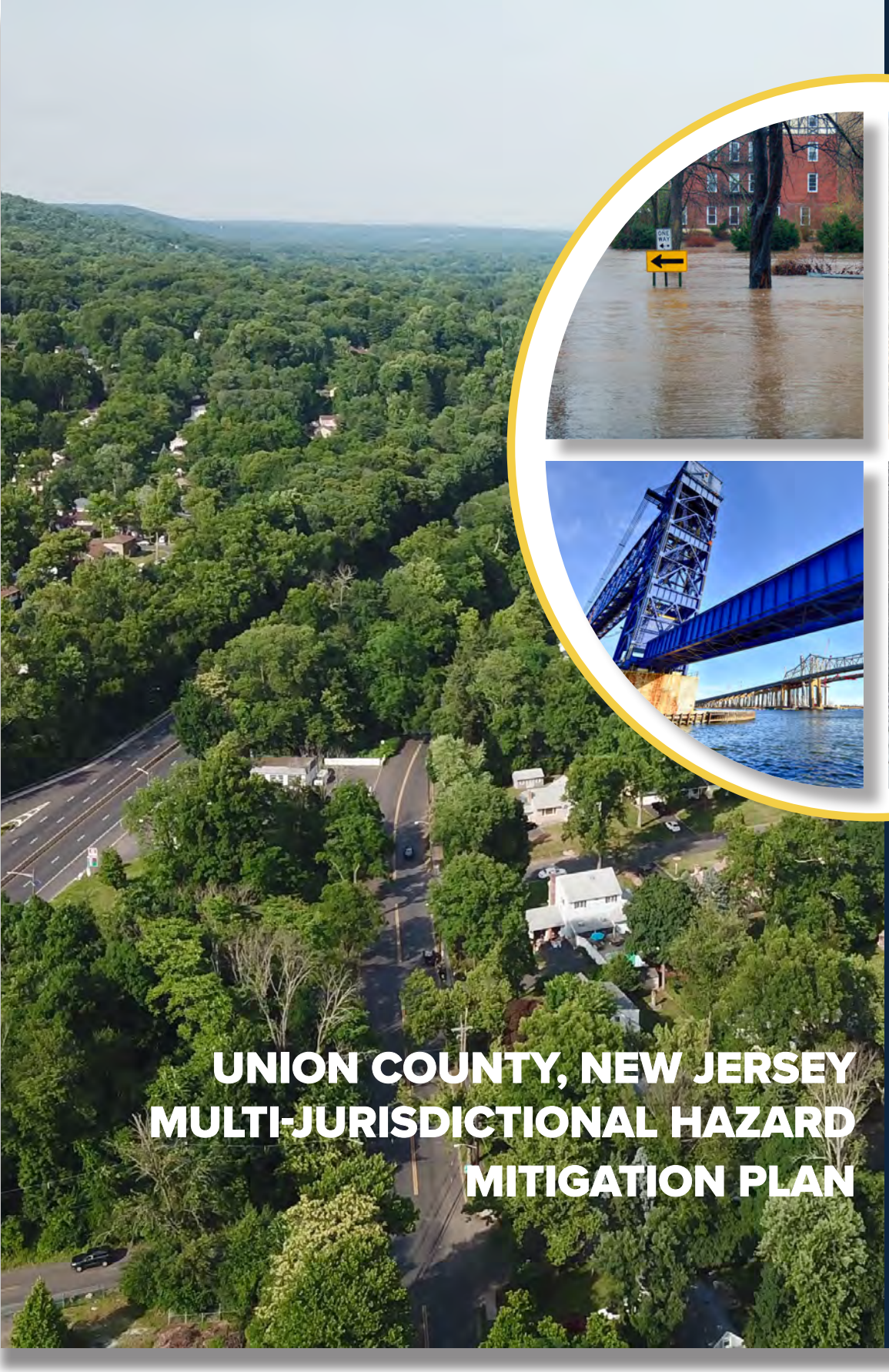

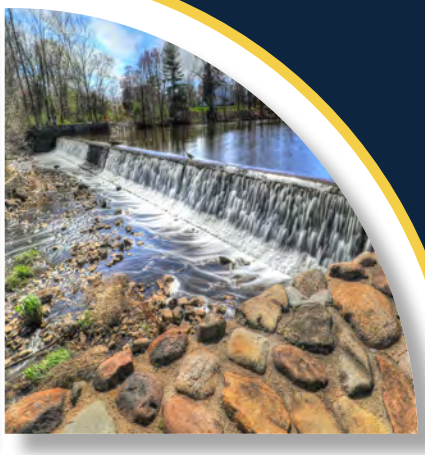

UNION COUNTY, NEW JERSEY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Final Plan Approval:
12/15/21
Expires:
12/14/26

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VOL I. 3 CRANFORD TOWNSHIP
VOL I. 4 ELIZABETH CITY
VOL I. 5 FANWOOD BOROUGH
VOL I. 6 GARWOOD BOROUGH
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1.0 INTRODUCTION

Rahway River

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1.0 INTRODUCTION

2021 HMP Changes:

- Section 1.0 Introduction replaces Section 1.0 Executive Summary.
- Section 1.1 Overview and Purpose was updated with current information.
- Section 1.2 Scope was added to this plan update.
- Section 1.3 Organization of the Plan was updated to reflect this HMP organization.
- Section 1.4 Authority was added to this plan update.
- The remaining information from the Executive Summary was moved to its corresponding section.

1.1 OVERVIEW AND PURPOSE

On October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000, also known as DMA 2000. Among its other features, DMA 2000 established a requirement that in order to remain eligible for federal disaster assistance and grant funds, local and state governments must develop and adopt hazard mitigation plans. On February 26, 2002, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule (IFR) that set forth the guidance and regulations under which such plans are supposed to be developed. The IFR provides detailed descriptions of both the planning process that states and localities are required to observe and the contents of the plan that emerges. In December 2010 the Union County Multi-Jurisdictional Hazard Mitigation Plan (Union County HMP) was developed to satisfy these requirements. The original plan was approved by FEMA and adopted by the County on December 8, 2010. In the spring of 2014 Union County initiated a Plan update to the 2010 and was adopted by FEMA on March 28, 2016. This Union County HMP is the second update to the original plan and is the result of work by County residents, local officials, and stakeholders that participated in the hazard mitigation planning process. Of the 21 municipalities that lie within Union County, 21 participated in the Plan update, achieving 100% plan participation.

The term “Hazard Mitigation” describes actions that can help reduce or eliminate long-term risks caused by hazards or disaster. The HMP process includes identifying local risks and vulnerabilities associated with disasters and developing long-term strategies for protecting people and property from future hazard events. These strategies are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. According to the National Institute of Building Sciences, natural hazard mitigation saves $6 on average for every $1 spent on Federal mitigation grants (FEMA, 2018). In other words, hazard mitigation actions and projects save more money than they cost.

1.2 SCOPE

The Union County HMP update has been prepared to meet requirements set forth by the FEMA and the New Jersey Office of Emergency Management (NJOEM) in order for the County to be eligible for funding and technical assistance from State and Federal hazard mitigation programs. Further, this HMP update is an effort to identify risks and vulnerabilities to natural and human-made hazards across Union County, as well as to outline suggested actions aimed at reducing overall risk and building resilience across the County. Union County decided to develop the original 2010 Plan because of increasing awareness that natural hazards, especially flood and wind, have the potential to affect people, physical assets, and operations in Union County and therefore have

undergone hazard mitigation planning and related activities in the past. Previous, ongoing, and new hazard mitigation activities are documented throughout the plan.

Union County selected the consultant Michael Baker International, Inc. (Michael Baker) to help develop the 2021 Union County Plan. The Union County Division of Emergency Services and Michael Baker worked together to update this HMP (Project Team).

1.3 ORGANIZATION OF THE PLAN

The Union County HMP is reformatted and organized to be more readable while paralleling the structure of the requirements outlined in 44 Code of Federal Regulations (CFR) 201.4 and FEMA's Plan Review Tool elements. The Union County HMP is organized into the following sections:

1. Introduction: Discusses the purpose of hazard mitigation planning and the planning requirements for the HMP.
2. HMP Review, Evaluation, and Implementation: Highlights changes in development since the 2016 Union County HMP, progress in local mitigation efforts, and changes in priorities (goals and objectives).
3. Mitigation Strategy: Details the updated mitigation strategy for the County and its municipalities.
4. Planning Process: Discusses the planning process, planning team, and municipal meeting process.
5. Capability Assessment: Examines the integration of existing planning mechanisms and the HMP.
6. Community Profile: Describes Union County's geography, land use, housing characteristics, economic assets, and transportation trends.
7. Risk Assessment: Provides an overview of the hazard identification, an analysis on each hazard affecting Union County, and key risk findings.
8. Plan Adoption: Discusses municipal HMP adoption process.
9. Plan Maintenance: Explains the plan maintenance process for monitoring, evaluating, and updating the HMP.

Appendices Volume I – Jurisdictional Information: Each municipality has their own appendix with their municipal narrative, mitigation strategy, capability assessment, and vulnerability maps.

Appendices Volume II – Other Plan Materials: Includes the Hazus report, annual monitoring tools, meeting materials, FEMA's Plan Review Tool, Community Rating System (CRS) Crosswalk, public comments, plan adoption resolutions, and the Final Draft 2020 City of Elizabeth Pre-Disaster Hazard Mitigation Plan.

TABLE 1.3-1 CROSSWALK OF 2016 HMP SECTIONS AND 2021 HMP SECTIONS

2016 HMP Sections:	2021 HMP Sections:
1. Executive Summary	Moved to Section 1.0 Introduction
2. County Profile	Moved to Section 6.0 County Profile
3. Planning Process	Moved to Section 4.0 Planning Process
4. Hazard Identification and Risk Assessment	Moved to Section 7.0 Risk Assessment
5. Capabilities and Action Plan	Moved to Section 3.0 Mitigation Strategy and Section 5.0 Capability Assessment
6. Approval and Adoption	Moved to Section 8.0 Plan Adoption
7. Plan Monitoring and Maintenance	Moved to Section 9.0 Plan Maintenance

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Note: Section 2.0 HMP Review, Evaluation, and Implementation is new to this plan update.

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1.4 AUTHORITY AND REFERENCES

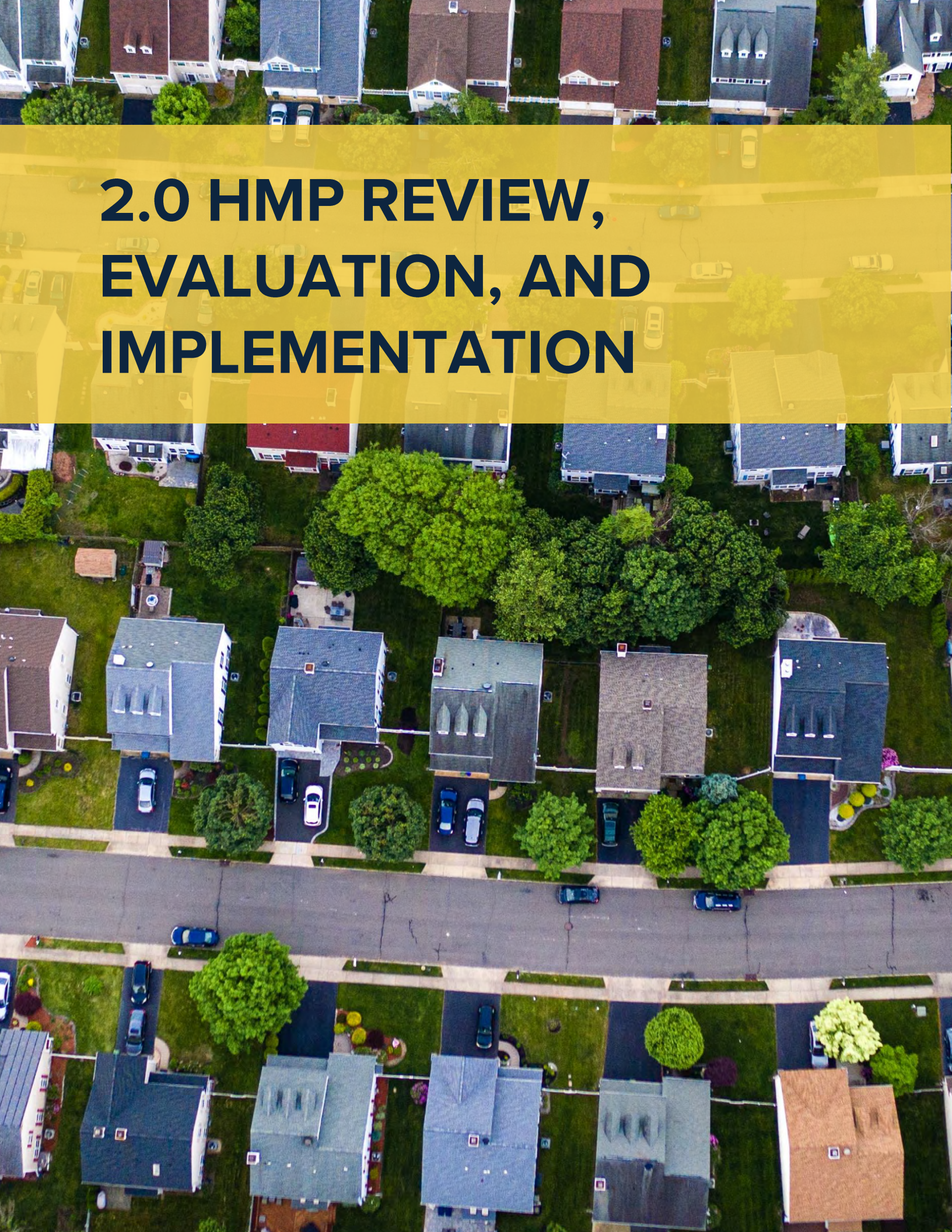
Authority for this plan originates from the following Federal and State sources:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, as amended;
- Code of Federal Regulations (CFR), Title 44, Parts 201 and 206;
- Disaster Mitigation Act of 2000, Public Law 106-390, as amended.
- National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 et seq.
- 2019 State of New Jersey HMP (State HMP)

FEMA's most recent guidance was used to for develop of this plan, including the *Mitigation Action Portfolio, Building Community Resilience with Nature-based Solutions: A Guide for Local Communities, Local Mitigation Planning Handbook,* and *Integrating Hazard Mitigation Planning into Local Planning: Case Studies and Tools for Community Officials.* Additionally, the plan follows guidance from the State Requirements to the Crosswalk from the 2019 New Jersey State Hazard Mitigation Plan (State HMP). Previous FEMA guides, including the 386 series, and information available from NJOEM on hazard mitigations was use as a guide in developing this HMP update.

Note: This Union County HMP update was completed with the most recent available data from August 2020 through June 2021. At the time of this plan update, the 2020 U.S. Census data was not available.

2.0 HMP REVIEW, EVALUATION, AND IMPLEMENTATION



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2.0 HMP REVIEW, EVALUATION, AND IMPLEMENTATION

2021 HMP Changes:

- This section is new to the HMP and added per NJOEM's request.
- Section 2.2 HMP Review: Changes in Development is now in this section, in addition to Appendices Volume I – Jurisdictional Information.
- Section 2.3 HMP Review: Change in Priorities was previously located in Section 5.1 Mitigation Goals, Objectives, and Actions.
- Section 2.4 HMP Review: Progress in Local Mitigation Efforts is now in this section, in addition to Appendices Volume I – Jurisdictional Information.

2.1 OVERVIEW

Section 2.0 HMP Review, Evaluation, and Implementation analyses how the previous HMP has been utilized and how new information is incorporated.

2.2 HMP REVIEW: CHANGES IN DEVELOPMENT

This section reflects changes in development since the last plan update in 2016.

2.2.1 NEW AND FUTURE DEVELOPMENT

As discussed in the 2019 State of New Jersey Hazard Mitigation Plan (State HMP), one of the key indicators of new and future development is the number of authorized building permits within each county. Statewide, Hudson County experienced the greatest population growth from 2012 to 2017 followed by Union, Bergen, and Middlesex Counties. There is a growing trend in urbanization and redevelopment in Union County as demonstrated by the increase in building permits and growth compared to the less developed areas of the State.

Table 2.2-1 Residential Building Permits, Yearly Summary (2015 - 2019) identifies residential building permits authorized for housing units reported by the State of New Jersey Department of Community Affairs (NJDCA) for each municipality in Union County between year 2015 and 2019. The table shows that building permits peaked in Union County in 2018 at 2,473. The fewest permits issued in Union County during this time period was in 2015 when only 925 housing permits were issued. The table is ordered by the total number of building permits during this time period, with the Elizabeth City having issued had the most building permits since 2015.

TABLE 2.2-1 RESIDENTIAL BUILDING PERMITS, YEARLY SUMMARY (2015 - 2019)

Municipality	2019	2018	2017	2016	2015	Total
Elizabeth City	503	396	239	676	174	1,988
Union Township	659	555	8	42	356	1,620
Rahway City	14	600	110	2	8	734
Linden City	266	281	62	19	17	645
Plainfield City	0	90	208	81	12	391
Westfield Town	55	55	102	82	90	384
New Providence Borough	17	8	178	4	118	325

Municipality	2019	2018	2017	2016	2015	Total
Cranford Township	62	219	13	9	11	314
Garwood Borough	291	1	3	1	2	298
Roselle Park Borough	0	169	0	0	1	170
Summit City	23	32	21	48	18	142
Roselle Borough	0	26	0	95	6	127
Scotch Plains Township	11	16	24	51	22	124
Berkeley Heights Township	13	6	15	11	30	75
Mountainside Borough	3	6	43	16	4	72
Clark Township	5	5	18	21	20	69
Fanwood Borough	4	0	41	1	19	65
Springfield Township	3	6	6	12	5	32
Hillside Township	0	0	6	9	12	27
Kenilworth Borough	3	2	3	2	0	10
Winfield Township	0	0	0	0	0	0
Total	1,932	2,473	1,100	1,182	925	7,612

Source: NJDCA Development Trends Viewer (as of 08/14/2019) and Housing units authorized by building permits (as of 08/07/20)

Building permits is also a great way to track new and future development in hazardous areas and therefore as part of this plan update, the Project Team asked the County and each municipality if they track building permits located within FEMA's Special Flood Hazard Area (SFHA). Unfortunately, at the time of this plan update, only two jurisdictions (Roselle Park Borough and Cranford Township) currently track this development, although several municipalities stated they will start to track building permits in the SFHA in order to update the plan in 2026. For the two municipalities that tracked permits within the SFHA, the Project Team compared addresses and noted the concentration of building permits in hazardous areas, which is located in the Municipal Narrative in Appendices Vol. I – Jurisdictional Information. In order to assist municipalities with tracking building permits within the SFHA, the County added a mitigation action to create a comprehensive database of building permits that are geocoded individually in order to understand changes in development in hazardous areas (Mitigation Action #22-53).

During the Planning Process, participants were asked if they were aware of any new and future developments in their community within the next 5+ years, especially within the SFHA. New and future development trends in Union County are illustrated below in **Table 2.2-2 New and Future Development in Union County**. Future development located partially or fully within the SFHA are highlighted in **bold** below. For more information on the plans for new and future development, see each municipal narrative, under New and Future Development, located in Appendices Volume I – Jurisdictional Information.

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TABLE 2.2-2 NEW AND FUTURE DEVELOPMENT IN UNION COUNTY

Municipality	New and Future Development
Berkeley Heights Township	There are nine new developments planned for the Township. Three developments are partially within the SFHA, one is adjacent to the SFHA, and five developments are outside the SFHA. • **Toll Brothers Luxury Townhomes Project at the Little Flower Church site/Hamilton Avenue School Redevelopment Area, 110 Roosevelt Avenue, 67 Carriage Homes and Condos (partially in the SFHA)** • **Millcreek "Spatz" Lone Pine Drive Complex, 91 Lone Pine Dr., 170 Units (partially in the SFHA)** • **Woodcrest Project, 100 Locust Avenue, 55 & Older Community 196 Rental Units (partially in the SFHA)** • Connell Corporate Park, Connell Drive, 328 Rental Units (adjacent to the SFHA) • Sttatton House (former Kings complex), 434 Springfield Avenue, 211 Rental Units (outside the SFHA) • The Terrance at Berkeley Heights Project (formally the movie theater), 450 Springfield Avenue, mixed occupancy of residential over commercial), 20 Units (outside the SFHA) • Elite Properties Project (Vito Mondelli site), 182 Plainfield Avenue, 10 Units (outside the SFHA) • Berkeley Crossing Project (Berkeley Florist), 663 & 665 Springfield Avenue, 45 Rental Units (outside the SFHA) • Municipal Complex, 29 Park Avenue, Police Station, Townhall, Library, and Recreation Center (outside the SFHA)
Clark Township	There are four areas of new and future development for the Township. All the new development is located outside the SFHA. • New construction at 1500 Westfield Ave – Woodcrest at Clark, a 55+ Active Adult Community • Brookside Manor, located at Westfield Ave. and Raritan Rd., a 42-unit complex • 35 Walnut Ave: a 195-unit complex • Westfield Ave. complex
Cranford Township	There are five new developments planned for the Township. One development is located in the SFHA and four are located outside the SFHA. • **High Street bet. South and Chestnut – parcels owned by developer (inside the SFHA)** • 109 Walnut Avenue – Albero Development, a multifamily/commercial complex (outside the SFHA) • 200-220 South Avenue East – Riverfront Development a multifamily/commercial complex (outside the SFHA) • 215-235 Birchwood Avenue – Birchwood Square Development, a multifamily complex (outside the SFHA) • Chestnut & Walnut Aves – parcel owned by developer (outside the SFHA)

Elizabeth City	Elizabeth is fully developed, but there are 23 redevelopment areas planned for the city. Eight properties are part of the Brownfields Development Area (BDA) Initiative, and 12 are partially in the SFHA, listed below:
	• **Harborfront Villas (former American Chrome Site – Block 2, Lot 480)**
	  o **Recently restarted construction. (BDA)**
	• **Apple Tree Village, 237-247 First Street (Block 1, Lots 115A, 116)**
	  o **Residential two-family homes have been completed. (BDA)**
	• **Bethlehem Steel Site (Block 2, Lot 461)**
	  o **School No. 28 completed on site. (BDA)**
	• **Borne Chemical Site (Block 4, Lot 1452)**
	  o **A Waste Management Intermodal Facility has been developed on a larger parcel; the smaller parcel remains undeveloped. (BDA)**
	• **Old Allied Signal (Block 1, Lot 1314/1315)**
	  o **A distribution center has been completed. (BDA)**
	• **Former Exact Anodizing Company (Block 2, Lot 655)**
	  o **Recently obtained Planning Board approval. (BDA)**
	• **Former Supermarket Property, (Block 2, Lot 604)**
	  o **Recently obtained Planning Board approval. (BDA)**
	• **Kull Property (Block 1, Lot 351)**
	  o **Site has been developed into a public parking lot. (BDA)**

Municipality	New and Future Development

	• **Kapkowski Road Redevelopment Area (Partially in the SFHA)**
	• **Elizabethport Waterfront Redevelopment Area, located at 39-55 Pine St (partially in the SFHA)**
	  o **Site has Planning Board approval for multi-family residential development. (BDA)**
	• **Midtown Redevelopment Area (partially in the SFHA)**
	  o **Multiple parcels within this redevelopment area have been developed and there is on-going and future construction planned for additional parcels.**
	• **Seaport Industrial Center Redevelopment Area (partially in the SFHA)**
	• **Elizabethport Phase II Redevelopment Area (partially in the SFHA)**
	• **Elizabethport Redevelopment Area (partially in the SFHA)**
	• **South Front Street (Borne Chemical) Redevelopment Area (partially in the SFHA)**
	• **York Street Redevelopment Area (partially in the SFHA)**
	• **Oakwood Plaza Redevelopment Area (partially in the SFHA)**
	  o **Area has been redeveloped.**
	• **Morris Ave (University Corridor) Redevelopment Area (partially in the SFHA)**
	• **56-78 Murray Street Redevelopment Area (partially in the SFHA)**
	  o **Area has been redeveloped.**

Fanwood Borough	The only new development planned for the Borough is infill development and it is located outside the SFHA.
Garwood Borough	There are current development projects on both North and South Avenue, which include residential and business space. The North Avenue Development at 75 North Avenue is outside the SFHA. A small portion of the South Avenue Development (the Former Petro Plastics and Casale Industries Site) at 450-490 South Avenue and 50 Center Street is within the SFHA. There are no plans for further development in the works at this time.
Hillside Township	The Township is mostly built-out, however there is one property planned for redevelopment along North Broad Street. This area is located outside the SFHA.
Kenilworth Borough	The Township recently completed a Redevelopment Study, and all areas planned for redevelopment are located outside the SFHA.
Linden City	There are three new developments planned for the City, which will all be located within the SFHA. • **Block 587, Lot 16-Tremley Point Warehouse and Parking Complex, located at 4050 Tremley Point Road (located in the SFHA)** • **Block 587, Lots 1.0 & 2.01; Block 586, Lots 8, 9, & 11-Tremley Point Warehouses (located in the SFHA)** • **Block 587, Proposed Lot 8.02-Linden Renewable Energy Facility (located in the SFHA)**
Mountainside Borough	The Borough has three plans for new development. One development is located in the SFHA, and two are located outside the SFHA. • **Long-term care facility on Springfield Avenue (located inside the SFHA)** • New Educational Facility (outside the SFHA) • 36-unit townhouse development (with 6 affordable housing units) along Mountain Avenue (outside the SFHA)
New Providence Borough	There is one new development in the Borough, being built in phases at the intersection of Mountain Avenue and South Street. Phase I is complete and phase II is in the process of getting zoning board approval. Both phases are outside the SFHA. • Phase I: 275 independent living units and 85 assisted living units (outside the SFHA) • Phase II: 550 independent living units and 108 health care (outside the SFHA)
Plainfield City	• There are no plans for new and future development at the time of this plan update.
Rahway City	The City has two projects proposed for redevelopment. One is partially in the SFHA and the other is adjacent to the SFHA. • **Tesla's Bridgeview – Block 322, Lots 4.02, 7, 8, 10, & 11: Lots 4.02 and 7 are in the 0.2% Annual Chance flood zone. Lots 8, 10, and 11 are at least partially in the Special Flood Hazard Area (SFHA) with the remainder of the lots being in the 0.2% Annual Chance flood zone. (partially in the SFHA)** • AST's Hamilton Street Redevelopment – Block 162, Lots 5-13: A majority of Block 162 is in the 0.2% Annual Chance flood zone. Lots 5, 9, and 13 also intersect with the SFHA. (adjacent to the SFHA)
Roselle	There are no plans for new and future development at the time of this plan update.

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Municipality	New and Future Development
Borough	
Roselle Park Borough	There are two areas planned for development in the Borough, with one future development located within the SFHA, and one outside the SFHA. • **There are three locations of new apartments above garages going in along West Westfield Ave. One property, 450 West Westfield Ave., is located in a flood zone. This property also has a tunnel that goes underneath the Gordon Street bridge which will remain for the new construction (inside the SFHA)** • 118 West Wester Avenue, a mixed-use apartment complex and parking garage, is outside the SFHA. Proposed parking will be underneath the apartment units (outside the SFHA)
Scotch Plains Township	There are three tiers and seven phases of revitalization and redevelopment planned for the downtown area of the Township, all located within the SFHA. • **1,023 total units with 204 affordable units** • **57 acres of land** • **Tier 1 Phase 1 is a Complete Street Redevelopment Plan with green infrastructure incorporated.**
Springfield Township	The Township has one property planned for development, located partially within the SFHA. • **1 apartment complex with 140 units, located at the intersection of Center Street, Morris Avenue, and Caldwell Place (partially in the SFHA)**
Summit City	The City has nine areas of planned redevelopments, which are all located outside the SFHA. • 289 Broad Street – A new firehouse will be built at this property. • Broad Street West, which will redevelop the property that the current firehouse sits on at 396 Broad St. A mixed-use building, residential over commercial. • 146 Morris Avenue will be a Habitat for Humanity project with 12 units. • There are "overlay" sections in town where if future development takes place on those properties a % of the project must be allotted for" Below Market Rate Housing". There are several locations throughout town, with 146 Morris and Broad Street West project. • There is a townhouse complex going in on New England Avenue with 6-12 units. • Broad Street East redevelopment to improve/ update the area from Maple Street to Walnut. • Overlook Hospital is in the process of finishing up a new multi- level parking garage. They are expanding their Emergency room as well. • Bristol Myers Squipp is also knocking down a building at the 556 Morris Avenue site and rebuilding modern research and development buildings with labs and storage buildings. • Discussions of expanding the Broad Street Parking Garage, 301 Broad Street, to accommodate additional parking for commuters. A future project that may get feet sooner than later.
Union Township	There are no plans for redevelopment in Union Township that are located in the SFHA.
Westfield Town	There is no new development proposed at this time in the Town, however certain areas have been designated as Areas in Need of Redevelopment and the whole Town has been designated an Area in Need of Rehabilitation. All of these are located outside of the SFHA.
Winfield Township	The Township is completely built out; no new development or redevelopment is planned at the time of this plan update.

An additional way to track new and future development is to analyze developable land (upland, private, vacant land) located within FEMA's SFHA. To do this analysis, the County used New Jersey Office of Geographic Information System's (NJOGIS) Parcels and MOD-IV Composite of New Jersey data to measure how many acres of vacant land are in FEMA's SFHA, by jurisdiction. The County deducted environment constraints to development, such as wetlands (and a 50-foot buffer) and open space. **Table 2.2-3 Vacant Developable Land Located Within FEMA'S SFHA (In Acres)** displays the number of acres located within each FEMA flood zone, by jurisdiction. The Elizabeth City, followed by the Linden City, have the most vacant developable land located within the SFHA.

TABLE 2.2-3 VACANT DEVELOPABLE LAND LOCATED WITHIN FEMA'S SFHA (IN ACRES)

Municipality	FEMA Flood Zone					Total
	A	AE	AH	AO	VE	
Elizabeth City	0.01	93.67	-	-	15.99	109.67
Linden City	-	83.01	-	-	-	83.01
Berkeley Heights Borough	2.37	12.55	-	-	-	14.92
Springfield Township	0.03	10.16	-	-	-	10.18
Rahway City	-	9.46	-	-	-	9.46
Roselle Borough	-	8.49	-	-	-	8.49
Scotch Plains Township	0.01	8.44	-	-	-	8.46
Plainfield City	0.39	0.55	-	7.49	-	8.42
Union Township	-	7.29	0.68	-	-	7.97
Mountainside Borough	2.74	2.15	-	-	-	4.90
New Providence Borough	0.57	2.81	-	-	-	3.38
Clark Township	-	2.61	-	-	-	2.61
Summit City	2.44	-	-	-	-	2.44
Kenilworth Borough	-	1.85	-	-	-	1.85
Cranford Township	-	1.81	-	-	-	1.81
Hillside Township	0.74	0.71	-	-	-	1.45
Westfield Town	-	0.68	-	-	-	0.68
Fanwood Borough	-	0.49	-	-	-	0.49
Garwood Borough	0.01	0.33	-	-	-	0.34
Roselle Park Borough	-	-	-	-	-	0.00
Winfield Township	-	-	-	-	-	0.00
Total	9.32	247.06	0.68	7.49	15.99	280.54

Source: 2019 FEMA Flood Zone Composite, 2019 New Jersey DEP Land Use/Land Cover 2015 Update, 2021 New Jersey DEP State, Local and Nonprofit Open Space of New Jersey, 2021 NJOGIS Parcels and MOD-IV Composite of New Jersey

In New Jersey, housing and land use have been significantly impacted by affordable housing litigation and subsequent legislation. The Mount Laurel IV Declaratory Judgment Process commenced in 2015 as a result of the responsibility for determining municipal affordable housing obligations and implementation of municipal housing elements and fair share plans pursuant to the Fair Housing Act being placed under the jurisdiction of the State Supreme Court, in response to a failure by the State Council on Affordable Housing to adopt updated Substantive and Procedural

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Rules and lack of a legislative solution. As the Declaratory Judgment Process continues, increasing numbers of municipalities in Union County and other areas of the State are reaching settlements with the Fair Share Housing Center and are adopting amended third round housing elements and fair share plans which describe municipal affordable housing obligations through 2025.

On February 4, 2021, Governor Murphy signed Senate Bill No. 2607 requiring the integration of climate vulnerability assessments into future municipal master plan updates. Municipalities are now required to include a climate change-related hazard vulnerability assessment in their land use plan elements to analyze current and future threats associated with climate change related natural hazards, such as flooding. This assessment also must include a build-out analysis of all future development in the municipality, as well as any threats and vulnerabilities associated with this development, and strategies to reduce the risks of climate change-related natural hazards. Therefore, the next plan update will include much more information on future development in hazardous areas since the State now requires build-out analyses at the local level.

2.2.2 CHANGES IN LAND USE/LAND COVER

Land use/land cover within Union County has remained relatively consistent since the last HMP Update, which used New Jersey Department of Environmental Protection (DEP) 2012 data. According to **Table 2.2-4 Land Cover Changes Since 2012 In Union County,** the County's urban footprint decreased by less than 0.1%. Local and state protections ensure that this type of development does not increase flood, wind, or earthquake risk to existing or new property owners.

TABLE 2.2-4 LAND COVER CHANGES SINCE 2012 IN UNION COUNTY

Land Cover Type	2012 (Acres)	Percent Change	2015 (Acres)	Percent Change
Agriculture	86.15	-37.13%	86.46	0.36%
Barren Land	627.15	19.53%	703.04	12.10%
Forest	6,151.00	-7.30%	6,086.86	-1.04%
Urban	55,757.87	0.85%	55,772.11	0.03%
Water	1,906.01	2.78%	1,875.80	-1.59%
Wetlands	2,912.95	-2.95%	2,914.33	0.05%

Source: New Jersey DEP DOIT BGIS 2019 Land Use/Land Cover 2015 Update. This report was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by New Jersey DEP and is not state-authorized or endorsed.

2.2.3 REDEVELOPMENT

According to the NJDCA, there are 62 resolutions designating Areas in Need of Redevelopment in Union County and there eight resolutions designating Areas in Need of Rehabilitation in Union County (NJDCA 2020). **Figure 2.2-1 Union County Areas in Need of Redevelopment and Areas in Need of Rehabilitation, 2020**, shows the distribution of Areas in Need of Redevelopment and Areas in Need of Rehabilitation throughout the County. Of the 62 designated areas, 41 are in the SFHA.

Those designated areas are located in the following municipalities:

- Berkeley Heights Township
- Elizabeth City
- Garwood Borough
- Linden City
- Plainfield City
- Rahway City
- Roselle Borough
- Scotch Plains Township
- Springfield Township
- Union Township

Of the eight designated areas, six are in the SFHA and are located in the following municipalities:

- Hillside Township
- Elizabeth City
- Plainfield City
- Scotch Plains Township

Several municipalities are incorporating hazard mitigation and resiliency into their redevelopment plans and discuss how they will increase or decrease risk in those hazard areas. These plans are discussed in each municipal narrative, under New and Future Development, located in Appendices Volume I – Jurisdictional Information.

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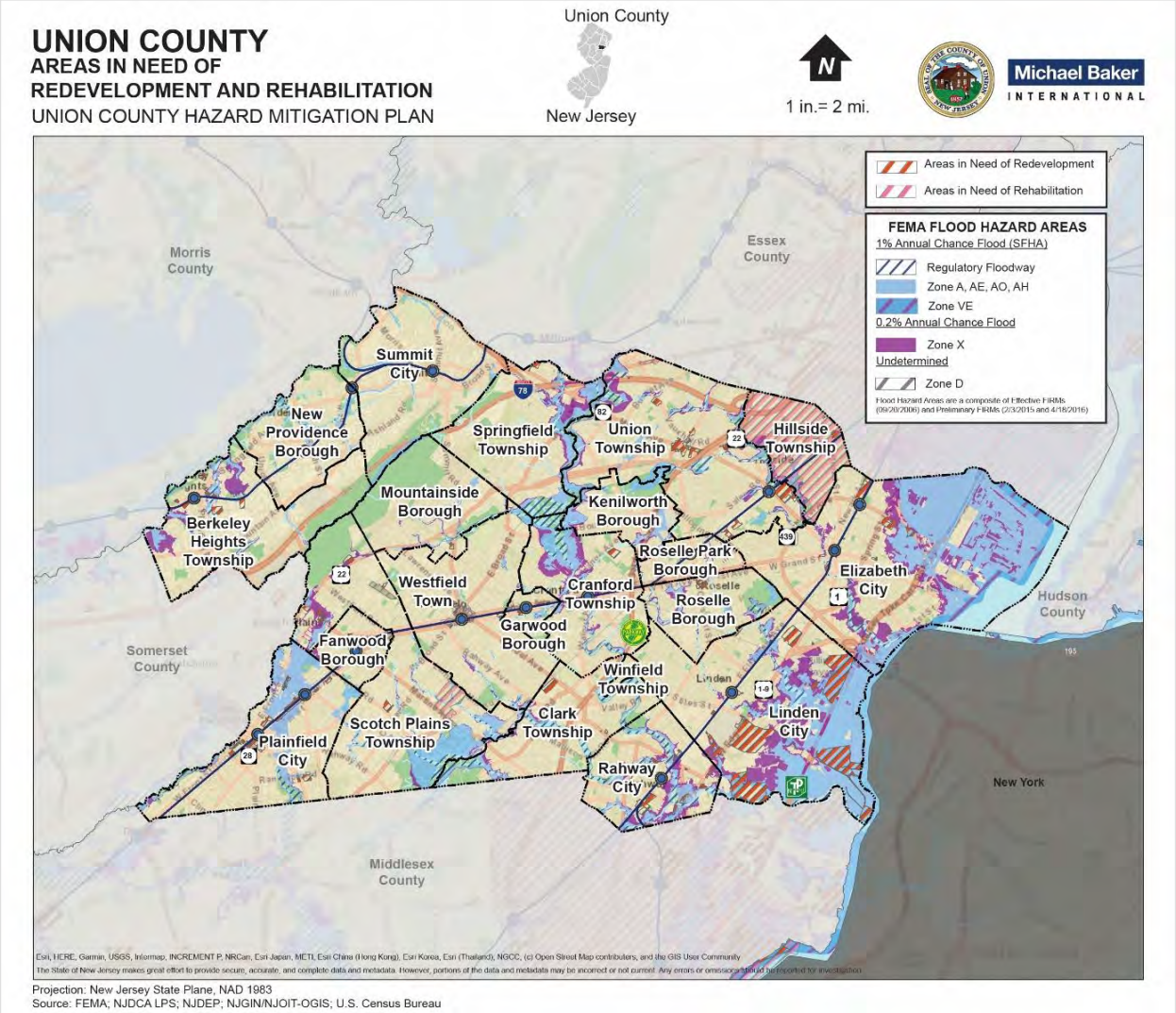
FIGURE 2.2-1 UNION COUNTY AREAS IN NEED OF REDEVELOPMENT AND AREAS IN NEED OF REHABILITATION, 2020



Source: NJDCA Local Planning Service (LPS), 2020

2.3 HMP EVALUATION: CHANGES IN PRIORITIES

This section reflects changes in priorities, including HMP Goals and Objectives and Hazard Identification.

2.3.1 CHANGES IN HMP GOALS AND OBJECTIVES

One of the first steps in updating this HMP was to meet with the Steering Committee and review the 2016 HMP Goals, which are general guidelines that explain what Union County wants to achieve through this plan. Goals are expressed as broad policy statements representing desired long-term results. Objectives are well-defined intermediate points in the process of achieving goals and are generally coterminous with strategies. Mitigation Actions are the specific steps (projects, policies, strategies, and programs) that advance a given objective. They are highly focused, specific, and measurable.

After evaluating the previous HMP goals, the Steering Committee discussed what has occurred in Union County since the last plan update and revised the Goals and Objectives to reflect the current risk that faces the County. The Steering Committee decided to roll the previous HMP goals into this plan update and more closely aligned their goals to FEMA's recent guidance by adding a goal on mitigating High-Hazard Potential Dams (Goal 5). The Goals and Objects for the 2021 Union County HMP are listed in the **Table 2.3-1 HMP Goals and Objectives**. The Goals and Objectives new to this plan update are highlighted in *red italics* below.

TABLE 2.3-1 HMP GOALS AND OBJECTIVES

Goal	Objective
Goal 1: Improve **education and outreach** efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.	**Objective 1.A:** Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials **Objective 1.B:** Increase local government official awareness regarding funding opportunities for mitigation. **Objective 1.C:** Increase local government official awareness regarding opportunities for participation in and contributing to future Plan updates.
Goal 2: Improve **data collection, use, and sharing** to reduce the impact of hazards	**Objective 2.A:** Improve availability of the county and participating municipalities to collect data related to all relevant hazards for use in future planning efforts. **Objective 2.B:** Provide government officials and local practitioners with educational opportunities and information regarding best practices for hazard mitigation planning, project identification, and implementation **Objective 2.C:** Acquire and maintain detailed data regarding critical facilities such that these sites can be prioritized and risk-assessed for possible mitigation actions
Goal 3: Improve **capabilities, coordination, and opportunities** at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities.	**Objective 3.A:** Continue support of hazard mitigation planning, project identification, and implementation at the municipal and county level. **Objective 3.B:** Support increased NFIP/CRS participation **Objective 3.C:** Support increased integration of municipal/county hazard mitigation planning and floodplain management with effective municipal/ county zoning regulation, subdivision regulation, and comprehensive planning. **Objective 3.D:** Elicit and support efforts to address shortcomings in existing laws, programs, and administrative rules related to hazard mitigation. **Objective 3.E:** Provide for user-friendly hazard-data accessibility for mitigation and other planning efforts and for private citizens **Objective 3.F:** Provide direct support, where possible, to municipal mitigation programs. **Objective 3.G:** Provide opportunities for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the plan update process
Goal 4: Pursue **opportunities to mitigate** repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities.	**Objective 4.A:** Facilitate development and timely submittal of project applications meeting state and federal guidelines for funding (1) for RL and SRL properties and (2) for hardening/ retrofitting infrastructure and critical facilities with highest vulnerability ratings. **Objective 4.B:** Maintain and enhance local planning and regulatory standards related to future development and investments.
Goal 5: *Mitigate High Hazard-Potential Dams within the County*	*Objective 5.A: Repair or rehabilitate high hazard-potential dams.*

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2.3.2 CHANGES IN HAZARD IDENTIFICATION

The hazards the Steering Committee decided to evaluate as part of this plan update are listed in **Table 2.3-2 Hazard Identification Crosswalk**. In the initial phase of the planning process, the Steering Committee evaluated the hazards profiled in the 2016 plan and determined that the same 18 hazards posed the greatest threat to Union County but combined Ice Storm with Severe Weather-Winter Weather (highlighted in *red italics*). For the 2021 Plan update, Union County added eight additional human-based hazards based on the State HMP (also in *red italics* below). More information on the hazard identification process is discussed in 7.1.1 Identification of Hazards.

TABLE 2.3-2 HAZARD IDENTIFICATION CROSSWALK

2016 Hazards Profiled	2021 Hazards Profiled
Natural Hazards	
Dam Failure	Dam Failure
Drought	Drought
Earthquake/Geological	Earthquake/Geological
Erosion–Hurricane/Nor'easter/Coastal Storm	Erosion–Hurricane/Nor'easter/Coastal Storm
Extreme Temperature–Cold	Extreme Temperature–Cold
Extreme Temperature – Heat	Extreme Temperature – Heat
Flood	Flood
Hail	Hail
High Wind – Straight-Line Winds	High Wind – Straight-Line Winds
High Wind – Tornado	High Wind – Tornado
Ice Storm	*Combined with Severe Storm-Winter Weather*
Landslide (non-seismic)	Landslide (non-seismic)
Severe Storm – Lightning	Severe Storm – Lightning
Severe Storm – Winter Weather	Severe Storm – Winter Weather (Includes Ice Storm)
Storm Surge –Hurricane/Nor'easter/Tropical Storm	Storm Surge –Hurricane/Nor'easter/Tropical Storm
Wildfire	Wildfire
Human-based Hazards	
Hazardous Materials Release – Fixed Site	Hazardous Materials Release – Fixed Site
Hazardous Materials Release – Transportation	Hazardous Materials Release – Transportation
-	*Animal Disease*
-	*Civil Unrest*
-	*Cyber Attack*
-	*Economic Collapse*
-	*Nuclear Hazards*
-	*Pandemic*
-	*Power Failure*
-	*Terrorism*
Note: Impacts from Climate Change and Sea Level Rise will be addressed in each applicable hazard.	

2.4 HMP IMPLEMENTATION: PROGRESS IN LOCAL MITIGATION EFFORTS

This section details how this HMP update reflects progress in local mitigation actions. As required by FEMA, Union County and its 21 municipalities completed an evaluation of the mitigation strategies and actions from the 2016 plan and reported on the status of each, either as Ongoing, Carried Forward, Completed, or Withdrawn. In addition, the Planning Team worked with the County and each municipality to brainstorm New Mitigation Actions for inclusion in this HMP update. For the 2021 HMP update, there are a total of **395 mitigation actions,** with **108 New actions, 135 Ongoing actions, 50 Carried Forward actions, 64 Completed actions,** and **38 Withdrawn actions.** The comprehensive list of all the mitigation actions is located in Section 3.4 Hazard Mitigation Action Summary.

2.4.1 SUCCESSFUL MITIGATION ACTIONS SINCE LAST HMP

The Planning Team worked with the County and each municipality to reflect progress in the HMP implantation. The following 2016 mitigation actions are now completed. There is a total of 64 Completed Mitigation Actions.

TABLE 2.4-1 SUCCESSFUL MITIGATION ACTIONS, BY JURISDICTION

Jurisdiction	Community Action #	Completed Mitigation Action
Berkeley Heights Township	01-03	Acquire Homes at Robin's Avenue and Springfield Intersection.
Berkeley Heights Township	01-04	Flood-proof Town Hall Building Which Houses Police Department/Data Storage.
Berkeley Heights Township	01-06	Upgrade and Improve the Stormwater Management System for the Berkeley Hall Nursing Home.
Clark Township	02-01	Purchase Generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building Located at 430 Westfield Avenue.
Cranford Township	03-04	Upgrade and Improve the Stormwater Management System for the Municipal Building Which Houses the Police Department.
Cranford Township	03-05	Purchase and Install Backup Generator for Fire Department.
Cranford Township	03-08	Upgrade Gate System at Hansel's Dam.
Elizabeth City	04-16	Upgrade, Repair and/or Maintain the Pump Station at 2nd South Street.
Elizabeth City	04-18	Elizabeth River and Arthur Kill Shoreline Stabilization.
Elizabeth City	04-34	Progress Street Flood Control.
Elizabeth City	04-35	Salt and Storage Facilities Upgrades.
Elizabeth City	04-36	Trumbull Street Flood Control (at 6th Street).
Fanwood Borough	05-02	Purchase and Install a Generator for the Borough Hall, Police Headquarters, and Fire Headquarters.
Fanwood Borough	05-03	Purchase a Portable Generator.
Fanwood Borough	05-04	Purchase a Variable Message Board.
Fanwood Borough	05-05	Purchase 3 Portable Generators and Transfer Switches for 3 Traffic Signals on Martine Avenue.
Fanwood Borough	05-08	Purchase a Generator for Forest Road Park (Warming Station).
Garwood Borough	-	No Completed Actions at the time of this plan update.

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Jurisdiction	Community Action #	Completed Mitigation Action
Hillside Township	07-03	Retrofit the North Avenue Pump Station that Houses Three Pumps.
Hillside Township	07-07	Join Union County First Alert System and Develop Telephone Emergency-based System to Notify Residents, including Facebook and Twitter.
Kenilworth Borough	08-01	Purchase and Install Generators at 3 Critical Facilities.
Linden City	09-06	Flood-proof Department of Public Works.
Linden City	09-07	Purchase and Install a Backup Generator and Upgrade Facilities for John T. Gregorio Community Center (Primary Care Shelter).
Linden City	09-17	Restore Wetlands, Conduct Drainage Improvements, and Conduct Bird Surveys Near Marshes Creek.
Linden City	09-18	Purchase a Backup Generator for City Hall.
Linden City	09-24	Acquire Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.
Mountainside Borough	10-02	Dredge Pre-Existing Creek that Runs South of Charles St. and North of Willow Road (Approximately 1,500 ft.).
Mountainside Borough	10-03	Develop Media Committee. Join New Emergency System (First-Alert). Develop Telephone Emergency-Based System to Notify Residents, Including Facebook and Twitter.
New Providence Borough	11-06	Control Erosion at Existing Outfalls to the Passaic River at Pine Way and Ashwood Road.
New Providence Borough	11-07	Control Erosion Along Surface Drainage Feature at Brook Hollow Lane.
Plainfield City	12-04	Obtain Backup Power or Bury Lines for Fire Station on Central Avenue.
Plainfield City	12-05	Obtain Backup Power or Bury Lines for Fire Station at Bergen and 3rd.
Plainfield City	12-06	Obtain Backup Power or Bury Lines for Fire Station at South Avenue and Belvedere.
Plainfield City	12-13	Install emergency generator at Warming Centers (Welcome Center) at two locations: YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.
Rahway City	13-01	Upgrade and Improve the Storm-water Management System Along Central and St. George's Streets (Robinson's).
Rahway City	13-05	Replace and Elevate Existing Generator Above Flood Level at the City Hall and Rahway Police Department. Provide Mobile Connector for Emergency Generator Hook-up. Install Sewer Check Valve to Eliminate Basement Flooding.
Rahway City	13-06	Replace and Elevate Existing Generator for the Dock Street Sanitary Sewer Above Flood Level. Elevate Electrical Controls Above Flood Level.
Rahway City	13-08	Replace Existing Generator at Maple Ave Firehouse.
Rahway City	13-09	Provide Mobile Connector for Emergency Hook-Up at Main Street Firehouse.
Rahway City	13-10	Replace Gymnasium Hardwood Floor with Vinyl Floor, which is More Flood-Resistant at Recreation Center.
Roselle Borough	-	No Completed Actions at the time of this plan update.

Jurisdiction	Community Action #	Completed Mitigation Action
Roselle Park Borough	15-01	Retrofit Roof to Meet Current Standards on Municipal Building that Houses the Local Police Department and OEM.
Roselle Park Borough	15-02	Flood-proof the Chestnut Street Fire Station.
Roselle Park Borough	15-03	Flood-proof the Lorane Fire House.
Roselle Park Borough	15-04	Flood-proof and Purchase and Install a Backup Generator for the Faitoute Fire House.
Roselle Park Borough	15-05	Retrofit Roof to Meet Current High Wind Standards on the Faitoute Fire House.
Roselle Park Borough	15-07	Mitigate Flooding of the Sherman School.
Roselle Park Borough	15-08	Obtain Backup Power to the Roselle Parks Middles School.
Roselle Park Borough	15-09	Increase Holding Capacity to Basin Along Meadow Street (East Grant Ave and Walnut Street).
Roselle Park Borough	15-10	Obtain Backup Power for and Retrofit the Aldine School.
Roselle Park Borough	15-11	Obtain Backup Power for and Retrofit Roselle Park High School.
Roselle Park Borough	15-13	Upgrade and Improve the Drainage System for the Tributary to the West Brook in Grant Avenue Area.
Roselle Park Borough	15-14	Impact Harden and Retrofit Roofs on 4 Schools Located on West Grant Ave (2 Facilities), Laurel Ave, and Chestnut Ave.
Roselle Park Borough	15-15	Upgrade the Covered Culvert Along West Westfield Ave.
Roselle Park Borough	15-18	Rebuild Trash Racks with Stronger Material to Prevent Debris from Clogging Drains at the Walnut St. Basin.
Roselle Park Borough	15-20	Join CRS Program.
Scotch Plains Township	16-03	Install Generator at Municipal Building.
Scotch Plains Township	16-04	Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.
Scotch Plains Township	16-08	Upgrade EOC.
Springfield Township	-	No Completed Actions at the time of this plan update.
Summit City	18-01	Purchase and Install a Backup Generator for Department of Public Works.
Summit City	18-05	Improve Drainage/Conveyance Along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron Avenue, Kent Place Boulevard, Edgemont Avenue, and W End Avenue.
Union Township	19-01	Upgrade and Improve Stormwater Management System for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.
Union Township	19-02	Harden and Retrofit Police Department.
Union Township	19-03	Harden and Retrofit of Municipal Building.
Union Township	19-05	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Union Township	19-07	Purchase New Emergency Standby Generator for Firehouse Headquarters.
Union Township	19-08	Purchase New Emergency Standby Generator for Senior Center.
Union Township	19-09	Purchase New Emergency Standby Generator for Police Department.

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Jurisdiction	Community Action #	Completed Mitigation Action
Union Township	19-10	Repair Irvington Branch Retaining Wall.
Westfield Town	20-05	Purchase and Install a Backup Generator for the Department of Public Works.
Winfield Township	21-02	Add NIXLE as an Emergency Messaging System to Enhance Emergency Communications Capabilities.
Union County	22-42	Purchase and Install a Generator for the Public Works Building.

2.4.2 ONGOING MITIGATION ACTIONS

The Planning Team worked with the County and each municipality to reflect progress in the HMP implantation. The following 2016 mitigation actions were updated as an Ongoing Mitigation Actions, which means actions that were started, however not completed and therefore are ongoing. There is a total of 135 Ongoing Actions.

TABLE 2.4-2 ONGOING MITIGATION ACTIONS, BY JURISDICTION

Jurisdiction	Community Action #	Ongoing Action Name
Berkeley Heights Township	01-01	Flood-proof Homes Along 400 and 600 River Road.
Berkeley Heights Township	01-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Berkeley Heights Township	01-09	De-Snag Streams and Rivers in the Township to Prevent Debris Build-Up.
Berkeley Heights Township	01-10	Relocate Municipal Facilities Outside of Flood-prone Areas.
Berkeley Heights Township	01-11	Remove Hazardous Trees in the Township.
Clark Township	02-02	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.
Clark Township	02-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Cranford Township	03-01	Construct New Local Storm Sewer, Pump Station, and Bypass Storm Systems to Mitigate Flooding in the Township.
Cranford Township	03-02	Upgrade and Improve Stormwater Management System for Various Local Streets to Reduce Flooding in Homes and on Roadways.
Cranford Township	03-10	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Cranford Township	03-14	Acquire and Demolish or Relocate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Cranford Township	03-15	Elevate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Cranford Township	03-16	Replace the Staff Gauge at Balmiere Parkway/Riverside Drive and Footbridge with an Automated Gauge.

Jurisdiction	Community Action #	Ongoing Action Name
Elizabeth City	04-01	Reduce or Eliminate Local Flooding via the Dowd Avenue Pump Station.
Elizabeth City	04-02	Upgrade, Repair, and Maintain Sewers and Drainage Along Trumbull Street to Manage Stormwater (Trumbull Street Regional Stormwater Management Project)
Elizabeth City	04-03	Upgrade, Repair, and/or Maintain Storm Sewers and Drainage Along Monmouth Road to Control Flooding (JMEUC Issues).
Elizabeth City	04-04	Upgrade, Repair, and/or Maintain Storm Drains and Sewers Along Park Avenue and Summit Road.
Elizabeth City	04-05	Reduce or Eliminate Local Flooding Along Maple Avenue/Routes 1&9.
Elizabeth City	04-06	Upgrade, Repair and/or Maintain Storm Drains and Sewers Where Routes 1&9 and Railroad Crossings Intersect.
Elizabeth City	04-07	Separate the Sewers, Upgrade the Pump Station, and Install a Generator at the Intersection of Cherry Street and West Jersey Street.
Elizabeth City	04-08	Upgrade and/or Repair Ursino Dam.
Elizabeth City	04-09	Purchase and Install Portable Generators at Key City Traffic Locations.
Elizabeth City	04-10	Purchase and Install New Miscellaneous Generators and Electrical Upgrades at Critical Facilities, Especially Existing Flood Control Pump Stations and Critical Care Facilities that Provide Continuity of Service.
Elizabeth City	04-11	Minimize Extreme Heat Casualties and Deaths through Public Awareness and Outreach.
Elizabeth City	04-12	Conduct a Public Communication Campaign Around Earthquake Awareness, Response, and Recovery.
Elizabeth City	04-13	Reduce or Eliminate Flooding Around Third Avenue and Atlantic Street.
Elizabeth City	04-14	Upgrade the South Second Street Pump Station, Install a New Generator and Improve Local Storm Sewers.
Elizabeth City	04-15	Construct Atlanta Plaza Floodwall.
Elizabeth City	04-17	Upgrade, Repair, and Separate Combined Sewers in the Bayway Area.
Elizabeth City	04-19	Flood-proof Firehouse Engine #1 on Broad Street.
Elizabeth City	04-20	Upgrade and Repair the Pump Station and Install a New Generator at Kapkowski Road.
Elizabeth City	04-21	Install a New Wet Weather Pump Station and Ancillary Infrastructures on Trenton Avenue.
Elizabeth City	04-22	Install a New Generator at Trenton Avenue.
Elizabeth City	04-23	Install Pump Station Upgrades and Generator at Mattano Park.
Elizabeth City	04-25	Reduce or Eliminate Local Flooding on Pennington Street.
Elizabeth City	04-26	Purchase and Install a Generator at the Municipal Marina.
Elizabeth City	04-27	Upgrade and Repair the Elizabeth River Flood Control Project.
Elizabeth City	04-28	Purchase and Install Emergency Overhead Signage for Emergency Communication.
Elizabeth City	04-30	Provide for Infectious Disease Control Through Emergency Communication and Temporary Vaccination Stations.
Elizabeth City	04-31	Design and Construct a New Firehouse Outside of the Flood Zone.
Elizabeth City	04-32	Upgrade the Storm Drains and Sewers in the Lincoln Avenue Area.

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Jurisdiction	Community Action #	Ongoing Action Name
Elizabeth City	04-33	Conduct a Public Communication, Education, and Outreach Campaign About Severe Winter Storms and Extreme Cold Events.
Fanwood Borough	05-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Garwood Borough	06-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Garwood Borough	06-02	Purchase and Install Generators for Multiple Critical Facilities to Use as Warming/Cooling Stations and Maintain Critical Borough Operations.
Garwood Borough	06-03	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Hillside Township	07-01	Construct Additional Basins to Protect Town Hall which Houses the Police Department and the Library.
Hillside Township	07-02	Upgrade Stormwater Management System for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.
Hillside Township	07-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Hillside Township	07-05	Purchase and Install Emergency Backup Generators at the Community Center and Senior Center.
Hillside Township	07-06	Conduct Ongoing Tree Maintenance and Survey Along Township Right-of-ways.
Kenilworth Borough	-	No Ongoing Actions at the time of this plan update.
Linden City	09-01	Upgrade, Maintain, and Improve Sewer Lines to Reduce Infiltration in the Flood Zone.
Linden City	09-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Linden City	09-19	Replace Range Road Bridge.
Linden City	09-20	Improve the Stormwater and Sewer System in the Rosewood Terrace Area and Along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.
Linden City	09-21	Acquire Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Linden City	09-22	Elevate Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Linden City	09-23	Expand Outreach to Reach Residents, with Translations for Non-English-Speaking Communities.
Mountainside Borough	10-01	Install Emergency Backup Generator at Mountainside Rescue Squad EOC (1399 Route 22 East).
New Providence Borough	11-05	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Plainfield City	12-01	Upgrade and Improve the Stormwater Management System, Including Retention Basins, Along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.

Jurisdiction	Community Action #	Ongoing Action Name
Plainfield City	12-07	Dredge and Clean Green Brook and Cedar Brook.
Plainfield City	12-11	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Plainfield City	12-12	Remove Trees and Trim Tree Limbs Near Power Lines.
Plainfield City	12-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Rahway City	13-02	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.
Rahway City	13-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Rahway City	13-07	Purchase and Install Traffic Signal and Trailer-Mounted Emergency Generators.
Rahway City	13-11	Adopt an Ordinance to Limit Stormwater Direction or Quantity Changes on Private Property That May Have a Compounding Effect on Downstream or Adjacent Properties.
Rahway City	13-12	Coordinate with Adjacent Municipalities to Reduce Flooding within the Watershed.
Rahway City	13-13	Elevate, Floodproof, Acquire or Relocate Buildings and Infrastructure in Flood-prone Areas Along the South Branch and Robinson Branch of the Rahway River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Roselle Borough	14-05	Improve and Convert Roadway Stormwater Systems at Harrison Ave., Wheat Sheaf Ave, and Brook Run.
Roselle Borough	14-06	Conduct Stream Maintenance to West Brook and Peach Orchard Brook.
Roselle Borough	14-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Roselle Park Borough	15-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Roselle Park Borough	15-19	Identify High Risk Trees through the Tree Management Program with Right of Way Survey and Trim or Remove Trees to Reduce Property Damage During and Debris After Storms and Severe Weather Events.
Scotch Plains Township	16-01	Purchase and Install a Generator at Department of Public Works to Provide Continuity of Operations During a Power Outage.
Scotch Plains Township	16-05	Increase Drainage in the Southeast quadrant of the Township near Ash Brook Reservation to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.
Scotch Plains Township	16-06	Enlarge the Culvert and Improve Drainage to Green Brook and its Tributary under Meadow Street to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.
Scotch Plains Township	16-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas along Ash Brook, Winding Brook, and in the Green Brook Subbasin that Extend into the Township from its Border with Clark Township (Not Addressed Through Drainage Improvements), with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL)

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Jurisdiction	Community Action #	Ongoing Action Name
		Properties.
Scotch Plains Township	16-10	Support the Green Brook Flood Control Project from USACE.
Springfield Township	17-07	Purchase and Install a Backup Generator for Independence Way to Ensure Continuity of Operations at the Springfield Senior Citizens Housing Facility.
Springfield Township	17-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Springfield Township	17-09	Purchase and Install a Generator at the Freeman Apartments at 41 Hillside Avenue.
Springfield Township	17-11	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Along the Township's Borders with Union Township and Cranford Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Summit City	18-03	Retrofit and Reconstruct the Fire Department Building.
Summit City	18-06	Construct Spillway Improvements at River Road.
Summit City	18-07	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Summit City	18-08	Right-size Undersized Culverts and Channels in the Corridor Between the Golf Course and Spillway at River Road, Which Includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.
Summit City	18-10	Identify a Solution to Mitigate City Water Discharge onto Private Property on Hobart Ave. and Edgewood Drive.
Summit City	18-11	Educate the Public about Risks Associated with Tornadoes and Actions to Take in Advance of Tornado Warning.
Summit City	18-12	Conduct a Full Tree Survey/Inventory Assessment Along City ROWs.
Union Township	19-04	Harden and Retrofit the Department of Public Works.
Union Township	19-06	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.
Union Township	19-11	Implement the Flood Control Project on the West Branch of the Rahway River.
Union Township	19-12	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Union Township's Borders with Hillside Township, Kenilworth Borough, and Springfield Township and Along the West Branch of the Elizabeth River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Union Township	19-13	Join CRS program
Westfield Town	20-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Westfield Town	20-02	Flood-proof the Police Building, Municipality Building, and Associated Data Storage to Reduce the Impact of Flooding on Public Facilities.
Westfield Town	20-03	Retrofit the Fire Department Building on North Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.
Westfield Town	20-04	Retrofit the Fire Department Building on Central Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.

Jurisdiction	Community Action #	Ongoing Action Name
Westfield Town	20-06	Flood-proof the Genesis Elder Care: Senior Housing Building to Reduce the Impact of Flooding on Vulnerable Populations.
Westfield Town	20-07	Acquire, Elevate, Relocate or Otherwise Mitigate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) Properties.
Winfield Township	21-01	Conduct an All-hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Winfield Township	21-11	Improve Drainage in Low-Lying Areas along Passaic Dr. to Reduce Stormwater Flooding.
Union County	22-01	Develop All Hazards Public and Municipal Official Education and Outreach Program for Hazard Mitigation and Preparedness.
Union County	22-02	Conduct Evacuation Exercises with and for Local Office of Emergency Management (OEM) Personnel and Private Citizens.
Union County	22-03	Conduct Yearly Workshops Related to FEMA Hazard Mitigation Grant Programs.
Union County	22-05	Develop and Maintain Relationships with Organizations that Can Provide Technical Information and/or Assistance in the Areas of Hazard Identification and Risk Assessment.
Union County	22-06	Undertake Site-Specific Studies to Better Characterize Flood Risks to Areas with Extensive Flood Loss Histories.
Union County	22-08	Use Best Possible Flood Data, including DFIRM and Map Mod Data, If Available, in Next Plan Update. Track Implementation of Risk MAP Initiative to Ensure Union County and Municipalities Gain Full Advantage of Opportunities Under This Program.
Union County	22-09	Continuously Update and Verify Status of Repetitive Loss and Severe Repetitive Loss Lists from the NFIP. Continue Working with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.
Union County	22-13	Collect Data on Hazardous Material Sites, Integrate with Most Current Information About Risk Factors, and Perform a GIS Analysis and Mapping of Potential Areas of Impact.
Union County	22-16	Work with Appropriate Agencies to Identify Specific Areas that are Vulnerable to Storm Effects, Then Inventory Assets and Populations in These Areas as the Basis for a Risk Calculation.
Union County	22-17	Undertake More Detailed Engineering Study of Clark Reservoir Dam, Which May Pose a Risk Downstream.
Union County	22-18	Obtain Additional Information About Surge Hazards and the Assets, Populations, and Functions in Identified Surge Zones in Areas of Significant Risk.
Union County	22-19	Identify and Map Erosion Hazard Zones Through Detailed Study.
Union County	22-20	Participate in Training and Workshops.
Union County	22-21	Develop Critical Facilities Inventory Database. Develop a Simple GIS Platform, or Build Upon an Existing Platform, to Maintain and Analyze Critical Facilities Inventories and Information about Hazards.

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Jurisdiction	Community Action #	Ongoing Action Name
Union County	22-22	Offer Technical Support to Help Municipalities Meet FEMA HMA Requirements and Provide Current Information on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties to Encourage Making RL and SRL Property Mitigation a High Priority Among Municipalities.
Union County	22-26	Encourage Municipalities to Participate in the CRS Program, Including Potentially Setting Up CRS Site Visits and/or Workshops for Interested Jurisdictions.
Union County	22-27	Encourage Municipalities to Include Identification and Prioritization of Actions Related to Future Participation in and Compliance With the NFIP.
Union County	22-28	Encourage the Integration of Floodplain Management and Hazard Mitigation Practices with Zoning, Subdivision Ordinances, Comprehensive Planning, and Other Land Use Tools and the Municipal Level.
Union County	22-31	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.
Union County	22-32	Increase Transparency of Plan Maintenance on County Website.
Union County	22-35	Integrate Hazard Mitigation Priorities into Transportation Planning and Other Capital Planning.
Union County	22-37	Implement a Training for Using GIS Interface on Tablets in the Field.
Union County	22-38	Inspect All Levees on County Property as Part of Dam Inspections.
Union County	22-39	Coordinate with Towns to Ensure Extended Care Facilities have Back-Up Power or Quick Connects.
Union County	22-40	Improve Options for Power Redundancy within Union County.
Union County	22-41	Purchase Portable Generators for Use During Power Failure.
Union County	22-43	Identify Suitable Shelter Venues to Temporarily House Displaced Persons and Store Disaster Aid Materials.

2.4.3 CARRIED FORWARD MITIGATION ACTIONS

The Planning Team worked with the County and each municipality to reflect progress in the HMP implantation. The following 2016 mitigation actions were updated as a Carried Forward Mitigation Action, which means these actions were not started and are carried forward from the 2010 and/or 2016 plan into this plan update. Jurisdictions modified and expanded the action to promote implementation. There are 50 Carried Forward Mitigation Actions.

TABLE 2.4-3 CARRIED FORWARD MITIGATION ACTIONS, BY JURISDICTION

Jurisdiction	Community Action #	Carried Forward Action Name
Berkeley Heights Township	01-01	Flood-proof Homes Along 400 and 600 River Road.
Berkeley Heights Township	01-02	Upgrade and Improve the Stormwater Management System Along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue.
Berkeley Heights Township	01-05	Flood-proof the Department of Public Works (DPW).

Jurisdiction	Community Action #	Carried Forward Action Name
Berkeley Heights Township	01-07	Upgrade and Improve the Stormwater Management System for 35 Cottage Street/Autumn Lake Healthcare.
Berkeley Heights Township	01-12	Acquire Properties in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Clark Township	02-03	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a Shelter for a Warming/Cooling Center and Charging Station Area.
Clark Township	02-05	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Pumpkin Patch Brook and Robinsons Branch Near the Scotch Plains Border and Along the Rahway River Near the Winfield Township Border, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Cranford Township	03-06	Armor and Improve Riverside Dike and Belmere Dike Along the Rahway River to Reduce Flooding.
Cranford Township	03-09	Replace Manual Gauge with Automatic Gauge to Automate the Municipal Flood Warming System Along Rahway River.
Cranford Township	03-12	Modify the Sluice Gate Control at the Stormwater Pump Station on Riverside Drive.
Cranford Township	03-13	Implement United States Army Corps of Engineers (USACE) Proposed Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.
Elizabeth City	-	No Carried Forward Actions at the time of this plan update.
Fanwood Borough	05-06	Purchase and Install 6 Portable Light Towers.
Fanwood Borough	05-07	Purchase and Install a Generator for LaGrande Park (Warming Station).
Garwood Borough	-	No Carried Forward Actions at the time of this plan update.
Hillside Township	-	No Carried Forward Actions at the time of this plan update.
Kenilworth Borough	08-02	Elevate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Tributaries, West Branch of the Elizabeth River, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Linden City	09-03	Control Flooding from West Brook by Constructing Flood Walls from 11th Street to Clinton Street, Installing Channel Improvements at Clinton Street, and Cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.
Linden City	09-04	Upgrade and Improve the Drainage System and Retention Basin along Cantor Avenue, Dalziel Road, and Hurst Street.
Linden City	09-05	Control flooding from Peach Orchard Creek by Installing Channel Improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, Replacing Bridges, and Upgrading and Improving the Stormwater Management System at the Edward Muraski Towers Senior Center and at the Ann J. Ferguson Towers-Senior Center.
Linden City	09-08	Purchase and Install a Backup Generator for the Linden Multi-Purpose Center.
Linden City	09-12	Acquire or Elevate 1 Repetitive Loss Property on Clinton Street.
Linden City	09-13	Acquire or Elevate 1 Repetitive Loss Property on Hussa Street.

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Jurisdiction	Community Action #	Carried Forward Action Name
Linden City	09-14	Acquire or Elevate 1 Repetitive Loss property on N. Stiles Street.
Linden City	09-15	Acquire or Elevate 1 Repetitive Loss property on Sherman Street.
Mountainside Borough	10-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
New Providence Borough	11-01	Upgrade and Improve the Stormwater Management System for Passaic Avenue, North of Springfield Avenue, and All Areas Along Salt Brook Bank (South/West/Central).
New Providence Borough	11-02	Elevate or Floodproof Properties Along the Passaic River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
New Providence Borough	11-03	Implement Channel Improvements for Salt Brook.
New Providence Borough	11-04	Flood-proof Wastewater Treatment Plant.
Plainfield City	12-02	Stabilize and Augment the Streambanks of Cedar Brook to Protect the Apartment Complexes at Rose and Randolf Road.
Plainfield City	12-03	Flood-proof Four Apartment Complexes Located Within the SFHA. These Include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.
Plainfield City	12-08	Flood-proof Structures and Infrastructure on St Mary's Ave., Carlisle Terrace, and George Street, with a Focus on 8 Repetitive Loss Properties.
Plainfield City	12-09	Acquire or Elevate Buildings and Infrastructure on Inwood Place, with a Focus on 2 Repetitive Loss (RL) Properties.
Plainfield City	12-10	Elevate/Acquire 3 Repetitive Loss Properties on Johnston Ave.
Rahway City	-	No Carried Forward Actions at the time of this plan update.
Roselle Borough	14-01	Purchase and Install a Generator at the Community Center.
Roselle Borough	14-02	Purchase and Install a Generator at the Department of Public Works (DPW).
Roselle Borough	14-03	Purchase and Install a Generator at the Sanitary Sewer Pump Station.
Roselle Borough	14-04	Mitigate Repetitive Loss Properties Through Channel Improvements to Tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.
Roselle Borough	14-07	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Peach Orchard Brook, West Brook, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Roselle Park Borough	-	No Carried Forward Actions at the time of this plan update.
Scotch Plains Township	16-07	Partner with the YMCA and/or JCC to Expand Community Shelter Options.
Springfield Township	17-05	Upgrade and Improve the Stormwater Management System for the Department of Public Works (DPW).
Springfield Township	17-06	Flood-proof the Hersey Building, Department of Public Works.

Jurisdiction	Community Action #	Carried Forward Action Name
Summit City	-	No Carried Forward Actions at the time of this plan update.
Union Township	-	No Carried Forward Actions at the time of this plan update.
Westfield Town	-	No Carried Forward Actions at the time of this plan update.
Winfield Township	21-03	Coordinate with Winfield Mutual Housing Corporation to Develop MOUs for Sheltering Options.
Winfield Township	21-04	Purchase and Install a Generator for Community Center to Serve as a Potential Shelter.
Winfield Township	21-05	Investigate Alternative Snow Removal Strategies to Ensure Roadway Safety During Winter Weather Events.
Winfield Township	21-06	Purchase and Install Generators or Provide Connections for Portable Generators for All Critical Facilities Identified in the Emergency Operations Plan (EOP) to Ensure Continuity of Operations During a Disaster.
Winfield Township	21-07	Upgrade Facilities for Potential Heating and Cooling Centers to Protect Persons from Extreme Temperature Events.
Winfield Township	21-08	Purchase and Install a Generator for Winfield Elementary School to Ensure Continuity of Operations During a Disaster.
Winfield Township	21-10	Join the National Flood Insurance Program (NFIP) to Strengthen Floodplain Management Practices.
Union County	22-07	Coordinate with State Efforts to Undertake Detailed Vulnerability Assessments and Develop Mitigation Options for Critical Facilities in A and AE Zones. Implement mitigation projects and programs intended to reduce risk to critical facilities.
Union County	22-10	Coordinate with State Effort to Survey Wind Vulnerabilities Using a Prioritized List of State, County, and Local Facilities. Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds.
Union County	22-12	Coordinate with State Efforts to Conduct Wildfire Risk Assessments for Areas and Assets that are Determined to Have the Most Hazard (Fuel Load, etc.) Potential, and the Most Vulnerable Structures, Populations, or Operations.

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3.0 MITIGATION STRATEGY

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3.0 MITIGATION STRATEGY

2021 HMP Updates Changes

- This section was previously Section 5, Capabilities and Action Plan, of the 2016 Plan.
- Section 5.1 Mitigation Goals, Objectives, and Actions is now discussed in Section 2.0 HMP Review, Evaluation, and Implementation and in Section 3.2 Mitigation Plan Goals and Objectives.
- Added Section 3.1 Overview to reflect the update in the mitigation strategy.
- Added State Hazard Mitigation Plan Goals to 3.2 Hazard Mitigation Plan Goals and Objectives.
- Revised Section 3.3 Identification and Analysis of Mitigation Actions to reflect the updated mitigation strategy for this plan update.
- Added Section 3.4 Hazard Mitigation Action Summary

3.1 OVERVIEW

The Mitigation Strategy outlined in Section 3.0 of this plan is Union County's blueprint for reducing potential future losses from hazards. The Mitigation Strategy provides information to guide county and municipal decision making regarding the protection of critical facilities and local hazard mitigation planning. The Mitigation Strategy consists of:

- The State and County Hazard Mitigation Goals that help guide the selection of activities that will mitigate identified hazards and reduce future losses (located in Section 2.0); and
- Strategies lead to the identification, evaluation, and prioritization of mitigation actions (located in section 2.0 and Appendices Vol. I – Jurisdictional Information).

The October 21, 2020 Steering Committee Kickoff Meeting began the discussion of updating the mitigation strategy. The Steering Committee evaluated the previous HMP goals and objectives and revised them to reflect the current risk and vulnerabilities that faces the County. The Steering Committee also decided the best planning methodology to update the strategy is to individually discuss potential future risks affecting each community and develop specific mitigation actions to address those risks in the form of Mitigation Action Worksheets. This section further describes the strategy in developing County and municipal mitigation actions.

Note: The Summary of the Union County Hazard Mitigation Actions are in Section 2.0 HMP Review, Evaluation, and Implementation. Each Municipal Mitigation Worksheet is available in the Appendices Vol. I – Jurisdictional Information.

3.2 HAZARD MITIGATION PLAN GOALS AND OBJECTIVES

3.2.1 STATE HMP GOALS

When evaluating the Union County Goals and Objectives, the Steering Committee reviewed the 2019 State of New Jersey Hazard Mitigation Plan (State HMP) Goals, which are listed below:

1. Protect life.
2. Protect property.
3. Increase public preparedness and awareness.
4. Develop and maintain an understanding of risks from hazards.

5. Enhance State and local mitigation capabilities to reduce hazard vulnerabilities.
6. Support continuity of operations pre-, during, and post- hazard events.

In addition to the plan goals, the 2019 plan update included a State Mitigation Strategy or specific actions to reduce the number of Repetitive Loss (RL) properties and Severe Repetitive Loss (SRL) properties throughout New Jersey. Some of the State Mitigation Strategy objectives include local jurisdictions with SRL properties take actions to reduce the number of these properties and to prioritize project grants for communities that have RL and SRL properties. Funding to mitigate Severe Repetitive Loss properties that are substantially damaged is the State's highest priority.

3.2.2 UNION COUNTY HMP GOALS AND OBJECTIVES

As discussed in Section 2.0 HMP Review, Evaluation, and Implementation, the Steering Committee decided to roll the previous HMP goals into this plan update and more closely aligned their goals to FEMA's recent guidance by adding a goal on mitigating High-Hazard Potential Dams (Goal 5).The Goals and Objectives for this plan update are described in **Table 2.2-1 HMP Goals and Objectives.**

3.3 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

As required by FEMA, Union County and its 21 municipalities completed an evaluation of the mitigation strategies and actions from the 2016 plan and reported on the status of each, either as ongoing, carried forward, completed, or withdrawn. In addition, the Planning Team worked with Union County and each of the 21 municipalities to brainstorm potential new mitigation actions for inclusion in the HMP.

In the original HMP and the 2016 HMP update, the Steering Committee developed county-wide mitigation actions in response to the risk assessment. As part of this HMP update, the Steering Committee reviewed and updated the County's mitigation strategy. The Steering Committee discussed each action with the lead office and the strategy was modified to include the status for each action.

Explanations of progress descriptions are listed below:

- **New Action**: new actions identified for this plan update.
- **Ongoing Action**: actions that were started, however not completed and therefore are ongoing.
- **Carried Forward Action**: actions carried forward from the 2010 and/or 2016 plan into this plan update. Jurisdictions modified and expanded the action to promote implementation.
- **Completed Action**: actions that were completed between 2015 and 2020 and now a capability.
- **Withdrawn Action**: mitigation actions found to be impractical, unfeasible, or undesirable. Jurisdictions provided a description as to why the action was withdrawn in the "Notes" section on the Mitigation Action Worksheets.

For this HMP update, Union County and its 21 municipalities have strategies that will be implemented to reduce the risk of future natural and human-based hazards. For the 2021 HMP update, Union County and its 21 municipalities have **407 mitigation actions, with 108 New actions, 135 Ongoing actions, 50 Carried Forward actions, 64 Completed actions, and 38 Withdrawn actions**.

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New to this plan is the integration of the State Mitigation Strategy, which requires jurisdictions with RL and SRL properties to reduce the number of those properties. Each municipality that has RL and/or SRL properties must have a mitigation action that describes how they will mitigate the properties. During the municipal meetings, the Project Team discussed which properties are RL or SRL with local officials, along with the status of those properties and ideas on how to mitigate the RL and/or SRL properties. Since RL/SRL data is sensitive information and not available to the public, only the State and the County have access to the RL/SRL data.

3.3.1 PRIORITIZED MITIGATION ACTION ITEMS

For the original HMP update, the County used the social, technical, administrative, political, legal, economic, and environmental (STAPLEE) criteria to evaluate and prioritize mitigation projects. For the last plan update, instead of using the STAPLEE criteria, the Steering Committee used the Committee prioritized the actions using a simple high/medium/low scale based on the following criteria, on a scale of 1-3. Since the last plan update, the State HMP was updated and it modified the STAPLEE mitigation action evaluation schema that uses a reduced set of evaluation criteria, more suited to the purposes of mitigation strategy evaluation. The evaluation is listed in **Table 3.3-1 Mitigation Action Worksheet Evaluation** under "Evaluating the Action."

3.3.2 MITIGATION ACTION WORKSHEETS

Every mitigation action, regardless of their status, must have a Mitigation Action Worksheet to be part of a HMP. The action worksheets document each jurisdiction's analysis of actions considered to reduce the impacts of hazards identified in the risk assessment. The Mitigation Action Worksheets follow recent FEMA guidance on how an action is evaluated and implemented for future funding. For example, FEMA would like to know the category, evaluation, and priority of each action. Mitigation actions that substantially reduce risk or eliminate an identified hazard area are ranked with the highest priority and are listed first in the table below. **Table 3.3 - 1 Mitigation Action Worksheet Evaluation** explains the evaluation local officials considered when developing their mitigation action worksheets. Refer to Appendices V. I - Jurisdictional Information to see the completed Mitigation Action Worksheets for each action, sorted by municipality. For the Summary of the Union County Hazard Mitigation Actions, please Section 2.0 HMP Review, Evaluation, and Implementation.

Table 3.3-1 MITIGATION ACTION WORKSHEET EVALUATION

Describing the Action	
Action Name:	- What is the name of the mitigation action?
Action Category:	- Is this a Mitigation (Risk Reduction or Continuity of Functional Use), Administrative, or Maintenance/Response/Recovery action?
Action Type:	- What is the category of action (Local Plans & Regulations, Structure & Infrastructure Projects, Natural Systems Protection, or Education & Awareness Programs)
HMA Eligible Activity:	- Yes or No
Action Description:	- What does this action entail?
Hazard (s) Addressed:	- What hazard's risk is reduced or eliminated due to this action?
Goals:	- Which of the Union County HMP Goals does this action satisfy?

Evaluating the Action	
Risk Reduction:	- What is the risk that is reduced or eliminated?
Life Safety:	- How effective will the action be at protecting lives and preventing injuries?
Property Protection:	- How significant will the action be at eliminating or reducing damage to structures and infrastructure?
Cost Effectiveness:	- Are the costs to implement the project or initiative commensurate with the benefits achieved?
Technical:	- Is the mitigation action technically feasible? - Is it a long-term solution?
Political:	- Is there overall public support for the mitigation action? - Is there the political will to support it?
Legal:	- Does the municipality have the authority to implement the action?
Environmental:	- What are the potential environmental impacts of the action? - Will it comply with environmental regulations?
Social:	- Will the proposed action adversely affect one segment of the population? - Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
Administrative:	- Does the municipality have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
Local Champion:	- Is there a strong advocate for the action or project among local agencies that will support the action's implementation?
Other Community Objectives:	- Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open-space preservation? - Does it support the policies of other plans and programs?
STAPLEE Evaluation:	The Total STAPLEE score is used for project evaluation and prioritization.
Implementing the Action	
Cost Estimate:	- How much do you estimate it will cost to implement the action?
Priority:	- Is this project realistically ready to submit for funding? - How significant is this action?
Local Planning Mechanism:	- Do you have current plans that support this action?
Responsible Party:	- Who is responsible for overseeing and implementing this action?
Likely Funding Sources:	- What are the likely funding sources available to complete this action?
Target Start Date:	- What is the target start date?
Timeline:	- What is the timeline for this action?
Action Status:	- What is the status of this action (New, Completed, Ongoing, Carried Forward, or Withdrawn)?
Notes:	- If the action is Completed, when was it finished? How was it funded? - If the action is Ongoing, when was it started? How is it being funded? - If the action is Carried Forward, why has the action been delayed? - If the action is Withdrawn, why?

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3.4 HAZARD MITIGATION ACTION SUMMARY

Altogether, Union County and its 21 municipalities have **407 mitigation actions**. To view the **Mitigation Action Worksheet Evaluation** (Table 3.3 – 1) for each mitigation action, refer to Appendices Vol. I – Jurisdictional Information. This section include New Mitigation Actions as part of this plan update (Section 3.4.1 New Mitigation Actions), a comprehensive table of Ongoing, Carried Forward, Completed, Withdrawn, and New Mitigation Actions (Section 3.4.2 Comprehensive Mitigation Action Summary) and a ranking of Mitigation Actions based on priority using the STAPLEE evaluation (Section 3.4.3 Mitigation Action Evaluation and Prioritization).

Explanations of progress descriptions are listed below:

- **New Action**: new actions identified for this plan update.
- **Ongoing Action**: actions that were started, however not completed and therefore are ongoing.
- **Carried Forward Action**: actions carried forward from the 2010 and/or 2016 plan into this plan update. Jurisdictions modified and expanded the action to promote implementation.
- **Completed Action**: actions that were completed between 2015 and 2020 and now a capability.
- **Withdrawn Action**: mitigation actions found to be impractical, unfeasible, or undesirable. Jurisdictions provided a description as to why the action was withdrawn in the "Notes" section on the Mitigation Action Worksheets.

3.4.1 NEW MITIGATION ACTIONS

The Planning Team worked with the County and each municipality to brainstorm New Mitigation Actions for inclusion in this HMP update, incorporating FEMA's latest guidance on HMA funding such as FEMA's RiskMAP's "Building Community Resilience with Nature-based Solutions: A Guide for Local Communities" (2020) and FEMA's "Mitigation Action Portfolio" (2020).

Table 3.4-1 NEW MITIGATION ACTIONS, BY JURISDICTION

Jurisdiction	Community Action #	New Action Name
Berkeley Heights Township	01-13	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Berkeley Heights Township	01-14	Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Berkeley Heights Township	01-15	Create Riparian Habitat Along the Passaic River and Within the Channel.
Berkeley Heights Township	01-16	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Clark Township	02-06	Repair, Remove, or Rehabilitate the Robinson's Branch Reservoir Dam.
Clark Township	02-07	Conduct a Study of Pumpkin Patch Brook to Identify New Actions to Improve Flood Control in the Area.
Clark Township	02-08	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Cranford Township	03-17	Design and Implement an Off-Site or Cloud-Based IT Backup and Disaster Recovery Plan.
Cranford Township	03-18	Stabilize Stream Banks and Widen Culvert of Orchard Brook on West Holly

Jurisdiction	Community Action #	New Action Name
		Street.
Cranford Township	03-19	Expand Protected Areas Around the Floodplain by Creating Floodplain and Stormwater Lots and/or Smaller Green Infrastructure Solutions Along the Rahway River and in Nomahegan Park.
Cranford Township	03-20	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Elizabeth City	04-37	Upgrade, Repair and Maintain Brick Sewers and Watermains.
Elizabeth City	04-38	Conduct a Citywide Public Communication Campaign to Increase COVID-19 Awareness.
Elizabeth City	04-39	Evaluate Possible Earthquake Shelters and Muster Areas Citywide.
Elizabeth City	04-40	Construct an Emergency Response Ambulance Canopy.
Elizabeth City	04-41	Ensure Continuity of Operations at the Liberty Square Senior Center by Purchasing and Installing a Generator.
Elizabeth City	04-42	Upgrade, Repair and/or Maintain Storm Drains and Sewers at North Avenue and Van Buren.
Elizabeth City	04-43	Construct a Police Drone Control Tower.
Elizabeth City	04-44	Upgrade, Repair and/or Maintain the Storm Drains and Sewers at Summer and South Broad Street.
Elizabeth City	04-45	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Elizabeth City	04-46	Continue to Revise Municipal Stormwater Control Ordinances as New State Regulations are Adopted.
Elizabeth City	04-47	Develop and Assess Citywide Shelters' Preparedness for Extreme Heat and Extreme Cold Events.
Fanwood Borough	05-10	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas in the Western and Southern Portions of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Fanwood Borough	05-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Garwood Borough	06-04	Build a Water Retention Basin/Pond.
Garwood Borough	06-05	Make a Dedicated Emergency Operations Center (EOC) Area.
Garwood Borough	06-06	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Hillside Township	07-08	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Elizabeth River and Route 22 Near the Township's Border with Union Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Hillside Township	07-09	Coordinate with the County to Construct a Stormwater Basin at Rutgers Ave., Support Riparian Habitat and Stabilize Banks at Risk of Eroding, and Conduct Wetland Restoration Around Rutgers Avenue Park.
Hillside Township	07-10	Coordinate with US DOT to Retrofit Route 22 to Mitigate Flooding.
Hillside Township	07-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Kenilworth Borough	08-03	Construct a New Building to House OEM Equipment.
Kenilworth Borough	08-04	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey

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Jurisdiction	Community Action #	New Action Name
		Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Linden City	09-25	Improve the Stormwater and Sewer System Along East Henry Street and Harrison Place.
Linden City	09-26	Build Alternate Access Road to New Jersey Turnpike from Tremley Point Area.
Linden City	09-27	Coordinate with the Linden Industrial Mutual Aid Council (LIMAC) to Use Their Private Road in the Area of Wood Avenue in the Tremley Point area as an Emergency Evacuation Route.
Linden City	09-28	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Mountainside Borough	10-05	Replace the Grate at the End of Charles Street Creek.
Mountainside Borough	10-06	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Nomahegan Brook and the Southern Border of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Mountainside Borough	10-07	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Mountainside Borough	10-08	Purchase and Install a Generator for Borough Hall.
New Providence Borough	11-08	Repair, Remove, or Rehabilitate the Clearwater Detention Dam.
New Providence Borough	11-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Passaic River and Salt Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
New Providence Borough	11-10	Replace the Mee Lane Pedestrian Bridge to Allow for Continuity of Operations during a Hazard Event.
New Providence Borough	11-11	Remediate the Ping Wang Property and Convert to a Stormwater Lot to Absorb Runoff.
New Providence Borough	11-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Plainfield City	12-15	Obtain Backup Power or Bury Lines for the Washington School.
Plainfield City	12-16	Obtain Backup Power or Bury Lines at 724 Park Ave.
Plainfield City	12-17	Obtain Backup Power or Bury Lines at Emerson School.
Plainfield City	12-18	Create a Microgrid of Underground Electricity Tying Critical Infrastructure Together.
Plainfield City	12-19	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Rahway City	13-14	Update the City's Flood Damage Prevention Ordinance to Conform to NJDEP's Model Ordinance Standards.
Rahway City	13-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Roselle Borough	14-09	Install Underground Gridwork That Continues Service During Blackouts.
Roselle Borough	14-10	Create and Connect a Vegetated Buffer Along Morses Creek in Coordination with Roselle Park Borough.
Roselle Borough	14-11	Construct an Emergency Operations Center (EOC) Facility.

Jurisdiction	Community Action #	New Action Name
Roselle Borough	14-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Roselle Borough	14-13	Bury Electrical and Cable Wiring Underground.
Roselle Park Borough	15-21	Purchase and Install a New Generator for the OEM Building.
Roselle Park Borough	15-22	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Morses Creek and a Peach Orchard Brook Tributary, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Roselle Park Borough	15-23	Upgrade the Hawthorne Street Basin and the Grove Street Basin.
Roselle Park Borough	15-24	Create and Connect a Vegetated Buffer Along Morses Creek with the Borough.
Roselle Park Borough	15-25	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Roselle Park Borough	15-26	Retrofit All Public Buildings with Generator Plugs for Mobile Power and Purchase a Large Mobile Generator.
Roselle Park Borough	15-27	Retrofit Police Headquarters and Casano Center with Full Building Surge Protection Against Lightning Strikes and Severe Weather.
Roselle Park Borough	15-28	Target Harden Police Headquarters Against Terror Attacks with New Fencing, Cams, and More Secure Parking for Police Vehicles.
Roselle Park Borough	15-29	Replace Computer/Network Infrastructure to Further Prevent Cyber Attacks.
Roselle Park Borough	15-30	Purchase a High-Capacity Mobile Pump for thee Two Basins in Town to Prevent Overflow.
Roselle Park Borough	15-31	Upgrade Current Storm Water/Wastewater System in Town to Keep Up with New Development.
Roselle Park Borough	15-32	Purchase a New Sewer Truck to Assist in Cleaning Catch Basins and a New Large Dump Truck for DPW to Assist with Clean Ups During Storm Impacts.
Scotch Plains Township	16-11	Repair, Remove, or Rehabilitate Shackamaxon Dam.
Scotch Plains Township	16-12	Coordinate with NJDOT to Mitigate Flooding and Downed Trees Along Rt 22.
Scotch Plains Township	16-13	Purchase and Install a Generator at the Golf Course Center for Use as a Shelter and Heating/Cooling Center.
Scotch Plains Township	16-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Scotch Plains Township	16-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Springfield Township	17-12	Purchase a Light Tower to Help the Department of Public Works (DPW) Provide Essential Services During Emergencies and Nighttime Hours.
Springfield Township	17-13	Install Generator for the Town Hall to Provide Local Government Services Uninterrupted by a Potential Power Outage.
Springfield Township	17-14	Retrofit Pump Stations to the Risk of Flooding in a Residential Zone.
Springfield Township	17-15	Improve and Retrofit Stormwater Inlets to Reduce Pollution and Runoff from Flooding and Storms into Waterbodies.
Springfield Township	17-16	Install Permeable Pavement at Veterans Park to Reduce Flooding Impacts.
Springfield Township	17-17	Maintain Trees Along Roads and Power Lines to Reduce Debris and Risk of Power Outages During and After Storms and Severe Weather Events.
Springfield Township	17-18	Improve Drainage at Ruby Park by Removing Rocks from Drainage Ditch.
Springfield Township	17-19	Purchase and Install Backup Generators for Essential Services During Hazard Events.
Springfield Township	17-20	Reduce Stormwater Flooding in Ruby Park and Irwin Park.

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Jurisdiction	Community Action #	New Action Name
Springfield Township	17-21	Improve Flood Control in Lenape Park.
Springfield Township	17-22	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20..
Summit City	18-14	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Salt Brook, the Passaic River, Blue Brook, and Rahway River Tributaries Near the City's Borders, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Summit City	18-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Union Township	19-14	Repair Retaining Walls on Various Streams Throughout the Township.
Union Township	19-15	Designate the Community Center/Senior Center as a Standby Public Shelter During Severe Weather Conditions.
Union Township	19-16	Create and Connect a Vegetated Buffer Along the Township's Rahway River Tributary and/or Create Stormwater and/or Floodplain Lots.
Union Township	19-17	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Westfield Town	20-08	Purchase and Install an Emergency Generator for Continuity of Operations at Westfield Memorial Pool Building and Complex.
Westfield Town	20-09	Replace and Install a New Roof for Westfield Municipal Building and Police Department to Provide for Continuity of Operations During a Disaster.
Westfield Town	20-10	Replace and Install a New Roof for Westfield Department of Public Works (DPW) to Provide for Continuity of Operations During a Disaster.
Westfield Town	20-11	Use the Town's Green Development Checklist to Identify Opportunities to Integrate Green Infrastructure into Redevelopment Plans, Especially in the Special Flood Hazard Area (SFHA).
Westfield Town	20-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Westfield Town	20-13	Implement the Mitigation Actions from the Resiliency Guidelines prepared by the Center for Climate and Energy Solutions (C2ES) to Adapt to Future Extreme Heat and Flooding Hazards.
Winfield Township	21-12	Target Harden the Town Hall Building (Police Department) and Fire Department Buildings with Surveillance Cameras
Winfield Township	21-13	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Winfield Township	21-14	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.
Union County	22-44	Perform an Engineering Study to Determine the Feasibility and Cost of Siting a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.
Union County	22-45	Purchase and Install a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.
Union County	22-46	Create a Stand Alone 9-1-1 Center to Support Police, Fire, and EMS Services Across the County.
Union County	22-47	Purchase and Install a New Radio Tower and Communications Infrastructure.
Union County	22-48	Install a Fiber Loop Throughout Each Municipal Complex in Union County to Provide Enhanced Communication Between Government Facilities,

Jurisdiction	Community Action #	New Action Name
		Ensure Continuity of Operations During Power Failure and Enhance Security to Prevent Against a Cyber Attack.
Union County	22-49	Implement the Findings of the Union County Truck Mobility Study to Ensure All Populations Can Safely Access Evacuation Routes.
Union County	22-50	Consider Access and Mobility for Socially Vulnerable Populations and Disaster Resilience When Designing Transportation Infrastructure.
Union County	22-51	Implement Mitigation Actions from the Confidential Site Assessment Report by the New Jersey Office of Homeland Security and Preparedness (NJOHSP) for Union County Buildings.
Union County	22-52	Digitize Municipal Zoning Maps to Assist the County with Understanding Potential New Development in Hazardous Areas.
Union County	22-53	Geocode Building Permits to Assist the County with Understanding Potential New Development in Hazardous Areas.
Union County	22-54	Construct Flood Control Improvements and Replace the Culvert at Peach Orchard Brook.
Union County	22-55	Construct Flood Control Measures at Laurel Drive.
Union County	22-56	Construct Drainage Improvements Near Nomahegan Park and Union County College (Cranford Phase 5).
Union County	22-57	Dredge Clark Reservoir.
Union County	22-58	Construct Flood Control Improvements Along Branch 10-24 and the West Branch of the Elizabeth River.
Union County	22-59	Construct Flood Control Improvements Along Pumpkin Patch Brook, Upstream of Robinsons Branch.
Union County	22-60	Conduct Hazard Mitigation Training and Education and Purchase Equipment at Union County Fire Training Academy.

3.4.2 COMPREHENSIVE MITIGATION ACTION SUMMARY

This section includes the comprehensive mitigation action database. For the 2021 HMP update, Union County and its 21 municipalities have **407 mitigation actions, with 108 New actions, 135 Ongoing actions, 50 Carried Forward actions, 64 Completed actions, and 38 Withdrawn actions**. As discussed in Section 2.4 HMP Implementation: Progress in Local Mitigation Efforts, the following describes the different categories of mitigation actions:

- **New Action**: new actions identified for this plan update.
- **Ongoing Action**: actions that were started, however not completed and therefore are ongoing.
- **Carried Forward Action**: actions carried forward from the 2010 and/or 2016 plan into this plan update. Jurisdictions modified and expanded the action to promote implementation.
- **Completed Action**: actions that were completed between 2015 and 2020 and now a capability.
- **Withdrawn Action**: mitigation actions found to be impractical, unfeasible, or undesirable. Jurisdictions provided a description as to why the action was withdrawn in the "Notes" section on the Mitigation Action Worksheets.

Table 3.4-2 COMPREHENSIVE MITIGATION ACTION DATABASE, BY JURISDICTION

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Berkeley Heights Township	01-01	Flood-proof Homes Along 400 and 600 River Road.	Carried Forward
Berkeley Heights	01-02	Upgrade and Improve the Stormwater Management System	Carried

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Township		Along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue.	Forward
Berkeley Heights Township	01-03	Acquire Homes at Robin's Avenue and Springfield Intersection.	Completed
Berkeley Heights Township	01-04	Flood-proof Town Hall Building Which Houses Police Department/Data Storage.	Completed
Berkeley Heights Township	01-05	Flood-proof the Department of Public Works (DPW).	Carried Forward
Berkeley Heights Township	01-06	Upgrade and Improve the Stormwater Management System for the Berkeley Hall Nursing Home.	Completed
Berkeley Heights Township	01-07	Upgrade and Improve the Stormwater Management System for 35 Cottage Street/Autumn Lake Healthcare.	Carried Forward
Berkeley Heights Township	01-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Berkeley Heights Township	01-09	De-Snag Streams and Rivers in the Township to Prevent Debris Build-Up.	Ongoing
Berkeley Heights Township	01-10	Relocate Municipal Facilities Outside of Flood-prone Areas.	Ongoing
Berkeley Heights Township	01-11	Remove Hazardous Trees in the Township.	Ongoing
Berkeley Heights Township	01-12	Acquire Properties in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Carried Forward
Berkeley Heights Township	01-13	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	New
Berkeley Heights Township	01-14	Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Berkeley Heights Township	01-15	Create Riparian Habitat Along the Passaic River and Within the Channel.	New
Berkeley Heights Township	01-16	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Clark Township	02-01	Purchase Generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building Located at 430 Westfield Avenue.	Completed
Clark Township	02-02	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.	Ongoing
Clark Township	02-03	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a Shelter for a Warming/Cooling Center and Charging Station Area.	Carried Forward
Clark Township	02-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Clark Township	02-05	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Pumpkin Patch Brook and Robinsons Branch Near the Scotch Plains Border and Along the Rahway River Near the Winfield Township Border, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Carried Forward
Clark Township	02-06	Repair, Remove, or Rehabilitate the Robinson's Branch Reservoir Dam.	New
Clark Township	02-07	Conduct a Study of Pumpkin Patch Brook to Identify New Actions to Improve Flood Control in the Area.	New
Clark Township	02-08	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater	New

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
		Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	
Cranford Township	03-01	Construct New Local Storm Sewer, Pump Station, and Bypass Storm Systems to Mitigate Flooding in the Township.	Ongoing
Cranford Township	03-02	Upgrade and Improve Stormwater Management System for Various Local Streets to Reduce Flooding in Homes and on Roadways.	Ongoing
Cranford Township	03-03	Flood-proof First Aid Squad.	Withdrawn
Cranford Township	03-04	Upgrade and Improve the Stormwater Management System for the Municipal Building Which Houses the Police Department.	Completed
Cranford Township	03-05	Purchase and Install Backup Generator for Fire Department.	Completed
Cranford Township	03-06	Armor and Improve Riverside Dike and Belmere Dike Along the Rahway River to Reduce Flooding.	Carried Forward
Cranford Township	03-07	Flood-proof the Property Adjacent to Orchard Brook.	Withdrawn
Cranford Township	03-08	Upgrade Gate System at Hansel's Dam.	Completed
Cranford Township	03-09	Replace Manual Gauge with Automatic Gauge to Automate the Municipal Flood Warming System Along Rahway River.	Carried Forward
Cranford Township	03-10	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Cranford Township	03-11	Improve the Stormwater Management System at Localized Flooding Areas to Reduce Impacts from Flooding.	Withdrawn
Cranford Township	03-12	Modify the Sluice Gate Control at the Stormwater Pump Station on Riverside Drive.	Carried Forward
Cranford Township	03-13	Implement United States Army Corps of Engineers (USACE) Proposed Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.	Carried Forward
Cranford Township	03-14	Acquire and Demolish or Relocate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Cranford Township	03-15	Elevate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Cranford Township	03-16	Replace the Staff Gauge at Balmiere Parkway/Riverside Drive and Footbridge with an Automated Gauge.	Ongoing
Cranford Township	03-17	Design and Implement an Off-Site or Cloud-Based IT Backup and Disaster Recovery Plan.	New
Cranford Township	03-18	Stabilize Stream Banks and Widen Culvert of Orchard Brook on West Holly Street.	New
Cranford Township	03-19	Expand Protected Areas Around the Floodplain by Creating Floodplain and Stormwater Lots and/or Smaller Green Infrastructure Solutions Along the Rahway River and in Nomahegan Park.	New
Cranford Township	03-20	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Elizabeth City	04-01	Reduce or Eliminate Local Flooding via the Dowd Avenue Pump Station.	Ongoing
Elizabeth City	04-02	Upgrade, Repair, and Maintain Sewers and Drainage Along Trumbull Street to Manage Stormwater (Trumbull Street Regional Stormwater Management Project).	Ongoing

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Elizabeth City	04-03	Upgrade, Repair, and/or Maintain Storm Sewers and Drainage Along Monmouth Road to Control Flooding (JMEUC Issues).	Ongoing
Elizabeth City	04-04	Upgrade, Repair, and/or Maintain Storm Drains and Sewers Along Park Avenue and Summit Road.	Ongoing
Elizabeth City	04-05	Reduce or Eliminate Local Flooding Along Maple Avenue/Routes 1&9.	Ongoing
Elizabeth City	04-06	Upgrade, Repair and/or Maintain Storm Drains and Sewers Where Routes 1&9 and Railroad Crossings Intersect.	Ongoing
Elizabeth City	04-07	Separate the Sewers, Upgrade the Pump Station, and Install a Generator at the Intersection of Cherry Street and West Jersey Street.	Ongoing
Elizabeth City	04-08	Upgrade and/or Repair Ursino Dam.	Ongoing
Elizabeth City	04-09	Purchase and Install Portable Generators at Key City Traffic Locations.	Ongoing
Elizabeth City	04-10	Purchase and Install New Miscellaneous Generators and Electrical Upgrades at Critical Facilities, Especially Existing Flood Control Pump Stations and Critical Care Facilities that Provide Continuity of Service.	Ongoing
Elizabeth City	04-11	Minimize Extreme Heat Casualties and Deaths through Public Awareness and Outreach.	Ongoing
Elizabeth City	04-12	Conduct a Public Communication Campaign Around Earthquake Awareness, Response, and Recovery.	Ongoing
Elizabeth City	04-13	Reduce or Eliminate Flooding Around Third Avenue and Atlantic Street.	Ongoing
Elizabeth City	04-14	Upgrade the South Second Street Pump Station; Install a New Generator and Improve Local Storm Sewers.	Ongoing
Elizabeth City	04-15	Construct Atlanta Plaza Floodwall.	Ongoing
Elizabeth City	04-16	Upgrade, Repair and/or Maintain the Pump Station at South Street; Purchase and Install Generator	Completed
Elizabeth City	04-17	Upgrade, Repair, and Separate Combined Sewers in the Bayway Area.	Ongoing
Elizabeth City	04-18	Elizabeth River and Arthur Kill Shoreline Stabilization	Completed
Elizabeth City	04-19	Flood-proof Firehouse Engine #1 on Broad Street.	Ongoing
Elizabeth City	04-20	Upgrade and Repair the Pump Station and Install a New Generator at Kapkowski Road.	Ongoing
Elizabeth City	04-21	Install a New Wet Weather Pump Station and Ancillary Infrastructures on Trenton Avenue.	Ongoing
Elizabeth City	04-22	Install a New Generator at Trenton Avenue.	Ongoing
Elizabeth City	04-23	Install Pump Station Upgrades and Generator at Mattano Park.	Ongoing
Elizabeth City	04-24	Upgrade and Repair Storm Drains and Sewers along Decker Ave.	Withdrawn
Elizabeth City	04-25	Reduce or Eliminate Local Flooding on Pennington Street.	Ongoing
Elizabeth City	04-26	Purchase and Install a Generator at the Municipal Marina.	Ongoing
Elizabeth City	04-27	Upgrade and Repair the Elizabeth River Flood Control Project.	Ongoing
Elizabeth City	04-28	Purchase and Install Emergency Overhead Signage for Emergency Communication.	Ongoing
Elizabeth City	04-29	Purchase and Install Solar Power Disconnects.	Withdrawn
Elizabeth City	04-30	Provide for Infectious Disease Control Through Emergency Communication and Temporary Vaccination Stations.	Ongoing
Elizabeth City	04-31	Design and Construct a New Firehouse Outside of the Flood Zone.	Ongoing
Elizabeth City	04-32	Upgrade the Storm Drains and Sewers in the Lincoln Avenue Area.	Ongoing
Elizabeth City	04-33	Conduct a Public Communication, Education, and Outreach	Ongoing

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
		Campaign About Severe Winter Storms and Extreme Cold Events.	
Elizabeth City	04-34	Progress Street Flood Control	Completed
Elizabeth City	04-35	Salt and Storage Facilities Upgrades	Completed
Elizabeth City	04-36	Trumbull Street Flood Control (at 6th Street)	Completed
Elizabeth City	04-37	Upgrade, Repair and Maintain Brick Sewers and Watermains.	New
Elizabeth City	04-38	Conduct a Citywide Public Communication Campaign to Increase COVID-19 Awareness.	New
Elizabeth City	04-39	Evaluate Possible Earthquake Shelters and Muster Areas Citywide.	New
Elizabeth City	04-40	Construct an Emergency Response Ambulance Canopy.	New
Elizabeth City	04-41	Ensure Continuity of Operations at the Liberty Square Senior Center by Purchasing and Installing a Generator.	New
Elizabeth City	04-42	Upgrade, Repair and/or Maintain Storm Drains and Sewers at North Avenue and Van Buren.	New
Elizabeth City	04-43	Construct a Police Drone Control Tower.	New
Elizabeth City	04-44	Upgrade, Repair and/or Maintain the Storm Drains and Sewers at Summer and South Broad Street.	New
Elizabeth City	04-45	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Elizabeth City	04-46	Continue to Revise Municipal Stormwater Control Ordinances as New State Regulations are Adopted.	New
Elizabeth City	04-47	Develop and Assess Citywide Shelters' Preparedness for Extreme Heat and Extreme Cold Events.	New
Fanwood Borough	05-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Fanwood Borough	05-02	Purchase and Install a Generator for the Borough Hall, Police Headquarters, and Fire Headquarters.	Completed
Fanwood Borough	05-03	Purchase a Portable Generator.	Completed
Fanwood Borough	05-04	Purchase a Variable Message Board.	Completed
Fanwood Borough	05-05	Purchase 3 Portable Generators and Transfer Switches for 3 Traffic Signals on Martine Avenue.	Completed
Fanwood Borough	05-06	Purchase and Install 6 Portable Light Towers.	Carried Forward
Fanwood Borough	05-07	Purchase and Install a Generator for LaGrande Park (Warming Station).	Carried Forward
Fanwood Borough	05-08	Purchase a Generator for Forest Road Park (Warming Station).	Completed
Fanwood Borough	05-09	Purchase a Generator for Public Works Gas Pumps.	Withdrawn
Fanwood Borough	05-10	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas in the Western and Southern Portions of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Fanwood Borough	05-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Garwood Borough	06-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Garwood Borough	06-02	Purchase and Install Generators for Multiple Critical Facilities to Use as Warming/Cooling Stations and Maintain Critical Borough	Ongoing

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
		Operations.	
Garwood Borough	06-03	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Garwood Borough	06-04	Build a Water Retention Basin/Pond.	New
Garwood Borough	06-05	Make a Dedicated Emergency Operations Center (EOC) Area.	New
Garwood Borough	06-06	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Hillside Township	07-01	Construct Additional Basins to Protect Town Hall which Houses the Police Department and the Library.	Ongoing
Hillside Township	07-02	Upgrade Stormwater Management System for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.	Ongoing
Hillside Township	07-03	Retrofit the North Avenue Pump Station that Houses Three Pumps.	Completed
Hillside Township	07-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Hillside Township	07-05	Purchase and Install Emergency Backup Generators at the Community Center and Senior Center.	Ongoing
Hillside Township	07-06	Conduct Ongoing Tree Maintenance and Survey Along Township Right-of-ways.	Ongoing
Hillside Township	07-07	Join Union County First Alert System and Develop Telephone Emergency-based System to Notify Residents, including Facebook and Twitter.	Completed
Hillside Township	07-08	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Elizabeth River and Route 22 Near the Township's Border with Union Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Hillside Township	07-09	Coordinate with the County to Construct a Stormwater Basin at Rutgers Ave., Support Riparian Habitat and Stabilize Banks at Risk of Eroding, and Conduct Wetland Restoration Around Rutgers Avenue Park.	New
Hillside Township	07-10	Coordinate with US DOT to Retrofit Route 22 to Mitigate Flooding.	New
Hillside Township	07-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Kenilworth Borough	08-01	Purchase and Install Generators at 3 Critical Facilities.	Completed
Kenilworth Borough	08-02	Elevate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Tributaries, West Branch of the Elizabeth River, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Carried Forward
Kenilworth Borough	08-03	Construct a New Building to House OEM Equipment.	New
Kenilworth Borough	08-04	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Linden City	09-01	Upgrade, Maintain, and Improve Sewer Lines to Reduce Infiltration in the Flood Zone.	Ongoing

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Linden City	09-02	Install Channel Improvements Along West Brook at Clinton Street.	Withdrawn
Linden City	09-03	Control Flooding from West Brook by Constructing Flood Walls from 11th Street to Clinton Street, Installing Channel Improvements at Clinton Street, and Cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.	Carried Forward
Linden City	09-04	Upgrade and Improve the Drainage System and Retention Basin along Cantor Avenue, Dalziel Road, and Hurst Street.	Carried Forward
Linden City	09-05	Control flooding from Peach Orchard Creek by Installing Channel Improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, Replacing Bridges, and Upgrading and Improving the Stormwater Management System at the Edward Muraski Towers Senior Center and at the Ann J. Ferguson Towers-Senior Center.	Carried Forward
Linden City	09-06	Flood-proof Department of Public Works.	Completed
Linden City	09-07	Purchase and Install a Backup Generator and Upgrade Facilities for John T. Gregorio Community Center (Primary Care Shelter).	Completed
Linden City	09-08	Purchase and Install a Backup Generator for the Linden Multi-Purpose Center.	Carried Forward
Linden City	09-09	Geolocate Two Dams on Conoco Phillips Refinery.	Withdrawn
Linden City	09-10	Collect Additional Specific Data for Plan Update (Natural Events).	Withdrawn
Linden City	09-11	Collect Additional Specific Data for Plan Update (Hazardous Materials).	Withdrawn
Linden City	09-12	Acquire or Elevate 1 Repetitive Loss Property on Clinton Street.	Carried Forward
Linden City	09-13	Acquire or Elevate 1 Repetitive Loss Property on Hussa Street.	Carried Forward
Linden City	09-14	Acquire or Elevate 1 Repetitive Loss property on N. Stiles Street.	Carried Forward
Linden City	09-15	Acquire or Elevate 1 Repetitive Loss property on Sherman Street.	Carried Forward
Linden City	09-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Linden City	09-17	Restore Wetlands, Conduct Drainage Improvements, and Conduct Bird Surveys Near Marshes Creek.	Completed
Linden City	09-18	Purchase a Backup Generator for City Hall.	Completed
Linden City	09-19	Replace Range Road Bridge.	Ongoing
Linden City	09-20	Improve the Stormwater and Sewer System in the Rosewood Terrace Area and Along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.	Ongoing
Linden City	09-21	Acquire Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Linden City	09-22	Elevate Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Linden City	09-23	Expand Outreach to Reach Residents, with Translations for Non-English-Speaking Communities.	Ongoing
Linden City	09-24	Acquire Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.	Completed
Linden City	09-25	Improve the Stormwater and Sewer System Along East Henry Street and Harrison Place.	New
Linden City	09-26	Build Alternate Access Road to New Jersey Turnpike from Tremley Point Area.	New

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Linden City	09-27	Coordinate with the Linden Industrial Mutual Aid Council (LIMAC) to Use Their Private Road in the Area of Wood Avenue in the Tremley Point area as an Emergency Evacuation Route.	New
Linden City	09-28	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Mountainside Borough	10-01	Install Emergency Backup Generator at Mountainside Rescue Squad EOC (1399 Route 22 East).	Ongoing
Mountainside Borough	10-02	Dredge Pre-Existing Creek that Runs South of Charles St. and North of Willow Road (Approximately 1,500 ft.).	Completed
Mountainside Borough	10-03	Develop Media Committee. Join New Emergency System (First-Alert). Develop Telephone Emergency-Based System to Notify Residents, Including Facebook and Twitter.	Completed
Mountainside Borough	10-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Carried Forward
Mountainside Borough	10-05	Replace the Grate at the End of Charles Street Creek.	New
Mountainside Borough	10-06	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Nomahegan Brook and the Southern Border of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Mountainside Borough	10-07	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Mountainside Borough	10-08	Purchase and Install a Generator for Borough Hall.	New
New Providence Borough	11-01	Upgrade and Improve the Stormwater Management System for Passaic Avenue, North of Springfield Avenue, and All Areas Along Salt Brook Bank (South/West/Central).	Carried Forward
New Providence Borough	11-02	Elevate or Floodproof Properties Along the Passaic River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Carried Forward
New Providence Borough	11-03	Implement Channel Improvements for Salt Brook.	Carried Forward
New Providence Borough	11-04	Flood-proof Wastewater Treatment Plant.	Carried Forward
New Providence Borough	11-05	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
New Providence Borough	11-06	Control Erosion at Existing Outfalls to the Passaic River at Pine Way and Ashwood Road.	Completed
New Providence Borough	11-07	Control Erosion Along Surface Drainage Feature at Brook Hollow Lane.	Completed
New Providence Borough	11-08	Repair, Remove, or Rehabilitate the Clearwater Detention Dam.	New
New Providence Borough	11-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Passaic River and Salt Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
New Providence Borough	11-10	Replace the Mee Lane Pedestrian Bridge to Allow for Continuity of Operations during a Hazard Event.	New
New Providence Borough	11-11	Remediate the Ping Wang Property and Convert to a Stormwater Lot to Absorb Runoff.	New
New Providence Borough	11-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management	New

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
		Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	
Plainfield City	12-01	Upgrade and Improve the Stormwater Management System, Including Retention Basins, Along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.	Ongoing
Plainfield City	12-02	Stabilize and Augment the Streambanks of Cedar Brook to Protect the Apartment Complexes at Rose and Randolf Road.	Carried Forward
Plainfield City	12-03	Flood-proof Four Apartment Complexes Located Within the SFHA. These Include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.	Carried Forward
Plainfield City	12-04	Obtain Backup Power or Bury Lines for Fire Station on Central Avenue.	Completed
Plainfield City	12-05	Obtain Backup Power or Bury Lines for Fire Station at Bergen and 3rd.	Completed
Plainfield City	12-06	Obtain Backup Power or Bury Lines for Fire Station at South Avenue and Belvedere.	Completed
Plainfield City	12-07	Dredge and Clean Green Brook and Cedar Brook.	Ongoing
Plainfield City	12-08	Flood-proof Structures and Infrastructure on St Mary's Ave., Carlisle Terrace, and George Street, with a Focus on 8 Repetitive Loss Properties.	Carried Forward
Plainfield City	12-09	Acquire or Elevate Buildings and Infrastructure on Inwood Place, with a Focus on 2 Repetitive Loss (RL) Properties.	Carried Forward
Plainfield City	12-10	Elevate/Acquire 3 Repetitive Loss Properties on Johnston Ave.	Carried Forward
Plainfield City	12-11	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Plainfield City	12-12	Remove Trees and Trim Tree Limbs Near Power Lines.	Ongoing
Plainfield City	12-13	Install emergency generator at Warming Centers (Welcome Center) at two locations. YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.	Completed
Plainfield City	12-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Ongoing
Plainfield City	12-15	Obtain Backup Power or Bury Lines for the Washington School.	New
Plainfield City	12-16	Obtain Backup Power or Bury Lines at 724 Park Ave.	New
Plainfield City	12-17	Obtain Backup Power or Bury Lines at Emerson School.	New
Plainfield City	12-18	Create a Microgrid of Underground Electricity Tying Critical Infrastructure Together.	New
Plainfield City	12-19	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Rahway City	13-01	Upgrade and Improve the Storm-water Management System Along Central and St. George's Streets (Robinson's).	Completed
Rahway City	13-02	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.	Ongoing
Rahway City	13-03	Flood-proof Homes.	Withdrawn
Rahway City	13-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Rahway City	13-05	Replace and Elevate Existing Generator Above Flood Level at the City Hall and Rahway Police Department. Provide Mobile Connector for Emergency Generator Hook-up. Install Sewer	Completed

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
		Check Valve to Eliminate Basement Flooding.	
Rahway City	13-06	Replace and Elevate Existing Generator for the Dock Street Sanitary Sewer Above Flood Level. Elevate Electrical Controls Above Flood Level.	Completed
Rahway City	13-07	Purchase and Install Traffic Signal and Trailer-Mounted Emergency Generators.	Ongoing
Rahway City	13-08	Replace Existing Generator at Maple Ave Firehouse.	Completed
Rahway City	13-09	Provide Mobile Connector for Emergency Hook-Up at Main Street Firehouse.	Completed
Rahway City	13-10	Replace Gymnasium Hardwood Floor with Vinyl Floor, which is More Flood-Resistant at Recreation Center.	Completed
Rahway City	13-11	Adopt an Ordinance to Limit Stormwater Direction or Quantity Changes on Private Property That May Have a Compounding Effect on Downstream or Adjacent Properties.	Ongoing
Rahway City	13-12	Coordinate with Adjacent Municipalities to Reduce Flooding within the Watershed.	Ongoing
Rahway City	13-13	Elevate, Floodproof, Acquire or Relocate Buildings and Infrastructure in Flood-prone Areas Along the South Branch and Robinson Branch of the Rahway River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Rahway City	13-14	Update the City's Flood Damage Prevention Ordinance to Conform to NJDEP's Model Ordinance Standards.	New
Rahway City	13-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Roselle Borough	14-01	Purchase and Install a Generator at the Community Center.	Carried Forward
Roselle Borough	14-02	Purchase and Install a Generator at the Department of Public Works (DPW).	Carried Forward
Roselle Borough	14-03	Purchase and Install a Generator at the Sanitary Sewer Pump Station.	Carried Forward
Roselle Borough	14-04	Mitigate Repetitive Loss Properties Through Channel Improvements to Tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.	Carried Forward
Roselle Borough	14-05	Improve and Convert Roadway Stormwater Systems at Harrison Ave., Wheat Sheaf Ave, and Brook Run.	Ongoing
Roselle Borough	14-06	Conduct Stream Maintenance to West Brook and Peach Orchard Brook.	Ongoing
Roselle Borough	14-07	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Peach Orchard Brook, West Brook, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Carried Forward
Roselle Borough	14-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Roselle Borough	14-09	Install Underground Gridwork That Continues Service During Blackouts.	New
Roselle Borough	14-10	Create and Connect a Vegetated Buffer Along Morses Creek in Coordination with Roselle Park Borough.	New
Roselle Borough	14-11	Construct an Emergency Operations Center (EOC) Facility.	New
Roselle Borough	14-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Roselle Borough	14-13	Bury Electrical and Cable Wiring Underground.	New
Roselle Park Borough	15-01	Retrofit Roof to Meet Current Standards on Municipal Building that Houses the Local Police Department and OEM.	Completed
Roselle Park Borough	15-02	Flood-proof the Chestnut Street Fire Station.	Completed
Roselle Park Borough	15-03	Flood-proof the Lorane Fire House.	Completed
Roselle Park Borough	15-04	Flood-proof and Purchase and Install a Backup Generator for the Faitoute Fire House.	Completed
Roselle Park Borough	15-05	Retrofit Roof to Meet Current High Wind Standards on the Faitoute Fire House.	Completed
Roselle Park Borough	15-06	Mitigate Flood/High Winds Affecting the First Aid House on Laurel Avenue.	Withdrawn
Roselle Park Borough	15-07	Mitigate Flooding of the Sherman School.	Completed
Roselle Park Borough	15-08	Obtain Backup Power to the Roselle Parks Middles School.	Completed
Roselle Park Borough	15-09	Increase Holding Capacity to Basin Along Meadow Street (East Grant Ave and Walnut Street).	Completed
Roselle Park Borough	15-10	Obtain Backup Power for and Retrofit the Aldine School.	Completed
Roselle Park Borough	15-11	Obtain Backup Power for and Retrofit Roselle Park High School.	Completed
Roselle Park Borough	15-12	Flood-proof the Department of Public Works.	Withdrawn
Roselle Park Borough	15-13	Upgrade and Improve the Drainage System for the Tributary to the West Brook in Grant Avenue Area.	Completed
Roselle Park Borough	15-14	Impact Harden and Retrofit Roofs on 4 Schools Located on West Grant Ave (2 Facilities), Laurel Ave, and Chestnut Ave.	Completed
Roselle Park Borough	15-15	Upgrade the Covered Culvert Along West Westfield Ave.	Completed
Roselle Park Borough	15-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Roselle Park Borough	15-17	Reinforce the Berm Surrounding the Hawthorne Basin (Between Hawthorne St. /Meadow).	Withdrawn
Roselle Park Borough	15-18	Rebuild Trash Racks with Stronger Material to Prevent Debris from Clogging Drains at the Walnut St. Basin.	Completed
Roselle Park Borough	15-19	Identify High Risk Trees through the Tree Management Program with Right of Way Survey and Trim or Remove Trees to Reduce Property Damage During and Debris After Storms and Severe Weather Events.	Ongoing
Roselle Park Borough	15-20	Join CRS Program.	Completed
Roselle Park Borough	15-21	Purchase and Install a New Generator for the OEM Building.	New
Roselle Park Borough	15-22	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Morses Creek and a Peach Orchard Brook Tributary, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Roselle Park Borough	15-23	Upgrade the Hawthorne Street Basin and the Grove Street Basin.	New
Roselle Park Borough	15-24	Create and Connect a Vegetated Buffer Along Morses Creek with the Borough of Roselle.	New
Roselle Park Borough	15-25	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Roselle Park Borough	15-26	Retrofit All Public Buildings with Generator Plugs for Mobile Power and Purchase a Large Mobile Generator.	New
Roselle Park Borough	15-27	Retrofit Police Headquarters and Casano Center with Full Building Surge Protection Against Lightning Strikes and Severe Weather.	New
Roselle Park Borough	15-28	Target Harden Police Headquarters Against Terror Attacks with New Fencing, Cams, and More Secure Parking for Police Vehicles.	New
Roselle Park Borough	15-29	Replace Computer/Network Infrastructure to Further Prevent Cyber Attacks.	New
Roselle Park Borough	15-30	Purchase a High-Capacity Mobile Pump for thee Two Basins in Town to Prevent Overflow.	New
Roselle Park Borough	15-31	Upgrade Current Storm Water/Wastewater System in Town to Keep Up with New Development.	New
Roselle Park Borough	15-32	Purchase a New Sewer Truck to Assist in Cleaning Catch Basins and a New Large Dump Truck for DPW to Assist with Clean Ups During Storm Impacts.	New
Scotch Plains Township	16-01	Purchase and Install a Generator at Department of Public Works to Provide Continuity of Operations During a Power Outage.	Ongoing
Scotch Plains Township	16-02	Install Generator at Library.	Withdrawn
Scotch Plains Township	16-03	Install Generator at Municipal Building.	Completed
Scotch Plains Township	16-04	Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.	Completed
Scotch Plains Township	16-05	Increase Drainage in the Southeast quadrant of the Township near Ash Brook Reservation to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.	Ongoing
Scotch Plains Township	16-06	Enlarge the Culvert and Improve Drainage to Green Brook and its Tributary under Meadow Street to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.	Ongoing
Scotch Plains Township	16-07	Partner with the YMCA and/or JCC to Expand Community Shelter Options.	Carried Forward
Scotch Plains Township	16-08	Upgrade EOC.	Completed
Scotch Plains Township	16-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas along Ash Brook, Winding Brook, and in the Green Brook Subbasin that Extend into the Township from its Border with Clark Township (Not Addressed Through Drainage Improvements), with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Scotch Plains Township	16-10	Support the Green Brook Flood Control Project from USACE.	Ongoing
Scotch Plains Township	16-11	Repair, Remove, or Rehabilitate Shackamaxon Dam.	New
Scotch Plains Township	16-12	Coordinate with NJDOT to Mitigate Flooding and Downed Trees Along Rt 22.	New
Scotch Plains Township	16-13	Purchase and Install a Generator at the Golf Course Center for Use as a Shelter and Heating/Cooling Center.	New
Scotch Plains Township	16-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	New
Scotch Plains Township	16-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Springfield Township	17-01	Upgrade and Improvement the Stormwater Management System Along Laurel Drive, Meisel Avenue, Cypress Drive, Hemlock Road.	Withdrawn
Springfield Township	17-02	Dredge Rahway River.	Withdrawn

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Springfield Township	17-03	Flood-proof the Municipal Building Which Includes the Police Department.	Withdrawn
Springfield Township	17-04	Flood-proof the First Aid Squad.	Withdrawn
Springfield Township	17-05	Upgrade and Improve the Stormwater Management System for the Department of Public Works (DPW).	Carried Forward
Springfield Township	17-06	Flood-proof the Hersey Building, Department of Public Works.	Carried Forward
Springfield Township	17-07	Purchase and Install a Backup Generator for Independence Way to Ensure Continuity of Operations at the Springfield Senior Citizens Housing Facility.	Ongoing
Springfield Township	17-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Springfield Township	17-09	Purchase and Install a Generator at the Freeman Apartments at 41 Hillside Avenue.	Ongoing
Springfield Township	17-10	Install Generator at Gas Station.	Withdrawn
Springfield Township	17-11	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Along the Township's Borders with Union Township and Cranford Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing
Springfield Township	17-12	Purchase a Light Tower to Help the Department of Public Works (DPW) Provide Essential Services During Emergencies and Nighttime Hours.	New
Springfield Township	17-13	Install Generator for the Town Hall to Provide Local Government Services Uninterrupted by a Potential Power Outage.	New
Springfield Township	17-14	Retrofit Pump Stations to the Risk of Flooding in a Residential Zone.	New
Springfield Township	17-15	Improve and Retrofit Stormwater Inlets to Reduce Pollution and Runoff from Flooding and Storms into Waterbodies.	New
Springfield Township	17-16	Install Permeable Pavement at Veterans Park to Reduce Flooding Impacts.	New
Springfield Township	17-17	Maintain Trees Along Roads and Power Lines to Reduce Debris and Risk of Power Outages During and After Storms and Severe Weather Events.	New
Springfield Township	17-18	Improve Drainage at Ruby Park by Removing Rocks from Drainage Ditch.	New
Springfield Township	17-19	Purchase and Install Backup Generators for Essential Services During Hazard Events.	New
Springfield Township	17-20	Reduce Stormwater Flooding in Ruby Park and Irwin Park.	New
Springfield Township	17-21	Improve Flood Control in Lenape Park.	New
Springfield Township	17-22	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Summit City	18-01	Purchase and Install a Backup Generator for Department of Public Works.	Completed
Summit City	18-02	Perform Site Work and Install an Equalization Tank at the Department of Public Works.	Withdrawn
Summit City	18-03	Retrofit and Reconstruct the Fire Department Building.	Ongoing
Summit City	18-04	Upgrade and Improve Channelization of the Salt Brook/West End Brook.	Withdrawn

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Summit City	18-05	Improve Drainage/Conveyance Along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron Avenue, Kent Place Boulevard, Edgemont Avenue, and W End Avenue.	Completed
Summit City	18-06	Construct Spillway Improvements at River Road.	Ongoing
Summit City	18-07	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Summit City	18-08	Right-size Undersized Culverts and Channels in the Corridor Between the Golf Course and Spillway at River Road, Which Includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.	Ongoing
Summit City	18-09	Construct West End Sanitary Sewer Pump Station and holding tank to prevent sewage backups during rainfall events.	Withdrawn
Summit City	18-10	Identify a Solution to Mitigate City Water Discharge onto Private Property on Hobart Ave. and Edgewood Drive.	Ongoing
Summit City	18-11	Educate the Public about Risks Associated with Tornadoes and Actions to Take in Advance of Tornado Warning.	Ongoing
Summit City	18-12	Conduct a Full Tree Survey/Inventory Assessment Along City ROWs.	Ongoing
Summit City	18-13	Join the CRS program.	Withdrawn
Summit City	18-14	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Salt Brook, the Passaic River, Blue Brook, and Rahway River Tributaries Near the City's Borders, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Summit City	18-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Union Township	19-01	Upgrade and Improve Stormwater Management System for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.	Completed
Union Township	19-02	Harden and Retrofit Police Department.	Completed
Union Township	19-03	Harden and Retrofit of Municipal Building.	Completed
Union Township	19-04	Harden and Retrofit the Department of Public Works.	Ongoing
Union Township	19-05	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Completed
Union Township	19-06	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.	Ongoing
Union Township	19-07	Purchase New Emergency Standby Generator for Firehouse Headquarters.	Completed
Union Township	19-08	Purchase New Emergency Standby Generator for Senior Center.	Completed
Union Township	19-09	Purchase New Emergency Standby Generator for Police Department.	Completed
Union Township	19-10	Repair Irvington Branch Retaining Wall.	Completed
Union Township	19-11	Implement the Flood Control Project on the West Branch of the Rahway River.	Ongoing
Union Township	19-12	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Union Township's Borders with Hillside Township, Kenilworth Borough, and Springfield Township and Along the West Branch of the Elizabeth River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Ongoing

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Union Township	19-13	Join CRS program	Ongoing
Union Township	19-14	Repair Retaining Walls on Various Streams Throughout the Township.	New
Union Township	19-15	Designate the Community Center/Senior Center as a Standby Public Shelter During Severe Weather Conditions.	New
Union Township	19-16	Create and Connect a Vegetated Buffer Along the Township's Rahway River Tributary and/or Create Stormwater and/or Floodplain Lots.	New
Union Township	19-17	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Westfield Town	20-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Westfield Town	20-02	Flood-proof the Police Building, Municipality Building, and Associated Data Storage to Reduce the Impact of Flooding on Public Facilities.	Ongoing
Westfield Town	20-03	Retrofit the Fire Department Building on North Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	Ongoing
Westfield Town	20-04	Retrofit the Fire Department Building on Central Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	Ongoing
Westfield Town	20-05	Purchase and Install a Backup Generator for the Department of Public Works.	Completed
Westfield Town	20-06	Flood-proof the Genesis Elder Care: Senior Housing Building to Reduce the Impact of Flooding on Vulnerable Populations.	Ongoing
Westfield Town	20-07	Acquire, Elevate, Relocate or Otherwise Mitigate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) Properties.	Ongoing
Westfield Town	20-08	Purchase and Install an Emergency Generator for Continuity of Operations at Westfield Memorial Pool Building and Complex.	New
Westfield Town	20-09	Replace and Install a New Roof for Westfield Municipal Building and Police Department to Provide for Continuity of Operations During a Disaster.	New
Westfield Town	20-10	Replace and Install a New Roof for Westfield Department of Public Works (DPW) to Provide for Continuity of Operations During a Disaster.	New
Westfield Town	20-11	Use the Town's Green Development Checklist to Identify Opportunities to Integrate Green Infrastructure into Redevelopment Plans, Especially in the Special Flood Hazard Area (SFHA).	New
Westfield Town	20-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Westfield Town	20-13	Implement the Mitigation Actions from the Resiliency Guidelines prepared by the Center for Climate and Energy Solutions (C2ES) to Adapt to Future Extreme Heat and Flooding Hazards.	Westfield Town
Winfield Township	21-01	Conduct an All-hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Winfield Township	21-02	Add NIXLE as an Emergency Messaging System to Enhance Emergency Communications Capabilities.	Completed
Winfield	21-03	Coordinate with Winfield Mutual Housing Corporation to Develop	Carried

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Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Township		MOUs for Sheltering Options.	Forward
Winfield Township	21-04	Purchase and Install a Generator for Community Center to Serve as a Potential Shelter.	Carried Forward
Winfield Township	21-05	Investigate Alternative Snow Removal Strategies to Ensure Roadway Safety During Winter Weather Events.	Carried Forward
Winfield Township	21-06	Purchase and Install Generators or Provide Connections for Portable Generators for All Critical Facilities Identified in the Emergency Operations Plan (EOP) to Ensure Continuity of Operations During a Disaster.	Carried Forward
Winfield Township	21-07	Upgrade Facilities for Potential Heating and Cooling Centers to Protect Persons from Extreme Temperature Events.	Carried Forward
Winfield Township	21-08	Purchase and Install a Generator for Winfield Elementary School to Ensure Continuity of Operations During a Disaster.	Carried Forward
Winfield Township	21-09	Install Back-Up Power Source for Communications Repeater.	Withdrawn
Winfield Township	21-10	Join the National Flood Insurance Program (NFIP) to Strengthen Floodplain Management Practices.	Carried Forward
Winfield Township	21-11	Improve Drainage in Low-Lying Areas along Passaic Dr. to Reduce Stormwater Flooding.	Ongoing
Winfield Township	21-12	Target Harden the Town Hall Building (Police Department) and Fire Department Buildings with Surveillance Cameras	New
Winfield Township	21-13	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	New
Winfield Township	21-14	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	New
Union County	22-01	Develop All Hazards Public and Municipal Official Education and Outreach Program for Hazard Mitigation and Preparedness.	Ongoing
Union County	22-02	Conduct Evacuation Exercises with and for Local Office of Emergency Management (OEM) Personnel and Private Citizens.	Ongoing
Union County	22-03	Conduct Yearly Workshops Related to FEMA Hazard Mitigation Grant Programs.	Ongoing
Union County	22-04	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.	Withdrawn
Union County	22-05	Develop and Maintain Relationships with Organizations that Can Provide Technical Information and/or Assistance in the Areas of Hazard Identification and Risk Assessment.	Ongoing
Union County	22-06	Undertake Site-Specific Studies To Better Characterize Flood Risks to Areas With Extensive Flood Loss Histories.	Ongoing
Union County	22-07	Coordinate with State Efforts to Undertake Detailed Vulnerability Assessments and Develop Mitigation Options for Critical Facilities in A and AE Zones. Implement mitigation projects and programs intended to reduce risk to critical facilities.	Carried Forward
Union County	22-08	Use Best Possible Flood Data, including DFIRM and Map Mod Data, If Available, in Next Plan Update. Track Implementation of Risk MAP Initiative to Ensure Union County and Municipalities Gain Full Advantage of Opportunities Under This Program.	Ongoing
Union County	22-09	Continuously Update and Verify Status of Repetitive Loss and Severe Repetitive Loss Lists from the NFIP. Continue Working with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.	Ongoing

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Union County	22-10	Coordinate with State Effort to Survey Wind Vulnerabilities Using a Prioritized List of State, County, and Local Facilities. Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds.	Carried Forward
Union County	22-11	Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds. Assessments Will Use Standard FEMA Guidelines, Procedures, and Software, Including the Wind Hazard Database.	Withdrawn
Union County	22-12	Coordinate with State Efforts to Conduct Wildfire Risk Assessments for Areas and Assets that are Determined to Have the Most Hazard (Fuel Load, etc.) Potential, and the Most Vulnerable Structures, Populations, or Operations.	Carried Forward
Union County	22-13	Collect Data on Hazardous Material Sites, Integrate with Most Current Information About Risk Factors, and Perform a GIS Analysis and Mapping of Potential Areas of Impact.	Ongoing
Union County	22-14	Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.	Withdrawn
Union County	22-15	Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics.	Withdrawn
Union County	22-16	Work with Appropriate Agencies to Identify Specific Areas that are Vulnerable to Storm Effects, Then Inventory Assets and Populations in These Areas as the Basis for a Risk Calculation.	Ongoing
Union County	22-17	Undertake More Detailed Engineering Study of Clark Reservoir Dam, Which May Pose a Risk Downstream.	Ongoing
Union County	22-18	Obtain Additional Information About Surge Hazards and the Assets, Populations, and Functions in Identified Surge Zones in Areas of Significant Risk.	Ongoing
Union County	22-19	Identify and Map Erosion Hazard Zones Through Detailed Study.	Ongoing
Union County	22-20	Participate in Training and Workshops.	Ongoing
Union County	22-21	Develop Critical Facilities Inventory Database. Develop a Simple GIS Platform, or Build Upon an Existing Platform, to Maintain and Analyze Critical Facilities Inventories and Information about Hazards.	Ongoing
Union County	22-22	Offer Technical Support to Help Municipalities Meet FEMA HMA Requirements and Provide Current Information on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties to Encourage Making RL and SRL Property Mitigation a High Priority Among Municipalities.	Ongoing
Union County	22-23	Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.	Withdrawn
Union County	22-24	Conduct direct outreach and education to municipal OEMs and other potential participants in Plan Maintenance and future Plan updates	Withdrawn
Union County	22-25	Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B).	Withdrawn
Union County	22-26	Encourage Municipalities to Participate in the CRS Program, Including Potentially Setting Up CRS Site Visits and/or Workshops for Interested Jurisdictions.	Ongoing
Union County	22-27	Encourage Municipalities to Include Identification and Prioritization of Actions Related to Future Participation In and Compliance With the NFIP.	Ongoing

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Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
Union County	22-28	Encourage the Integration of Floodplain Management and Hazard Mitigation Practices with Zoning, Subdivision Ordinances, Comprehensive Planning, and Other Land Use Tools and the Municipal Level.	Ongoing
Union County	22-29	Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.	Withdrawn
Union County	22-30	Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.	Withdrawn
Union County	22-31	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.	Ongoing
Union County	22-32	Increase Transparency of Plan Maintenance on County Website.	Ongoing
Union County	22-33	Continue Working with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.	Withdrawn
Union County	22-34	Implement mitigation projects and programs intended to reduce risk to critical facilities.	Withdrawn
Union County	22-35	Integrate Hazard Mitigation Priorities into Transportation Planning and Other Capital Planning.	Ongoing
Union County	22-36	Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).	Withdrawn
Union County	22-37	Implement a Training for Using GIS Interface on Tablets in the Field.	Ongoing
Union County	22-38	Inspect All Levees on County Property as Part of Dam Inspections.	Ongoing
Union County	22-39	Coordinate with Towns to Ensure Extended Care Facilities have Back-Up Power or Quick Connects.	Ongoing
Union County	22-40	Improve Options for Power Redundancy within Union County.	Ongoing
Union County	22-41	Purchase Portable Generators for Use During Power Failure.	Ongoing
Union County	22-42	Purchase and Install a Generator for the Public Works Building.	Completed
Union County	22-43	Identify Suitable Shelter Venues to Temporarily House Displaced Persons and Store Disaster Aid Materials.	Ongoing
Union County	22-44	Perform an Engineering Study to Determine the Feasibility and Cost of Siting a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	New
Union County	22-45	Purchase and Install a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	New
Union County	22-46	Create a Stand Alone 9-1-1 Center to Support Police, Fire, and EMS Services Across the County.	New
Union County	22-47	Purchase and Install a New Radio Tower and Communications Infrastructure.	New
Union County	22-48	Install a Fiber Loop Throughout Each Municipal Complex in Union County to Provide Enhanced Communication Between Government Facilities, Ensure Continuity of Operations During Power Failure and Enhance Security to Prevent Against a Cyber Attack.	New
Union County	22-49	Implement the Findings of the Union County Truck Mobility Study to Ensure All Populations Can Safely Access Evacuation Routes.	New
Union County	22-50	Consider Access and Mobility for Socially Vulnerable Populations and Disaster Resilience When Designing Transportation	New

Comprehensive Mitigation Action Database			
Jurisdiction	**Community Action #**	**Action Name**	**Action Status**
		Infrastructure.	
Union County	22-51	Implement Mitigation Actions from the Confidential Site Assessment Report by the New Jersey Office of Homeland Security and Preparedness (NJOHSP) for Union County Buildings.	New
Union County	22-52	Digitize Municipal Zoning Maps to Assist the County with Understanding Potential New Development in Hazardous Areas.	New
Union County	22-53	Geocode Building Permits to Assist the County with Understanding Potential New Development in Hazardous Areas.	New
Union County	22-54	Construct Flood Control Improvements and Replace the Culvert at Peach Orchard Brook.	New
Union County	22-55	Construct Flood Control Measures at Laurel Drive.	New
Union County	22-56	Construct Drainage Improvements Near Nomahegan Park and Union County College (Cranford Phase 5).	New
Union County	22-57	Dredge Clark Reservoir.	New
Union County	22-58	Construct Flood Control Improvements Along Branch 10-24 and the West Branch of the Elizabeth River.	New
Union County	22-59	Construct Flood Control Improvements Along Pumpkin Patch Brook, Upstream of Robinsons Branch.	New
Union County	22-60	Conduct Hazard Mitigation Training and Education and Purchase Equipment at Union County Fire Training Academy.	New

3.4.3 MITIGATION ACTIONS EVALUATION AND PRIORITIZATION

As described in **Table 3.3-1 Mitigation Action Worksheet Evaluation**, each New, Ongoing, and Carried Forward Mitigation Action was evaluated and prioritized based on the 2014 New Jersey State Hazard Mitigation Plan's social, technical, administrative, political, legal, economic, and environmental (STAPLEE) criteria. The STAPLEE method provides a systematic approach that considers the opportunities and constraints of implementing a particular mitigation action.

Local officials were asked to use assign a numeric rank (-1, 0, or 1) for each of the 11 evaluation criteria, as defined in **Table 3.3-1 Mitigation Action Worksheet Evaluation**, to assist them in evaluating and prioritizing Ongoing, Carried Forward, and New Mitigation Actions.

The numeric rank is defined as:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Table 3.4-3 Mitigation Actions Evaluated and Prioritized, by Jurisdiction lists the prioritization of Ongoing, Carried Forward, and New Mitigation Actions based on the STAPLEE method.

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Table 3.4-3 MITIGATION ACTIONS EVALUATED AND PRIORITIZED

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Berkeley Heights Township	01-16	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Berkeley Heights Township	01-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Berkeley Heights Township	01-16	Create Riparian Habitat Along the Passaic River and Within the Channel.	1	1	1	1	1	1	1	1	1	1	1	New	11
Berkeley Heights Township	01-01	Flood-proof Homes Along 400 and 600 River Road.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Berkeley Heights Township	01-02	Upgrade and Improve the Stormwater Management System Along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Berkeley Heights Township	01-05	Flood-proof the Department of Public Works (DPW).	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Berkeley Heights Township	01-07	Upgrade and Improve the Stormwater Management System for 35 Cottage Street/Autumn Lake Healthcare.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Berkeley Heights Township	01-09	De-Snag Streams and Rivers in the Township to Prevent Debris Build-Up.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Berkeley Heights Township	01-10	Relocate Municipal Facilities Outside of Flood-prone Areas.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Berkeley Heights Township	01-13	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	1	1	1	1	1	1	1	1	1	1	0	New	10
Berkeley Heights Township	01-15	Create Riparian Habitat Along the Passaic River and Within the Channel.	1	1	1	1	1	1	1	1	1	1	0	New	10
Berkeley Heights Township	01-11	Remove Hazardous Trees in the Township.	1	1	1	1	1	1	0	1	1	1	0	Ongoing	9
Berkeley Heights Township	01-12	Acquire Properties in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Berkeley	01-14	Elevate, or Relocate Buildings and	1	1	0	1	1	1	1	1	1	1	0	New	9

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Heights Township		Infrastructure in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.													
Clark Township	02-08	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Clark Township	02-02	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Clark Township	02-03	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a Shelter for a Warming/Cooling Center and Charging Station Area.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Clark Township	02-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Clark Township	02-05	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Pumpkin Patch Brook and Robinsons Branch Near the Scotch Plains Border and Along the Rahway River Near the Winfield Township Border, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Clark Township	02-07	Conduct a Study of Pumpkin Patch Brook to Identify New Actions to Improve Flood Control in the Area.	1	1	1	1	1	1	1	1	1	1	0	New	10
Clark Township	02-06	Repair, Remove, or Rehabilitate the Robinson's Branch Reservoir Dam.	1	1	0	1	1	0	0	1	1	1	0	New	7
Cranford Township	03-20	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11

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Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Cranford Township	03-01	Construct New Local Storm Sewer, Pump Station, and Bypass Storm Systems to Mitigate Flooding in the Township.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Cranford Township	03-02	Upgrade and Improve Stormwater Management System for Various Local Streets to Reduce Flooding in Homes and on Roadways.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Cranford Township	03-06	Armor and Improve Riverside Dike and Belmere Dike Along the Rahway River to Reduce Flooding.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Cranford Township	03-10	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Cranford Township	03-15	Elevate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Cranford Township	03-17	Design and Implement an Off-Site or Cloud-Based IT Backup and Disaster Recovery Plan.	1	1	1	1	1	1	1	1	0	1	1	New	10
Cranford Township	03-09	Replace Manual Gauge with Automatic Gauge to Automate the Municipal Flood Warming System Along Rahway River.	1	1	1	0	1	1	1	1	1	1	0	Carried Forward	9
Cranford Township	03-12	Modify the Sluice Gate Control at the Stormwater Pump Station on Riverside Drive.	1	1	1	0	1	1	1	1	1	1	0	Carried Forward	9
Cranford Township	03-14	Acquire and Demolish or Relocate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Cranford Township	03-16	Replace the Staff Gauge at Balmiere Parkway/Riverside Drive and Footbridge with an Automated Gauge.	1	1	1	0	1	1	1	1	1	1	0	Ongoing	9
Cranford Township	03-19	Expand Protected Areas Around the Floodplain by Creating Floodplain and Stormwater Lots and/or Smaller Green Infrastructure Solutions Along the Rahway River and in Nomahegan Park.	1	1	0	1	1	1	1	1	1	1	0	New	9
Cranford	03-18	Stabilize Stream Banks and	1	1	0	1	1	1	0	1	0	1	1	New	8

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Township		Widen Culvert of Orchard Brook on West Holly Street.													
Cranford Township	03-13	Implement United States Army Corps of Engineers (USACE) Proposed Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.	1	1	1	1	1	0	0	1	0	1	0	Carried Forward	7
Elizabeth City	04-13	Reduce or Eliminate Flooding Around Third Avenue and Atlantic Street.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Elizabeth City	04-14	Upgrade the South Second Street Pump Station, Install a New Generator and Improve Local Storm Sewers.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Elizabeth City	04-46	Continue to Revise Municipal Stormwater Control Ordinances.	1	1	1	1	1	1	1	1	1	1	1	New	11
Elizabeth City	04-04	Upgrade, Repair, and/or Maintain Storm Drains and Sewers Along Park Avenue and Summit Road.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Elizabeth City	04-21	Install a New Wet Weather Pump Station and Ancillary Infrastructures on Trenton Avenue.	1	1	1	1	0	1	1	1	1	1	1	Ongoing	10
Elizabeth City	04-32	Upgrade the Storm Drains and Sewers in the Lincoln Avenue Area.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Elizabeth City	04-22	Install a New Generator at Trenton Avenue.	1	1	1	1	0	1	1	1	1	1	0	Ongoing	9
Elizabeth City	04-08	Upgrade and/or Repair Ursino Dam.	1	1	1	1	0	1	1	0	1	1	0	Ongoing	8
Elizabeth City	04-27	Upgrade and Repair the Elizabeth River Flood Control Project.	1	1	1	1	0	0	1	1	1	1	0	Ongoing	8
Elizabeth City	04-45	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	0	1	1	1	1	1	0	New	8
Elizabeth City	04-07	Separate the Sewers, Upgrade the Pump Station, and Install a Generator at the Intersection of Cherry Street and West Jersey Street.	1	1	1	1	0	0	0	0	1	1	0	Ongoing	6
Elizabeth City	04-09	Purchase and Install Portable Generators at Key City Traffic Locations.	1	1	1	1	0	0	-1	0	1	1	1	Ongoing	6
Elizabeth City	04-10	Purchase and Install New Miscellaneous Generators and Electrical Upgrades at Critical Facilities, Especially Existing Flood Control Pump Stations and Critical Care Facilities that Provide Continuity of Service.	1	1	1	1	0	0	-1	1	1	1	0	Ongoing	6
Elizabeth City	04-17	Upgrade, Repair, and Separate Combined Sewers in the Bayway Area.	1	1	1	1	0	0	-1	0	1	1	1	Ongoing	6

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Elizabeth City	04-28	Purchase and Install Emergency Overhead Signage for Emergency Communication.	1	0	1	0	0	0	1	1	0	1	1	Ongoing	6
Elizabeth City	04-31	Design and Construct a New Firehouse Outside of the Flood Zone.	1	1	1	1	0	0	-1	1	1	1	0	Ongoing	6
Elizabeth City	04-01	Reduce or Eliminate Local Flooding via the Dowd Avenue Pump Station.	1	1	1	1	0	0	-1	0	1	1	0	Ongoing	5
Elizabeth City	04-02	Upgrade, Repair, and Maintain Sewers and Drainage Along Trumbull Street to Manage Stormwater (Trumbull Street Regional Stormwater Management Project)	1	1	1	1	0	0	-1	0	1	1	0	Ongoing	5
Elizabeth City	04-03	Upgrade, Repair, and/or Maintain Storm Sewers and Drainage Along Monmouth Road to Control Flooding (JMEUC Issues).	1	1	1	1	0	0	-1	0	1	1	0	Ongoing	5
Elizabeth City	04-05	Reduce or Eliminate Local Flooding Along Maple Avenue/Routes 1&9.	1	1	1	1	0	0	-1	0	1	1	0	Ongoing	5
Elizabeth City	04-15	Construct Atlanta Plaza Floodwall.	1	1	1	1	0	0	-1	0	1	1	0	Ongoing	5
Elizabeth City	04-19	Flood-proof Firehouse Engine #1 on Broad Street.	1	1	1	0	0	0	-1	0	1	1	1	Ongoing	5
Elizabeth City	04-23	Install Pump Station Upgrades and Generator at Mattano Park.	1	1	1	0	0	0	-1	0	1	1	1	Ongoing	5
Elizabeth City	04-26	Purchase and Install a Generator at the Municipal Marina.	1	1	1	1	0	0	-1	0	1	1	0	Ongoing	5
Elizabeth City	04-37	Upgrade, Repair and Maintain Brick Sewers and Watermains.	1	1	1	0	0	0	0	0	1	1	0	New	5
Elizabeth City	04-40	Construct an Emergency Response Ambulance Canopy.	1	0	1	1	1	1	-1	-1	1	1	0	New	5
Elizabeth City	04-41	Ensure Continuity of Operations at the Liberty Square Senior Center by Purchasing and Installing a Generator.	1	1	1	0	0	0	-1	1	1	1	0	New	5
Elizabeth City	04-43	Construct a Police Drone Control Tower.	1	1	1	0	0	0	-1	0	1	1	1	New	5
Elizabeth City	04-44	Upgrade, Repair and/or Maintain the Storm Drains and Sewers at Summer and South Broad Street.	1	1	1	0	0	0	0	0	1	1	0	New	5
Elizabeth City	04-06	Upgrade, Repair and/or Maintain Storm Drains and Sewers Where Routes 1&9 and Railroad Crossings Intersect.	0	1	1	1	0	0	-1	0	1	1	0	Ongoing	4
Elizabeth City	04-20	Upgrade and Repair the Pump Station and Install a New Generator at Kapkowski Road.	1	1	1	0	0	0	-1	0	1	1	0	Ongoing	4
Elizabeth City	04-30	Provide for Infectious Disease Control Through Emergency Communication and Temporary Vaccination Stations.	1	-1	1	0	0	0	1	1	0	1	0	Ongoing	4
Elizabeth City	04-42	Upgrade, Repair and/or Maintain Storm Drains and Sewers at North Avenue and Van Buren.	1	1	1	0	0	0	-1	0	1	1	0	New	4

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Elizabeth City	04-25	Reduce or Eliminate Local Flooding on Pennington Street.	0	1	1	0	0	0	-1	0	1	1	0	Ongoing	3
Elizabeth City	04-11	Minimize Extreme Heat Casualties and Deaths through Public Awareness and Outreach.	1	-1	1	0	0	0	-1	1	0	1	0	Ongoing	2
Elizabeth City	04-12	Conduct a Public Communication Campaign Around Earthquake Awareness, Response, and Recovery.	1	-1	1	0	0	0	-1	1	0	1	0	Ongoing	2
Elizabeth City	04-33	Conduct a Public Communication, Education, and Outreach Campaign About Severe Winter Storms and Extreme Cold Events.	1	-1	1	0	0	0	-1	1	0	1	0	Ongoing	2
Elizabeth City	04-38	Conduct a Citywide Public Communication Campaign to Increase COVID-19 Awareness.	1	-1	1	0	0	0	-1	1	0	1	0	New	2
Elizabeth City	04-39	Evaluate Possible Earthquake Shelters and Muster Areas Citywide.	1	-1	1	0	0	0	-1	1	0	1	0	New	2
Elizabeth City	04-47	Develop and Assess Citywide Shelters' Preparedness for Extreme Heat and Extreme Cold Events.	1	-1	1	0	0	0	-1	1	0	1	0	New	2
Fanwood Borough	05-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Fanwood Borough	05-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Fanwood Borough	05-06	Purchase and Install 6 Portable Light Towers.	1	0	1	1	1	1	1	1	1	1	0	Carried Forward	9
Fanwood Borough	05-10	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas in the Western and Southern Portions of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	New	9
Fanwood Borough	05-07	Purchase and Install a Generator for LaGrande Park (Warming Station).	1	0	1	0	1	1	1	1	1	1	0	Carried Forward	8
Garwood Borough	06-06	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect	1	1	1	1	1	1	1	1	1	1	1	New	11

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		Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.													
Garwood Borough	06-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Garwood Borough	06-03	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Garwood Borough	06-02	Purchase and Install Generators for Multiple Critical Facilities to Use as Warming/Cooling Stations and Maintain Critical Borough Operations.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Garwood Borough	06-04	Build a Water Retention Basin/Pond.	1	1	1	1	1	0	1	1	1	1	0	New	9
Garwood Borough	06-05	Make a Dedicated Emergency Operations Center (EOC) Area.	1	1	1	1	1	1	0	1	1	1	0	New	9
Hillside Township	07-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Hillside Township	07-01	Construct Additional Basins to Protect Town Hall which Houses the Police Department and the Library.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Hillside Township	07-02	Upgrade Stormwater Management System for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Hillside Township	07-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Hillside Township	07-06	Conduct Ongoing Tree Maintenance and Survey Along Township Right-of-ways.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Hillside Township	07-05	Purchase and Install Emergency Backup Generators at the Community Center and Senior Center.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Hillside Township	07-08	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Elizabeth River and Route 22 Near the Township's Border with Union Township, with a Focus on	1	1	0	1	1	1	1	1	1	1	0	New	9

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		Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.													
Hillside Township	07-09	Coordinate with the County to Construct a Stormwater Basin at Rutgers Ave., Support Riparian Habitat and Stabilize Banks at Risk of Eroding, and Conduct Wetland Restoration Around Rutgers Avenue Park.	1	1	0	1	1	0	1	1	1	1	0	New	8
Hillside Township	07-10	Coordinate with US DOT to Retrofit Route 22 to Mitigate Flooding.	1	1	0	1	1	0	1	1	1	1	0	New	8
Kenilworth Borough	08-04	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Kenilworth Borough	08-03	Construct a New Building to House OEM Equipment.	1	1	1	1	1	1	1	1	0	1	1	New	10
Kenilworth Borough	08-02	Elevate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Tributaries, West Branch of the Elizabeth River, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Linden City	09-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Linden City	09-28	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Linden City	09-01	Upgrade, Maintain, and Improve Sewer Lines to Reduce Infiltration in the Flood Zone.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Linden City	09-03	Control Flooding from West Brook by Constructing Flood Walls from 11th Street to Clinton Street, Installing Channel Improvements at Clinton Street, and Cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Linden City	09-04	Upgrade and Improve the Drainage System and Retention	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10

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		Basin along Cantor Avenue, Dalziel Road, and Hurst Street.													
Linden City	09-05	Control flooding from Peach Orchard Creek by Installing Channel Improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, Replacing Bridges, and Upgrading and Improving the Stormwater Management System at the Edward Muraski Towers Senior Center and at the Ann J. Ferguson Towers-Senior Center.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Linden City	09-19	Replace Range Road Bridge.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Linden City	09-20	Improve the Stormwater and Sewer System in the Rosewood Terrace Area and Along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Linden City	09-23	Expand Outreach to Reach Residents, with Translations for Non-English-Speaking Communities.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Linden City	09-25	Improve the Stormwater and Sewer System Along East Henry Street and Harrison Place.	1	1	1	1	1	1	1	1	1	1	0	New	10
Linden City	09-26	Build Alternate Access Road to New Jersey Turnpike from Tremley Point Area.	1	1	1	1	1	0	1	1	1	1	1	New	10
Linden City	09-08	Purchase and Install a Backup Generator for the Linden Multi-Purpose Center.	1	0	1	1	1	1	1	1	1	1	0	Carried Forward	9
Linden City	09-12	Acquire or Elevate 1 Repetitive Loss Property on Clinton Street.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Linden City	09-13	Acquire or Elevate 1 Repetitive Loss Property on Hussa Street.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Linden City	09-14	Acquire or Elevate 1 Repetitive Loss property on N. Stiles Street.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Linden City	09-15	Acquire or Elevate 1 Repetitive Loss property on Sherman Street.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Linden City	09-21	Acquire Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Linden City	09-22	Elevate Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Linden City	09-27	Coordinate with the Linden Industrial Mutual Aid Council (LIMAC) to Use Their Private Road in the Area of Wood Avenue in	1	1	1	1	1	0	1	1	0	1	0	New	8

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		the Tremley Point area as an Emergency Evacuation Route.													
Mountainside Borough	10-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Carried Forward	11
Mountainside Borough	10-07	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Mountainside Borough	10-05	Replace the Grate at the End of Charles Street Creek.	1	1	1	1	1	1	1	1	1	1	0	New	10
Mountainside Borough	10-06	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Nomahegan Brook and the Southern Border of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	New	9
Mountainside Borough	10-07	Purchase and Install a Generator for Borough Hall.	1	0	0	1	1	1	1	1	1	1	0	New	8
Mountainside Borough	10-01	Install Emergency Backup Generator at Mountainside Rescue Squad EOC (1399 Route 22 East).	1	0	1	0	1	1	1	1	1	1	0	Ongoing	8
New Providence Borough	11-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
New Providence Borough	11-05	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	0	1	1	1	1	1	1	1	1	1	Ongoing	10
New Providence Borough	11-01	Upgrade and Improve the Stormwater Management System for Passaic Avenue, North of Springfield Avenue, and All Areas Along Salt Brook Bank (South/West/Central).	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
New Providence Borough	11-02	Elevate or Floodproof Properties Along the Passaic River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9

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Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
New Providence Borough	11-04	Flood-proof Wastewater Treatment Plant.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
New Providence Borough	11-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Passaic River and Salt Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	New	9
New Providence Borough	11-11	Remediate the Ping Wang Property and Convert to a Stormwater Lot to Absorb Runoff.	1	1	1	1	1	1	0	1	1	1	0	New	9
New Providence Borough	11-10	Replace the Mee Lane Pedestrian Bridge to Allow for Continuity of Operations during a Hazard Event.	1	1	1	1	1	0	0	1	1	1	0	New	8
New Providence Borough	11-03	Implement Channel Improvements for Salt Brook.	1	1	0	1	1	0	0	1	1	1	0	Carried Forward	7
New Providence Borough	11-08	Repair, Remove, or Rehabilitate the Clearwater Detention Dam.	1	1	0	1	1	0	0	1	1	1	0	New	7
Plainfield City	12-19	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Plainfield City	12-11	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Plainfield City	12-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	1	1	1	1	0	1	1	1	1	1	1	Ongoing	10
Plainfield City	12-12	Remove Trees and Trim Tree Limbs Near Power Lines.	1	1	1	1	1	1	0	1	1	1	0	Ongoing	9
Plainfield City	12-15	Obtain Backup Power or Bury Lines for the Washington School.	1	1	1	1	1	1	1	1	0	1	0	New	9
Plainfield City	12-16	Obtain Backup Power or Bury Lines at 724 Park Ave.	1	1	1	1	1	1	1	1	0	1	0	New	9
Plainfield City	12-17	Obtain Backup Power or Bury Lines at Emerson School.	1	1	1	1	1	1	1	1	0	1	0	New	9
Plainfield City	12-18	Create a Microgrid of Underground Electricity Tying Critical Infrastructure Together.	1	1	1	1	1	1	1	1	0	1	0	New	9
Plainfield City	12-02	Stabilize and Augment the Streambanks of Cedar Brook to Protect the Apartment Complexes at Rose and Randolf Road.	1	1	0	1	0	1	0	1	1	0	0	Carried Forward	6
Plainfield City	12-07	Dredge and Clean Green Brook and Cedar Brook.	1	1	0	1	0	1	1	1	0	0	0	Ongoing	6

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Plainfield City	12-09	Acquire or Elevate Buildings and Infrastructure on Inwood Place, with a Focus on 2 Repetitive Loss (RL) Properties.	1	1	0	1	0	1	1	1	0	0	0	Carried Forward	6
Plainfield City	12-10	Elevate/Acquire 3 Repetitive Loss Properties on Johnston Ave.	1	1	0	1	0	1	1	1	0	0	0	Carried Forward	6
Plainfield City	12-01	Upgrade and Improve the Stormwater Management System, Including Retention Basins, Along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.	1	1	0	0	0	-1	1	1	1	0	0	Ongoing	4
Plainfield City	12-08	Flood-proof Structures and Infrastructure on St Mary's Ave., Carlisle Terrace, and George Street, with a Focus on 8 Repetitive Loss Properties.	1	1	0	-1	0	1	1	1	0	0	0	Carried Forward	4
Plainfield City	12-03	Flood-proof Four Apartment Complexes Located Within the SFHA. These Include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.	1	1	0	-1	0	1	0	1	0	0	0	Carried Forward	3
Rahway City	13-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Rahway City	13-14	Update the City's Flood Damage Prevention Ordinance to Conform to NJDEP's Model Ordinance Standards.	1	1	1	1	1	1	1	1	1	1	1	New	11
Rahway City	13-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Rahway City	13-02	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Rahway City	13-11	Adopt an Ordinance to Limit Stormwater Direction or Quantity Changes on Private Property That May Have a Compounding Effect on Downstream or Adjacent Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9

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Rahway City	13-12	Coordinate with Adjacent Municipalities to Reduce Flooding within the Watershed.	1	1	1	1	1	1	1	1	0	1	0	Ongoing	9
Rahway City	13-13	Elevate, Floodproof, Acquire or Relocate Buildings and Infrastructure in Flood-prone Areas Along the South Branch and Robinson Branch of the Rahway River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Rahway City	13-07	Purchase and Install Traffic Signal and Trailer-Mounted Emergency Generators.	1	0	1	0	1	1	1	1	1	1	0	Ongoing	8
Roselle Borough	14-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Roselle Borough	14-03	Purchase and Install a Generator at the Sanitary Sewer Pump Station.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Roselle Borough	14-04	Mitigate Repetitive Loss Properties Through Channel Improvements to Tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Roselle Borough	14-05	Improve and Convert Roadway Stormwater Systems at Harrison Ave., Wheat Sheaf Ave, and Brook Run.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Roselle Borough	14-06	Conduct Stream Maintenance to West Brook and Peach Orchard Brook.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Roselle Borough	14-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Roselle Borough	14-09	Install Underground Gridwork That Continues Service During Blackouts.	1	1	1	1	1	1	1	1	1	1	0	New	10
Roselle Borough	14-10	Create and Connect a Vegetated Buffer Along Morses Creek in Coordination with Roselle Park Borough.	1	1	1	1	1	1	1	1	1	1	0	New	10
Roselle Borough	14-13	Bury Electrical and Cable Wiring Underground.	1	1	1	1	1	1	1	1	1	1	0	New	10
Roselle Borough	14-01	Purchase and Install a Generator at the Community Center.	1	0	1	1	1	1	1	1	1	1	0	Carried Forward	9
Roselle Borough	14-02	Purchase and Install a Generator at the Department of Public	1	0	1	1	1	1	1	1	1	1	0	Carried Forward	9

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		Works (DPW).													
Roselle Borough	14-07	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Peach Orchard Brook, West Brook, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Carried Forward	9
Roselle Borough	14-11	Construct an Emergency Operations Center (EOC) Facility.	1	0	1	1	1	1	0	1	1	1	1	New	9
Roselle Park Borough	15-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Roselle Park Borough	15-25	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Roselle Park Borough	15-23	Upgrade the Hawthorne Street Basin and the Grove Street Basin.	1	1	1	1	1	1	1	1	1	1	0	New	10
Roselle Park Borough	15-22	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Morses Creek and a Peach Orchard Brook Tributary, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	New	9
Roselle Park Borough	15-24	Create and Connect a Vegetated Buffer Along Morses Creek With the Borough of Roselle.	1	1	1	1	1	0	1	1	1	1	0	New	9
Roselle Park Borough	15-26	Retrofit All Public Buildings with Generator Plugs for Mobile Power and Purchase a Large Mobile Generator.	1	1	1	1	1	1		1	1	1	0	New	9
Roselle Park Borough	15-27	Retrofit Police Headquarters and Casano Center with Full Building Surge Protection Against Lightning Strikes and Severe Weather.	1	1	1	1	1	1		1	1	1	0	New	9
Roselle Park Borough	15-28	Target Harden Police Headquarters Against Terror Attacks with New Fencing, Cams, and More Secure Parking for Police Vehicles.	1	1	1	1	1	1		1	1	1	0	New	9
Roselle Park Borough	15-30	Purchase a High-Capacity Mobile Pump for thee Two Basins in Town to Prevent Overflow.	1	1	1	1	1	1		1	1	1	0	New	9
Roselle Park Borough	15-31	Upgrade Current Storm Water/Wastewater System in Town to Keep Up with New Development.	1	1	1	1	1	1		1	1	1	0	New	9

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Roselle Park Borough	15-19	Identify High Risk Trees through the Tree Management Program with Right of Way Survey and Trim or Remove Trees to Reduce Property Damage During and Debris After Storms and Severe Weather Events.	1	1	1	1	1	0	0	1	1	1	0	Ongoing	8
Roselle Park Borough	15-21	Purchase and Install a New Generator for the OEM Building.	1	0	1	0	1	1	1	1	1	1	0	New	8
Roselle Park Borough	15-29	Replace Computer/Network Infrastructure to Further Prevent Cyber Attacks.	1	0	1	1	1	1		1	1	1	0	New	8
Roselle Park Borough	15-32	Purchase a New Sewer Truck to Assist in Cleaning Catch Basins and a New Large Dump Truck for DPW to Assist with Clean Ups During Storm.	1	0	0	1	1	1		1	1	1	0	New	7
Scotch Plains Township	16-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Scotch Plains Township	16-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	1	1	1	1	1	1	1	1	1	1	0	New	10
Scotch Plains Township	16-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas along Ash Brook, Winding Brook, and in the Green Brook Subbasin that Extend into the Township from its Border with Clark Township (Not Addressed Through Drainage Improvements), with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Scotch Plains Township	16-01	Purchase and Install a Generator at Department of Public Works to Provide Continuity of Operations During a Power Outage.	1	0	1	0	1	1	1	1	1	1	0	Ongoing	8
Scotch Plains Township	16-07	Partner with the YMCA and/or JCC to Expand Community Shelter Options.	1	0	1	1	1	1	1	1	0	1	0	Carried Forward	8
Scotch Plains Township	16-10	Support the Green Brook Flood Control Project from USACE.	1	1	1	1	1	0	0	1	1	1	0	Ongoing	8
Scotch Plains Township	16-12	Coordinate with NJDOT to Mitigate Flooding and Downed Trees Along Rt 22.	1	1	1	1	1	1	0	1	0	1	0	New	8
Scotch Plains Township	16-13	Purchase and Install a Generator at the Golf Course Center for Use as a Shelter and Heating/Cooling Center.	1	0	1	0	1	1	1	1	1	1	0	New	8

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Scotch Plains Township	16-06	Enlarge the Culvert and Improve Drainage to Green Brook and its Tributary under Meadow Street to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.	1	1	0	1	1	1	0	1	0	1	0	Ongoing	7
Scotch Plains Township	16-11	Repair, Remove, or Rehabilitate Shackamaxon Dam.	1	1	0	1	1	0	0	1	1	1	0	New	7
Scotch Plains Township	16-05	Increase Drainage in the Southeast quadrant of the Township near Ash Brook Reservation to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.	1	1	0	1	1	0	0	1	0	1	0	Ongoing	6
Springfield Township	17-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Springfield Township	17-12	Purchase a Light Tower to Help the Department of Public Works (DPW) Provide Essential Services During Emergencies and Nighttime Hours.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-13	Install Generator for the Town Hall to Provide Local Government Services Uninterrupted by a Potential Power Outage.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-14	Retrofit Pump Stations to the Risk of Flooding in a Residential Zone.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-15	Improve and Retrofit Stormwater Inlets to Reduce Pollution and Runoff from Flooding and Storms into Waterbodies.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-20	Reduce Stormwater Flooding in Ruby Park and Irwin Park.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-21	Improve Flood Control in Lenape Park.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-22	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Springfield Township	17-16	Install Permeable Pavement at Veterans Park to Reduce Flooding Impacts.	1	1	1	1	1	1	1	1	0	1	1	New	10
Springfield Township	17-17	Maintain Trees Along Roads and Power Lines to Reduce Debris and Risk of Power Outages During and After Storms and Severe Weather Events.	1	1	1	1	1	1	1	1	1	1	0	New	10
Springfield Township	17-18	Improve Drainage at Ruby Park by Removing Rocks from Drainage Ditch.	1	1	1	0	1	1	1	1	1	1	1	New	10

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Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Springfield Township	17-11	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Along the Township's Borders with Union Township and Cranford Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Springfield Township	17-05	Upgrade and Improve the Stormwater Management System for the Department of Public Works (DPW).	1	1	0	1	1	1	0	1	1	1	0	Carried Forward	8
Springfield Township	17-06	Flood-proof the Hersey Building, Department of Public Works.	1	1	0	1	1	1	0	1	1	1	0	Carried Forward	8
Springfield Township	17-07	Purchase and Install a Backup Generator for Independence Way to Ensure Continuity of Operations at the Springfield Senior Citizens Housing Facility.	1	0	1	0	1	1	1	1	1	1	0	Ongoing	8
Springfield Township	17-09	Purchase and Install a Generator at the Freeman Apartments at 41 Hillside Avenue.	1	0	1	0	1	1	1	1	1	1	0	Ongoing	8
Springfield Township	17-19	Purchase and Install Backup Generators for Essential Services During Hazard Events.	1	0	1	0	1	1	1	1	0	1	1	New	8
Summit City	18-07	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Summit City	18-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Summit City	18-03	Retrofit and Reconstruct the Fire Department Building.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Summit City	18-06	Construct Spillway Improvements at River Road.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Summit City	18-08	Right-size Undersized Culverts and Channels in the Corridor Between the Golf Course and Spillway at River Road, Which Includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Summit City	18-11	Educate the Public about Risks Associated with Tornadoes and Actions to Take in Advance of Tornado Warning.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10

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Summit City	18-12	Conduct a Full Tree Survey/Inventory Assessment Along City ROWs.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Summit City	18-14	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Salt Brook, the Passaic River, Blue Brook, and Rahway River Tributaries Near the City's Borders, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	1	New	10
Summit City	18-10	Identify a Solution to Mitigate City Water Discharge onto Private Property on Hobart Ave. and Edgewood Drive.	1	1	1	1	1	0	1	1	1	1	0	Ongoing	9
Union Township	19-17	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Union Township	19-04	Harden and Retrofit the Department of Public Works.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union Township	19-06	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union Township	19-11	Implement the Flood Control Project on the West Branch of the Rahway River.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union Township	19-13	Join CRS program	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union Township	19-14	Repair Retaining Walls on Various Streams Throughout the Township.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union Township	19-12	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Union Township's Borders with Hillside Township, Kenilworth Borough, and Springfield Township and Along the West Branch of the Elizabeth River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Union Township	19-15	Designate the Community Center/Senior Center as a Standby Public Shelter During Severe Weather Conditions.	1	0	1	1	1	1	1	1	1	1	0	New	9
Union Township	19-16	Create and Connect a Vegetated Buffer Along the Township's Rahway River Tributary and/or Create Stormwater and/or Floodplain Lots.	1	1	0	1	1	1	1	1	1	1	0	New	9

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Westfield Town	20-09	Replace and Install a New Roof for Westfield Municipal Building and Police Department to Provide for Continuity of Operations During a Disaster.	1	1	1	1	1	1	1	1	1	1	1	New	11
Westfield Town	20-10	Replace and Install a New Roof for Westfield Department of Public Works (DPW) to Provide for Continuity of Operations During a Disaster.	1	1	1	1	1	1	1	1	1	1	1	New	11
Westfield Town	20-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Westfield Town	20-13	Implement the Mitigation Actions from the Resiliency Guidelines prepared by the Center for Climate and Energy Solutions (C2ES) to Adapt to Future Extreme Heat and Flooding Hazards.	1	1	1	1	0	1	1	1	1	1	1	New	10
Westfield Town	20-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Westfield Town	20-02	Flood-proof the Police Building, Municipality Building, and Associated Data Storage to Reduce the Impact of Flooding on Public Facilities.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Westfield Town	20-06	Flood-proof the Genesis Elder Care: Senior Housing Building to Reduce the Impact of Flooding on Vulnerable Populations.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Westfield Town	20-11	Use the Town's Green Development Checklist to Identify Opportunities to Integrate Green Infrastructure into Redevelopment Plans, Especially in the Special Flood Hazard Area (SFHA).	1	1	1	1	1	1	1	1	1	1	0	New	10
Westfield Town	20-03	Retrofit the Fire Department Building on North Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Westfield Town	20-04	Retrofit the Fire Department Building on Central Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Westfield Town	20-07	Acquire, Elevate, Relocate or Otherwise Mitigate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) Properties.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Westfield Town	20-08	Purchase and Install an Emergency Generator for Continuity of Operations at Westfield Memorial Pool Building and Complex.	1	0	1	0	1	1	1	1	1	1	1	New	9
Winfield Township	21-14	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted 3/2/20.	1	1	1	1	1	1	1	1	1	1	1	New	11
Winfield Township	21-01	Conduct an All-hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Winfield Township	21-10	Join the National Flood Insurance Program (NFIP) to Strengthen Floodplain Management Practices.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Winfield Township	21-12	Target Harden the Town Hall Building (Police Department) and Fire Department Buildings with Surveillance Cameras	1	1	1	1	1	1	1	1	1	1	0	New	10
Winfield Township	21-07	Upgrade Facilities for Potential Heating and Cooling Centers to Protect Persons from Extreme Temperature Events.	1	0	1	1	1	1	1	1	1	1	0	Carried Forward	9
Winfield Township	21-13	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	1	1	0	1	1	1	1	1	1	1	0	New	9
Winfield Township	21-04	Purchase and Install a Generator for Community Center to Serve as a Potential Shelter.	1	0	1	0	1	1	1	1	1	1	0	Carried Forward	8
Winfield Township	21-05	Investigate Alternative Snow Removal Strategies to Ensure Roadway Safety During Winter Weather Events.	1	0	1	1	1	1	1	1	0	1	0	Carried Forward	8
Winfield Township	21-06	Purchase and Install Generators or Provide Connections for Portable Generators for All Critical Facilities Identified in the Emergency Operations Plan (EOP) to Ensure Continuity of Operations During a Disaster.	1	0	1	0	1	1	1	1	1	1	0	Carried Forward	8
Winfield Township	21-03	Coordinate with Winfield Mutual Housing Corporation to Develop	1	0	1	1	1	0	1	1	0	1	0	Carried Forward	7

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Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
		MOUs for Sheltering Options.													
Winfield Township	21-11	Improve Drainage in Low-Lying Areas along Passaic Dr. to Reduce Stormwater Flooding.	1	1	0	1	1	0	1	1	0	1	0	Ongoing	7
Winfield Township	21-08	Purchase and Install a Generator for Winfield Elementary School to Ensure Continuity of Operations During a Disaster.	1	0	1	0	1	0	1	1	0	1	0	Carried Forward	6
Union County	22-01	Develop All Hazards Public and Municipal Official Education and Outreach Program for Hazard Mitigation and Preparedness.	1	1	1	1	1	1	1	1	1	1	1	Ongoing	11
Union County	22-02	Conduct Evacuation Exercises with and for Local Office of Emergency Management (OEM) Personnel and Private Citizens.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-03	Conduct Yearly Workshops Related to FEMA Hazard Mitigation Grant Programs.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-05	Develop and Maintain Relationships with Organizations that Can Provide Technical Information and/or Assistance in the Areas of Hazard Identification and Risk Assessment.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-06	Undertake Site-Specific Studies to Better Characterize Flood Risks to Areas with Extensive Flood Loss Histories.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-07	Coordinate with State Efforts to Undertake Detailed Vulnerability Assessments and Develop Mitigation Options for Critical Facilities in A and AE Zones. Implement mitigation projects and programs intended to reduce risk to critical facilities.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10
Union County	22-08	Use Best Possible Flood Data, including DFIRM and Map Mod Data, If Available, in Next Plan Update. Track Implementation of Risk MAP Initiative to Ensure Union County and Municipalities Gain Full Advantage of Opportunities Under This Program.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-10	Coordinate with State Effort to Survey Wind Vulnerabilities Using a Prioritized List of State, County, and Local Facilities. Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds.	1	1	1	1	1	1	1	1	1	1	0	Carried Forward	10

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Union County	22-13	Collect Data on Hazardous Material Sites, Integrate with Most Current Information About Risk Factors, and Perform a GIS Analysis and Mapping of Potential Areas of Impact.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-16	Work with Appropriate Agencies to Identify Specific Areas that are Vulnerable to Storm Effects, Then Inventory Assets and Populations in These Areas as the Basis for a Risk Calculation.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-17	Undertake More Detailed Engineering Study of Clark Reservoir Dam, Which May Pose a Risk Downstream.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-18	Obtain Additional Information About Surge Hazards and the Assets, Populations, and Functions in Identified Surge Zones in Areas of Significant Risk.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-19	Identify and Map Erosion Hazard Zones Through Detailed Study.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-20	Participate in Training and Workshops.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-26	Encourage Municipalities to Participate in the CRS Program, Including Potentially Setting Up CRS Site Visits and/or Workshops for Interested Jurisdictions.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-27	Encourage Municipalities to Include Identification and Prioritization of Actions Related to Future Participation in and Compliance With the NFIP.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-28	Encourage the Integration of Floodplain Management and Hazard Mitigation Practices with Zoning, Subdivision Ordinances, Comprehensive Planning, and Other Land Use Tools and the Municipal Level.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-35	Integrate Hazard Mitigation Priorities into Transportation Planning and Other Capital Planning.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-37	Implement a Training for Using GIS Interface on Tablets in the Field.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-38	Inspect All Levees on County Property as Part of Dam Inspections.	1	1	1	1	1	1	1	1	1	1	0	Ongoing	10
Union County	22-46	Create a Stand Alone 9-1-1 Center to Support Police, Fire, and EMS Services Across the County.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union County	22-47	Purchase and Install a New Radio Tower and Communications Infrastructure.	1	1	1	1	1	1	1	1	1	1	0	New	10

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Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Union County	22-50	Consider Access and Mobility for Socially Vulnerable Populations and Disaster Resilience When Designing Transportation Infrastructure.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union County	22-51	Implement Mitigation Actions from the Confidential Site Assessment Report by the New Jersey Office of Homeland Security and Preparedness (NJOHSP) for Union County Buildings.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union County	22-52	Digitize Municipal Zoning Maps to Assist the County with Understanding Potential New Development in Hazardous Areas.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union County	22-53	Geocode Building Permits to Assist the County with Understanding Potential New Development in Hazardous Areas.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union County	22-60	Conduct Hazard Mitigation Training and Education and Purchase Equipment at Union County Fire Training Academy.	1	1	1	1	1	1	1	1	1	1	0	New	10
Union County	22-09	Continuously Update and Verify Status of Repetitive Loss and Severe Repetitive Loss Lists from the NFIP. Continue Working with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-12	Coordinate with State Efforts to Conduct Wildfire Risk Assessments for Areas and Assets that are Determined to Have the Most Hazard (Fuel Load, etc.) Potential, and the Most Vulnerable Structures, Populations, or Operations.	1	1	1	1	1	1	1	1	0	1	0	Carried Forward	9
Union County	22-21	Develop Critical Facilities Inventory Database. Develop a Simple GIS Platform, or Build Upon an Existing Platform, to Maintain and Analyze Critical Facilities Inventories and Information about Hazards.	1	1	1	1	1	1	1	1	0	1	0	Ongoing	9
Union County	22-22	Offer Technical Support to Help Municipalities Meet FEMA HMA Requirements and Provide Current Information on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties to Encourage Making RL and SRL Property Mitigation a High Priority Among Municipalities.	1	1	0	1	1	1	1	1	1	1	0	Ongoing	9

Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Union County	22-31	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-32	Increase Transparency of Plan Maintenance on County Website.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-39	Coordinate with Towns to Ensure Extended Care Facilities have Back-Up Power or Quick Connects.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-40	Improve Options for Power Redundancy within Union County.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-41	Purchase Portable Generators for Use During Power Failure.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-43	Identify Suitable Shelter Venues to Temporarily House Displaced Persons and Store Disaster Aid Materials.	1	0	1	1	1	1	1	1	1	1	0	Ongoing	9
Union County	22-48	Install a Fiber Loop Throughout Each Municipal Complex in Union County to Provide Enhanced Communication Between Government Facilities, Ensure Continuity of Operations During Power Failure and Enhance Security to Prevent Against a Cyber Attack.	1	1	1	1	1	1	1	1	0	1	0	New	9
Union County	22-49	Implement the Findings of the Union County Truck Mobility Study to Ensure All Populations Can Safely Access Evacuation Routes.	1	0	1	1	1	1	1	1	1	1	0	New	9
Union County	22-44	Perform an Engineering Study to Determine the Feasibility and Cost of Siting a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	1	1	0	1	0	1	1	1	0	1	1	New	8
Union County	22-54	Construct Flood Control Improvements and Replace the Culvert at Peach Orchard Brook.	1	1	1	1	1	0	0	1	0	1	1	New	8
Union County	22-55	Construct Flood Control Measures at Laurel Drive.	1	1	1	1	1	0	0	1	0	1	1	New	8
Union County	22-56	Construct Drainage Improvements Near Nomahegan Park and Union County College (Cranford Phase 5).	1	1	1	1	1	0	0	1	0	1	1	New	8
Union County	22-58	Construct Flood Control Improvements Along Branch 10-24 and the West Branch of the Elizabeth River.	1	1	1	1	1	0	0	1	0	1	1	New	8
Union County	22-59	Construct Flood Control Improvements Along Pumpkin Patch Brook, Upstream of Robinsons Branch.	1	1	1	1	1	0	0	1	0	1	1	New	8

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Jurisdiction	Community Action #	Action Description	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Action Status	STAPLEE Evaluation
Union County	22-57	Dredge Clark Reservoir.	1	1	0	1	1	0	0	1	0	1	1	New	7
Union County	22-45	Purchase and Install a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	1	1	0	0	0	0	1	1	0	1	1	New	6

4.0 PLANNING PROCESS

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4.0 PLANNING PROCESS

2021 HMP Update Changes:

- Section 4.0 Planning Process was previously Section 3.0
- Section 3.1 Federal Mitigation Planning Requirements is now located in Section 1.1 Overview and Purpose and Section 5.0 Capability Assessment
- Section 3.2 Description of the Planning Process is now 4.1 and is updated to reflect the new planning process for this HMP update.
- Added Sections 4.2 The Steering Committee and 4.3 Multi-Jurisdictional Planning
- Moved 3.4 Review and Incorporation of Plans, Studies, and Reports to Section 5.0 Capability Assessment

4.1 DESCRIPTION OF THE PLANNING PROCESS

The Union County HMP update includes a robust planning process and participation strategy. The project is led by the Union County Division of Emergency Services. The HMP Project Manager is the Union County Deputy OEM Coordinator, William Kane. Union County Division of Emergency Services selected the consultant Michael Baker International, Inc. (Michael Baker) to help develop the 2021 Union County Plan. The Union County Division of Emergency Services and Michael Baker worked together to update this HMP (Project Team).

The Union County HMP is built on a similar outreach strategy as the 2016 plan, however due to the COVID-19 restrictions and limits on in-person and group interactions during the time of this plan update, all meetings were held virtually. During the Planning Process, the Project Team met with the Steering Committee, each of the 21 municipalities in Union County, several County offices, regional stakeholders, and maintained a public website specific to this HMP update during the entire planning process. This strategy gave Union County the unique opportunity to have a discussion with local officials, regional stakeholders, and the public. The Union County HMP follows FEMA's HMP process by following their four core steps in completing a HMP update.

TABLE 4.1-1 FEMA'S FOUR COUR PLANNING STEPS

FEMA's Four Core Planning Steps	Union County HMP Action
Organize the Planning Process and Resources	Created an online project website for public input, meeting notices, general information on hazard mitigation, and links to additional resources.
Assess Risks and Capabilities	Provided risk estimates based on Hazus-MH, which was based on an updated critical facility data layer and reviewed local capabilities at the municipal meetings.
Develop a Mitigation Strategy	Developed Mitigation Action Worksheets, which document each jurisdiction's analysis of actions considered to reduce the impacts of hazards identified in the risk assessment.
Adopt and Implement the Plan	After receiving formal approval from both NJOEM and FEMA, the County will adopt this plan and each of the 21 municipalities will formally adopt a resolution approving the finalized Union County HMP update.

This HMP update was completed through a combination of research and municipal, stakeholder, and public participation. The Project Team researched existing local plans, reports, projects, and ordinances in addition to acquiring data from the County, New Jersey Geographic Information Network (NJGIN), Centers for Disease Control and Prevention (CDC), New Jersey Department of

Environmental Protection (DEP), and FEMA to update the Union County HMP. The Project Team spent October 2020 through July 2021 coordinating municipal, stakeholder, and public feedback.

Plan participation began with the Steering Committee kick-off meeting in October 2020 and concluded when the final draft plan was submitted to FEMA. The Project Team spent October 2020 conducting local meetings with each municipality in Union County, achieving 100% Planning Participation.

The following highlights describes the steps the County took to include municipal, stakeholder, and public participation throughout the planning process:

- **Steering Committee Planning Process:** The Steering Committee Kick-off meeting in October 2020 included participation from a variety of regional stakeholders ranging from FEMA, NJOEM, several county agencies, and regional utility providers. During the kick-off meeting, the Project Team worked with the Committee to evaluate plan goals, hazards to profile, risk and vulnerability assessment, mitigation strategy, and plan maintenance for this plan update. The Steering Committee had a second meeting in December 2020 to update the Committee on municipal and stakeholder outreach, review common local mitigation actions that emerged from municipal outreach, and review the County's capability assessment and mitigation strategy. As the HMP went through the plan review process the Steering Committee reviewed the plan and provide comments. The County accepted stakeholder comments throughout the entire planning process, only ending the comment period when the plan was sent to FEMA for final review. All comments by the Steering Committee were incorporated into the plan.

- **Union County Government Representatives Planning Process:** The Project Team held five meetings with other Union County departments and agencies to review the County's capability assessment and mitigation strategy. The other departments and agencies include the Union County Public Safety Department, Union County Police Department, Union County Division of Strategic Planning and Intergovernmental Relations, Union County Division of Engineering, and Union County Utility Authority.

- **Regional Stakeholder Planning Process**: The Project Team contacted several regional stakeholders to notify them of this HMP update and provided announcements throughout the planning process on how they can participate in the plan update. Additionally, the County offered to formally meet with each stakeholder to discuss any regional mitigation projects and actions that should be included in the Union County HMP update. See section 4.3.4 for additional information on stakeholder engagement.

- **Municipal Planning Process**: The Project Team hosted four virtual regional municipal kick-off meetings in October 2020 to introduce the HMP planning process, plan materials, and available HMP resources to assist with creating new local mitigation actions. Following the municipal meetings, the Project Team individually coordinated with each of the 21 municipalities, via phone and additionally virtual meetings, to discuss updating their mitigation strategy, capability assessment, list of critical facilities, and list of Repetitive Loss (RL) and Severe Repetitive Loss (SRL). The Project Team also discussed with each municipality where recent and future development is targeted for the next 5+ years and reviewed the updated municipal appendices with the local Point of Contact (POC) to make

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sure this HMP accurately captures what has occurred and is planning on occurring within each municipality.

- **Public Planning Process**: The public project website (**Figure 4.1-1 HMP Website: www.UnionHMP.com**) and was created at the beginning of the process and remains active. The website was created as a tool to communicate with the public and stakeholders on the status of the plan update, information on hazard mitigation planning, funding resources, plan materials, the draft plan, and a platform for the public to comment on the draft plan by contacting the Project Team (**Figure 4.1-3 Union HMP Website Public Comment Section**). On July 8, 2021, the County posted a press release on the County website with a link to the draft link, directing the public to review the draft plan and send their comments to the Project Team (**Figure 4.1-3 Union County Press Release Released July 8, 2021**). The press release was sent to the regional planning agencies, adjoining counties, municipal utility authorities, educational institutions, and major employers. The County accepted public comment for 30 days. All public comments are located in Appendix Volume II - F. Public Comments.

After receiving formal approval from both NJOEM and FEMA, each jurisdiction formally adopts a resolution approving the finalized Union County HMP update, documenting their commitment to strive to implement the actions and projects identified in the mitigation strategy to reduce or eliminate long-term risk from natural hazards and disasters in their community. The Resolutions are located in Appendix Volume II – G. Plan Adoption Resolutions.

FIGURE 4.1-2 HMP PUBLIC PROJECT WEBSITE: WWW.UNIONHMP.COM

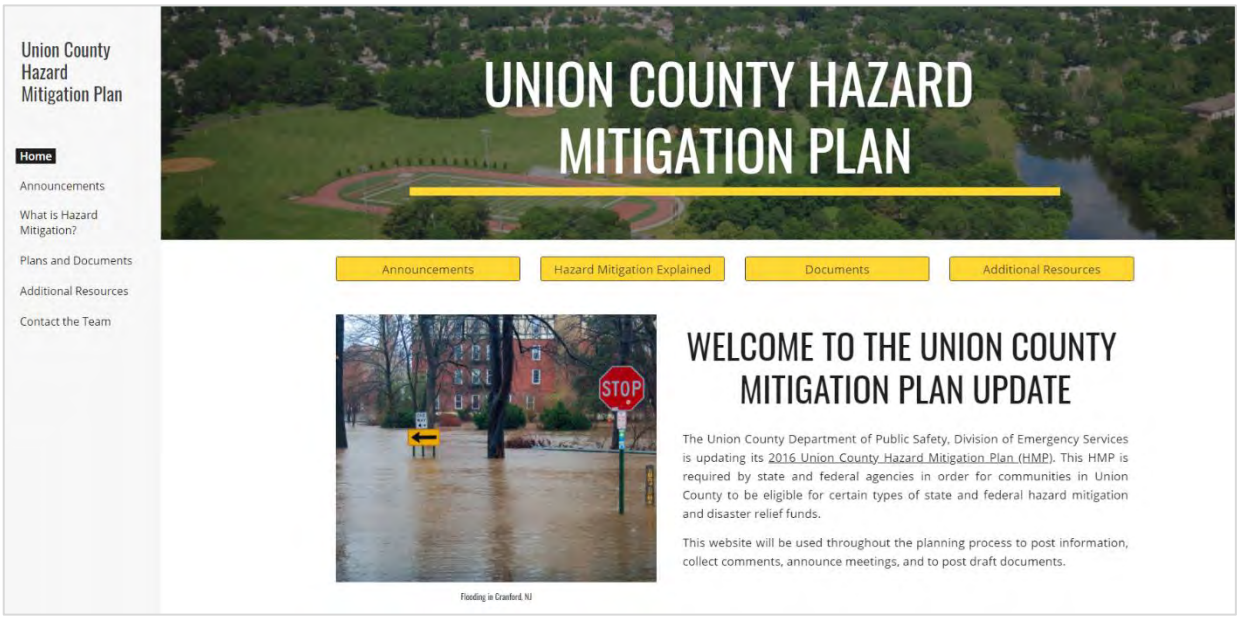
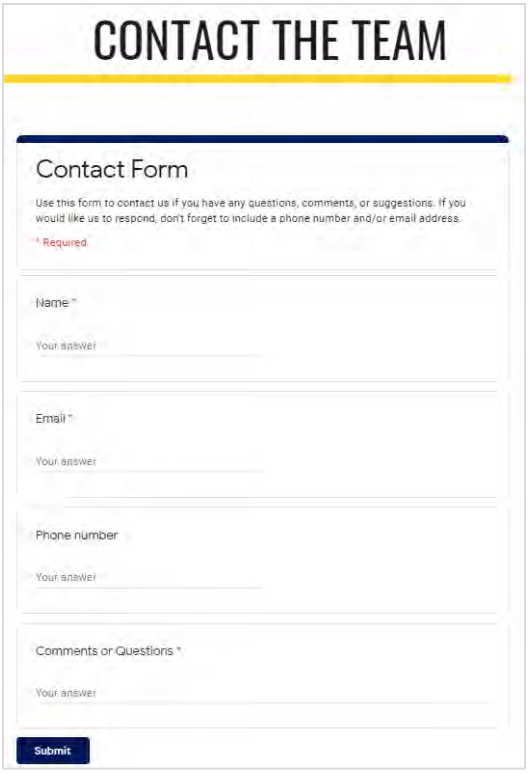


FIGURE 4.1-3 UNION COUNTY HMP WEBSITE PUBLIC COMMENT SECTION



CONTACT THE TEAM

Contact Form

Use this form to contact us if you have any questions, comments, or suggestions. If you would like us to respond, don't forget to include a phone number and/or email address.

* Required

Name *

Your answer

Email *

Your answer

Phone number

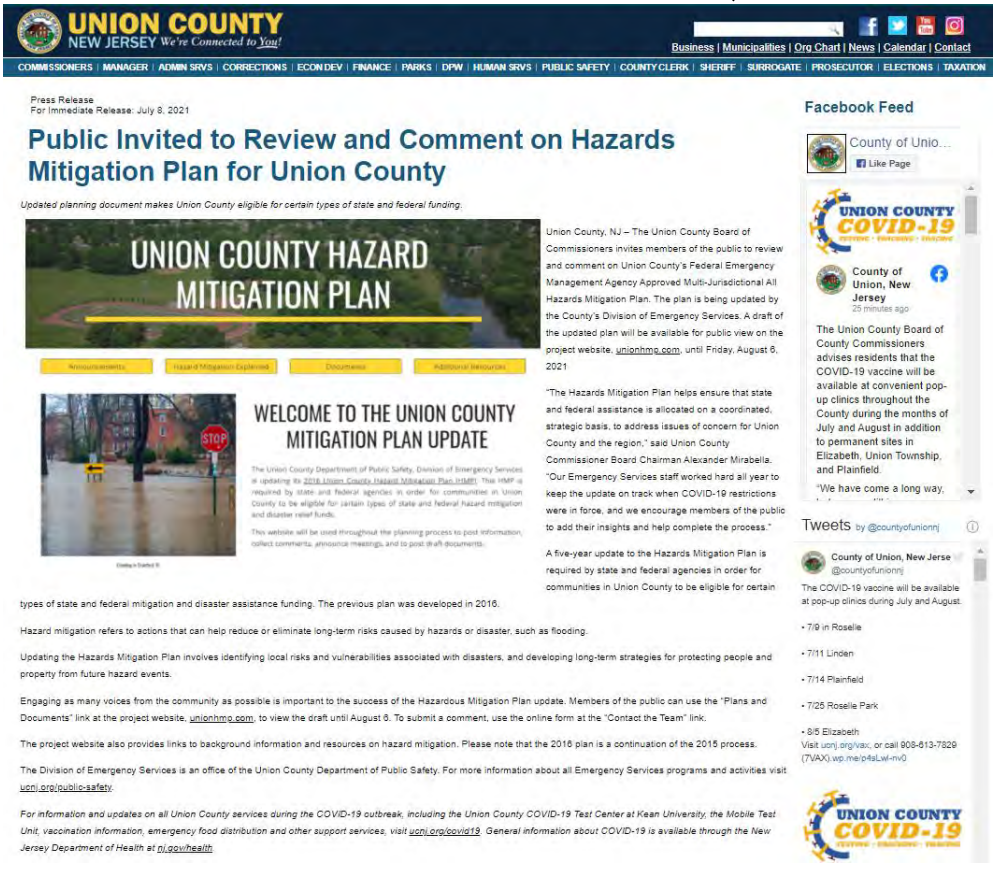
Your answer

Comments or Questions *

Your answer

Submit

FIGURE 4.1-4 UNION COUNTY PRESS RELEASE RELEASED JULY 8, 2021



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Press Release
For Immediate Release: July 8, 2021

Public Invited to Review and Comment on Hazards Mitigation Plan for Union County

Updated planning document makes Union County eligible for certain types of state and federal funding.

UNION COUNTY HAZARD MITIGATION PLAN

WELCOME TO THE UNION COUNTY MITIGATION PLAN UPDATE

Union County, NJ – The Union County Board of Commissioners invites members of the public to review and comment on Union County's Federal Emergency Management Agency Approved Multi-Jurisdictional All Hazards Mitigation Plan. The plan is being updated by the County's Division of Emergency Services. A draft of the updated plan will be available for public view on the project website, unionhmp.com, until Friday, August 6, 2021

"The Hazards Mitigation Plan helps ensure that state and federal assistance is allocated on a coordinated, strategic basis, to address issues of concern for Union County and the region," said Union County Commissioner Board Chairman Alexander Mirabella. "Our Emergency Services staff worked hard all year to keep the update on track when COVID-19 restrictions were in force, and we encourage members of the public to add their insights and help complete the process."

A five-year update to the Hazards Mitigation Plan is required by state and federal agencies in order for communities in Union County to be eligible for certain types of state and federal mitigation and disaster assistance funding. The previous plan was developed in 2016.

Hazard mitigation refers to actions that can help reduce or eliminate long-term risks caused by hazards or disaster, such as flooding.

Updating the Hazards Mitigation Plan involves identifying local risks and vulnerabilities associated with disasters, and developing long-term strategies for protecting people and property from future hazard events.

Engaging as many voices from the community as possible is important to the success of the Hazardous Mitigation Plan update. Members of the public can use the "Plans and Documents" link at the project website, unionhmp.com, to view the draft until August 6. To submit a comment, use the online form at the "Contact the Team" link.

The project website also provides links to background information and resources on hazard mitigation. Please note that the 2016 plan is a continuation of the 2015 process.

The Division of Emergency Services is an office of the Union County Department of Public Safety. For more information about all Emergency Services programs and activities visit ucnj.org/public-safety.

For information and updates on all Union County services during the COVID-19 outbreak, including the Union County COVID-19 Test Center at Kean University, the Mobile Test Unit, vaccination information, emergency food distribution and other support services, visit ucnj.org/covid19. General information about COVID-19 is available through the New Jersey Department of Health at nj.gov/health

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UNION COUNTY COVID-19

County of Union, New Jersey
25 minutes ago

The Union County Board of County Commissioners advises residents that the COVID-19 vaccine will be available at convenient pop-up clinics throughout the County during the months of July and August in addition to permanent sites in Elizabeth, Union Township, and Plainfield.

"We have come a long way,

Tweets by @countyofunionnj

County of Union, New Jerse
@countyofunionnj

The COVID-19 vaccine will be available at pop-up clinics during July and August.

- 7/9 in Roselle
- 7/11 Linden
- 7/14 Plainfield
- 7/25 Roselle Park
- 8/5 Elizabeth

Visit ucnj.org/vax, or call 908-613-7829 (7VAX).wp.me/p4sLwl-nv0

UNION COUNTY COVID-19

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4.2 THE STEERING COMMITEE

Union County formed a Steering Committee prior to the start of the planning process to guide the development of this HMP update. The Steering Committee was active in releasing a Request for Proposal for the HMP update and reviewing, interviewing, and selecting a contractor for the project. Once the Steering Committee selected Michael Baker, Project Manager Michael Yaffe with Michael Baker and Deputy Project Manager Brittany Ashman with Michael Baker, joined the Steering Committee.

The Steering Committee first met on October 21, 2020 and developed a well-diversified list of potential HMP stakeholders, which included local officials, Union County government representatives, State, and Federal partners, adjacent county representative, universities, and other stakeholder organizations. At this meeting, the Steering Committee reviewed the previous HMP goals and revised them for this plan update, which is described in Section 2.0 HMP Review, Evaluation, and Implementation. The Steering Committee also captured changes in the County since 2016 through a hazard identification worksheet, which is new to the hazard mitigation planning process. The hazard mitigation identification worksheets assisted the County in reorganizing and restructuring the profiled hazards in the risk assessment. The hazard identification worksheet is described in more detail in Section 7.0 Risk Assessment.

Steering Committee Members

- Michael Yaffe, Michael Baker
- Brittany Ashman, Michael Baker
- Jack Heide, FEMA Region II
- Howard Wolf, NJOEM
- Chris Testa, NJOEM
- Phil Kandl, Union County Economic Development and Planning
- Christopher Scaturo, Union County Emergency Services
- William Kane, Union County Emergency Services
- Elizabeth Stamler, Union County Emergency Services
- Tom Mineo, Union County Engineer
- Fred Fretz, Union County Fire Mutual Aid Coordinator
- Annie McNair, Union County Health
- Jessica Cohen, Union County Manager's Office
- Chris Debbie, Union County Police Chief
- Andrew Moran, Union County Public Safety Director
- Joe Graziano, Union County Public Works Director
- Dan Sullivan, Union County Utilities Authority
- Carol Bianchi, JCP&L
- Joseph Prusik, PSE&G
- Michael Redding, Elizabethtown Gas Company

4.3 MEETINGS AND DOCUMENTATION

Meetings were held to gather input into the Union County HMP, guide the planning process, and leverage Federal and State resources. Meetings were planned to maximize the time of participants. Invitations, agendas, presentations, sign-in sheets, and minutes for these meetings are included in Appendices Vol. II – C Meeting Materials.

4.3.1 COUNTY MEETINGS

The following list provides a summary of the Union County Government Representatives Planning Process:

- October 26, 2020: Union County Coordination Meeting #1 – Division of Engineering
- December 16, 2020: Union County Coordination Meeting #2 – Division of Engineering
- December 16, 2020: Union County Coordination Meeting #3 - Division of Strategic Planning and Intergovernmental Relations, Bureau of Transportation Planning
- December 22, 2020: Union County Coordination Meeting #4 - Union County Utility Authority
- December 22, 2020: Union County Coordination Meeting #5- Union County Public Safety Department and Union County Police Department
- January 5, 2021: Union County Coordination Meeting #6: Division of Engineering, Bureau of Geographic Information Systems and Division of Engineering, Department of Public Works

Table 4.3-1 County Participation lists who attended each of the County meetings with the Project Team.

TABLE 4.3-1 COUNTY PARTICIPATION

County Department	Name	Title	Meeting Attended
Division of Emergency Services	William Kane	Deputy Director	All
	Elizabeth Stamler	Procurement Specialist	All
Division of Engineering	Thomas Mineo	Director	October 26, 2020, December 16, 2020
Strategic Planning and Intergovernmental Relations Division	Phil Kandl	Division Director	December 16, 2020
Bureau of Transportation Planning	Liza Betz	Bureau Chief	December 16, 2020
Union County Utility Authority	Linda Stender	Director of Planning and Projects	December 22, 2020
	Jack Bernardino	Asset Manager	December 22, 2020
Department of Public Safety	Gareth Williams	County 911 Coordinator	December 22, 2020
Police Department	Chief Debbie	Chief of Police	December 22, 2020
Division of Engineering, Department of Public Works	Daniel Lozano	GIS Specialist	January 5, 2021
Division of Engineering, Bureau of Geographic Information Systems	Matthew Mathan	Bureau Chief	January 5, 2021

4.3.2 MUNICIPAL MEETINGS

All municipalities are required to participate in the planning process in order to have their own plan to be eligible for FEMA funding after a disaster. Local municipalities also have the legal authority to enforce compliance with land use planning and development issues. The following list provides a summary of municipal planning participation:

- October 14, 2020: Regional Municipal Meeting #1
- October 15, 2020: Regional Municipal Meeting #2
- October 22, 2020: Regional Municipal Meeting #3

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- October 23, 2020: Regional Municipal Meeting #4
- October 23, 2020 – June 2021: Individual Coordination

Regional Municipal Meetings

To kick-off the planning process at the local level, the Project Team hosted four virtual meetings in October 2020, achieving participation from 100% of the 21 municipalities. The Project Team sent each municipal POC an invitation to attend one of the four meetings, with the option to invite as many other local officials as they desired. Some municipalities attended more than one of the regional meetings. POCs and local attendees included OEM coordinators, CRS coordinators, engineers, planners, department of public works, fire and police chiefs, administrators, and city managers.

The following topics were covered in the meetings:

- Introduction to hazard mitigation for local officials that were not involved in the previous plan update
- New Standard Operating Procedure updates from the 2019 State of New Jersey Hazard Mitigation Plan (State HMP), such as the new local jurisdictional Plan Endorsement Form requirement
- The 2021 HMP Goals and Hazards profiled (human-based hazards are now profiled in this plan update)
- The six-step planning process to update an HMP
- Integration of CRS and HMP
- Federal funding resources to fund mitigation actions, including the new Building Resilient Communities and Infrastructure (BRIC) program.

The POCs and local attendees that attended the regional municipal meetings are listed in **Table 4.3-2 Local POCS and Local Attendees of Regional Meetings, by Jurisdiction.**

TABLE 4.3-2 LOCAL POCS AND LOCAL ATTENDEES OF REGIONAL MEETINGS, BY JURISDICTION

Jurisdiction	Name	Title	Meeting Attended
Berkeley Heights Township	Anthony Padovano	OEM Coordinator	10/15/2020
Clark Township	Mike Nenortas	Deputy OEM Coordinator	10/15/2020
Cranford Township	Matthew Lubin	Fire Official / Administrative Officer	10/15/2020
	Guy Patterson	OEM Coordinator	10/15/2020
Elizabeth City	Daniel J. Loomis	City Engineer	10/14/2020
	John Papetti	Director, Public Works	10/14/2020
Fanwood Borough	Fred Tomkins	Acting Borough Administrator	10/15/2020
	John Piccola	Chief, Fire Department	10/15/2020
Garwood Borough	Ken Capobianco	OEM Coordinator	10/22/2020
Hillside Township	Douglas Ferrigno	Hillside FD	10/15/2020
Kenilworth Borough	Michael Scuderi	Deputy Chief/OEM Coordinator	10/15/2020
Linden City	Joseph Chrobak	Supervising Engineer	10/15/2020

Jurisdiction	Name	Title	Meeting Attended
	Kathy Colgan	Public Information Officer	10/15/2020
Mountainside Borough	Matthew DeAnna	Director Public Works/Deputy Director Emergency Management	10/23/2020
	Keith Turner	OEM Coordinator	10/23/2020
New Providence Borough	Bernadette Cuccaro	Assistant Administrator	10/15/2020
	Ralph Parlapiano	Manager, Public Works	10/15/2020
	Theresa Gazaway	Chief of Police	10/15/2020
	Susan Deluise	Deputy OEM Coordinator	10/15/2020
Plainfield City	Malcolm Alston	Interim Lieutenant, Fire Department	10/23/2020
	Oren Dabney	Public Works	10/23/2020
	Kenneth Childress	Fire Director	10/23/2020
	William Nierstedt	Planner	10/22/2020
Rahway City	Joe DiLorenzo	CRS Coordinator	10/14/2020
	Tim Dunn	OEM Coordinator	10/14/2020
	Georgia Marino	CRS Coordinator	10/15/2020
Roselle Borough	Cesar Perez	OEM Coordinator	10/15/2020
Roselle Park Borough	Detective Sgt. Rich Cocca	Detective Sgt., PD	10/14/2020
Scotch Plains Township	Dennis VanNatta	OEM Coordinator	10/15/2020
	Al Mirabella	Township Manager	10/15/2020
Springfield Township	Michael Disko	Director, Engineering	10/14/2020
	Jennifer Sherman	Assistant OEM Coordinator	10/14/2020
Summit City	Aaron Schrager	City Engineer	10/23/2020
	Donald Nelson	OEM Coordinator	10/23/2020
Union Township	Frederic Fretz	OEM Coordinator	10/14/2020
Westfield Town	Christopher Battiloro	Chief of Police	10/15/2020
	Kris McAloon	Engineer	10/14/2020
Winfield Township	Frank Mazzarella	PD/OEM	10/14/2020

Individual Coordination

Following the regional municipal meetings, the Project Team coordinated with the municipal POC on updating their critical facilities, status of Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties, municipal narrative (including recent hazards to impact their community and recent and future development trends), capability assessment, and mitigation strategy. The Project Team highly recommended the municipal POC meet with other local officials that handle hazard mitigation and resiliency to update their plan materials, including their city planner/planning board, engineer, floodplain administrator, code enforcer, administration, elected officials, Fiscal CFO, zoning officers, fire and police departments, GIS specialists, and public works. Sign-in sheets were completed for the meetings held at the local level. The Project Team offered to attend any local meeting in addition to the ongoing coordination between the Project Team and POC.

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The comprehensive list of local officials that assisted the local POC update their municipal documents is listed in **Table 4.3-3 List of Local Official Participation, by Jurisdiction**. This list is not exhaustive in that it does not include members from the public that may have commented during public portions of meetings.

TABLE 4.3-3 LIST OF LOCAL OFFICIAL PARTICIPATION, BY JURISDICTION

Jurisdiction	Name	Title
Berkeley Heights Township	Anthony Padovano	OEM Coordinator
Clark Township	Mike Nenortas	Deputy OEM Coordinator
	Jerry Fewkes	OEM Coordinator
Cranford Township	Matthew Lubin	OEM Coordinator/Fire Official / Administrative Officer
	Ryan Greco	Police Chief/ Deputy OEM Coordinator
	Guy Patterson	Police Captain/Deputy OEM Coordinator
	Jason Bottcher	Zoning Officer/Planner
	Richard Belluscio	Construction Code Official
	Daniel Czeh	Fire Chief
	Jamie Cryan	Township Administrator
	Erik Hastrup	Public Works Superintendent
	Jaqueline Dirmann	Principal Engineer/ Floodplain Manager
Elizabeth City	Daniel J. Loomis	City Engineer
	Robert Lin	Consultant, Mott MacDonald
	John F. Papetti Jr.	Director, Public Works
	Albeiro Hincapie Jr.	Superintendent of Public Buildings, Public Works
	Eduardo Rodriguez	Director, Planning & Community Development
	Raywant Sarran	Construction Official/Floodplain Administrator
	Bridget Anderson	Business Administrator
	Steven P. Rinaldi	City Land Surveyor/Supervising Engineer
	Mark Colicchio	Health Officer
	Krishna Garlic	Director, Department of Health
	John Brennan	Chief of Police, Emergency Operations Coordinator
	Patrick Byrnes	Fire Director
	Daniel Campbell	Deputy Chief, Fire
Fanwood Borough	Frederick Tomkins	Acting Borough Administrator
	John Piccola	Chief, Fire Department, OEM Coordinator
	Mark Gottlick	Deputy Coordinator/Police
	Clint Dicksen	Deputy Coordinator/DPW
	Kristopher Piccola	Fire Department
	Diane Howarth	OEM Secretary
	Antonios Panagopoulos	Engineer

Jurisdiction	Name	Title
Garwood Borough	Ken Capobianco	OEM Coordinator
	Victor Vinegra	Borough Engineer
	Sara Todisco	Mayor
	Jim Wright	Police Chief
	John Scalzadonna	Fire Chief
	Jen Blumenstock	Council President
Hillside Township	Douglas Ferrigno	Hillside FD
Kenilworth Bourgh	Michael Scuderi	Deputy Chief/OEM Coordinator
	Tony Galiaro	Bourgh Engineer (Harbor Consultants)
	John Zimmerman	Police Chief
Linden City	Joseph Chrobak	Supervising Engineer
	Kathy Colgan	Public Information Officer
	Nicholas J. Pantina	Director of Community Services
	Tom Gassler	Zoning
	William Hasko	Fire Chief
	Nancy Koblis	Health Officer
	David Hart	Police Chief/OEM Coordinator
	John Venditto	Assistant Superintendent, Linden City DPW
Mountainside Borough	Matthew DeAnna	Director Public Works/Deputy Director Emergency Management
	Keith Turner	OEM Coordinator, Council President
	Eric Pastore	Chief EMS
	Anthony Pecorelli	Chief, Fire Department
	Glenn Mortimer	Borough Administrator
	Joe Giannuzzi	Chief of Police
	Michael Disko	Engineer, Zoning Enforcement Official
	Paul Mirabelli	Mayor
New Providence Borough	Bernadette Cuccaro	Assistant Administrator
	Ralph Parlapiano	Manager, Public Works
	Theresa Gazaway	Chief of Police
	Susan Deluise	Deputy OEM Coordinator
	Kevin Boyer	Engineer, Maser Consulting
	Andrew Hipolit	Engineer, Maser Consulting
	Douglas Marvin	Borough Administrator
	Keith Lynch	Building Department
Plainfield City	Oren Dabney	Director of Public Works
	Valerie Jackson	Director of Economic Development
	Malcolm Alston	Deputy Coordinator

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Jurisdiction	Name	Title
	Kenneth Childress	Fire Director
	William Nierstedt	Planner
Rahway City	Joe DiLorenzo	CRS Coordinator, Najarian Associates
	Timothy Dunn	Deputy OEM Coordinator
	Karin Napier	Secretary, Rahway Redevelopment Agency
	Jacqueline Foushee	City Engineer
	Georgia Marino	CRS Coordinator
Roselle Borough	Cesar Perez	OEM Coordinator
Roselle Park Borough	Detective Sgt. Rich Cocca	Detective Sgt., PD/Deputy OEM Coordinator
	Daniel McCaffery	Police Chief/OEM Coordinator
	Andrew Casais	Borough Administrator
	Ken Blum	Chief Financial Officer
	Tom Solfaro	Borough Engineer, Neglia Engineer
	Mark Pasquali	Roselle Park DPW Super
Scotch Plains Township	Dennis VanNatta	OEM Coordinator
	Al Mirabella	Township Manager
	Joseph Rifo	Captain, Police
	John Lestarchich	Chief, Fire Department
	Tom Strowe	Redevelopment Coordinator
	Ted Conley	Chief, Police
	Jeff Briel	Captain, Police
	Frank Dinizo	Director, DPW
	Robert LaCosta	Floodplain Manager, Construction Official
Springfield Township	Michael Disko	Director, Engineering
	Scott Seidel	OEM Coordinator
	Jennifer Sherman	Tax Assessor Assistant
Summit City	Aaron Schrager	City Engineer, Deputy DCS Director
	Donald Nelson	OEM Coordinator, Deputy Fire Chief
Union Township	Frederic Fretz	Former Union Fire Department Chief & OEM Coordinator
	Gregory Ricciardi	Union Fire Department Deputy Chief
	Philip Haderer, P.E.	Assistant Township Engineer
Westfield Town	Christopher Battiloro	Chief of Police, OEM Coordinator
	James Gilder	Town Administrator
	Kris McAloon	Town Engineer
Winfield Township	Frank Mazzarella	PD/OEM
	Gary Genz	Dep. OEM Coordinator/Mayor
	Debra Daly	Fire Chief

Jurisdiction	Name	Title
	Lenoard Ho	CFO
	June Planas	Clerk
	George Vircik	Township Engineer
	Trish Donahue	Housing Manager, Winfield Mutual Housing Corporation

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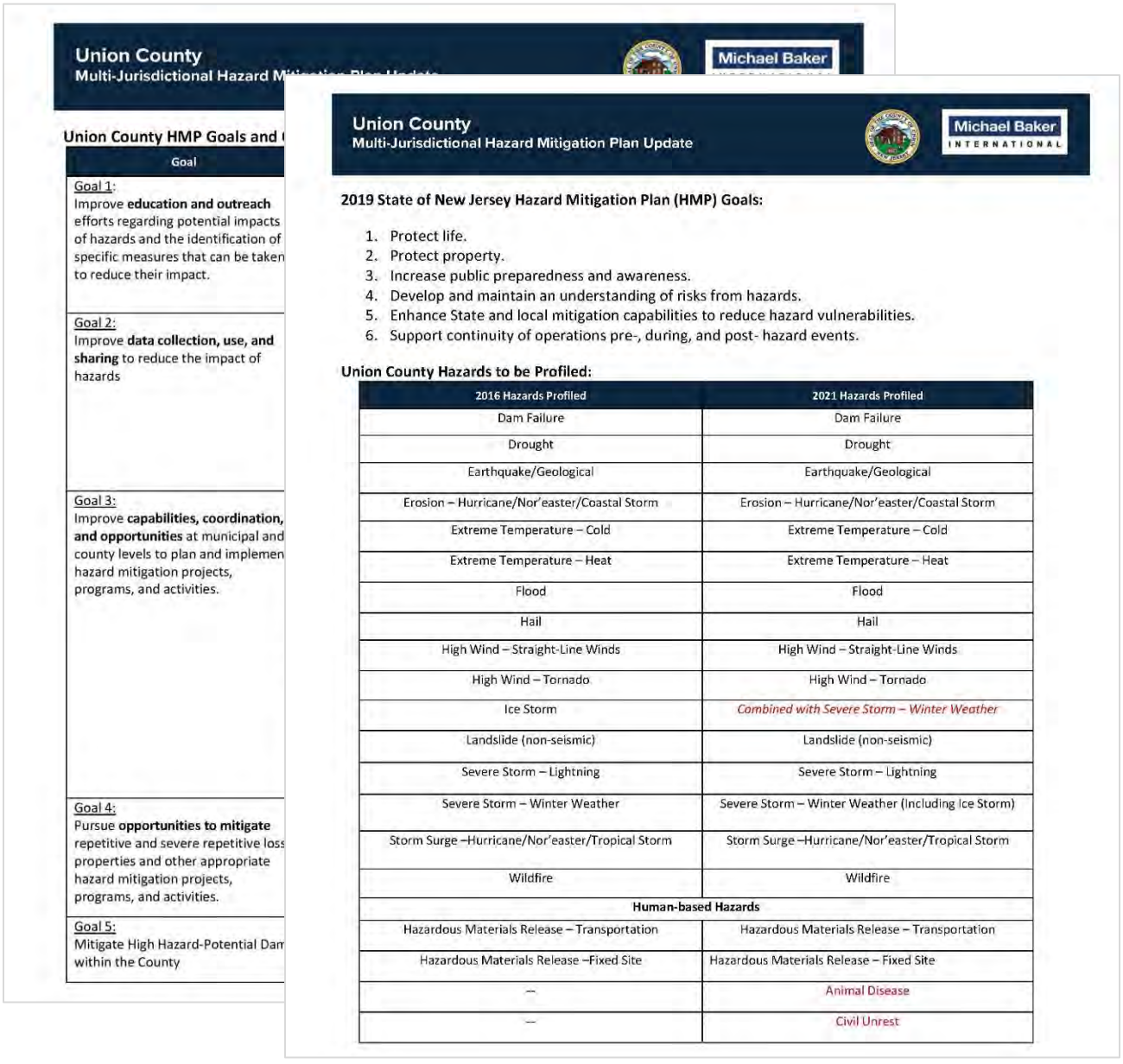
4.3.3 MUNICIPAL MEETING DOCUMENTATION

Union HMP Goals and Hazards: Helps communities understand the HMP goals for both the Union County HMP update and the State HMP update and the hazards profiled in this plan update compared to the 2016 update.

FIGURE 4.3-1 UNION COUNTY GOALS AND HAZARDS



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2019 State of New Jersey Hazard Mitigation Plan (HMP) Goals:

1. Protect life.
2. Protect property.
3. Increase public preparedness and awareness.
4. Develop and maintain an understanding of risks from hazards.
5. Enhance State and local mitigation capabilities to reduce hazard vulnerabilities.
6. Support continuity of operations pre-, during, and post- hazard events.

Union County Hazards to be Profiled:

2016 Hazards Profiled	2021 Hazards Profiled
Dam Failure	Dam Failure
Drought	Drought
Earthquake/Geological	Earthquake/Geological
Erosion – Hurricane/Nor'easter/Coastal Storm	Erosion – Hurricane/Nor'easter/Coastal Storm
Extreme Temperature – Cold	Extreme Temperature – Cold
Extreme Temperature – Heat	Extreme Temperature – Heat
Flood	Flood
Hail	Hail
High Wind – Straight-Line Winds	High Wind – Straight-Line Winds
High Wind – Tornado	High Wind – Tornado
Ice Storm	*Combined with Severe Storm – Winter Weather*
Landslide (non-seismic)	Landslide (non-seismic)
Severe Storm – Lightning	Severe Storm – Lightning
Severe Storm – Winter Weather	Severe Storm – Winter Weather (Including Ice Storm)
Storm Surge –Hurricane/Nor'easter/Tropical Storm	Storm Surge –Hurricane/Nor'easter/Tropical Storm
Wildfire	Wildfire
Human-based Hazards	
Hazardous Materials Release – Transportation	Hazardous Materials Release – Transportation
Hazardous Materials Release –Fixed Site	Hazardous Materials Release – Fixed Site
–	Animal Disease
–	Civil Unrest

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Capability Assessment: Collects information on local planning, regulatory, administrative, technical, fiscal, political, and resiliency capabilities that can be included in the countywide mitigation strategy. The capability assessment for each municipality is available in the Appendices I – Jurisdictional Information.

Mitigation Action Worksheets: Collects information on completed, ongoing, and new mitigation actions completed or that want to be completed by each municipality in order to reduce risk in their community. Each action has its own worksheet with an action name, category, type, description, HMP goal it addresses, risk reduction, cost estimate, priority, timeline, potential funding source, action status, and more. These Mitigation Action Worksheets were discussed in Section 3.0 Mitigation Strategy. The mitigation action worksheet for each municipality is available in the Appendices I – Jurisdictional Information.

Critical Facilities: Collects information on emergency services, municipal buildings, utilities, communications, schools, religious institutions, historic properties, and cultural assets, in addition to if the facility is located in a SFHA. The Project Team asked each town to revise and update the critical facility list based on their definition of a critical facility. Due to the sensitivity of the information of a critical facility this list is not available to the public.

Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties: Collects information on properties that are considered a RL or SRL based on the number of claims and total amount paid by FEMA. As part of this plan update, every municipality that currently has non-mitigated RL or SRL properties in their jurisdiction must have a mitigation action on how they plan to mitigate those properties, as required by the State HMP update.

During the individual municipal follow up, the Project Team scanned the sign-in sheet, wrote meeting minutes, and updated the previous plan documents including the capability assessment, mitigation actions, critical facility list, and RL/SRL lists based on each municipal discussion. The Project Team returned the updated documents to each town's point of contact to review and revise and send back to the team where the updated documents were placed in the appendix of this plan.

Municipal Maps Depicting Flood Vulnerability

Visually displays flood hazard risk and vulnerability on a series of maps at the municipal level:

1. Base map depicting local land use
2. FEMA's Special Flood Hazard Areas (SFHA)
3. Critical facilities overlaying FEMA's SFHA
4. Repetitive Loss (RL) properties and Severe Repetitive Loss (SRL) properties overlaying FEMA's SFHA

The municipal maps for each municipality are available in the Appendices I – Jurisdictional Information. Due to the sensitivity of the information on both the critical facility and RL/SRL maps, those maps are not available in this version of the plan.

FIGURE 4.3-2 EXAMPLE OF FLOOD VULNERABILITY MAPPING

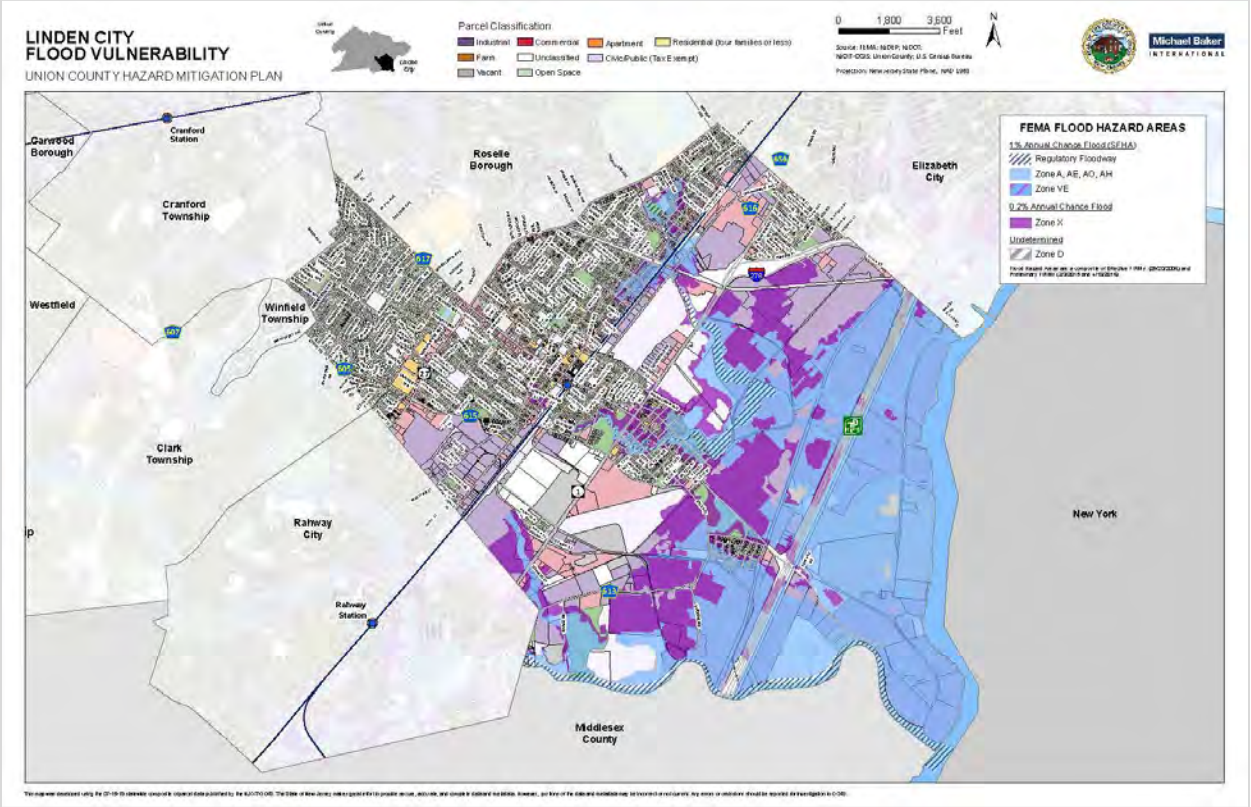

Table 4.4-1 Local Meeting Participation and Documentation, by Jurisdiction lists jurisdictional participation in the HMP planning process, including attendance at regional meetings, individual municipal follow-up coordination, and coordination on updating the 2021 HMP municipal documents. All 21 municipalities in Union County participated in this HMP update, thus achieving 100 percent participation.

TABLE 4.3-4 LOCAL MEETING PARTICIPATION AND DOCUMENTATION, BY JURISDICTION

Jurisdiction	Meetings		Updated Meeting Documents			
	Regional Municipal Meetings	Individual Follow-up	Capability Assessment	Mitigation Strategy	Critical Facility List	RL/SRL Property Information
Berkeley Heights Township	✓	✓	✓	✓	✓	✓
Clark Township	✓	✓	✓	✓	✓	✓
Cranford Township	✓	✓	✓	✓	✓	✓
Elizabeth City	✓	✓	✓	✓	✓	✓
Fanwood Borough	✓	✓	✓	✓	✓	✓

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Jurisdiction	Meetings		Updated Meeting Documents			
	Regional Municipal Meetings	Individual Follow-up	Capability Assessment	Mitigation Strategy	Critical Facility List	RL/SRL Property Information
Garwood Borough	✓	✓	✓	✓	✓	✓
Hillside Township	✓	✓	✓	✓	✓	✓
Kenilworth Borough	✓	✓	✓	✓	✓	✓
Linden City	✓	✓	✓	✓	✓	✓
Mountainside Borough	✓	✓	✓	✓	✓	✓
New Providence Borough	✓	✓	✓	✓	✓	✓
Plainfield City	✓	✓	✓	✓	✓	✓
Rahway City	✓	✓	✓	✓	✓	✓
Roselle Borough	✓	✓	✓	✓	✓	✓
Roselle Park Borough	✓	✓	✓	✓	✓	✓
Scotch Plains Township	✓	✓	✓	✓	✓	✓
Springfield Township	✓	✓	✓	✓	✓	✓
Summit City	✓	✓	✓	✓	✓	✓
Union Township	✓	✓	✓	✓	✓	✓
Westfield Town	✓	✓	✓	✓	✓	✓
Winfield Township	✓	✓	✓	✓	✓	✓

4.3.4 STAKEHOLDER MEETINGS

Through stakeholder identification and outreach with the Steering Committee, the Project Team engaged neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development in the planning process. The Project Team contacted several regional stakeholders (listed below) to notify them of this HMP update and provided announcements throughout the planning process on how they can participate in the plan update. Additionally, the County offered to formally meet with each stakeholder to discuss any regional mitigation projects and actions that should be included in the Union County HMP update. Stakeholders were provided links to the 2016 Union County HMP as well as the 2021 Union County HMP project website. Additional information on hazard mitigation planning and the planning process were included in a formal letter attached to each email. Correspondence with regional stakeholders is located in Appendices Vol. II – Other Plan Materials.

The Project Team engaged with the following regional stakeholders:

Neighboring Counties

- Essex County
- Hudson County
- Middlesex County
- Morris County
- Somerset County
- New York City: Richmond County

Major Employers

- Merck
- Overlook Medical Center
- Phillips 66 Refinery
- Robert Wood Johnson University Hospital Rahway
- Wakefern Food Corporation (Shoprite)
- Trinitas Regional Medical Center

Regional Planning Organizations

- New Jersey Turnpike Authority
- Port Authority of New York and New Jersey
- U.S. Army Corps of Engineers

The Project Team individually met with the stakeholders listed in **Table 4.3-4 Stakeholder Meetings** in an effort to understand their capabilities and strategies related to hazard mitigation. The Project Team lead discussions around local projects and mitigation actions that the County and its local municipalities are interested in pursuing and how they may harmonize with their regional stakeholders. The Project Team added mitigation projects and actions discussed in these meetings to the County's mitigation strategy.

TABLE 4.3-5 STAKEHOLDER MEETINGS

Organization or Agency	Contact	Title	Meeting Attended
Somerset County	Douglas Vornlocker	Director, Office of Emergency Management	January 5, 2021
	Thomas J. Scialo	Emergency Support Specialist	January 5, 2021
	Kayla Pipas-Keller	Emergency Support Specialist	January 5, 2021
Wakefern Food Corporation (Shoprite)	Steve Hoptay	Vice President - Asset Protection	January 22, 2021
	Nancy Pike	Executive Admin. to Steve Hoptay	January 22, 2021
	Derrick Price	Director - Asset Protection	January 22, 2021
	Russ Lefkus	Senior Supervisor - Asset Protection	January 22, 2021
Port Authority of NY and NJ	Josh DeFlorio	Chief, Resilience & Sustainability	February 2, 2021
	Tiffany Chapman	Mitigation Manager	February 2, 2021

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4.4 INVOLVEMENT BY THE PUBLIC AND OTHER INTERESTED PARTIES

The public project website was created at the beginning of the planning process and remain active. The website serves as a helpful tool in encouraging public and stakeholder participation. The project website was created as a tool to communicate with the public and stakeholders on the status of the plan update, information on hazard mitigation planning, funding resources, plan materials and the draft plan, and a platform for the public to contact the Project Team on their comments/questions on the draft plan.

On [insert date] Union County posted the draft Union County HMP on the Division of Emergency Services' website with a link to the draft HMP. On [insert date] the County posted a press release on the County website with a link to the draft link, directing the public to review the draft plan and send their comments to the Project Team (see **Figure 3.1-4 Union County Press Release**). The press release was sent to the regional planning agencies, adjoining counties, municipal utility authorities, educational institutions, and major employers. The County accepted public comment for 30 days. All public comments are located in Appendix Volume II - F. Public Comments.

FIGURE 4.4-1 HMP PUBLIC PROJECT WEBSITE: WWW.UNIONHMP.COM

5.0 CAPABILITY ASSESSMENT

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5.0 CAPABILITY ASSESSMENT

2021 HMP Update Changes:

- This section was previously section 5.3 of the previous plan
- Added the following sections: 5.1 Overview, 5.2.1 Federal Planning and Regulations, 5.2.2 State Planning and Regulations, 5.2.5 Other Planning Efforts, 5.2.6 Watershed Management Plans, 5.3.1 State Administrative and Technical Capabilities, 5.4 Fiscal Capability, 5.5 Education and Outreach, 5.6 Plan Integration
- Moved the first two paragraphs of 5.3.2 Capability Assessment for Union County to 5.2.3 County Planning and Regulations; additional content added
- Moved 5.3.3 Capability Assessment for Municipalities within Union County and Building Codes to 5.2.4 Municipal Planning and Regulations; additional content added
- Moved 5.4 Floodplain Management (minus Building Codes), 5.4.1 Continued Compliance with the NFIP, and 5.4.3 Community Rating System to 5.2.8 Participation in the NFIP and CRS Program
- Moved Technical, Administrative, and Regulatory Capacity to 5.3.2 County and Local Administrative and Technical Capabilities
- Moved 5.3 Overview to 5.1 Overview
- Moved Fiscal Capacity to 5.4 Fiscal Capability
- Introductory Paragraph added to the major sections
- Added a Summary of Findings table for each of the following sections: 5.2.7 Summary of Findings, 5.3.3 Summary of Findings, 5.4.2 Summary of Findings, 5.5.1 Summary of Findings

5.1 OVERVIEW

A Capability Assessment evaluates local regulatory, administrative, technical, and fiscal capabilities to accomplish hazard mitigation actions through existing mechanisms. This assessment helps Union County and its municipalities identify strengths that could be used to reduce losses and risks in the community. The capability assessment also provides an inventory of the most critical local planning tools available within each municipality and a summary of the fiscal and technical capabilities available through programs and organizations outside of the County. It also identifies emergency management capabilities and the processes used to comply with the National Flood Insurance Program (NFIP).

5.1.1 METHODOLOGY

To fully understand each jurisdiction's existing authorities, policies, programs, and resources, the Project Team distributed a Capability Assessment Worksheet (**Figure 5.1-1 Capability Assessment Worksheet)** to Union County and its 21 municipalities after the regional municipal meetings. During the individual follow up with each municipality, the Project Team and local officials discussed new capabilities since the acceptance of the previous Union County HMP and updated the worksheet based on feedback. Where there were gaps in local knowledge or where extra information was available through research, this information was added to complement local feedback. The Worksheet divides capabilities into four categories: Planning and Regulatory; Education and Outreach; Administrative and Technical; and Financial. Each municipal capability assessment, and the County's capability assessment is located in the Appendices Vol. I – Jurisdictional Information.

FIGURE 5.1-1 CAPABILITY ASSESSMENT WORKSHEET (PAGE 1 0F 7)

Union County
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Local Capability Assessment Worksheet

Jurisdiction: _____

Name: _____ Title: _____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development		
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency		
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period		
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP		
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts		

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5.2 PLANNING AND REGULATORY CAPABILITY

According to the *FEMA Local Mitigation Handbook*, planning and regulatory capabilities are based on the implementation of ordinances, policies, local laws and state statutes, and plans and programs that relate to guiding and managing growth and development. Union County and its municipalities have various federal, state, county, and local policies, programs, and plans available to promote and support mitigation and reduce future damages. Refer to Appendix Volume I – Jurisdictional Information which summarizes the planning and regulatory capabilities per municipality.

5.2.1 FEDERAL PLANNING AND REGULATIONS

National Flood Insurance Program (NFIP)

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968 (FEMA's 2002 NFIP: Program Description). The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.

There are three components to the NFIP: flood insurance, floodplain management, and flood hazard mapping. Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary. Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage in the U.S. is reduced by nearly $1 billion each year through communities implementing sound floodplain management requirements and property owners purchasing flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance (FEMA 2008).

NFIP Community Rating System (CRS)

As an additional component of the NFIP, the Community Rating System (CRS), is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance (FEMA 2012).

Hazard Mitigation Assistance: Mitigation Action Portfolio. 2020.

The purpose of the Hazard Mitigation Assistance: Mitigation Action Portfolio is to introduce stakeholders to the Building Resilient Infrastructure and Communities (BRIC) program and to highlight select innovative hazard mitigation projects for different hazards that represent possible project types eligible for BRIC program funding. Local governments can use this portfolio as a resource to inform their BRIC grant applications and to help brainstorm projects for other FEMA Hazard Mitigation Assistance (HMA) and mitigation-focused federal funding opportunities. During the HMP municipal meetings, the Planning Team suggested each municipality to review this document for mitigation ideas to reduce risk in their community. The portfolio can be found on the FEMA web site at: https://www.fema.gov/sites/default/files/2020-08/fema_mitigation-action-portfolio-support-document_08-01-2020_0.pdf.

RiskMAP: Building Community Resilience with Nature-based Solutions. 2020.
The *Building Community Resilience with Nature-based Solutions* guide helps local communities identify, understand the benefits of, plan for, implement, and fund nature-based solutions in their communities. During the HMP municipal meetings, the Planning Team suggested each municipality to review this document for mitigation ideas to reduce risk in their community. This resource can be found on the FEMA web site at: https://www.fema.gov/sites/default/files/2020-08/fema_riskmap_nature-based-solutions-guide_2020.pdf.

Local Mitigation Planning Handbook. March 2013.
The Local Mitigation Planning Handbook is the official guide for local governments to develop, update and implement local mitigation plans. While Federal requirements have not changed, the Handbook provides revised and expanded guidance, offering practical approaches, tools, worksheets and local mitigation planning examples for how communities can engage in effective planning to reduce long term risk from natural hazards and disasters. The Handbook can be found on the FEMA web site at: https://www.fema.gov/media-library-data/1590070172371-48e87ca446838ba81afc2aca995940bc/FEMA_Local_Mitigation_Planning_Handbook_508.pdf

Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials, March 1, 2013.
The purpose of this document is to provide succinct and practical information to local government officials on how to best integrate hazard mitigation into the full range of community planning activities. It is intended for those who are engaged in any type of local planning, but primarily community planners and emergency managers that bear responsibility for hazard mitigation planning. This resource can be found at:
https://www.fema.gov/media-library-data/20130726-1908-25045-0016/integrating_hazmit.pdf

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013.
The purpose of this document is to provide a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters. The focus of this document is mitigation, which is action taken to reduce or eliminate long-term risk to hazards. Ideas for mitigation actions are presented for the following natural hazards: drought, earthquake, erosion, extreme temperatures, flood, hail, landslide, lightning, sea level rise, severe wind, severe winter weather, storm surge, subsidence, tornado, tsunami, and wildfire. This resource can be found on the FEMA web site at: https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf

Mitigation Resources for Success. CD. FEMA 372, September 2001.
This CD contains a wealth of information about mitigation and is useful for state and local government planners and other stakeholders in the mitigation process. It provides mitigation case studies, success stories, information about Federal mitigation programs, suggestions for mitigation measures to homes and businesses, appropriate relevant mitigation publication, and contact information.

A Guide to Federal Aid in Disasters. FEMA 262, April 1995.
When disasters exceed the capabilities of State and local governments, the President's disaster assistance program (administrated by FEMA) is the primary source of Federal assistance. This handbook discusses the procedures and process for obtaining this assistance and provides a brief overview of each program.

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The Emergency Management Guide for Business and Industry. FEMA 141, October 1993.
This guide provides a step-by-step approach to emergency management planning, response, and recovery. It also details a planning process that companies can follow to better prepare for a wide range of hazards and emergency events. This effort can enhance a company's ability to recover from financial losses, loss of market share, damages to equipment, and product or business interruptions. This guide could be of great assistance to Union County industries and businesses located in hazard prone areas.

Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments. FEMA, DAP-12, September 1990.
This handbook explains the basic concepts of hazard mitigation and shows State and local governments how they can develop and achieve mitigation goals within the context of FEMA's post-disaster hazard mitigation planning requirements. The handbook focuses on approaches to mitigation, with an emphasis on multi-objective planning.

Important Websites:
The following are important websites that provide focused access to valuable planning resources for communities interested in sustainable development initiatives.

- http://www.fema.gov: Web site of the Federal Emergency Management Agency includes links to information, resources, and grants that communities can use in planning and implementation of sustainable measures. Most notably:
- http://www.fema.gov/what-mitigation: to learn more about mitigation and how to make it work for you.
- http://www.fema.gov/multi-hazard-mitigation-planning: for information about multi hazard mitigation planning.
- https://www.floodsmart.gov: the official site of FEMA's National Flood Insurance Program.
- http://mitigationguide.org: "Beyond the Basics: Best Practices in Local Mitigation Planning", a website developed as part of a multi-year research study funded by the U.S. Department of Homeland Security, and led by the Center for Sustainable Community Design within the Institute for the Environment at the University of North Carolina at Chapel Hill.
- http://www.planning.org: Web site of the American Planning Association, a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.
- http://www.ibhs.org: website of the Institute for Business and Home Safety, an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters. Online resources provide information on natural hazards, community land use, and ways you can protect your property from damage.

5.2.2 RECENT UPDATES TO STATE PLANS, GUIDANCE, POLICIES, AND REGULATIONS

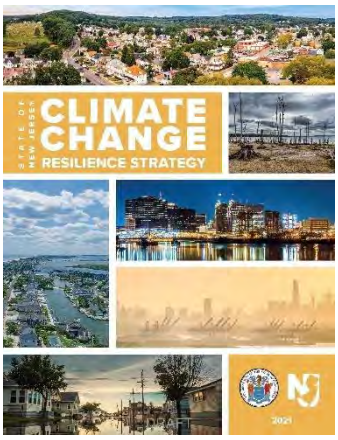
Recent Updates To State Plans and Guidance

Resilient NJ: Local Planning for Climate Change Toolkit. June 2021.
New Jersey Department of Environmental Protection (DEP) produced Resilient NJ: Local Planning for Climate Change Toolkit to meet requirements of the Senate Bill No. 2607 by providing guidance to municipal or county governments within New Jersey to help proactively plan for the changing

climate and build resilience into their local governance. This Toolkit also helps communities address the recent changes to the Municipal Land Use Law and meet the resilience requirements for Municipal Plan Endorsement (both described above). The Local Resilience Guide is located here: http://resilient.nj.gov/guidance

New Jersey Stormwater Best Management Practices Manual. March 2021
N.J.A.C. 7:8 specify stormwater management standards that are mandatory for new major development; the Best Management Practices (BMP) Manual provides examples of ways to meet the standards contained in the rule. Chapter Two of the manual explores low impact development techniques municipalities can incorporate to reduce the risk of flooding.

State of New Jersey Climate Change Resilience Strategy. Draft, April 2021.
New Jersey's first Statewide Climate Change Resilience Strategy serves as a roadmap for reducing the impacts of climate change through adaptive policies. The purpose of the Strategy is to promote the long-term mitigation, adaptation and resilience of New Jersey's economy, communities, infrastructure and natural resources throughout the State.



The Strategy established six priorities for the State:

1. Build Resilient and Healthy Communities
2. Strengthen the Resilience of New Jersey's Ecosystems
3. Promote Coordinated Governance
4. Invest in Information and Increase Public Understanding
5. Expand Resilience Funding and Financing
6. Coastal Resilience Plan

The Strategy recommends 125 Climate Change Resilience Actions to strengthen New Jersey against climate impacts, including the State's unique risks from sea-level rise, chronic flooding, rising temperatures and more frequent and intense storm events. The Strategy follows the release of New Jersey's first-ever Scientific Report on Climate Change (2020). The Climate Change Resilience Strategy is located at: https://www.nj.gov/dep/climatechange/resilience-strategy.html

Municipal Plan Endorsement Guidance. Adopted October 2007, Amended October 2020.
Municipal Plan Endorsement offers benefits to New Jersey municipalities who undergo a voluntary process to have local planning documents and efforts reviewed by state agencies participating on the State Planning Commission (SPC). The purpose of Municipal Plan Endorsement is to ensure the coordination of state, county, and municipal planning efforts in achieving the goals and policies of the State Planning Act. Completing Municipal Plan Endorsement allows municipalities to have access to State agency assistance with implementing the endorsed plan. Benefits to Municipal Plan Endorsement include technical assistance, direct state capital investment, priority for grants and low-interest loans, preferential interest rates, and a coordinated regulatory review for projects consistent with endorsed plans.

The SPC recently approved new Municipal Plan Endorsement guidelines that requires municipalities demonstrate action towards planning for the changing climate. Specifically, the SPC requires that municipalities complete the following steps:

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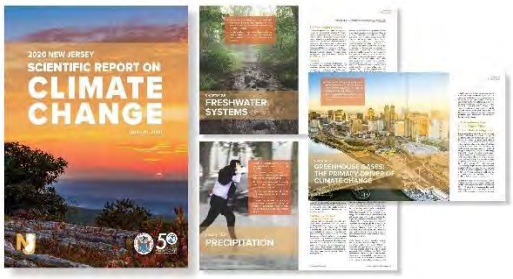
- Step 1: Assess vulnerable areas, critical assets, and infrastructure
- Step 2: Develop a local resiliency strategy
- Step 3: Periodically demonstrate action to address vulnerabilities

For more information on Municipal Plan Endorsement Guidelines, see:
https://nj.gov/state/planning/assets/docs/pe-docs/plan-endorsement-guidelines-2020-10-01.pdf



Scientific Report on Climate Change. June 30, 2020. DEP's first scientific report on climate change summarizes the current state of knowledge regarding the effects of climate change on New Jersey's environment to inform state and local decision-makers as they seek to understand and respond to the impacts of climate change. This report identifies and presents the best available science and existing data regarding the current and anticipated environmental effects of climate change globally, nationally, and regionally. The report is available on DEP's website here: https://www.nj.gov/dep/climatechange/data.html

2019 New Jersey Energy Master Plan: Pathway to 2050. January 27, 2020
In May 2018, Governor Murphy's Executive Order No. 28 directed the New Jersey Board of Public Utilities, in partnership with other state agencies, to develop a statewide clean energy plan and shift away from energy production that contributes to climate change. On January 27, 2020, Governor Murphy unveiled the state's Energy Master Plan, which outlines key strategies to reach the Administration's goal of 100 percent clean energy by 2050. The Energy Master Plan comprehensively addresses New Jersey's energy system, including electricity generation, transportation, and buildings, and their associated greenhouse gas emissions and related air pollutants. State and local government actions in pursuit of a clean energy transition may also be an opportunity to build resilience into local energy infrastructure and local communities in general. Information on the Energy Master Plan can be found here: https://www.nj.gov/emp/index.shtml.

2019 New Jersey State Hazard Mitigation Plan
The 2019 New Jersey State Hazard Mitigation Plan (State HMP) includes an evaluation of the State's overall pre and post hazard mitigation policies, programs, and capabilities; the policies related to development in hazard prone areas; and the State's funding capabilities. Please refer to Appendix G for additional information, including but not limited to State grant and loan funding sources with the potential to address hazard mitigation projects that can be accessed by local jurisdictions. It provides an overview of these funding sources, potential availability, applicability of pre- or post-disaster requirements, and the type of funding that is available. The State HMP should be referred to directly for more specifics (on the web at www.state.nj.us/njoem).

This capability assessment finds that the State of New Jersey's various departments collectively have a significant level of legal, technical, and fiscal tools and resources necessary for implementation of hazard mitigation strategies.

Emergency management in the State of New Jersey is under the direct control of the Governor, who is conferred specific emergency powers under the New Jersey Constitution and statues. The Superintendent of the State Police, a Division within the New Jersey Department of Law and Public Safety, is the State Director of Emergency Management.

The Emergency Management Section facilitates the flow of information to and from the various bureaus supervised and serves as a conduit for communication with other divisions. The Section is also responsible for planning, directing and coordinating emergency operations within the State which are beyond local control.

The Recovery Bureau supervises the Public Assistance, Mitigation and Finance Units.

- The Preparedness Unit disseminates preparedness information in advance of a disaster or potential disaster.
- The Mitigation Unit has the mission of enhancing State, county, and municipal risk reduction through the development and implementation of mitigation strategies. The Unit undertakes hazard mitigation planning and the review of mitigation projects in advance of potential disasters and is also activated during and immediately after disasters to evaluate existing and proposed mitigation measures in the affected areas. They make applicants aware of FEMA mitigation grant programs and conduct training sessions and workshops and participate in public meetings to facilitate grant processes.
- The Finance Unit supports the fiscal functions of both the Public Assistance and Mitigation Units. It ensures timely reimbursements and fiduciary responsibility.

The State has an Emergency Operations Center which is activated and staffed whenever a disaster occurs or is predicted to occur. The State's Emergency Operations Plan addresses the State's response to any disaster or emergency and provides the basis for coordinated emergency operations involving disaster planning, response, recovery and mitigation.

The NJOEM office has evolved from a small agency with limited planning, training, and response capabilities to its present status as an integral part of State government. The State Hazard Mitigation Officer is the representative of State government acting as the primary point of contact with FEMA, other Federal agencies, and county and local units of government in the planning and implementation of pre- and post-disaster mitigation programs and activities required under the Stafford Act.

NJOEM has prioritized support for the Mitigation Unit. A Mitigation Unit manager, civil engineer and regional manager were hired to manage the increased workload and responsibilities of the NJOEM Mitigation Unit. Additional planning assets are also scheduled to be hired in the very near future. The projected additions to the Mitigation Unit will bring a total workforce to 15 staff members. The Mitigation Unit also has seven to nine Contract staff members on staff to assist with New Jersey Hurricane Sandy (DR-4086) including specialists in federal environmental and historic preservation (EHP), Benefit Cost Analysis (BCA), and planning services.

New Jersey has several funding sources for conducting hazard mitigation projects. For example, grants for flood mitigation projects may be obtained through the New Jersey Office of Emergency Management for planning and projects.

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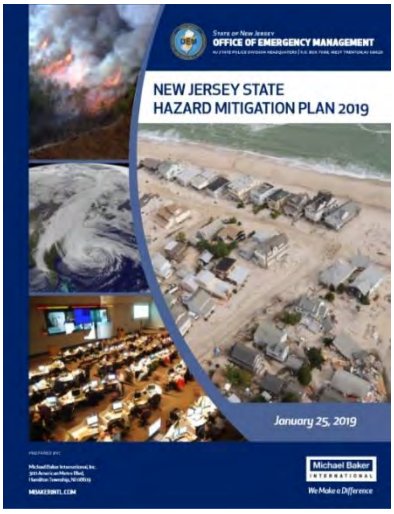
Capital needs of the state are primarily funded through three methods, which may be used singularly or in combination. They are:

- Pay-as-you-go capital outlays used primarily for renovations and preservation of state properties, highway, and mass transit improvements and environmental projects.
- General obligation bond funds, used to finance more expensive capital construction projects such as new facilities and must yield substantial benefits for the present and future generations (these funds must be authorized by the state's voters)
- Lease or lease-purchase is an alternate method of financing capital construction by allowing the State to occupy a facility and, over a defined period, secure ownership.



A complete listing of funding opportunities is available in the New Jersey State for Hazard Mitigation Plan available here: http://ready.nj.gov/mitigation/2019-mitigation-plan.shtml

Building Ecological Solutions to Coastal Community Hazards. 2017
A Guide for New Jersey Coastal Communities: Developed by the National Wildlife Federation and DEP, this report describes ecological solutions to coastal community hazards. The report encourages coastal communities to work with, rather than against, nature to increase elevation and reduce erosion and flooding risks.

New Jersey Statewide Water Supply Plan. October 5, 2017
Periodic revisions to the New Jersey Statewide Water Supply Plan (NJSWSP) are intended to improve the management and protection of the State's water supplies. The 2017-2022 NJSWSP emphasizes the need to balance traditional water use with water resource protection and outlines a range of policy options to achieve that balance amid an array of competing interests and issues. The 2017-2022 NJSWSP differs from preceding plans as it is designed to allow for continuous updates, as ongoing water resource evaluations, water use data, and more refined water demand projections become available. The release of future NJSWSP updates will be made available through the DEP's web site here: https://www.state.nj.us/dep/watersupply/wsp.html

Recent Updates To State Policies and Regulations

Senate Bill No. 2607. February 4, 2021.
Governor Murphy signed Senate Bill No. 2607 requiring the integration of climate vulnerability assessments into future municipal master plan updates. Municipalities are now required to include a climate change-related hazard vulnerability assessment in their land use plan elements to analyze current and future threats associated with climate change related natural hazards, such as flooding. This assessment also must include a build-out analysis of all future development in the municipality, as well as any threats and vulnerabilities associated with this development, and strategies to reduce the risks of climate change-related natural hazards. The Senate Bill is located at: https://www.njleg.state.nj.us/2020/Bills/PL21/6_.PDF

New Jersey Executive Order No. 89. October 29, 2019.
Executive Order No. 89 establishes new requirements aimed at building statewide and community resilience, including appointing the state's first Chief Resilience Officer, establishing an Interagency Council on Climate Resilience, and directing the DEP to develop the Scientific Report on Climate Change (2020) and a Statewide Climate Change Resilience Strategy (2021).

New Jersey PACT: Protecting Against Climate Threats
Under Governor Phil Murphy's Executive Order 100, the DEP is reforming regulations that will help reduce greenhouse gas (GHG) emissions and build resilience in our natural and built environments through several initiatives within the coming years. In 2021, DEP is anticipating issuing Sea Level Rise Guidance providing a framework, core principles and a method to help determine the most appropriate SLR projection applicable to a project and what, if any, adaptation measures should be included. DEP intends to instill climate change considerations into DEP's grant, loan, contracting, planning, and policy programs and guidance. By January 2022, NJPACT is targeting the adoption of environmental land use rules to respond to climate change by considering risks such as sea level rise and chronic flooding, and to facilitate climate resilience by supporting green infrastructure and renewable energy. The latest information about NJPACT can be found on the DEP website at: https://www.nj.gov/dep/njpact/

DEP's Division of Land Use Regulation
DEP regulates land use activities through a permit process to ensure the health and quality of streams, estuaries, coastal waters, wetlands, wildlife habitat, and drinking water. Two of these regulations include the Coastal Area Facility Review Act (CAFRA), which determines if an activity is regulated based on the activity itself and its location within the coastal zone, and The Flood Hazard Area Control Act, which regulates construction in the riparian zone. Depending upon the nature of the project, specific additional standards may apply.

The following DEP programs both protect critical natural resources, and provide funding for the State, municipalities, and counties to purchase land for open-space preservation and recreation, which may directly or indirectly support hazard mitigation efforts:

- Green Acres Program
- Blue Acres Program
- Historical Preservation Program
- Farmland Preservation
- Wetlands Act of 1970 (N.J.S.A. 13:9A)
- Soil and Erosion and Sediment Control Act (N.J.S.A. 4:24)
- Highlands Water Protection and Planning Act (N.J.S.A. 13:20-1)

The Wetlands Act of 1970 (N.J.S.A. 13:9A) provides rules and regulations governing development in wetland areas of New Jersey. New Jersey has 15 soil conservation districts, following county boundaries that implement the New Jersey Soil Erosion and Sediment Control Act (N.J.S.A. 4:24), which governs certain aspects of new development.

Floodplain Management Policy
The New Jersey State Law Flood Hazard Area Control Act (NJSA 58:16A-52) and subsequent regulations attempt to minimize damage to life and property from flooding caused by development

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within fluvial and tidal flood hazard areas, to preserve the quality of surface waters, and to protect the wildlife and vegetation that exist within and depend upon such areas for sustenance and habitat. While it does not require local adoption, as it is enforced by the DEP, the floodplain ordinances of each municipality need to be reviewed to be in compliance with this new regulation.

Land Use Planning Policy

The State of New Jersey Municipal Land Use Law (L.1975, c. 291, s. 1, effective August 1, 1976) is the legislative foundation for the land use process in the State of New Jersey, including decisions by Planning Boards and Zoning Boards of Adjustment. It defines the powers and responsibilities of boards and is essential to their functions and decisions. It also provides the required components of a municipal master plan.

Every municipal agency shall adopt and may amend reasonable rules and regulations, consistent with this act or with any applicable ordinance, for the administration of its functions, powers, and duties. These plans help jurisdictions review their land use plans and policies with public participation. The Municipal Land Use Law requires that each municipality prepare a comprehensive plan and update that plan every 10 years.

5.2.3 COUNTY PLANNING AND REGULATIONS

Under the County Planning Act (a component of the Municipal Land Use Law), the Board of Freeholders may create a county planning board comprised of at least five members. If the county creates a planning board then they are also required to make and adopt a master plan. The primary purpose of the plan is to assess which and how many capital facilities are needed and the timing of that need. It is also used to facilitate development a county Capital Improvements Plan (CIP). The county master plan may also include a transportation component, specifically any issues pertaining to county roads, bridges, and transit networks. The County also needs to adopt an Emergency Operations Plan (EOP).

The planning board is required to encourage the cooperation of the municipalities in any matters that concern the master plan and to advise the board freeholders with respect to the formulation of development programs and budgets for capital expenditures. The county also reviews all subdivisions within the county and have approval over those subdivisions that affect county roads or drainage facilities. The county also reviews and approve site plans within the county that affect county roads and/or drainage facilities. The county planning board is also involved in open space, recreation, and conservation efforts. This is in addition to the preservation of farmland.

In accordance with New Jersey's home rule structure, authority over the three key tools for proactive hazard mitigation–land use planning, floodplain management, and building code enforcement–reside at the municipal level. Counties play a coordinating role in these matters.

5.2.4 MUNICIPAL PLANNING AND REGULATIONS

The Faulkner Act, or the Optional Municipal Charter Law, provides New Jersey municipalities with four plans of government: mayor-council, council-manager, small municipality, and mayor-council administrator. This Act provides municipalities with more governmental and administrative flexibility than the traditional forms of government like city, borough, township, town, or village.

As stated above, the State, through enabling legislation, delegates the power of zoning to municipalities. In accordance with the MLUL, all municipalities are required to enact zoning

ordinances that promote the health, safety, and welfare of residents. Zoning ordinances allow for local communities to regulate the use of land in order to protect the interested and safety of the general public. Zoning ordinances can be designed to address unique conditions or concerns within a given community. They may be used to create buffers between structures and high-risk areas, limit the type or density of development and/or require land development to consider specific hazard vulnerabilities. All municipalities in Union County have zoning regulations.

Uniform Construction Code (Uniform Construction Code Act of 1975 [UCC]) requires all jurisdictions to have current land use master plans, zoning, and other land development ordinances. The UCC adopts up-to-date building codes as its Building Subcode and One- and Two-Family Subcode. These subcodes contain requirements that address construction in both A and V flood zones. Building codes mandate best practices and technology, much of which is designed to reduce or prevent damage from occurring when structures are under stress. New Jersey State Law requires that all municipalities adopt ordinances that follow the UCC. In January 2013, the state established by emergency rule the best available data from FEMA's latest flood maps, plus one foot of freeboard, as the general rebuilding standard to adapt to changing flood hazard risks and corresponding federal flood insurance rates. All municipalities in Union County have an active building code.

In addition to the required zoning and building ordinances, there are plans and regulations that local jurisdictions are required to adopt, including a local EOP, a Stormwater Management Plan (SWMP), stormwater ordinances, or an ordinance plan implementation. An EOP outlines the methods, resources, and procedures in the event of emergencies and is initiated by local emergency managers if an emergency or disaster overwhelms local emergency response capabilities. County OEM coordinates the necessary Federal, State, or County resources to address the crisis. The EOP also contains details pertaining to the type of hazard requiring an evacuation and how the evacuation will be executed and accomplished. Every county and municipality in New Jersey are required by law to prepare and maintain a multi-hazard EOP which is updated and certified every four years by NJOEM. SWMPs should be a component of a master/comprehensive plan and the municipality should coordinate with the appropriate soil conservation district.

The following plans and regulations are required and can be a strong capability if they incorporate hazard mitigation and/or resilience:

- **Comprehensive/Master Plan**: Overall policy guide for future community growth and development
- **Emergency Operations Plan**: Organizational structure and processes to respond to and initially recover from an emergency
- **Capital Improvements Plan**: Coordinates the location, timing, and financing of capital improvements over a multi-year period
- **Local Emergency Operations Plan/Continuity of Operations Plan**: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP
- **Stormwater Management**: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts
- **Emergency Response Plan**: Outlines the parties responsible for and the procedures necessary for emergency response

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- **Fire Department ISO Rating**: Ratings for fire departments and their surrounding communities
- **Site Plan Review Requirements**: Review of new development applications
- **Subdivision Regulations**: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development
- **Zoning Ordinance**: Rules that define how property in specific geographic zones can be used
- **Floodplain Ordinance**: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use
- **Mutual Aid Agreements**: Establish the terms under which assistance is provided between two or more jurisdictions

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

The following plans and regulations are optional and can be a strong capability if implemented:

- **Redevelopment Plan/Study**: Facilitates development in specific geographic areas
- **Coastal Zone Management Program**: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses
- **Community Wildfire Protection Plan**: Allows local governments to create their own community-specific wildfire risk reduction strategy
- **Climate Adaptation Plan**: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate
- **Streambank Buffer Protection Program**: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway
- **Watershed Management Plan**: NJDEP-supported plans for the reduction of nonpoint source water pollution
- **Floodplain Management Plan**: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards
- **Post-Disaster Recovery Plan**: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters
- **Transfer of Development Rights**: Designating high-risk or preservation areas as “sending areas,” from which the potential to develop land is transferred to low-risk or growth areas called “receiving areas” for compensation
- **Land Acquisition for Open Space and Public Recreation Uses**: Purchasing high-risk areas to remain as open space/public recreation
- **Growth Management Ordinance**: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl

- **Natural Hazard Ordinance**: Zoning ordinance that dictates specific standards for development in hazard-prone areas
- **Post-Disaster Recovery Ordinance**: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster
- **Real Estate Disclosure Requirement**: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale

5.2.5 WATERSHED MANAGEMENT PLANS

Union County contains portions of three Watershed Management Areas (WMAs): WMA 06 Upper Passaic, Whippany and Rockaway; WMA 07 Arthur Kill; and WMA 09 Lower Raritan, South River and Lawrence. In June 2018, the DEP Division of Water Monitoring and Standards published the Non-Tidal Raritan River Watershed Protection Plan, which focuses on the non-tidal portion of the watershed and includes seven counties (Hunterdon, Mercer, Middlesex, Monmouth, Morris, Somerset and Union County). Nine Union County municipalities are in the Raritan River Watershed (as a part of WMA 09): Berkeley Heights Township, Fanwood Borough, Mountainside Borough, New Providence Borough, Plainfield City, Scotch Plains Township, Springfield Township, Summit City, and Westfield Township. The Plan is available on the DEP website here: https://www.state.nj.us/dep/wms/bears/docs/Raritan_Watershed_Protection_Plan_2018-06-04.pdf

The Green Brook Sub Basin is part of the Raritan River Watershed and is an area of flooding in Union, Middlesex, and Somerset Counties. The Green Brook Flood Control Commission is multi-county effort to address Green Brook flooding. The municipalities and counties invited to participate in the Commission are: Borough of Bound Brook, Township of Bridgewater, Borough of Dunellen, Township of Green Brook, Borough of Middlesex, Borough of North Plainfield, Plainfield City, Township of Scotch Plains, and the Borough of Watchung, and the County of Middlesex, County of Somerset, and County of Union. The Commission is established in accordance with Chapter 316, P.L. 1971 of the State of New Jersey.

Another flood control commission, the Mayors Council Rahway River Watershed Flood Control, is composed of governing officials in seven municipalities in Union and Essex County. Officials in Cranford, Kenilworth, Rahway, Springfield and Union Township (Union County), and Maplewood and Millburn (Essex County) have coordinated with one another, their counties, U.S. Representatives and the U.S. Army Corps of Engineers on flood control in the Rahway River Basin. Watershed Organizations are also active in Union County. One such organization is the Rahway River Watershed Association, who seek the protection and restoration of the Rahway River and its associated biological communities. The Rahway City receives its drinking water from the Rahway River.

5.2.6 SUMMARY OF FINDINGS

A summary of required planning and regulations capabilities is listed in **Table 5.2-1 Required Planning and Regulations Capabilities** and optional planning and regulation capabilities in **Table 5.2-2 Optional Planning and Regulation Capabilities, Based on Municipal Response**. To view individual Capability Assessment Worksheets, refer to the Appendices Vol. I —Jurisdictional Information. The Capability Assessment Worksheet is where each municipality also evaluated their ability to expand on and improve these existing plans.

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TABLE 5.2-1 REQUIRED PLANNING AND REGULATIONS CAPABILITIES

Jurisdiction	Comprehensive/ Master Plan	Emergency Operations Plan	Capital Improvements Plan	Local Emergency Operations Plan /Continuity of Operations Plan	Stormwater Management	Emergency Response Plan	Fire Department ISO Rating	Site Plan Review Requirements	Subdivision Regulations	Zoning Ordinance	Floodplain Ordinance	Mutual Aid Agreements
Berkeley Heights Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Clark Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cranford Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Elizabeth City	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fanwood Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Garwood Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hillside Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kenilworth Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Linden City	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mountainside Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
New Providence Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Plainfield City	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rahway City	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Roselle Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Roselle Park Borough	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scotch Plains Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Springfield Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Summit City	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Union Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Westfield Town	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Jurisdiction	Comprehensive/ Master Plan	Emergency Operations Plan	Capital Improvements Plan	Local Emergency Operations Plan /Continuity of Operations Plan	Stormwater Management	Emergency Response Plan	Fire Department ISO Rating	Site Plan Review Requirements	Subdivision Regulations	Zoning Ordinance	Floodplain Ordinance	Mutual Aid Agreements
Winfield Township	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Union County	✓	✓	✓	✓		✓		✓	✓			✓

TABLE 5.2-2 OPTIONAL PLANNING AND REGULATIONS CAPABILITIES, BASED ON MUNICIPAL REVIEW

Jurisdiction	Redevelopment Plan/ Study	Coastal Zone Management Program	Community Wildfire Protection Plan	Climate Adaptation Plan	Streambank Buffer Protection Program	Watershed Management Plan	Floodplain Management Plan	Post-Disaster Recovery Plan	Transfer of Development Rights	Land Acquisition for Open Space and Public	Growth Management Ordinance	Natural Hazard Ordinance	Post-Disaster Recovery Ordinance	Real Estate Disclosure Requirement
Berkeley Heights Township	✓		✓		✓	✓	✓	✓		✓	✓	✓		
Clark Township						✓	✓							✓
Cranford Township	✓													✓
Elizabeth City	✓			✓	✓	✓	✓	✓		✓	✓			
Fanwood Borough	✓					✓	✓							
Garwood Borough	✓		✓	✓	✓	✓	✓	✓				✓	✓	
Hillside Township								✓						✓
Kenilworth Borough	✓					✓	✓	✓						
Linden City	✓						✓			✓		✓		✓
Mountainside Borough	✓		✓		✓	✓	✓	✓			✓	✓		
New Providence Borough					✓	✓	✓		✓	✓	✓	✓		✓
Plainfield City	✓	✓					✓	✓				✓	✓	

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Jurisdiction	Redevelopment Plan/ Study	Coastal Zone Management Program	Community Wildfire Protection Plan	Climate Adaptation Plan	Streambank Buffer Protection Program	Watershed Management Plan	Floodplain Management Plan	Post-Disaster Recovery Plan	Transfer of Development Rights	Land Acquisition for Open Space and Public	Growth Management Ordinance	Natural Hazard Ordinance	Post-Disaster Recovery Ordinance	Real Estate Disclosure Requirement
Rahway City	✓					✓								✓
Roselle Borough	✓										✓			
Roselle Park Borough	✓						✓							
Scotch Plains Township	✓		✓		✓	✓			✓	✓	✓			
Springfield Township	✓					✓	✓					✓	✓	✓
Summit City														
Union Township	✓		✓		✓	✓	✓	✓		✓				
Westfield Town	✓	✓				✓	✓							
Winfield Township														
Union County										✓				

5.2.7 PARTICIPATION IN THE NFIP AND CRS PROGRAM

Improved floodplain management, including land use planning, zoning, and enforcement at the local level can reduce flood related damages for both existing buildings and new development and are consistent with Goal 3. The use of the National Flood Insurance Program (NFIP), the predominant flood insurer in the U.S., is critical to the reduction of future flood damage costs to the taxpayer. Following catastrophic floods in the early 1960s, the NFIP was established by the U.S. Congress in 1968, Property owners and businesses could purchase coverage for flood damage. The program is currently administered by FEMA. One stipulation of the program is that communities make a commitment to regulate the location and design of future floodplain construction to increase safety from flood hazards. The federal government established a series of building and development standards for floodplain construction to serve as minimum requirements for participation in the program.

The effective FIRMs for Union County have been revised a number of times to reflect more detailed information and changes to the floodplain and is now used as the minimum flood hazard area within which development must conform to floodplain management regulations. At the time of this plan update, Union County had effective FIRMs dated 09/20/06 and preliminary FIRMS dated 02/03/15 and 04/18/16. The Project Team used a composite map of both effective and preliminary FIRMS in their risk assessment.

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All developments, regardless of the location, require a permit to include buildings, fill, and any other type of development. Under New Jersey's home rule system, different offices in the various municipalities have authority over the necessary permits. The NFIP requires that when the cost of reconstruction, rehabilitation, addition, or other improvements to a building equals or exceeds 50% of the fair market value, then the building must meet the same construction requirements as a new building. Substantially damaged buildings must be brought up to new construction standards. A residence or building damaged so that the cost of repairs equals or exceeds 50% of the structure's fair market value must also be elevated above the Base Flood Elevation (BFE) in flood zones where BFEs are available.

The Community Rating System (CRS) was established through the NFIP. It is a program that municipalities can elect to join and provides incentives for activities that go beyond the minimum standards of the NFIP. Once a community has joined, participants receive a discount on their flood insurance premiums. As a result of being part of the CRS, these communities actively pursue public outreach programs. One of the requirements of CRS is an annual outreach project, such as a Repetitive Loss Outreach Program. This program would focus on repetitive loss areas within the county and consists of three main components. The first is to advise the homeowners that they live in a repetitive loss area and could be subject to flooding. The second is to give the homeowner appropriate property protection measure guidelines. The third is to make the homeowner aware of the basic facts about Flood Insurance.

Table 5.2-2 Communities Participating in NFIP and CRS lists the dates when the communities of Union County joined the NFIP. Of the 21 municipalities, 20 have joined the NFIP. The Township of Winfield is not presently a member of the NFIP but has included joining the program as a mitigation action item in the last plan update. For each community in Union County that is a participating community in the NFIP is required to have both a well-trained municipal floodplain manager and construction code official to enforce municipal ordinances. To ensure adequate enforcement of both codes, each community in Union County should encourage additional training opportunities for all code enforcement personnel, to include its municipal floodplain manager. These ordinances are intended to address methods and practices to minimize flood damage to new and substantial home improvement projects, as well as addressing zoning and sub-division ordinances and state regulations as enforced through the DEP.

TABLE 5.2-3 COMMUNITIES PARTICIPATING IN NFIP AND CRS

Name of Community	Date Joined NFIP	CRS Classification (if Applicable)
Berkeley Heights Township	March 1, 1978	N/A
Clark Township	December 23, 1971	N/A
Cranford Township	June 25, 1971	7
Elizabeth City	May 7, 1971	N/A
Fanwood Borough	October 28, 1977	N/A
Garwood Borough	February 1, 1977	N/A
Hillside Township	September 24, 1979	N/A
Kenilworth Borough	March 2, 1983	N/A
Linden City	November 24, 1976	8

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Name of Community	Date Joined NFIP	CRS Classification (if Applicable)
Mountainside Borough	February 16, 1977	N/A
New Providence Borough	November 23, 1973	N/A
Plainfield City	June 25, 1971	N/A
Rahway City	December 17, 1971	7
Roselle Borough	June 4, 1980	7
Roselle Park Borough	July 17, 1978	8
Scotch Plains Township	September 30, 1977	N/A
Springfield Township	October 1, 1977	N/A
Summit City	February 2, 1972	N/A
Union Township	August 1, 1978	N/A
Westfield Town	December 18, 1979	N/A
Winfield Township	-	N/A

Source: FEMA Status Book, 11/18/2020; Appendix F: Community Rating System, April 2020 NFIP Flood Insurance Manual (CRS STATUS EFFECTIVE May 1, 2020)

5.3 EDUCATION AND OUTREACH

The following education and outreach activities can be a strong capability if implemented:

- **Local Citizen Groups or Non-Profit Organizations**: Focuses on environmental protection, emergency preparedness, access and functional needs populations
- **Seasonal Emergency Management and Mitigation Outreach**: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction
- **Disaster/Safety Related School Programs**: Programs to teach the youth about safety related to hazards
- **StormReady Certification**: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.
- **Firewise USA Certification**: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community
- **Sustainable Jersey Certification**: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards
- **Public-Private Partnership Initiatives Addressing Disaster Related Issues**: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population

A summary of local education and outreach capabilities is listed in **Table 5.3-1 Education and Outreach Capabilities, based on Responses** below, based on responses from each municipality. More information on the program/organization and how it relates to disaster resilience is on listed on each individual Capability Assessment Worksheets located in Appendices Vol. I—Jurisdictional Information. The Capability Assessment Worksheet is where each municipality also evaluated their ability to expand on and improve their education and outreach capabilities.

TABLE 5.3-1 EDUCATION AND OUTREACH CAPABILITIES, BASED ON RESPONSES

Jurisdiction	Local Citizen Groups or Non-Profit Organizations	Seasonal Emergency Management and Mitigation Outreach	Disaster/ Safety Related School Programs	StormReady Certification	Firewise USA Certification	Sustainable Jersey Certification	Public-Private Partnership Initiatives Addressing Disaster Related Issues
Berkeley Heights Township	✓	✓	✓			✓	
Clark Township	✓		✓				
Cranford Township	✓	✓	✓				
Elizabeth City	✓	✓	✓			✓	
Fanwood Borough	✓		✓				
Garwood Borough	✓	✓	✓			✓	✓
Hillside Township		✓		✓			
Kenilworth Borough			✓				
Linden City	✓		✓				✓
Mountainside Borough							
New Providence Borough	✓	✓				✓	✓
Plainfield City	✓	✓	✓				✓
Rahway City	✓	✓					
Roselle Borough							
Roselle Park Borough	✓		✓			✓	
Scotch Plains Township		✓	✓			✓	✓
Springfield Township	✓	✓	✓			✓	✓
Summit City							
Union Township		✓	✓			✓	
Westfield Town		✓				✓	✓
Winfield Township		✓					
Union County		✓	✓				✓

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5.4 ADMINISTRATIVE AND TECHNICAL CAPABILITY

The ability of a local government to develop and implement mitigation projects, policies, and programs is contingent upon its staff and resources. Staffing capability can be evaluated by assessing the staffing skill set and job responsibilities. Administrative capability is described by an adequacy of departmental and personnel resources for the implementation of mitigation-related activities and committees. Technical capability relates to an adequacy of knowledge and technical expertise of local government employees or the ability to contract outside resources for this expertise in order to effectively execute mitigation activities.

Administrative & Technical Capability Findings

The following administrate and technical capabilities can help reduce risk and vulnerability at the local level:

- **Planning Commission**: Reviews most applications for development including site plan, subdivision, and conditional use applications
- **Mitigation Planning Committee**: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government
- **Environmental Commission**: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation
- **Economic Development Commission**: Provides recommendations on economic development policies and issues
- **Maintenance Programs to Reduce Risk**: Ongoing programs such as tree trimming, clearing drainage systems

A summary of municipal administrative and technical capabilities is listed in **Table 5.4-1 Administrative & Technical Capabilities, Based on Responses** below, based on responses from each municipality. More information on administrative and technical capabilities is listed in each individual Capability Assessment Worksheets located in Appendices Vol. I—Jurisdictions. The Capability Assessment Worksheet is where each municipality also evaluated their ability to expand on and improve their administrative and technical capabilities.

TABLE 5.4-1 ADMINISTRATIVE & TECHNICAL CAPABILITIES, BASED ON RESPONSES

Jurisdiction	Planning Commission	Mitigation Planning Committee	Environmental Commission	Economic Development Commission	Maintenance Programs to Reduce Risk
Berkeley Heights Township	✓	✓	✓	✓	✓
Clark Township	✓		✓	✓	✓
Cranford Township	✓		✓	✓	✓
Elizabeth City	✓	✓		✓	✓
Fanwood Borough	✓		✓		
Garwood Borough	✓	✓	✓	✓	✓
Hillside Township	✓				✓
Kenilworth Borough	✓				✓
Linden City	✓		✓	✓	✓
Mountainside Borough	✓	✓			✓
New Providence Borough	✓		✓	✓	✓
Plainfield City	✓	✓		✓	✓
Rahway City	✓		✓	✓	✓
Roselle Borough	✓			✓	✓
Roselle Park Borough	✓				✓
Scotch Plains Township	✓	✓	✓	✓	✓
Springfield Township	✓		✓		✓
Summit City					
Union Township	✓		✓		✓
Westfield Town	✓		✓		✓
Winfield Township					
Union County	✓	✓	✓		✓

Staffing Capability Findings

The following staffing capabilities can help reduce risk and vulnerability at the local level:

- **Planner**: a New Jersey licensed Professional Planner
- **Engineer**: a New Jersey licensed Professional Engineer
- **Code Enforcement**: Evaluates private properties and public grounds against local codes

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- **Chief Building Official**: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations
- **Floodplain Manager**: a Certified Floodplain Manager
- **Grant Writer**: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources
- **Geographic Information Systems (GIS) Specialist**: In-house or contracted staff that can use GIS to manage hazard and community asset data

A summary of municipal staffing capabilities is listed below in **Table 5.4-2 Staffing Capabilities, based on Responses**. More information on staffing capabilities are listed on the individual Capability Assessment Worksheets located in Appendices Vol. I—Jurisdictional Information. The Capability Assessment Worksheet is where each municipality also evaluated their ability to expand on and improve their staffing capabilities.

TABLE 5.4-2 STAFFING CAPABILITIES, BASED ON RESPONSES

Jurisdiction	Planner	Engineer	Code Enforcement	Chief Building Official	Floodplain Manager	Grant Writer	GIS Specialist
Berkeley Heights Township	✓	✓	✓	✓		✓	✓
Clark Township	✓	✓	✓	✓	✓		
Cranford Township	✓	✓	✓	✓	✓	✓	
Elizabeth City	✓	✓	✓	✓	✓	✓	✓
Fanwood Borough	✓	✓	✓	✓		✓	✓
Garwood Borough	✓	✓	✓	✓	✓	✓	✓
Hillside Township		✓	✓	✓		✓	✓
Kenilworth Borough	✓	✓	✓	✓		✓	
Linden City	✓	✓	✓	✓	✓	✓	✓
Mountainside Borough	✓	✓	✓	✓	✓		✓
New Providence Borough	✓	✓	✓	✓	✓	✓	✓
Plainfield City	✓	✓	✓	✓	✓	✓	✓
Rahway City	✓	✓	✓	✓		✓	✓
Roselle Borough	✓	✓	✓	✓		✓	
Roselle Park Borough		✓	✓	✓			

Jurisdiction	Planner	Engineer	Code Enforcement	Chief Building Official	Floodplain Manager	Grant Writer	GIS Specialist
Scotch Plains Township	✓	✓	✓	✓	✓	✓	✓
Springfield Township	✓	✓	✓	✓	✓		
Summit City							
Union Township	✓	✓	✓	✓	✓	✓	✓
Westfield Town	✓	✓	✓	✓			✓
Winfield Township		✓	✓	✓			
Union County	✓	✓		✓	✓	✓	✓

5.5 FISCAL CAPABILITY

The ability of a local government to implement mitigation activities is also associated with the funding available for policies and projects. While some mitigation actions are less costly than others, it is important that money is available locally to implement policies and projects. Funding for such initiatives is often locally based revenue and financing, as well as outside grants. Costs associated with mitigation activities range from staffing and administrative costs to the actual cost of the mitigation project. Financial resources are particularly important if communities are trying to take advantage of state or Federal mitigation grant funding opportunities that require local-match contributions. Some of the local funding option may be incorporated in a Capital Improvement Plan (CIP) or schedule or through various municipal fees.

The following fiscal capabilities include access to or eligibility to use funding resources for hazard mitigation:

- **Capital Improvements Program**: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan
- **Federal Funding programs (non-FEMA)**: Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.
- **Utility fees for stormwater, water, sewer, gas, or electric services**: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions
- **Impact fees for new development**: Fees paid by a developer to the municipality
- **General Obligation Bonds and/or Special Tax Bonds**: Debt obligations issued by public entities that use the loans to fund public projects
- **Community Development Block Grants (CDBG)**: Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program

A summary of municipal fiscal capabilities is listed in **Table 5.5-1 Fiscal Capabilities, Based on Responses** below. As of November 2020, municipalities can establish, operate, and maintain

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stormwater (SW) utilities by imposing user fees and issuing bonds. In addition, all municipalities have the authority to levy taxes for special purposes. Information on other Federal and State programs municipalities partake in and other funding resources are listed on each individual Capability Assessment Worksheets located in Appendices V.I—Jurisdictional Information. The Capability Assessment Worksheet is where each municipality also evaluated their ability to expand on and improve fiscal capabilities.

TABLE 5.5-1 FISCAL CAPABILITIES, BASED ON RESPONSES

Jurisdiction	Capital Improvements Program	Federal Funding Programs (Non-FEMA)	Utility Fees for Stormwater, Water, Sewer, Gas, Or Electric Services	Impact Fees for New Development	General Obligation Bonds and/or Special Tax Bonds	Community Development Block Grants (CDBG)
Berkeley Heights Township	✓	✓	✓	✓	✓	
Clark Township	✓	✓	✓	✓	✓	✓
Cranford Township			✓			
Elizabeth City	✓	✓			✓	✓
Fanwood Borough						
Garwood Borough	✓	✓	✓	✓		
Hillside Township						
Kenilworth Borough	✓	✓	✓		✓	
Linden City	✓	✓			✓	✓
Mountainside Borough	✓	✓		✓	✓	
New Providence Borough	✓	✓			✓	✓
Plainfield City	✓	✓		✓		✓
Rahway City	✓	✓	✓	✓	✓	✓
Roselle Borough						
Roselle Park Borough	✓	✓	✓	✓	✓	✓
Scotch Plains Township	✓	✓	✓	✓	✓	✓

Jurisdiction	Capital Improvements Program	Federal Funding Programs (Non-FEMA)	Utility Fees for Stormwater, Water, Sewer, Gas, Or Electric Services	Impact Fees for New Development	General Obligation Bonds and/or Special Tax Bonds	Community Development Block Grants (CDBG)
Springfield Township	✓		✓	✓		
Summit City						
Union Township	✓	✓	✓		✓	✓
Westfield Town	✓			✓	✓	
Winfield Township						
Union County	✓	✓	✓			✓

Federal Technical Assistance and Funding

The Federal government offers a wide range of funding and technical assistance programs that communities can access to assist in their long-term recovery. Some of these programs are geared to disaster preparedness and mitigation planning, while the focus of others is the long-term vitality of the communities. Examples of these programs include Emergency Watershed Protection Program (NOAA), National Cyber Security Awareness (NPPD), Disaster Assistance Loans (SBA), and National Disaster Resilience Competition (HUD).

Table 5.5-2 Federal Funding presents a summary of Federal funding sources available for mitigation activities. Further information on these and other Federal programs can be found in the Catalog of Federal Domestic Assistance (CFDA) available on online at www.cfda.gov.

TABLE 5.5-2 FEDERAL FUNDING (FEMA, HUD, USDOT 2019)

Funding that Requires an Approved Hazard Mitigation Plan:	
Flood Mitigation Assistance Program (FMA)	Availability: Pre- disaster Description: To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to building, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP)/
Hazard Mitigation Grant Program (HMGP)	Availability: Post-disaster Description: To provide funds to states, territories, Indian Tribal governments, and communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in state, Tribal or local hazard mitigation plans, and enables mitigation measures to be implemented during the recovery from a disaster.
Pre-Disaster Mitigation Program (PDM)	Availability: Pre-disaster Description: To provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

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Other Available Federal Funds:	
Fire Management Assistance Grant Program	Availability: Post-disaster Description: Assistance for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands, which threaten such destruction as would constitute a major disaster.
Community Development Block Grant (CDBG)	Availability: Pre- or Post-disaster Description: Federal grant provided to CDBG "entitlement communities" (typically, municipalities with populations over 50,000 and urban counties with populations over 200,000) and to all states.
Reimbursement for Firefighting on Federal Property	Availability: Post-disaster Description: Provides reimbursement only for direct costs and losses over and above normal operation costs
National Dam Safety Program (NDSP)	Availability: Pre-disaster Description: The NDSP was formally established by the Water Resources and Development Act of 1996. Led by FEMA, the NDSP is a partnership of the states, Federal agencies, and other stakeholders to encourage individual and community responsibility for dam safety.
Land and Water Conservation Fund (LWCF)	Availability: To states, local, and conservation organizations Description: Funding for outdoor recreational development, renovation, land acquisition, and planning.
The Forest Legacy Program (FLP)	Availability: Participation in Forest Legacy is limited to private forest landowners. Description: Federal program in partnership with states, supports state efforts to protect environmentally sensitive forest lands. Designed to encourage the protection of privately-owned forest lands, FLP is an entirely voluntary program. To maximize the public benefits it achieves, the program focuses on the acquisition of partial interests in privately owned forest lands. FLP helps the states develop and carry out their forest conservation plans. It encourages and supports acquisition of conservation easements, legally binding agreements transferring a negotiated set of property rights from one party to another, without removing the property from private ownership. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect other values.
Transportation Trust Fund (TTF)	Availability: Pre- or Post-disaster Description: Grants are funded by the TTF through a competitive application-based process administered by the Local Aid District Offices.
U.S. Army Corp of Engineers	Availability: Post-disaster Description: Assistance for the management of mitigation projects after the project has met all of the performance standards for the project.

In July 2020, FEMA published the New Jersey Mitigation Resource Guide on federal funding opportunities, technical assistance, and other resources to support hazard mitigation. The purpose of the Guide is to Guide is to provide New Jersey and local officials with a spectrum of potential mitigation funding sources. The Guide is available here: https://www.fema.gov/sites/default/files/2020-09/fema_region-03_mitigation-funding-resource-guide_new-jersey_09-24-2020.pdf

TABLE 5.5-3 STATE FUNDING

State Funding Available:	
New Jersey Environmental Infrastructure Trust (NJEIT)	Availability: Pre- and Post-Disaster; For Water and Wastewater Infrastructure Projects Description: The New Jersey Environmental Infrastructure Trust (NJEIT) is an independent state financing authority that provides low-interest rate loans to qualified borrowers in New Jersey for water quality and infrastructure projects. The NJEIT, partnering with DEP, offers short-term financing (bridge loans) and long-term disaster-recovery loan assistance.
New Jersey Economic Development Authority (NJEDA)	Availability: Pre- and Post-Disaster; For Businesses, Non-profits, and Developers Description: The New Jersey Economic Development Authority (NJEDA) is an independent state agency that provides tax incentives to foster development and employment growth and retention, financing for small and mid-sized businesses, revitalizes communities through redevelopment initiatives, and supports entrepreneurial development by providing access to training and mentoring programs. With its large portfolio of some 30 varied programs and services, NJEDA can assist businesses, non-profits and developers to access capital, including tax-exempt and taxable bond financing, loans, loan guarantees, and business and tax incentives.
New Jersey Redevelopment Authority (NJRA)	Availability: Pre- and Post-Disaster Description: The New Jersey Redevelopment Authority (NJRA) is an independent state financing authority committed exclusively to the redevelopment of New Jersey's urban areas. NJRA offers several financing resources including site acquisition funding, predevelopment assistance, several development assistances resources, and technical assistance.
New Jersey Housing and Mortgage Finance Agency (NJHMFA)	Availability: Pre- and Post-Disaster Description: The New Jersey Housing and Mortgage Finance Agency (NJHMFA) is an independent state financing authority that provides affordable home ownership and housing opportunities for New Jersey residents by funding affordable home mortgages for first-time home buyers, promoting construction and rehabilitation of rental housing, and encouraging mixed-income owner-occupied housing growth. NJHMFA provides low-interest financing and administers low-income housing tax credits for the State of New Jersey's low- and moderate-income communities.

5.6 PLAN INTEGRATION

5.6.1 REGIONAL INTERGRATION ACTIVITIES

Passaic River Basin Climate Resilience Planning Study (2019)

In 2019, the North Jersey Transportation Planning Authority (NJTPA) completed a Passaic River Basin Climate Resilience Planning Study (Study) to identify adaptation strategies to protect the transportation corridors and assets in the New Jersey portion of the Passaic River Basin from natural hazards. The study included a vulnerability assessment of the transportation infrastructure, the projection of future risks, the development of adaptation strategies for critical transportation infrastructure, and a series of recommendations. The Union County Hazard Mitigation Plan and the other HMPs in the region were used to inform asset identification and vulnerability for the Study.

Coastal Community Vulnerability Assessment and Mapping Protocol (CCVAMP)

Community resilience is highly dependent upon the location of development in relation to high-hazard areas. In order for local governments to take proactive measures to adapt, mitigate, and plan for episodic events or long-term changes in the shoreline, they must first be aware of the hazards they face and the potential exposure of people, property, and resources. The CCVAMP was developed by NJDEP to assist land use planners, hazard mitigation planners, emergency managers, and other local decision-makers in the identification of their community's vulnerability to coastal hazards.

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The CCVAMP defines the necessary steps to geospatially identify vulnerable land areas under present and future inundation scenarios, whether it be shallow coastal flooding due to spring tides, storm surge, or sea level rise. Through the development of inundation scenarios, coastal decisionmakers can then determine threats to infrastructure, sensitive natural resources, and special needs populations. The first step in the analysis is the development of a Coastal Vulnerability Index (CVI), which stratifies high hazard areas in coastal communities by compiling available hazard, elevation, and landscape geospatial data into an analysis that considers environmental hazards. Armed with the understanding of areas naturally predisposed to risk, coastal decisionmakers may guide future development away from high hazard areas and mitigate future losses.

New Jersey Coastal Management Program

New Jersey's Coastal Management Program (NJCMP) is part of the National Coastal Zone Management Program which addresses some of today's most pressing coastal issues, including sustainable and resilient coastal community planning, climate change, ocean planning, and planning for energy facilities and development.

5.6.2 COUNTY INTEGRATION ACTIVITIES

Planning for the protection and management of the coast, open space, and natural resources already integrates hazard mitigation into other planning mechanism and provides an excellent opportunity for continued and improved integration. Union County has adopted several plans and programs since the last Union County HMP in 2016.

Union County Emergency Operations Plan

As noted previously, all counties and municipalities in New Jersey must prepare and adopt an EOP. The primary purpose of the EOP is to prevent or mitigate, prepare for, respond to, and recover from both manmade and natural disasters. This includes providing an organizational structure for emergency responders and managing operations within the county by coordinating available resources from county and municipal governments. The latest EOP was approved on October 9, 2019 and is updated annually at the County's Local Emergency Planning Committee meetings.

Union County Transportation Master Plan (2016)

There are eight goals and objectives of the 2016 Union County Transportation Master Plan. Goal #8 – "To prepare for and adapt to changing conditions and withstand, respond to and recover rapidly from disruptions reflects" Union County's focus on resilient transportation infrastructure. The climate resilience of Union County's existing transportation infrastructure was considered during the planning process and is described in Section F. Climate Resilience of the Union County Transportation Master Plan. This section directly references the 2016 Union County HMP Update.

Implementation strategies related to Climate Resilience include the following:

- Work with NJDOT, NJ TRANSIT and other partners to improve the resilience of the County transportation infrastructure against the impacts of extreme weather.
- Identify existing infrastructure that can be elevated and work with partner agencies to pursue funding for this work. When feasible, site future infrastructure out of or above future flood- prone areas.
- Establish and frequently update emergency detours and evacuation routes.

Sustainable Development in Union County: A Livability Guide (2015)

The purpose of the *Sustainable Development in Union County: A Livability Guide* (Guide), by NJ Future, is a document was *to create a single document with a unifying theme to help better guide and coordinate county policy decisions and to assist with its updates and revisions to several key plans, the goal of which was to ensure that separate plans work to complement one another and to promote a more sustainable and dynamic county*. The unifying principle chosen by the County was the Principles of Livability developed by the federal Partnership for Sustainable Communities. One Principle of Livability, Supporting Existing Communities, includes the following strategies related to hazard mitigation:

Strategy 5. Protect existing communities from flooding and other natural hazards

Union County:

- The Union County Hazard Mitigation Plan (HMP) should include long-term land-use strategies as part of its mitigation approach, including green-infrastructure solutions to mitigate flooding in prone areas.

Municipal:

- Participate in FEMA's Community Rating System to increase community resilience and reduce flood insurance costs for property owners.
- Adopt a flood hazard ordinance if one does not exist, and review and update as necessary to reflect current hazards.
- In concert with the county, prepare a municipal Hazard Mitigation Plan.
- Consider a coordinated buy-out program for areas that have suffered repetitive flooding and loss.

Strategy 6. Design infrastructure for resiliency to extreme weather and climate change

Union County:

- Revise the Union County Land Development Standards (1999) and Design Standards (2009) to require low-impact design techniques and green infrastructure to manage stormwater more effectively on county roads.

Municipal:

- Create a green-development checklist to be used as part of the development application review process that includes consideration of low-impact design techniques and green infrastructure to manage stormwater more effectively.
- Adopt low-impact design standards directly into the official site plan checklist and into future municipal capital investments, including roads, public spaces, etc.

Union County Strategic Recovery Planning Report (2014)

Strategic Recovery Planning Reports (SRPR) emerged after Superstorm Sandy to address conditions created or exacerbated by Superstorm Sandy. The SRPRs were financed through the U.S. Housing and Urban Development (HUD) Community Development Block Grant Disaster Recovery (CDBG-DR) program and were intended to identify specific recovery and rebuilding strategies jurisdictions could take to help ensure that the community will be more resistant to damage from future storm events and encourage sustainable economic growth. Union County released a Strategic Recovery Planning Report in 2014.

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5.6.3 LOCAL INTEGRATION ACTIVITIES

This section outlines plans, tools, and other capabilities that the county and municipalities intend to use to promote mitigation efforts. The County and its corresponding municipalities have decided to incorporate mitigation requirements that would decrease their overall risk and vulnerability to hazard events by performing the following general tasks:

- Most municipalities in Union County have local Comprehensive Master Plans, which are the legal roadmap to planning for appropriate and safe land development. As discussed in Section 5.2.2 State Planning and Regulations, municipalities are now required to include a climate change-related hazard vulnerability assessment in their land use plan elements to analyze current and future threats associated with climate change related natural hazards, such as flooding. This assessment also must include a build-out analysis of all future development in the municipality, as well as any threats and vulnerabilities associated with this development, and strategies to reduce the risks of climate change-related natural hazards.
- Mitigation is integrated into local floodplain management practices and will be increased through several initiatives in the mitigation strategy. Municipalities have adopted the Advisory BFE maps and intend to adopt the updated DFIRMs after they are released through the Letter of Final Determination. Mitigation is integrated into floodplain management through practices including regulating where and how building permits are issued, requiring building materials and methods that mitigate the impact of flooding on homes, and encouraging property owners to exceed requirements and build with freeboard above the BFE.
- Several municipalities will integrate mitigation into plans to increase participation in the CRS program.
- Municipalities will review dam action plans and coordinate with private dam owners to implement mitigation actions into the plans and into maintenance practices.
- Local budgets and capital improvement plans will incorporate budgets for maintenance that can mitigate the impact of storms and flooding. For instance, clean-up plans for debris in the bay will assist in mitigating flooding, trimming trees near power lines will reduce or prevent utility outages during storms, and brush clean-up will mitigate wildfire.
- Local Emergency Planning Committees will continue to mitigate the impact of hazardous materials through integrating mitigation into their plans, coordination and meetings.
- Local evacuation and shelter plans focus on response. However, mitigation is integrated into these plans by maintaining and improving infrastructure that provides a safe exit for evacuees, maintaining and improving critical facilities such as Emergency Operations Centers and shelters to provide safe guidance and respite during a disaster, and planning for locations for generator back-up power.

Many of the municipalities in Union County have plans that address resiliency that may not fit into the category of plans presented above. Within each Municipal Narrative, located in Appendices Vol. I – Jurisdictional Information, contains a list of local capabilities that go beyond the minimum Federal and State requirements. Mitigation Actions identified in these plans have been incorporated into this HMP update as identified by the jurisdiction.

Table 5.1-1 Ongoing Planned Municipal Integration Activities lists specific integration activities for each of Union County's municipalities based on the results of the municipal capability assessments and the mitigation activities selected during this planning process.

TABLE 5.6-1 ONGOING PLANNED MUNICIPAL INTEGRATION ACTIVITIES

Jurisdiction	Ongoing Planned Integration Activities
Berkeley Heights Township	• Master Plan discusses redevelopment in flood hazard areas and recommends to consider updating bulk standards in affected zoning districts, such as establishing building height regulations based on the design flood elevation or requiring a minimum floor-to-floor height above the design flood elevation. • Community Wildfire Protection Plan • Streambank Buffer Protection Program • Watershed Management Plan • Floodplain Management Plan • Post-Disaster Recovery Plan • Land Acquisition for Open Space and Public Recreation Uses • Growth Management Ordinance • Natural Hazard Ordinance • The Township of Berkeley Heights is also certified by Sustainable Jersey and has a Mitigation Planning Committee.
Clark Township	• The Township's Master Plan specifically addresses minimizing flood risk. • Clark Township has a Watershed Management Plan and a Floodplain Management Plan.
Cranford Township	• The Township's Master Plan (2009) includes a Conservation Element including sections on Stormwater Management and Floodplains / Flood Hazard Areas. The Floodplain Overlay District (Zoning) provides clear, defined limits on development in the floodplain. The Reexamination of the Master Plan (2019) includes goals such as maintaining / improving the Townships Class Rating in the CRS. • Cranford Township's Site Plan Review and Subdivision requirements are reviewed against stringent stormwater requirements to minimize flow off-site and are subject to recommendations from the Board to implement resiliency related improvements. • Redevelopment Plan/Study • Levee (Dike) Stability and Seepage Analysis • Real Estate Disclosure Requirement
Elizabeth City	• Draft Final City of Elizabeth Pre-Disaster Hazard Mitigation Plan (2020) • The City's CIP includes many hazard mitigations projects. • All site plans and subdivisions within the Elizabeth City are reviewed by professional experts with training in evaluating hazards such as, waste disposal, flooding, evacuation, sight distances, buffers, underground contamination, etc. • The City's Redevelopment Plans/Studies requires development to comply with adopted floodplain management regulations and building codes. • The Elizabeth City has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements: • Redevelopment Plan/Study: Requires development to comply with adopted floodplain management regulations and building codes. • Climate Adaptation Plan: The Elizabeth City's Master Plan and new ordinance reflect the concept of conservation of water and avoidance of heat sinks. Natural buffers, promotion of renewal resources, LED outdoor lighting, promotion of hydrogen use in industrial uses, are all things promoted. • Streambank Buffer Protection Program: The City has acquired easements along the almost the entire length of the Elizabeth River within its corporate boundary to maintain the Flood Control Project constructed by the Army Corp of Engineers in the 1980s and prevent encroachments. This area is also regulated by NJDEP. • Watershed Management Plan: Stormwater Pollution Prevention Plan (2018, with annual review) • Floodplain Management Plan: Elizabeth River Flood Control Project • Post-Disaster Recovery Plan: The Elizabeth City has in the case of Superstorm Sandy worked nights and weekends to move applications along to promote diligent reviews. The Planning Office utilizes outside consultants who are on-call at least 55 hours per week. This assists applicants and residents quick and correct answers to their questions.

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Jurisdiction	Ongoing Planned Integration Activities
	• Land Acquisition for Open Space and Public Recreation Uses: Historically the City has purchased waterfront property for open space and public access. • Growth Management Ordinance: The City as a vast array of tools that it uses to promote the inclusion of open space in all future developments. This open space includes indoor and outdoor uses by residents. As an urban City the Planning Office has enhanced many Brownfields sites which includes hundreds of acres. • The Elizabeth City is part of the Coastal Zone Management Program regulated by New Jersey's Department of Environmental Protection and utilizes model Federal and State Natural Hazard Ordinances. • Local citizen groups or non-profit organizations in the City that engage in hazard mitigation activities include Future City, Inc., Groundwork Elizabeth, and Elizabeth Conservancy. • The Elizabeth City is certified by Sustainable Jersey. The City's Sustainable Jersey activities include teaching the community about sustainable stormwater management and using green infrastructure demonstration projects at a local library.
Fanwood Borough	• The Borough's redevelopment plan integrates hazard mitigation by improving a site to prevent blight and promote smart growth • The Borough has development a Stormwater Pollution Plan (which is stricter than DEP's BMP) and a Floodplain Management Plan
Garwood Borough	• Redevelopment Plan/Study • Community Wildfire Protection Plan • Climate Adaptation Plan • Post-Disaster Recovery Plan • Natural Hazard Ordinance • Post-Disaster Recovery Ordinance: Provided flexibility during the COVID-19 pandemic • The Borough also has a Streambank Buffer Protection Program, Watershed Management Plan, and Floodplain Management Plan as required by the New Jersey Department of Environmental Protection. • The Borough is Bronze Certified by Sustainable Jersey, engages in public-private partnership initiatives addressing disaster related issues with NJ American Water and PSE&G, and has a Mitigation Planning Committee.
Hillside Township	• Post-Disaster Recovery Plan • Real Estate Disclosure Requirement • The Township is also a certified StormReady Community
Kenilworth Borough	• Redevelopment Plan/Study • Post-Disaster Recovery Plan • Kenilworth's Mayor continues to work with the Mayors Council Rahway River Watershed Flood Control. • Borough is a member of the Rahway Valley Sewage Authority and conducts ongoing coordination on hazard mitigation.
Linden City	• Redevelopment Plan/Study: The Plan ensures compliance w/current regulations. • Land Acquisition for Open Space and Public Recreation Uses: The City uses the New Jersey Department of Environmental Protection (DEP) Blue Acres Program. • Natural Hazard Ordinance: Zoning Ordinance and FEMA FIRM Maps • The Linden City is also part of the DEP Coastal Zone Management Program and follows the NJ State law for seller disclosure. • The Linden City is also involved in a public-private partnership initiative, the CAP Program, in which the American Red Cross, Phillips 66, Spectra Energy, NuStar and other businesses have assisted programs with funding and expertise to address disaster related issues. • The City incorporates hazards into their CIP. • The City's Site Plan Review and Subdivision regulations are reviewed by various department for compliance with ordinances, flooding issues, and environment regulations
Mountainside Borough	• Redevelopment Plan/Study • Community Wildfire Protection Plan • Post-Disaster Recovery Plan • Growth Management Ordinance • Natural Hazard Ordinance

Jurisdiction	Ongoing Planned Integration Activities
	• The Borough has a Streambank Buffer Protection Program, Watershed Management Plan, and Floodplain Management Plan that follows all regulations through the New Jersey Department of Environmental Protection. • The Borough also has a Mitigation Planning Committee. • The Borough's site plan regulations consider hazard mitigation
New Providence Borough	• The Borough master plan promotes development in areas not encumbered by environmental constraints. • The Borough also has a Streambank Buffer Protection Program, Watershed Management Plan, Floodplain Management Plan, Growth Management Ordinance, and Natural Hazard Ordinance based on various Borough Ordinances and State Regulations
Plainfield City	• The City has a Mitigation Planning Committee that addresses the hazards listed in the HMP and attempts to mitigate prior to incidents occurring. • Redevelopment Plan/Study: Studies are conducted whenever new development or redevelopment is initiated. Risks that generally affect that geographic area are assessed and addressed for mitigation planning prior to initiating construction. • Coastal Zone Management Program: Planning committees assess all new projects prior to development. Hazards associated in high risk areas are addressed and the city and builders come together to formulate mitigation efforts for overall risk reduction. • Floodplain Management Plan: Mitigation efforts related to this plan are listed in the action worksheets. • Post-Disaster Recovery Plan: Hazard mitigation initiatives are outline in this section of the EOP. • Natural Hazard Ordinance: Regulations and policies enforced by the zoning board in high risk areas. • Post-Disaster Recovery Ordinance: Risk assessments are calculated pre-incident and post-incident in efforts to prepare for and allocate resources and funding for resiliency efforts. • Community entities come together to enhance and improve the overall effectiveness of recovery post-incident as a part of public-private partnership initiatives in the City. • The City has a Mitigation Planning Committee that addresses the hazards listed in the HMP and attempts to mitigate prior to incidents occurring
Rahway City	• Redevelopment Plan/Study • Watershed Management Plan • The Rahway City also has a Real Estate Disclosure Requirement in accordance with State law.
Roselle Borough	• Redevelopment Plan/Study • Growth Management Ordinance
Roselle Park Borough	• Redevelopment Plan/Study • Floodplain Management Plan: The Borough has a Stormwater and Flooding Chapter in their 2020 Environmental Resources Inventory. • The Borough is Sustainable Jersey Certification.
Scotch Plains Township	• Redevelopment Plan/Study: Downtown Redevelopment Plan Tier 1 Phase 1 and Resolution 2018-24 encourage a Complete Streets policy in the redevelopment area and discusses incorporating green infrastructure through stormwater management • Community Wildfire Protection Plan: Currently being reviewed and updated • Streambank Buffer Protection Program • Watershed Management Plan • Floodplain Management Plan • Land Acquisition for Open Space and Public Recreation Uses • Growth Management Ordinance • Natural Hazard Ordinance • The Township has Sustainable Jersey Certification and is involved in public-private partnership initiatives addressing disaster related issues. • The Township has a Mitigation Planning Committee
Springfield Township	• Redevelopment Plan/Study: Zoning for these plans adhere to specific area requirements. • Floodplain Management Plan: Member of National Flood Insurance Program through FEMA. • Post-Disaster Recovery Plan: Building and Zoning manage all construction due to disaster damages.

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Jurisdiction	Ongoing Planned Integration Activities
	• Natural Hazard Ordinance: Zoning ordinances for floodplains and steep slopes. • Post-Disaster Recovery Ordinance: Emergency Management Plan covers actions and recovery from disasters. • Real Estate Disclosure Requirement: Building Dept. requires Certificates of Occupancy guidelines. • The Township also has Sustainable Jersey Certification and a Special Improvement District Committee group focused on local business involvement in addressing disaster related issues.
Summit City	• Emergency Operations Plan: Our EOP does somewhat address resilience wit in the plan. Part of each ESF requires each function to establish continuity plans • Capital Improvements Plan: includes the mitigation of hazards with funding for road, storm and sanitary projects including resiliency for the City's building infrastructure • Streambank Buffer Protection Program: The City has a riparian ordinance that protects the streambank buffer areas along all water bodies in Summit • Post-Disaster Recovery Plan: City Admin has in the past provided a path for permitting to be expedited to facilitate recovery. Nothing formal, on an as needed basis.
Union Township	• Redevelopment Plan/Study: The Township has implemented a number of redevelopment plans where the existing conditions on some of the properties were considered hazardous and satisfied the criteria for redevelopment under the Local Housing and Redevelopment Law. • Community Wildfire Protection Plan: Countywide Plan • Streambank Buffer Protection Program: Article XXIXA, entitled Riparian Buffer Conservation Zone, of the Land Use Ordinance provides protections for vegetative buffers along state open waters. • Watershed Management Plan: Article XXIX entitled Stormwater Management and Control of the Land Use Ordinance identifies stormwater management requirements for major developments in accordance with N.J.A.C. 7:8 • Floodplain Management Plan: Article XIII of the Land Use Ordinance addresses floodplain management requirements, and names the Township Engineer as the local administrator • Land Acquisition for Open Space and Public Recreation Uses: Township has over 235 acres of parkland some of which are located in floodplains but with all parkland encumbered under the NJDEP Green Acres Program. • Union Township has received a bronze star in recognition of its Sustainable Jersey Certification.
Westfield Town	• Green Development Checklist: All applications for preliminary and final major site plan approval shall submit a Green Development Checklist, which includes various green development and design strategies to guide and inform the dialogue between an applicant and the Town regarding smart growth and resource efficiency. The checklist includes Low-Impact Design (LID) design features that work to mitigate flooding, drought, and extreme heat. • Redevelopment Plan/Study • Watershed Management Plan • Floodplain Management Plan • The Town is also certified Silver by Sustainable Jersey as of December 18, 2020 and engages in public-private partnership initiatives addressing disaster related issues.
Winfield Township	• The Township of Winfield did not note any Planning & Regulatory capabilities beyond minimum Federal and State requirements.

Rahway, NJ

6.0 COUNTY PROFILE

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6.0 COUNTY PROFILE

2021 HMP Update Changes:

- The County Profile was previously Section 2.
- Added the Section 6.2 Natural Features.
- Changed Section 2.3 Population to be under Section 6.3 Demographics.
- Added the Section Vulnerable Populations to Section 6.3 Demographics
- Updated Land Use/Land Cover section based on the most recent data (NJDEP Land Use/Land Cover 2015 Update).
- Updated Building Permits data and moved to Changes in Section 2.3 HMP Review: Changes in Development.
- Added Sections 6.5 Economic Assets and 6.6 Transportation Sections.

The recommendations in the Union County HMP update are based in large part on identification of past and potential property losses and risk to life and safety due to natural and man-made hazards. As part of the process of identifying potential problems, it is useful to understand the physical characteristics of Union County. It is also important to understand any related planning efforts by the NJOEM, as well as requirements of the federal government regarding hazard mitigation plans. The following subsections provide the geography, climate, and population characteristics for Union County.

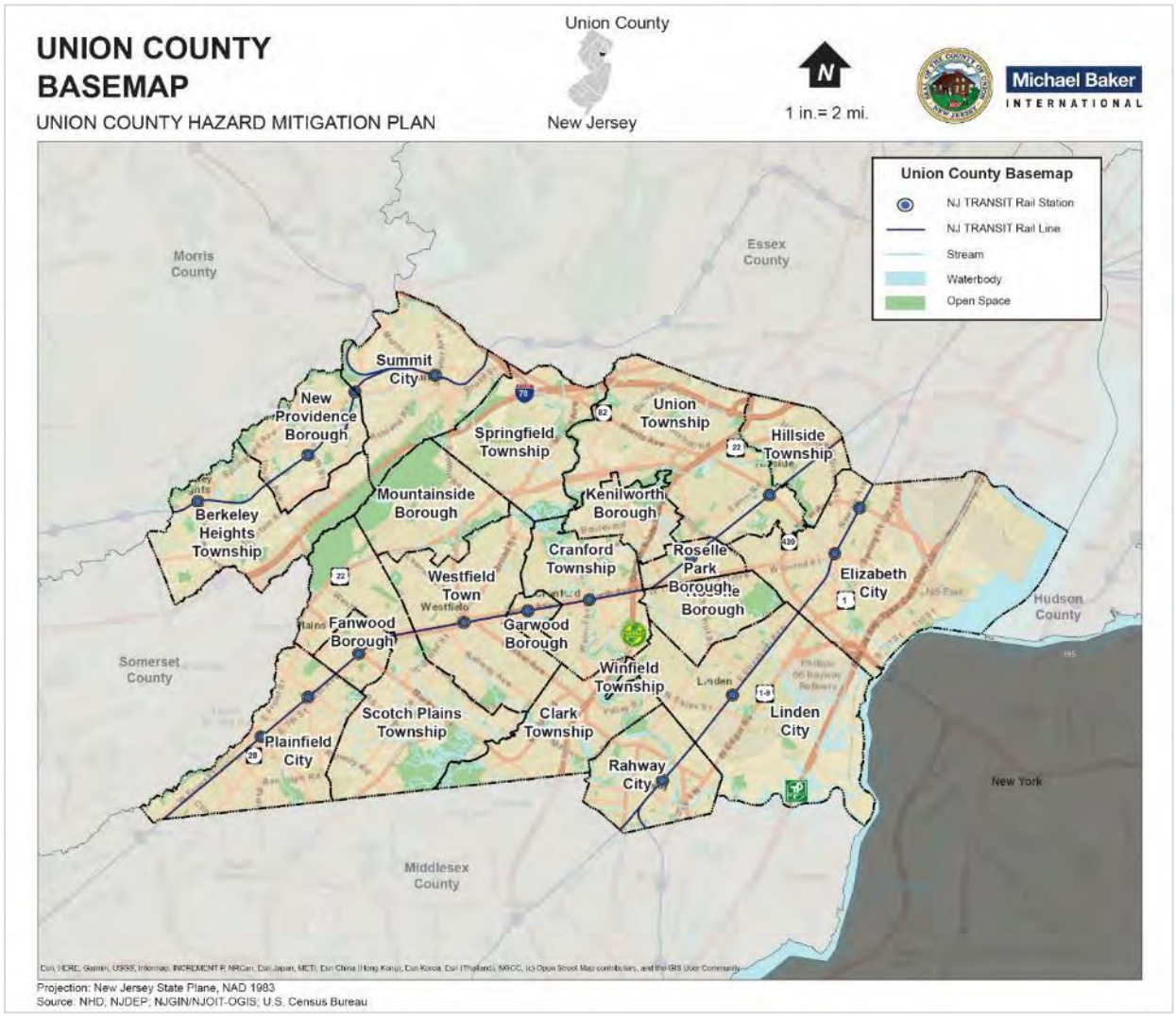
6.1 GEOGRAPHY

Union County comprises 105 square miles and is home to 21 municipalities. The Watchung Mountains cross the northwestern section of the County, with the highest elevations exceeding 500 feet above sea level in several locations. It is the third most densely populated county in New Jersey. Union County is located in the northeast section of New Jersey and is bordered by the Hudson County, the New York Stateline, and the Arthur Kill to the east, Essex County to the north, Morris County to the northwest, Somerset County to the southwest, and Middlesex County to the south. The 21 municipalities include the following:

Berkeley Heights Township
Clark Township
Cranford Township
Elizabeth City
Fanwood Borough
Garwood Borough
Hillside Township
Kenilworth Borough
Linden City
Mountainside Borough
New Providence Borough
Plainfield City
Rahway City
Roselle Borough
Roselle Park Borough
Scotch Plains Township
Springfield Township
Summit City
Union Township
Westfield Town
Winfield Township

All 21 municipalities participated in the Union County HMP and are mapped in **Figure 6.1-1 Union County Base Map**.

FIGURE 6.1-1 UNION COUNTY BASE MAP



6.2 NATURAL FEATURES

6.2.1 CLIMATE

Union County's average high temperature arrives in July at 86°F. The low-average month (19.8°F) occurs in January. The temperature is rarely below zero or above 100°F. Precipitation is evenly distributed throughout the year. Union County receives on average 50.94 inches of rain a year. Spring and summer frontal systems can produce high rainfall amounts and spawn tornados. Tropical storm systems can affect the northern Atlantic seaboard from late summer to late fall.

As discussed in Section 5.2 State Planning and Regulations, DEP recently released the *Scientific Report on Climate Change,* which states "as atmospheric levels of carbon dioxide and other greenhouse gases increase, New Jersey will experience significant direct and secondary changes in its environment. These include increases in temperature, variability in precipitation, frequency and intensity of storms, sea-level rise, ocean acidification, and the associated impacts to ecological systems, natural resources, human health, and the economy." Therefore, Union County and the 21 municipalities updated their mitigation strategy to address the effects and impacts of climate change.

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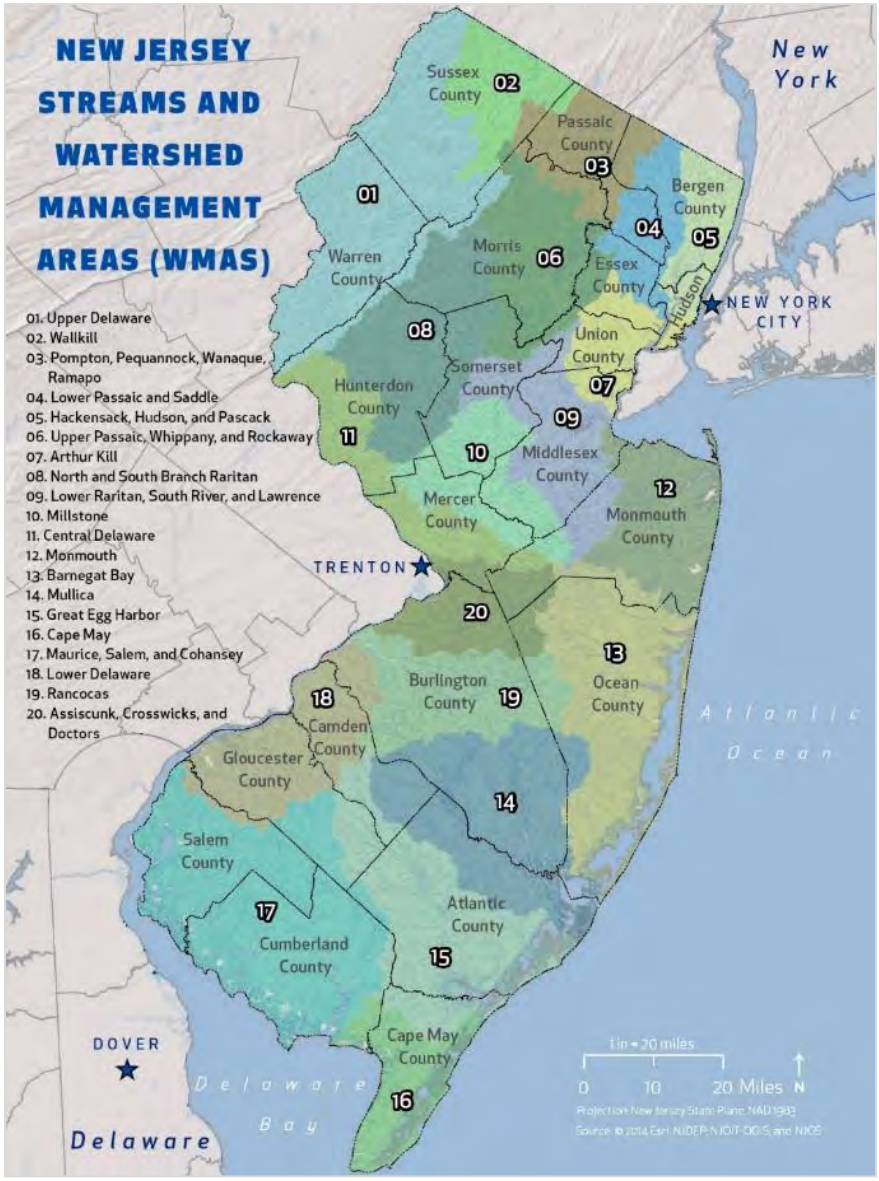
6.2.2 WATERSHEDS

A watershed is the area of land that drains into a body of water such as a river, lake, stream, or bay. It is separated from other systems by high points in the area such as hills or slopes. It includes not only the waterway itself but also the entire land area that drains to it. Drainage basins generally refer to large watersheds that encompass the watersheds of many smaller rivers and streams. In New Jersey, the State is divided into 20 Watershed Management Areas (WMA), which are made up of smaller watersheds. Union County is located mostly in the Arthur Kill (WMA 7), but also encompasses part of Upper Passaic, Whippany, and Rockaway (WMA 6) and Lower Raritan, South River, and Lawrence (WMA 9). **Figure 6.2-1 New Jersey Watersheds** illustrates the WMAs and watersheds of New Jersey's counties.

FIGURE 6.2-1 NEW JERSEY WATERSHEDS



Source: State HMP

The mainstem of the Rahway River is 24 miles long, flowing from Union County into the Arthur Kill near Linden and is tidal from the Pennsylvania Railroad Bridge at Rahway down to the mouth. Major tributaries include the East Branch Rahway River, Woodbridge River and Robinson's Branch and major impoundments are the Middlesex Reservoir, Orange Reservoir, Lower and Upper Echo Lakes and Diamond Mill Pond. The Elizabeth River is 11 miles long, much of it channelized for flood control purposes. Land uses in the Rahway and Elizabeth Watersheds are principally residential, commercial, and industrial. As of January 2021, there are currently 494 NJPDES Active Permits in Union County, with 135 Active Permits in Rahway City and Elizabeth City (NJDEP DataMiner).

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6.3 DEMOGRAPHICS

6.3.1 POPULATION

The population of Union County has steadily increased over the past 30 years. As shown in **Table 6.3-1 Union County Population Since 1990**, the population has increased by 12,498 or roughly 2.3% since the last HMP update (ACS 2014-2018). **Table 6.3-2 Changes in Population for Union County** compares the change in population and percent change by jurisdiction since the last plan update.

TABLE 6.3-1 UNION COUNTY POPULATION SINCE 1990

1990	2000	2010	2013 (est.)	2018 (est.)
493,819	522,541	536,499	540,568	553,066

Sources: U.S. Census Bureau, 2014-2018 American Community Survey

TABLE 6.3-2 CHANGES IN POPULATION FOR UNION COUNTY

Jurisdiction	2013 Population Estimate	2018 Population Estimate	Percent Change
Berkeley Heights Township	13,246	13,417	1.29%
Clark Township	14,882	15,614	4.92%
Cranford Township	22,846	23,882	4.53%
Elizabeth City	125,888	128,153	1.80%
Fanwood Borough	7,390	7,602	2.87%
Garwood Borough	4,239	4,334	2.24%
Hillside Township	21,538	21,895	1.66%
Kenilworth Borough	7,977	8,160	2.29%
Linden City	40,732	42,033	3.19%
Mountainside Borough	6,741	6,820	1.17%
New Providence Borough	12,225	12,808	4.77%
Plainfield City	50,065	50,508	0.88%
Rahway City	27,701	29,370	6.03%
Roselle Borough	21,212	21,582	1.74%
Roselle Park Borough	13,384	13,568	1.37%
Scotch Plains Township	23,657	24,183	2.22%
Springfield Township	16,249	17,398	7.07%
Summit City	21,657	21,921	1.22%
Union Township	56,915	58,158	2.18%

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Jurisdiction	2013 Population Estimate	2018 Population Estimate	Percent Change
Westfield Town	30,525	30,086	-1.44%
Winfield Township	1,499	1,574	5.00%
Union County	540,568	553,066	2.31%

Sources: U.S. Census Bureau, 2014-2018 American Community Survey

Population Density

A further breakdown of the population of Union County as collected by the 2014-2018 ACS is compiled in the following tables. Most of the population statistics below are comparable to New Jersey. In Union County 76% of the population is over the age of 18 which is comparable to that of the State, with 78% over age 18. In Union County 14% of the population is over 65, compared to 15.5% of the State population.

FIGURE 6.3-1 POPULATION DENSITY MAP

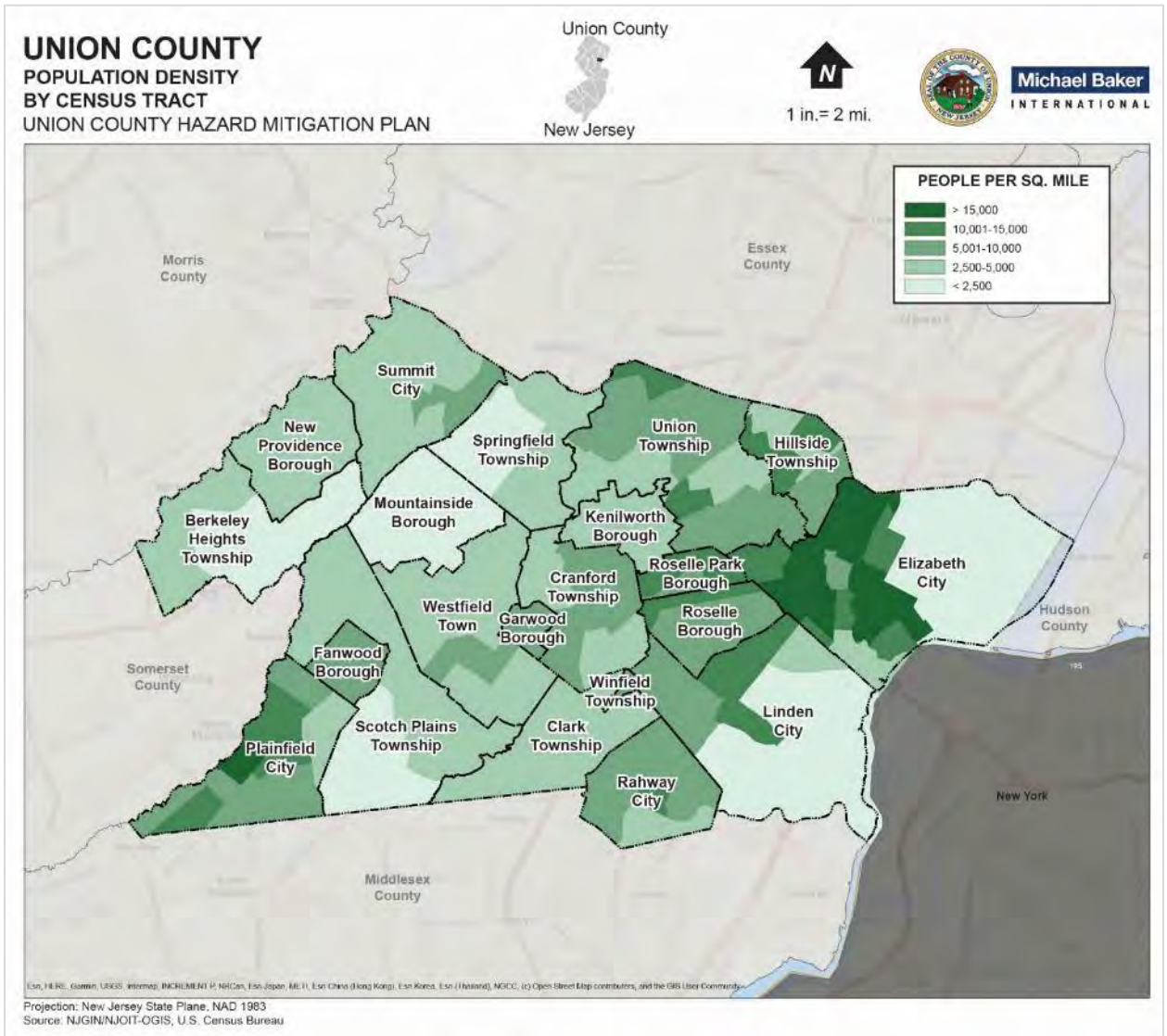

TABLE 6.3-3 DEMOGRAPHIC COMPARISON BETWEEN UNION COUNTY AND NEW JERSEY

General Characteristics	Union County	Union County Percent	New Jersey	New Jersey Percent
Male	269,450	48.72%	4,335,930	48.82%
Female	283,616	51.28%	4,545,915	51.18%
Median Age (years)	38.5	N/A	39.8	N/A
Under 5 years	35,056	6.34%	521,684	5.87%
18 years and over	422,703	76.43%	6,908,443	77.78%
65 years and over	76,895	13.90%	1,376,863	15.50%
One Race	538,219	97.32%	8,650,896	97.40%
White	310,654	56.17%	6,031,747	67.91%
Black or African American	117,079	21.17%	1,196,764	13.47%
American Indian and Alaska Native	1,580	0.29%	18,649	0.21%
Asian	27,959	5.06%	832,403	9.37%
Native Hawaiian and Other Pacific Islander	85	0.02%	3,357	0.04%
Some other race	80,862	14.62%	567,976	6.39%
Two or more races	14,847	2.68%	230,949	2.60%
Hispanic or Latino (of any race)	171,745	31.05%	1,768,020	19.91%

Source: U.S. Census Bureau, 2014-2018 American Community Survey

TABLE 6.3-4 SOCIAL CHARACTERISTICS, 2014 - 2018

Social Characteristics of Population	Union County Estimate	Percent	New Jersey	Percent
Total Population 25 years and over	375,148		6,129,542	
High school graduate or higher	323,487	86.23%	5,488,429	89.54%
Bachelor's degree or higher	131,578	35.07%	2,384,056	38.89%
Foreign born	146,300	39.00%	1,746,422	28.49%

Source: U.S. Census Bureau, 2014-2018 American Community Survey

TABLE 6.3-5 ECONOMIC CHARACTERISTICS

Economic Characteristics	Union County	New Jersey
Total population 16 years and over	437,481	7,142,175
In labor force (population 16 years and over)	299,008	4,684,112
Mean travel time to work in minutes (workers 16 years +)	31.4	31.7
Median household income (2018 inflation-adjusted dollars)	$77,095	$79,363
Median family income (in 2018 inflation-adjusted dollars)	$91,381	$98,047
Per capita income (in 2018 inflation-adjusted dollars)	$40,201	$40,895

Source: U.S. Census Bureau, 2008-2012 American Community Survey, 2014-2018

6.3.2 HOUSING UNITS

There are approximately 201,916 housing units within Union County, of which 55.12 percent are owner occupied and 38.48 percent are rentals. Approximately 58 percent of the occupied housing units are single units, with 54.3 percent of those units being detached units. An additional 15.7

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percent are comprised of two units and about 15 percent have 10 or more units. For occupied rentals, about 42 percent are two to four units, with over one-third being 10 or more units (U.S. Census Bureau ACS 2014-2018). The breakdown of housing statistics compared to New Jersey is summarized below.

TABLE 6.3-6 UNION COUNTY BREAKDOWN OF HOUSING STATISTICS, ESTIMATE 2014-2018

General Characteristics	Union County Estimate	Union County Percent	New Jersey
Total housing units	201,916	-	3,605,401
Occupied housing units	188,987	93.60%	3,213,362
Owner-occupied housing units	111,289	55.12%	2,054,413
Renter-occupied housing units	77,698	38.48%	1,158,949
Vacant housing units	12,929	6.40%	392,039
Median value (dollars)	$357,300	-	$327,900
Owner-occupied with a mortgage	76,034	68.32%	1,383,992
Owner-occupied not mortgaged	35,255	31.68%	670,421

Source: U.S. Census Bureau American Community Survey, 2014-2018

For information on Changes in Development, see Section 2.3 HMP Review: Changes in Development.

6.3.3 VULNERABLE POPULATIONS

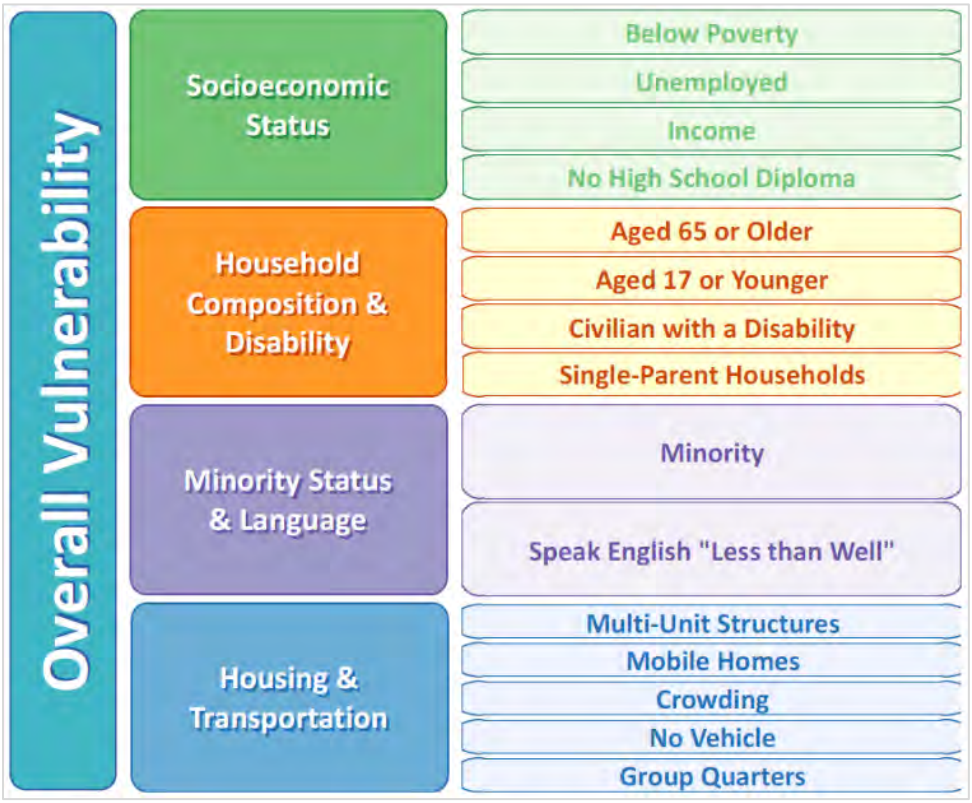
The DMA 2000 requires that HMPs consider the risk and vulnerability of socially vulnerable populations to natural hazards. These populations can be more susceptible to hazard events, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. For the purposes of this planning process, vulnerable populations in Union County include children, elderly, low-income, the physically or mentally disabled, non-English speakers, and the medically or chemically dependent.

Identifying concentrations of vulnerable populations can assist communities in targeting preparedness, response, and mitigation actions. For the purposes of this planning process, vulnerable populations in Union County include children, elderly, low-income, the physically or mentally disabled, non-English speakers and the medically or chemically dependent.

The Social Vulnerability Index, or SVI, is compiled by the Centers for Disease Control and Prevention (CDC) and indicates the relative social vulnerability of a county. The CDC defines social vulnerability as “the degree to a which a community exhibits certain social conditions that may affect that community’s ability to prevent human suffering and financial loss” when a disaster or hazardous event occurs (CDC, 2018). In order to analyze the SVI of each county, the CDC uses US Census Tract data and groups 15 factors into following categories: socioeconomic status; household composition and disability; minority and language; and housing and transportation. The SVI is an important aspect of the Union County HMP as it can be used to estimate the amount of supplies need for the various populations, identify where shelters are needed, and plans for evacuation considering the elderly or those for whom is English is not their first language or spoken well.

Each vulnerability category is color coded for easy interpretation, as displayed in **Figure 6.3 - 2 SVI Categories**. Each category then relates to a corresponding map that depicts those vulnerabilities, see **Figure 6.3-3 CDC SVI Household Composition/Disability, 2018**, **Figure 6.3-4 CDC SVI Socioeconomic Status, 2018**, **Figure 6.3-5 CDC SVI Race/Ethnicity/Language, 2018**, and **Figure 6.3-6 CDC SVI Housing/Transportation, 2018**. All the results are then combined to create an overall SVI map, see **Figure 6.3-7 CDC SVI Overall Social Vulnerability, 2018**.

FIGURE 6.3-2 SVI CATEGORIES



Source: CDC

Household Composition and Disability

Figure 6.3-3 CDC SVI Household Composition/Disability, 2018 depicts household composition and disability vulnerability by Census Tract from CDC SVI 2018. This category is based on the population aged 65 and over, aged 17 and younger, in a single-parent household, and aged 5 and over with a disability as determined by the US Census American Community Survey (ACS) 2014-2018. The census tracts with the highest household composition and disability vulnerabilities are in Plainfield City, Union Township, Cranford Township, Clark Township, Rahway City, Roselle Borough, Elizabeth City, and Linden City.

According to the 2014-2018 ACS, approximately 14% of the population is over 65 and 24% of the population is aged 17 and younger.

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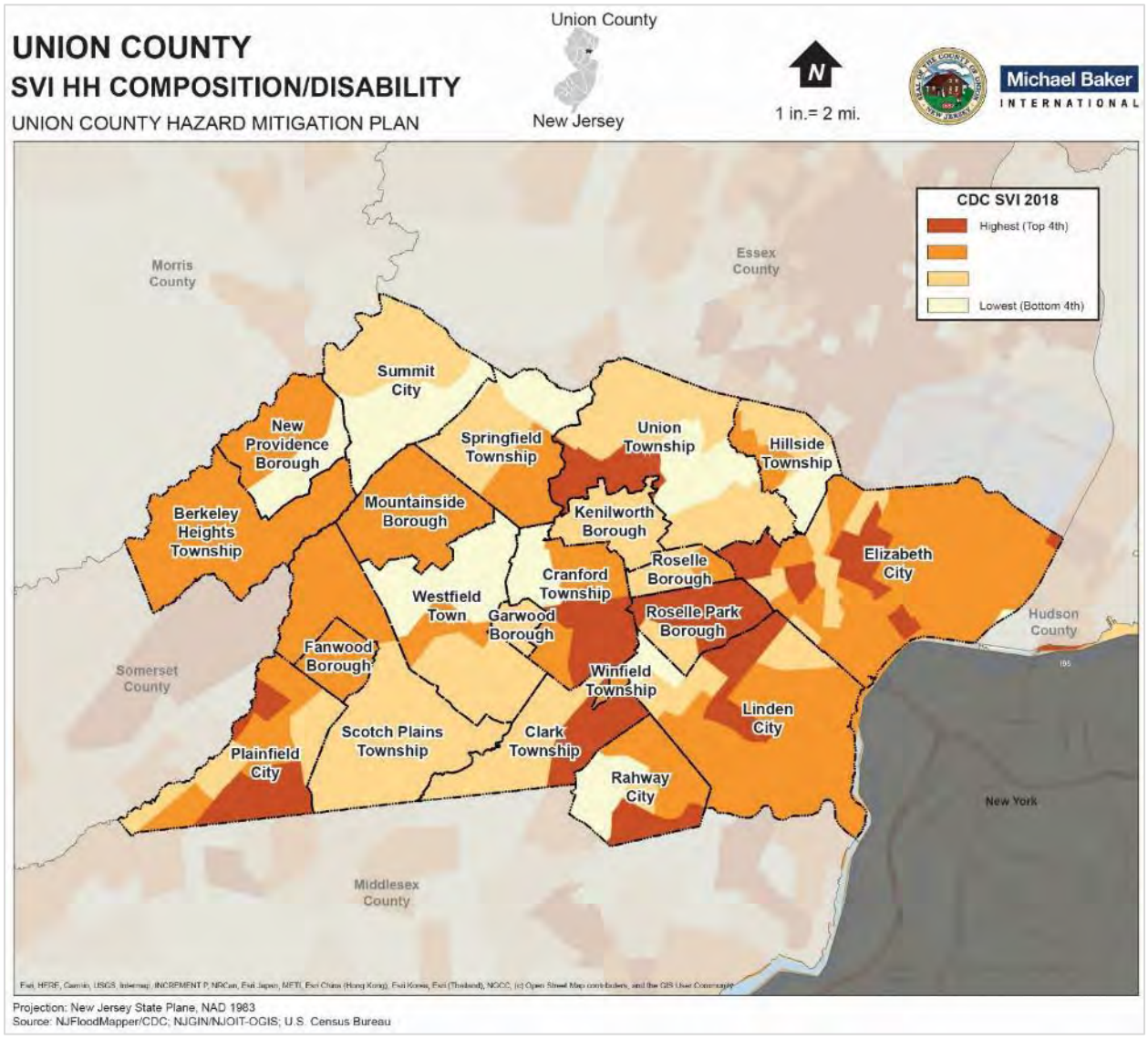
FIGURE 6.3-3 CDC SVI HOUSEHOLD COMPOSITION/DISABILITY, 2018



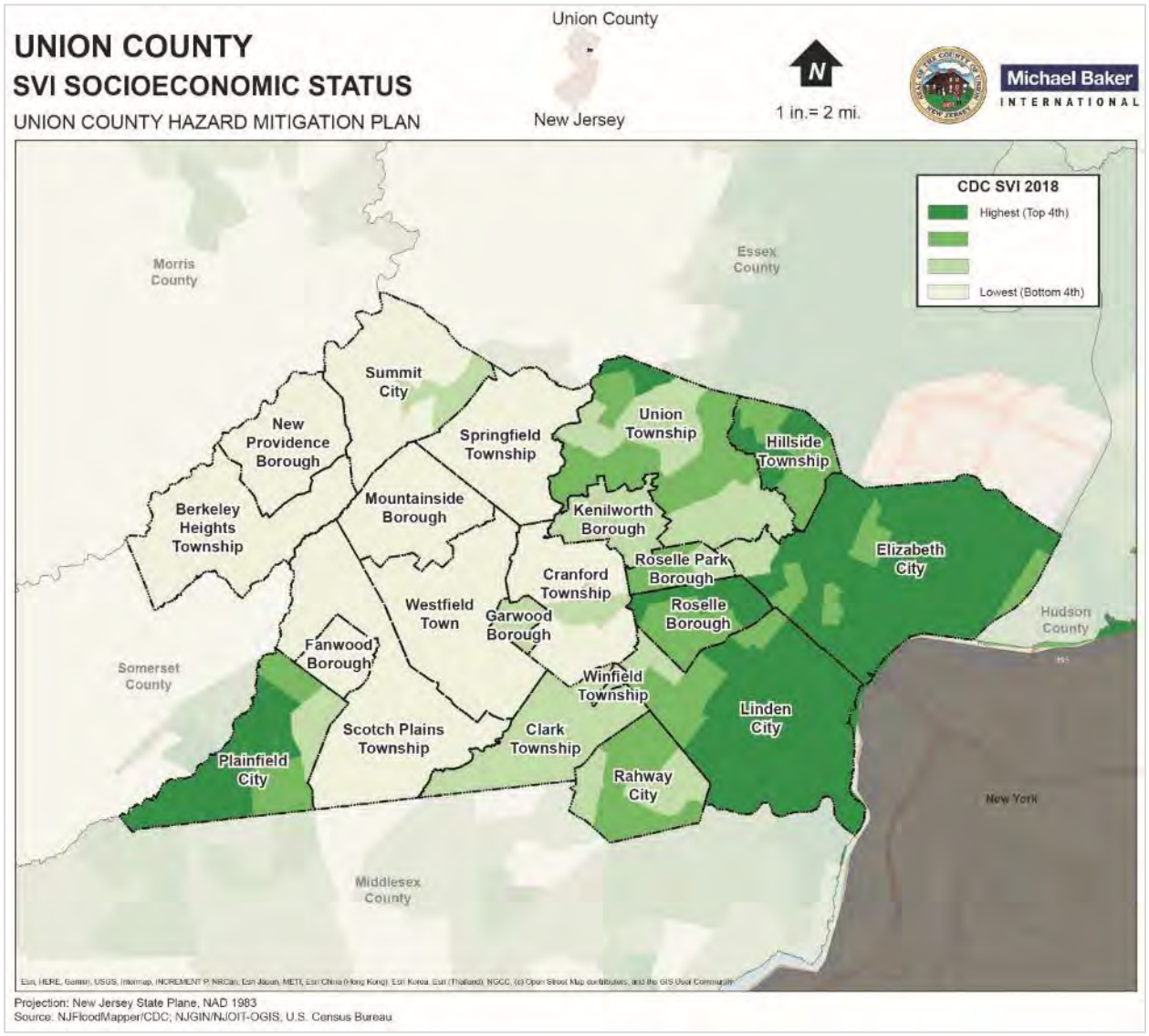
Source: CDC SVI 2018

Socioeconomic Status

Figure 6.3-4 CDC SVI Socioeconomic Status, 2018 depicts the socioeconomic status vulnerability by Census Tract from CDC SVI 2018. This category is based population in poverty, unemployed, (low) per capita income, and without a high school diploma as determined by the US Census ACS 2014-2018. The census tracts with the highest socioeconomic vulnerabilities are Elizabeth City, Linden City, Plainfield City, Roselle Borough, Hillside Township and Union Township.

According to the 2014-2018 ACS, approximately 14% of the Union County population 25 years and over are without a high school dipolma.

FIGURE 6.3-4 CDC SVI SOCIOECONOMIC STATUS, 2018



Source: CDC SVI 2018

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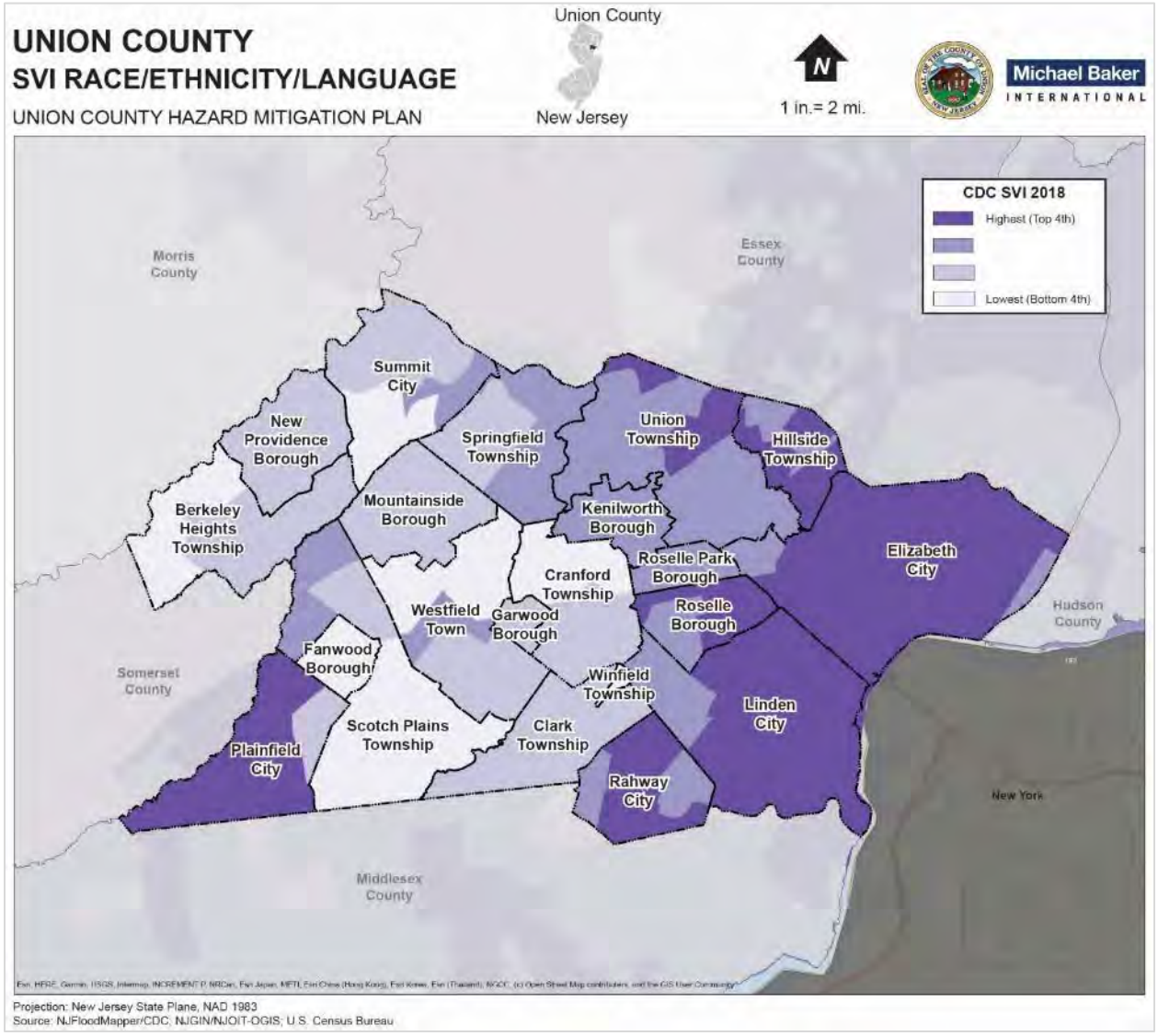
Race, Ethnicity, and Language

Figure 6.3-5 CDC SVI Race/Ethnicity/Language, 2018 depicts the race/ethnicity/language vulnerability by Census Tract from CDC SVI 2018. This category is based population that is minority and speaks English "less than well" as determined by the US Census ACS 2014-2018. The census tracts with the highest race/ethnicity/language vulnerabilities are Elizabeth City, Linden City, Rahway City, Plainfield City, Roselle Borough, Hillside Township, and Union Township.

According to the 2014-2018 ACS, approximately 21% of Union County identifies as Black or African America, 5% identifies as Asian, less than one percent identifies as American Indian and Alaskan Native and less than one-tenth percent identifies as Native Hawaiian and Other Pacific Islander. Approximately 31% of Union County's population identifies as Hispanic or Latino.

FIGURE 6.3-5 CDC SVI RACE/ETHNICITY/LANGUAGE, 2018



Source: CDC SVI 2018

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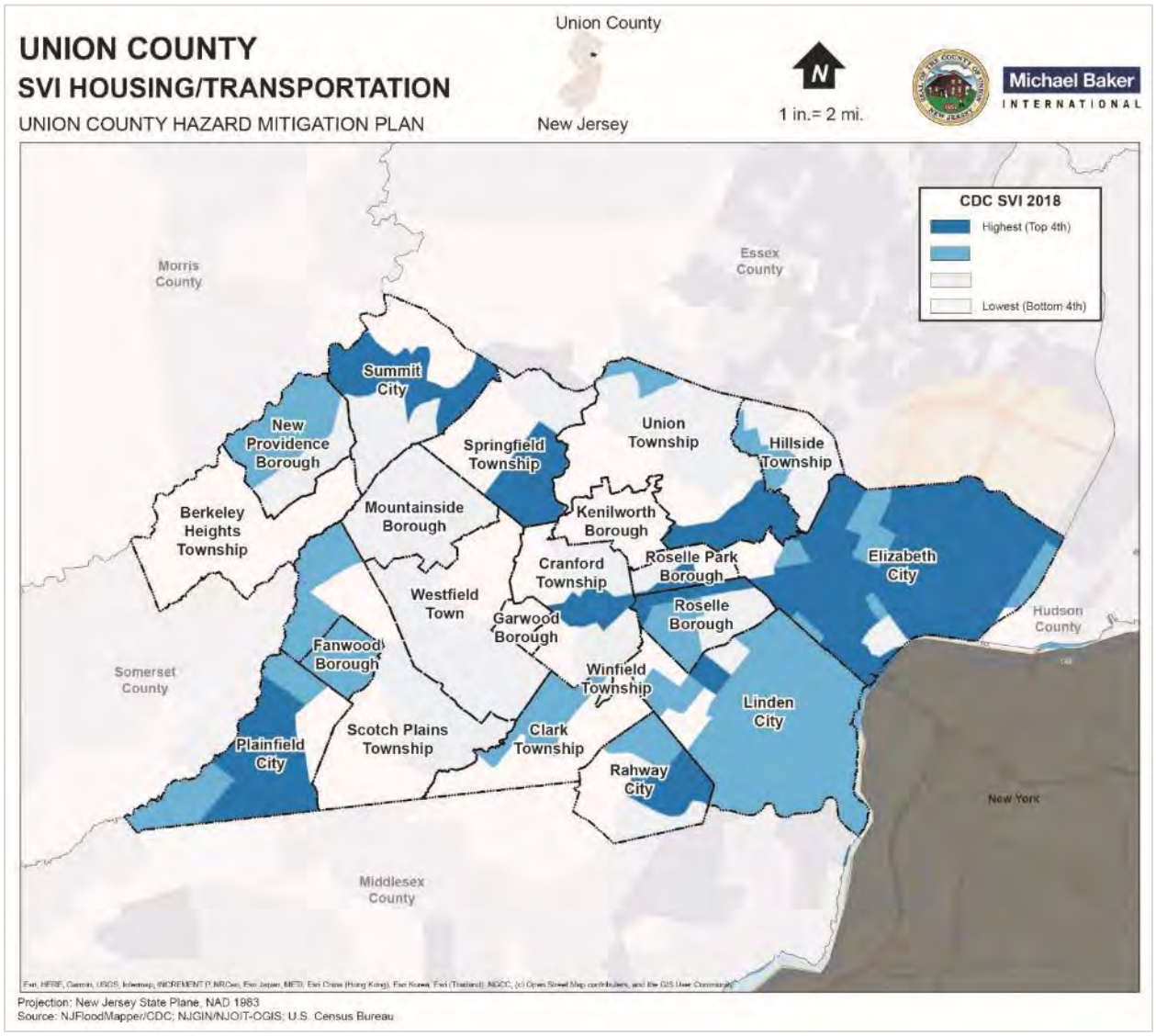
Housing and Transportation

Figure 6.3-6 CDC SVI Housing/Transportation, 2018 depicts the housing/transportation vulnerability by Census Tract from CDC SVI 2018. This category is based population that live in multi-unit housing, mobile homes, crowded conditions, group quarters, and do not own a vehicle as determined by the US Census ACS 2014-2018. The census tracts with the highest housing/transportation vulnerabilities are Elizabeth City, Plainfield City, Union Township, Summit City, Springfield Township, Cranford Township, Roselle Park Borough, Roselle Borough, Rahway City, and Linden City.

According to the Union County Transportation Master Plan (2016), 10 percent of Union County's population travels to work via public transportation, and one in nine households have no vehicle.

FIGURE 6.3-6 CDC SVI HOUSING/TRANSPORTATION, 2018



Source: CDC SVI 2018

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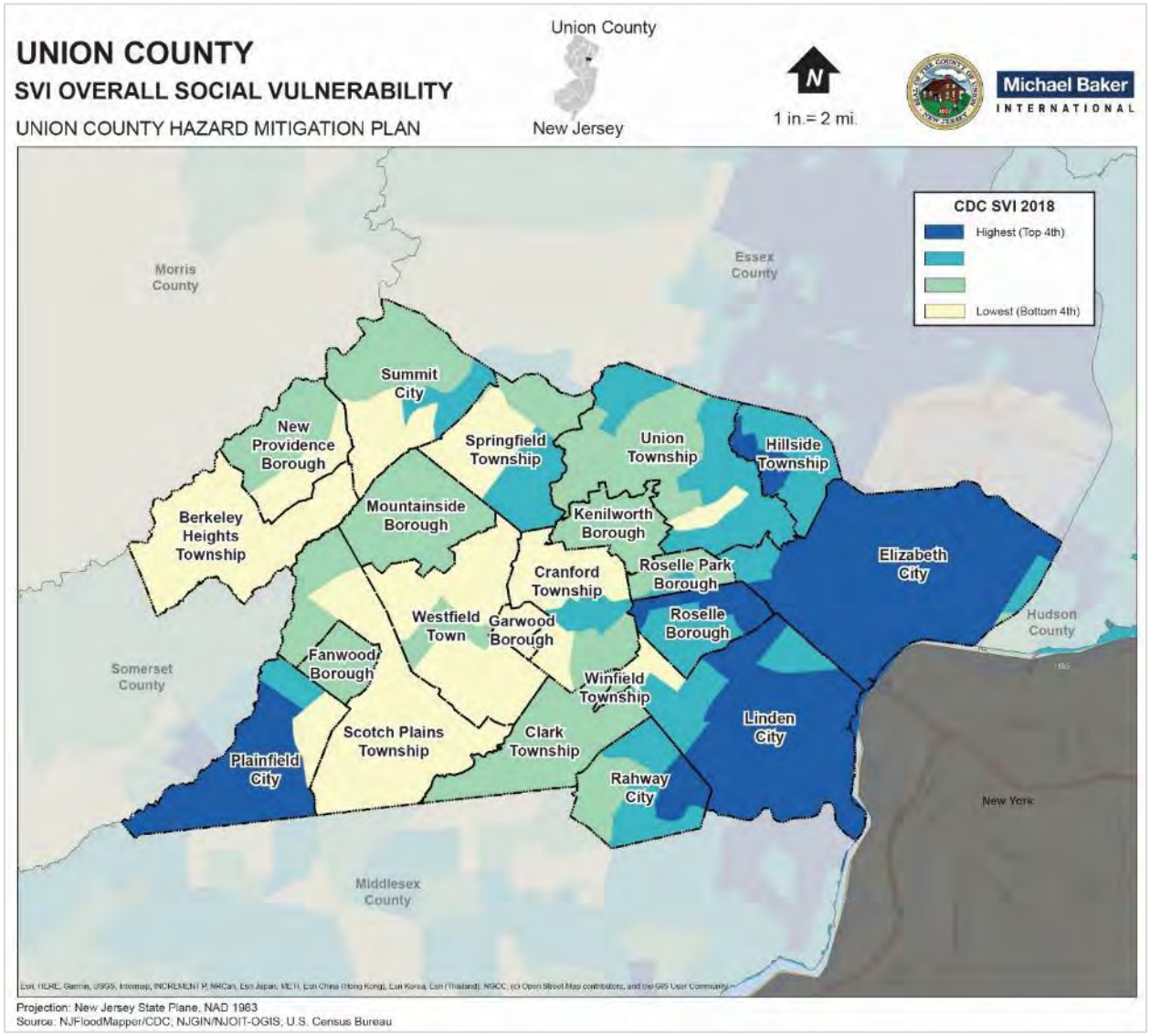
Overall, vulnerable communities can be found in Elizabeth City, Linden City, Plainfield City, Hillside Township, and Roselle Borough as shown in **Figure 6.3-7 CDC SVI Overall Social Vulnerability, 2018**.

FIGURE 6.3-7 CDC SVI OVERALL SOCIAL VULNERABILITY, 2018



Source: CDC SVI 2018

6.4 LAND USE/LAND COVER

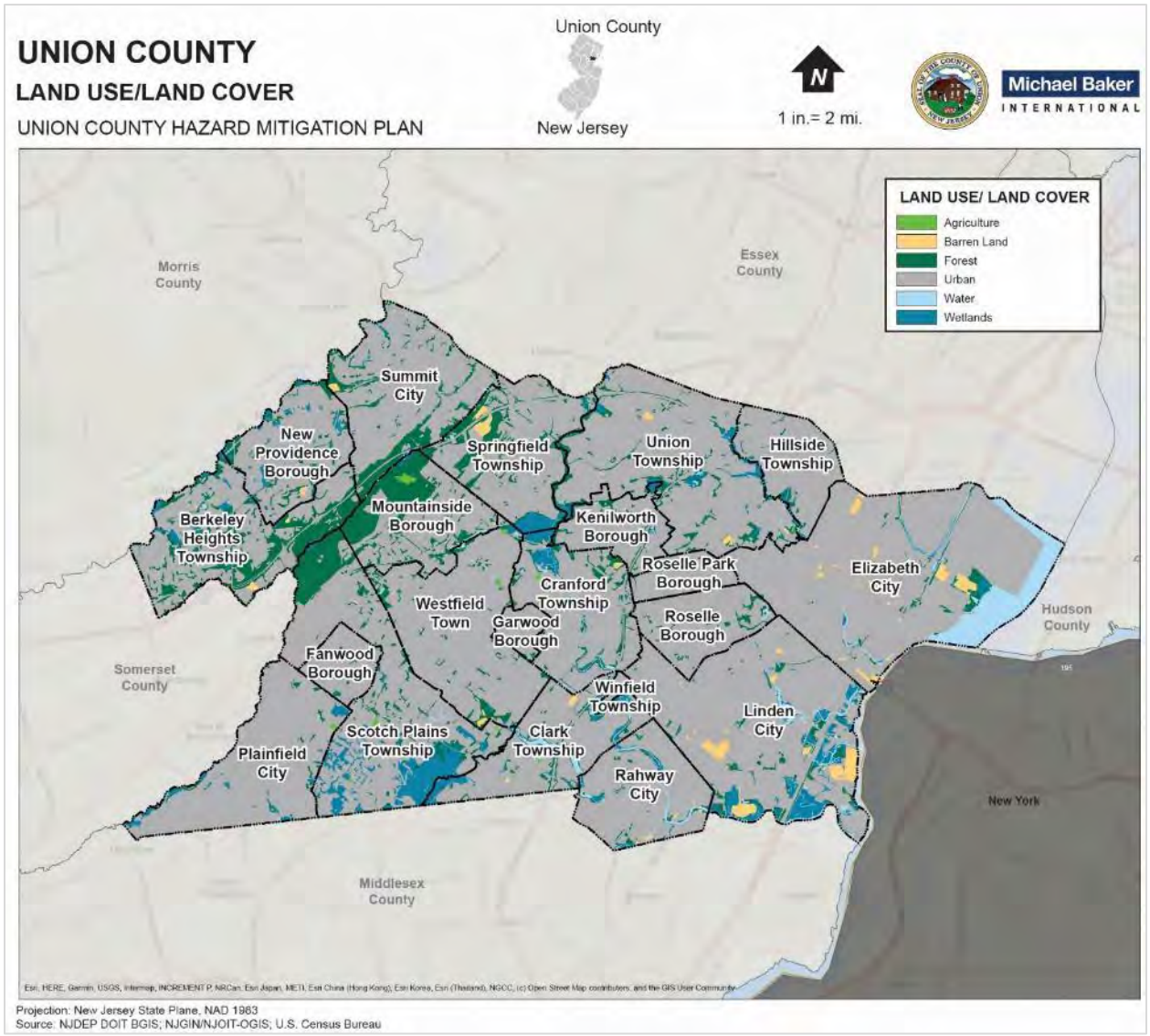
6.4.1 DISTRIBUTION OF LAND USE

Union County is suburban residential county, with approximately 83 percent of the County covered by urban land uses, while approximately 0.1 percent of the County is used for agricultural land. Approximately 9% of the land is covered by forests and 4% covered by wetlands, much of which is preserved as local, county, and state-owned lands (NJDEP DOIT BGIS 2019 Land Use/Land Cover 2015 Update). The County's Parks Department manages 36 parks, covering almost 6,200 acres. This includes the Watchung Reservation, which is 2,200 acres in the western part of the County. In addition to providing residents with the positive benefits of park land and open space, the

County has prioritized acquiring additional parkland within the flood prone areas of the Rahway River. This approach protects towns like the Township of Winfield, who has yet to join the NFIP, because all of its flood prone land falls within the County park, and thus it has minimal flood risk to its properties and residents.

The most significant land cover class within the County is urban development. The Census estimated in 2018 that there are 201,916 housing units within the County, 93.6% of which are occupied (U.S. Census Bureau ACS 2014-2018). According to this survey, approximately, 82% of these houses were built before 1979 (Union County's initial FIRM was adopted in 1978). While it is not certain how many of these houses were built in flood prone areas, it stands to reason that the County has a number of residents that pre-date the FIRM. Many of these properties may be targeted for mitigation efforts in the future. **Figure 6.4-1 Union County Land Use/Land Cover Map** displays the current land use/land cover described above.

FIGURE 6.4-1 UNION COUNTY LAND USE/LAND COVER MAP



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6.4.2 CHANGES IN LAND USE/LAND COVER

The land cover within the County has remained relatively consistent since the last HMP Update. According to the land cover classification data created by NJDEP, Union County has only increased its urban footprint by less than 0.1% (NJDEP DOIT BGIS 2019 Land Use/Land Cover 2015 Update). Local and state protections ensure that this type of development does not increase flood, wind, or earthquake risk to existing or new property owners.

TABLE 6.4-1 LAND COVER CHANGES SINCE 2002 IN UNION COUNTY

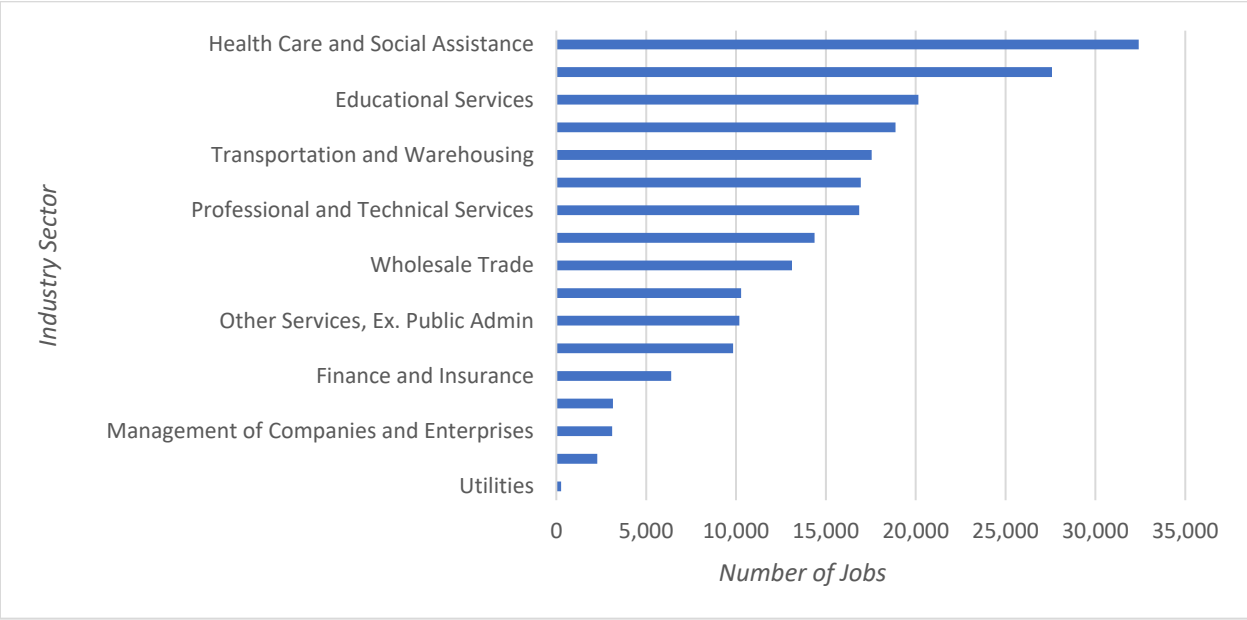
Land Cover Type	2012 (Acres)	Percent Change	2015 (Acres)	Percent Change
Agriculture	86.15	-37.13%	86.46	0.36%
Barren Land	627.15	19.53%	703.04	12.10%
Forest	6,151.00	-7.30%	6,086.86	-1.04%
Urban	55,757.87	0.85%	55,772.11	0.03%
Water	1,906.01	2.78%	1,875.80	-1.59%
Wetlands	2,912.95	-2.95%	2,914.33	0.05%

Source: NJDEP DOIT BGIS 2019 Land Use/Land Cover 2015 Update.
This report was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.

6.5 ECONOMIC ASSETS

According to the New Jersey Department of Labor and Workforce Development (NJLWD) 2019 New Jersey Quarterly Census of Employment and Wages report, 228,239 people employed in Union County in both the public and private sectors. The industry employing the greatest number of employees was Health Care and Social Assistance, with 32,409 employees, with an annual payroll of $1,854,505,974. The industry with the highest annual payroll was Professional and Technical Services, $3,166,857,534, with 16,854 employees. **Figure 6.5-1 Jobs by Employment Sector in Union County, 2019** displays the number of jobs by industry sector.

FIGURE 6.5-1 JOBS BY EMPLOYMENT SECTOR IN UNION COUNTY (2019)



Source: NJLWD 2019 Quarterly Census of Employment and Wages

The major employers identified by the Steering Committee to include in the Planning Process include:

- Merck
- Overlook Medical Center
- Phillips 66 Refinery
- Robert Wood Johnson University Hospital Rahway
- Wakefern Food Corporation (Shoprite)
- Trinitas Regional Medical Center

6.6 TRANSPORTATION

Roadways and Bridges

According to the Union County Transportation Master Plan (2016), there are 1,430 miles of road in Union County. Major roadways that traverse Union County include Interstates 78, 278/Goethals Bridge, and the New Jersey Turnpike (I-95); the Garden State Parkway, and State Highways 1&9, 22, 24, 27, 82, and 124.

Union County owns 129 bridges that span over 20 feet. Of these 129 bridges, 5% are structurally deficient and require replacement (pending funding) and another 30% are functionally obsolete and may require rehabilitation (pending funding). NJDOT has identified nine "Orphan Bridges" of uncertain ownership in Union County (Union County Transportation Master Plan 2016). The Port Authority of New York and New Jersey owns the Goethals Bridge, which connects Union County to Staten Island, NY.

Freight

The New Jersey Transportation Planning Authority (NJTPA) tracts a set of metrics in order to support transportation, land use, and economic development within the North Jersey region. Using 2010 Census Data, the NJTPA Freight Profile for Union County shows how important freight movement is to the County's economy and job sector. Thirty-five percent of those employed in the County work in "freight-intensive" industries, including retail and wholesale trade. There are about 700 warehouses or distribution centers in the County, with an additional 328 manufacturing buildings. Although not thought of being heavily dependent on freight, the healthcare industry also relies on the movement of medical supplies. In 2007, about 52.5 million tons of domestic freight moved into or out of Union County, which does not include "pass thru" tonnage.

Union County freight is moved via all forms of transportation, by land, sea, and air. Union County is home to several freight rail corridors, such as the Lehigh Line and the Garden State Secondary (Chemical Coast Line). Most freight lines in Union County are operated by Conrail Shared Assets Operations (Union County Transportation Master Plan 2016).

Port Facilities and Marine Terminals

In Union County, the Port Authority of New York and New Jersey operates port facilities at Port Elizabeth in Elizabeth City. Port Newark/Elizabeth is the largest marine terminal complex in the Port of New York & New Jersey, and are composed of "the largest containerized, deep-water shipping terminals on the East Coast of the U.S." (Union County Transportation Master Plan 2016).

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Air

Union County is home to two airports: Linden Municipal Airport and Newark Liberty International Airport, which straddles the cities of Newark (Essex County) and Elizabeth (Union County) (Union County Transportation Master Plan 2016).

Newark Liberty International Airport (Newark Airport) is a major hub for both passenger travel and cargo movement. In 2015, Newark Airport was ranked the 15th busiest commercial airport in the U.S for passenger travel. Additionally, in 2015, Newark Airport carried the most domestic cargo (almost 450,000 tons) of any airport in the New York City region. Newark Airport is operated by the Port Authority of New York and New Jersey (Union County Transportation Master Plan 2016). A majority of the airport is in FEMA's SFHA.

Linden Municipal Airport, which is owned and operated by the City of Linden, is used for general aviation entities as well as emergency responders and government entities. Linden Municipal Airport does not carry cargo (Union County Transportation Master Plan 2016).

Public Transportation

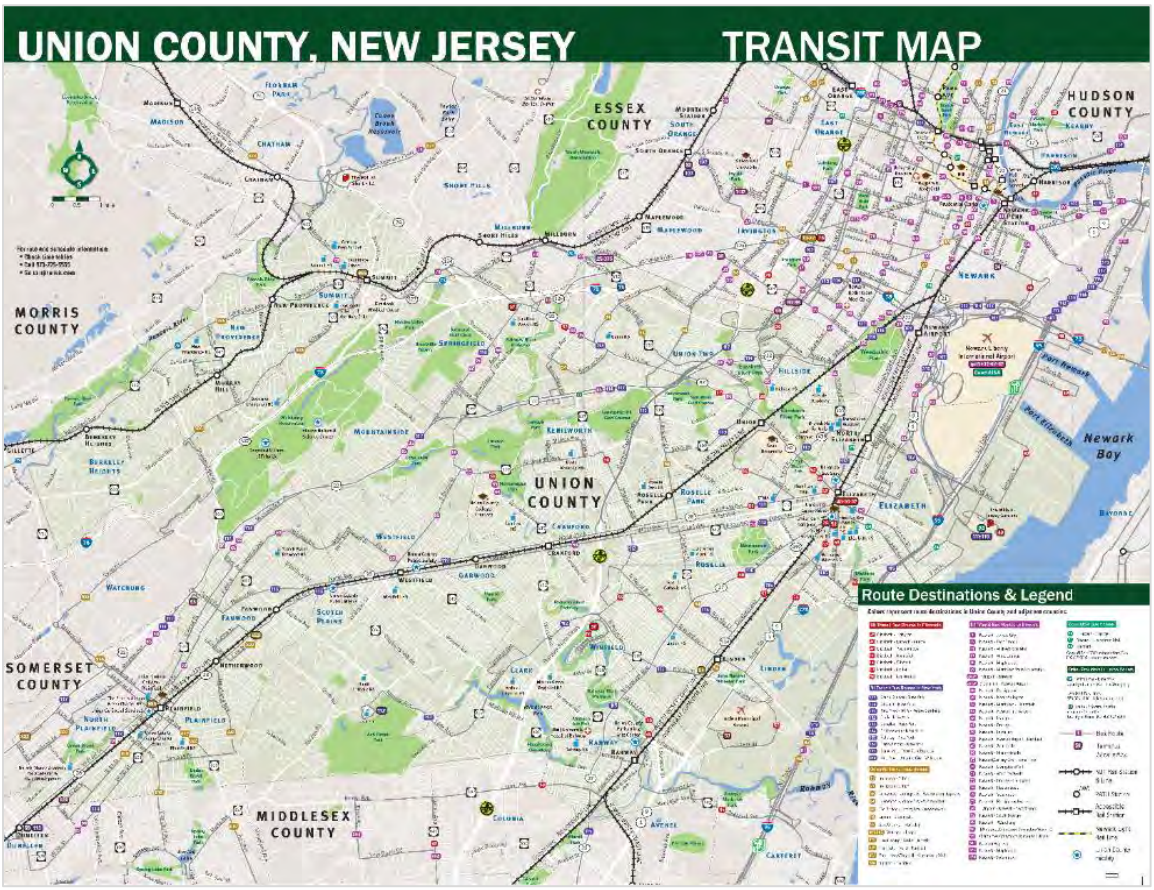
In addition to the major roadways, Union County also has a network of NJ Transit (NJT) bus stops and routes. There are 16 rail stations in the County that run along three NJT rail lines: Northeast Corridor, Raritan Valley Line and Morris & Essex Line. The New Jersey Coast Line also runs through the County. NJ Transit bus service operates 25 routes and over 2,100 stops in Union County. Transit service is concentrated in the eastern portion of the County, with a focus on access to Elizabeth, Newark, and New York City (Union County Transportation Master Plan 2016).

Figure 6.6-1 Union County, NJ Transit Map is a comprehensive transit map Union County, which includes NJ Transit bus routes, NJ Transit rail stations and lines, light rail lines and stations, as well as airport facilities and major roadways.

As described in Section 5.6.2 County Integration Activities, the 2016 Union County Transportation Master Plan includes implementation strategies related to Climate Resilience. These implementation strategies include the following:

- Work with NJDOT, NJ TRANSIT and other partners to improve the resilience of the County transportation infrastructure against the impacts of extreme weather.
- Identify existing infrastructure that can be elevated and work with partner agencies to pursue funding for this work. When feasible, site future infrastructure out of or above future flood- prone areas.
- Establish and frequently update emergency detours and evacuation routes.

FIGURE 6.6-1 UNION COUNTY, NJ TRANSIT MAP



Source: Union County Transportation Master Plan, 2017

Evacuation Routes

Figure 6.6-2 Coastal Evacuation Routes, Union County, NJ shows the State routes identified as potential Evacuations Routes in the event of a coastal hazard (i.e. tropical storm, hurricane) as determined by NJOEM.

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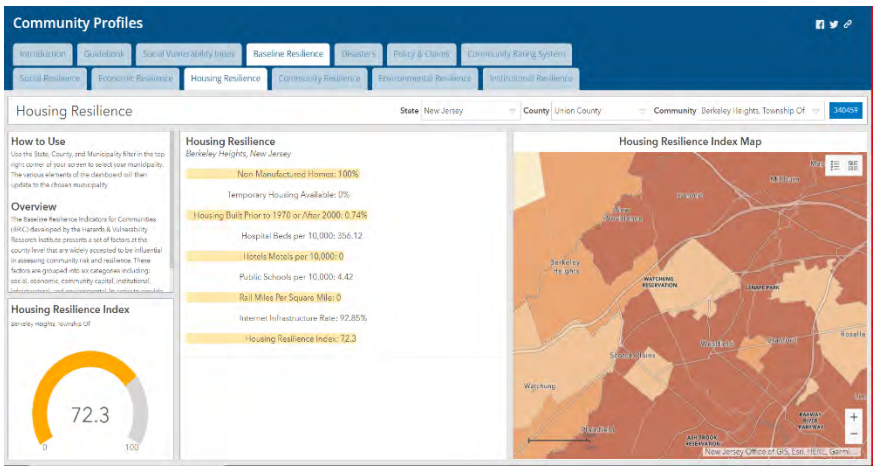
FIGURE 6.6-2 COASTAL EVACUATION ROUTES, UNION COUNTY, NJ

Source: NJOEM

FEMA Community Profiles Tool. This section includes demographic data from the U.S. Census Bureau and the CDC. The FEMA Community Profiles Tool offers real-time updates to this data as well as indices measuring a community's social, economic, housing, and community resilience. Future HMP updates should integrate this information. The FEMA Community Profiles tool can be found at: https://gis.fema.gov/R2CommunityProfiles.

FIGURE 6.6-3 FEMA COMMUNITY PROFILES TOOL



7.0 RISK ASSESSMENT

Cranford, NJ

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7.0 Risk Assessment

2021 HMP update Changes:

This is from Section 4, Hazard Identification and Risk Assessment, of the 2016 plan.

- Added eight additional human-based hazards: Animal Disease, Civil Unrest, Cyber Attack, Economic Collapse, Nuclear Hazards, Pandemic, Power Failure, Terrorism.
- Combined Ice Storm with Severe Storm-Winter Weather.
- Added Critical Facilities Section
- Moved Hazard Descriptions for each hazard from Appendix A to the Hazard Description of each hazard in the Risk Assessment.
- Renamed Severity (or Extent) subsections to Extent for each hazard.
- Renamed Impact on Life and Property subsections (Vulnerabilities and Risk) to Vulnerability Assessment for each hazard.
- Renamed Occurrences subsections to Previous Occurrences and Losses for each hazard.
- Moved information on probability of hazard events to Probability of Future Occurrences Sections for each hazard.
- Potential Effects of Climate Change Section added for each hazard.
- Moved information on Hurricane Extent from Appendix A D-11.2 Characteristics of Wind to 7.13.3 Extent.
- Moved Risk Calculations under High Wind-Straight-Line Wind to Vulnerability Assessment
- Moved information on description of the Fujita Tornado Measurement Scale from Appendix A D-12.2 Characteristics of Tornado to 7.14.3 Extent.
- Moved Wildfire Intensity Scale from Appendix A D-18 to 7.19.3 Extent.
- Removed images of hazards not depicting Union County.
- Footnotes replaced with in-text citations.
- Moved Power losses from straight-line winds section to 7.26 Power Failure
- Moved Sea Level Rise subsection under Flood to Potential Effects of Climate Change section under Flood
- Moved recent major flooding events along the Rahway River from Location to Previous Occurrences and Losses under Flood
- Calculated new Probability of Future Occurrences for each hazard when relevant
- Moved language related to previous extreme heat events from Impacts on Life and Property (Vulnerabilities and Risk) to 7.8.5 Previous Occurrences and Losses
- Updated annual risk of hypothermia, hyperthermia, and lightning-related deaths
- Add tables for risks to critical facilities when information was available.

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7.1 RISK ASSESSMENT OVERVIEW

7.1.1 IDENTIFICATION OF HAZARDS

Section 7.1.1 of this HMP update includes detailed descriptions of the process that was used to assess and prioritize Union County's risks from natural hazards, quantitative risk assessments for Union County as a whole, and create assessments that are more detailed for certain asset classes. A total of 25 hazards were identified and profiled by the Steering Committee (see section 2.3 HMP Evaluation: Changes in Priorities for a comparison of hazards from the previous plan).

For each of these hazards, the profiles in Section 7.0 include:

- Hazard Description;
- Location;
- Extent;
- Previous Occurrences and Losses;
- Probability of Future Occurrence;
- Potential Effects of Climate Change; and
- Vulnerability Assessment

In its early meetings related to this HMP update, the Steering Committee considered a total of 25 hazards that have potential to affect the County. The group reviewed these hazards and prioritized them as high, medium, or low based on the overall impact to the County. They considered factors such as how often the hazard occurred, degree of property and infrastructure damage, number of people impacted, and time of recovery. Those hazards prioritized as high or medium by the Steering Committee include more extensive discussions about vulnerability and risk than those with lower rankings. A total of 12 hazards were ranked high. The rankings for all 25 hazards can be found in **Table 7.1-2 Union County (County-wide) Hazard Ranking Table.** In addition, jurisdiction specific hazards have been identified and profiled for each participating municipality in Appendices Volume I-Jurisdictional Information. A subset of hazards from the main plan was selected for each jurisdiction. These hazards were identified by municipality point of contacts after a series of meetings and workshops held with each participating jurisdiction.

In addition to ranking hazards at the county level, the municipal working groups also ranked each hazard as high, medium, and low. The county-wide assessment was supported by jurisdictional risk assessments for the hazards, ranked high, medium, and low by the municipal planning committees. A risk calculation is a FEMA requirement. Risk is a numerical indication of potential future damages. This section includes details about calculation methodologies and results of the county-wide risk assessments. In the 2016 HMP update, additional risk calculations were included in the individual municipal appendices for hazards ranked as high and medium. In the 2021 Update, all risk calculations are included in Section 7.0 Risk Assessment.

During the 2021 HMP update many parts of the 2016 HMP update were preserved. Where applicable, portions of the historical hazard data have been retained. As required by federal planning guidelines, one of the key elements of the 2021 HMP update was to describe the events and effects of natural hazards on the County since the last Plan update was developed and adopted. For the 25 hazards profiled, links to websites have been included at the end of the Hazard Description subsection. These links provide additional information related to the general description of each hazard that can affect Union County.

Note: The term “planning area” is used frequently in this section. This term refers to the jurisdictional limits of Union County.

7.1.2 OVERVIEW OF UNION COUNTY’S HISTORY OF HAZARDS

Numerous federal agencies maintain a variety of records regarding losses associated with natural hazards. However, no single source offers a definitive accounting of all losses. FEMA maintains records on federal expenditures associated with declared major disasters, while the U.S. Army Corps of Engineers (USACE) and the Natural ReSource Conservation Service (NRDC) collect data on losses during the course of some of their ongoing projects and studies. Additionally, the National Oceanic Atmospheric Administration’s (NOAA) National Centers for Environmental Information (NCEI, formerly the National Climatic Data Center) and Spatial Hazard Events and Losses Database for the United States (SHELDUS) database collect and maintain data about natural hazards in summary format. The data includes occurrences, dates, injuries, deaths, and costs.

In the absence of definitive data on some of the hazards that may occur in Union County, illustrative examples are useful. **Table 7.1-1 Recent Hazards and Declared Emergency and Major Disasters in Union County, New Jersey (1992-2020)** provides brief descriptions of particularly significant hazard events occurring in the county’s recent history. This list is not meant to capture every event that has affected the area, but rather to list some of the more significant events that have occurred here in the past.

Union County has received 15 major Presidential Disaster Declarations and eight Emergency Declarations since 1950. Seven of the 13 major disaster declarations were the result of significant flooding. Since that last plan update, one major disaster has occurred (COVID-19 Pandemic). The more recent major and emergency declarations (and one non-declared event) are included as part of the summary below.

TABLE 7.1-1 RECENT HAZARDS AND DECLARED EMERGENCY AND MAJOR DISASTERS IN UNION COUNTY, NEW JERSEY (1992-2020)

Date and Disaster (DR)	Nature of Event
12/18/1992 (DR-973)	SEVERE STORMS AND INLAND AND COASTAL FLOODING-A major winter storm\ (Nor’easter) that caused considerable coastal flooding and beach erosion. A total of 12 counties in New Jersey included as part of the Presidentially Declared Disaster.
3/13/1993 (EM-3076)	SEVERE STORMS AND FLOODING (Emergency Declaration)-Event known as the “Storm of the Century” affected as many as 26 States from Florida to Maine, the Gulf Coast, and the Ohio Valley. One of the most intense nor’easters to ever affect the United States. The “Storm of the Century” label was given tothe event due to the record low pressure, wind speeds, temperature, and snowfall. All 21 counties in New Jersey were included in the Presidentially Declared Disaster.
1/7/1996 (DR1038)	BLIZZARD-A State of Emergency was declared for the blizzard that hit the state. Road conditions were dangerous due to the high winds and drifts. Both government and contract snow plowing operations were running at a maximum. Local roads were impassable. This blizzard also brought on coastal flooding with the high tides on Sunday evening and Monday morning, and there were reports of damage to dunes and beaches from the heavy wave activity. More than 400 National Guard personnel were activated for transport assistance, primarily for medic missions. In Union County, snowfall totals ranged from 20"-30".
10/19/1996 (DR 1145)	FLASH FLOOD-Flooding temporarily closed parts of US 1 and 9, several state routes, and the Garden State Parkway. Union County received 5"-7" of rainfall. In Union County, the flooding caused an estimated $4 million in residential property damages and $300,000 in infrastructure damages.

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Date and Disaster (DR)	Nature of Event
9/16/1999 (DR-3148)	HURRICANE FLOYD (Emergency Declaration)-This downgraded fall hurricane put the entire Eastern Seaboard on flood watch, including every county in New Jersey. Although downgraded from a hurricane by the time it hit New Jersey, the storm lasted approximately 18 hours resulting in rainfall totals of 11.90" within Union Township in Union County. The Rahway River at Springfield was above its flood stage of 5.5' from 11:00am on the September 16 until 12:45pm on the September 17. The crest stage of 10.67' occurred around 10:00pm on the September 16.
2/16/2003 (DR-3181)	HEAVY SNOW (Emergency Declaration)-The most powerful storm to affect New Jersey since the Blizzard of 1996. The combination of the very cold temperatures and the approach of a strong storm system caused widespread snow to break out, starting before sunrise on Sunday, February 16. Snow continued during the day Sunday, heavy at times, and continued into Sunday night. Precipitation continued on Monday, before finally coming to an end on Tuesday. Total snowfall in Union County ranged from 18.5" to 23.5". New Jersey requested and was granted a Snow Emergency Declaration for all 21 counties. The President's Day snowstorm tied or set records in all 21 New Jersey counties including Union County. Statewide, the event resulted in damages estimated at approximately $30.2 million.
8/5/2003	SEVERE STORMS AND FLOODING-Torrential rain resulted in widespread flash flooding of streets, low lying and poor drainage areas, mainly along a line extending northeast across Southwest Union County into South Central Bergen County. The highest estimated rainfall rates were between 2" and 3" per hour across southwest Union County, where the flooding was most severe. The Plainfield Township police reported numerous streets flooded: Rock Avenue, West Front and South Second Streets, Watchung Avenue, and East Third Street, George and Johnson Avenues, Randolph Road, and Cedarbrook Park, and a section of Route 22 flooded in Scotch Plains.
4/15/2007 (DR 1694)	SEVERE STORMS AND INLAND AND COASTAL FLOODING - A seven-day Nor'easter deluged New Jersey with over 9" of rain, causing millions of dollars of damage and killing three residents. Statewide damage was estimated at $180 million dollars. Street flooding was reported along Route 1 south bound near Lawrence Street. Union County rainfall ranged from 2.16" at Canoe Brook to 7.31" at Cranford.
04/02/2010 (DR 1897)	SEVERE STORMS AND FLOODING A slow moving storm moving north along the Atlantic coast produced heavy rains from March 12 - 15, 2010. Rainfall amounts were greatest in central and northeastern New Jersey. One of the highest rainfall totals was reported at USGS gage in Mountainside, New Jersey.
12/26/2010 (DR 1954)	SEVERE WINTER STORM AND SNOWSTORM – A rapidly intensifying low-pressure system tracked from off the Southeast US coast on Christmas Day and then past the Mid Atlantic Coast on Sunday December 26th. Bands of heavy snow plus embedded thunderstorms and very strong winds affecting the region Sunday afternoon through Sunday night. The powerful blizzard brought a widespread area of 20 to 30 inches of snow across Northeast New Jersey. The heavy snow was accompanied by area wide winds of 25 to 40 mph and gusts in excess of 60 mph Sunday afternoon into Sunday night, resulting in near whiteout conditions with blowing and drifting snow and making all forms of travel extremely difficult to nearly impossible. Major Disaster Declaration Declared on February 4, 2011.
10/29/2011 (DR-4048)	SEVERE WINTER STORM AND SNOWSTORM – A historic and unprecedented early-season winter storm impacted the area on Saturday, October 29, with more than one foot of heavy wet snow falling on interior portions of northeast New Jersey. This is the first time a winter storm of this magnitude has ever occurred in October. The heaviest snow fell across interior northeast New Jersey, with up to 18 inches of snowfall across higher elevations. Thousands of people across northeast New Jersey lost power during this event as heavy snow accumulated on trees that still had partial to full foliage during mid-autumn. This caused extensive felling of trees and limbs across the region and damage to power lines. In Union County a significant number of trees came down due to the heavy wet snow.
08/31/2011 (DR 4021)	HURRICANE IRENE - Hurricane Irene made landfall along the Outer Banks of North Carolina on August 27, 2011 as a Category 1 hurricane. The storm re- emerged over the Atlantic and made a second landfall as a tropical storm on August 28th in the Little Egg Inlet in southeastern New Jersey. Large portions of the county experienced flooding, with the most severe occurring in the municipalities of Cranford, Springfield, and Rahway. These areas were mainly impacted by flooding from the Rahway River. The storm flooded thousands of residential homes in Cranford

Date and Disaster (DR)	Nature of Event
	including the downtown area. In other areas of the county, police used boats to rescue nearly 90 people from their homes on flooded streets in Rahway and Springfield. In Rahway significant flooding occurred along West Grand Avenue and Rahway Avenue. An estimated 30,000 Union County residents were left without power.
10/30/2012 (DR 4086)	HURRICANE SANDY – In late October of 2012, Union County was impacted by Hurricane Sandy, a late season hurricane. Sandy reached a peak intensity of 85 knot while it turned northwestward toward the mid-Atlantic states. Sandy weakened somewhat and then made landfall as a post-tropical cyclone near Brigantine, New Jersey with 70-knott maximum sustained winds. Because of its tremendous size, however, Sandy drove a catastrophic storm surge into the New Jersey and New York coastlines. In Union County, the storm produced 3 to 6 feet of inundation along the Arthur Kill and in the Elizabeth Port Authority Marine Terminal along Newark Bay in eastern Union County. This inundation caused areas of moderate to major damage to industrial complexes, such as the Bayway refinery.
1/22/2016 (DR 4264)	SEVERE WINTER STORM AND SNOWSTORM – On February 11, 2016, Governor Chris Christie requested a major disaster declaration due to a severe winter storm and snowstorm during the period of January 22-24, 2016. The Governor requested a declaration for Public Assistance for 17 counties, snow assistance for 14 counties, and Hazard Mitigation statewide.
3/25/2020 (DR 4488)	NEW JERSEY COVID-19 PANDEMIC – FEMA announced that federal emergency aid has been made available for the state of New Jersey to supplement the state and local recovery efforts in the areas affected by the Coronavirus Disease 2019 (COVID-19) pandemic beginning on January 20, 2020, and continuing.

Source: NOAA/NCEI, FEMA, and the NJ Office of Emergency Management

7.1.3 METHODOLOGY FOR PRIORITIZATION

The hazard prioritization table is provided below and describes the rationale for the hazard ranking. It also shows Source of information that were consulted for the determination. Although all 25 of the hazards are profiled in this section, the prioritization was used as a basis to focus vulnerability and risk assessment activities on those hazards with the most potential to negatively affect the County. Those hazards prioritized as high, medium, or low by the Steering Committee include more extensive discussions about vulnerability and risk than those with lower rankings.

It should be understood that the overall HMP is structured to emphasize jurisdictional hazards and vulnerabilities, so this county-level section of the document is necessarily less detailed in this regard. There is more information about location-specific hazards and vulnerabilities in the jurisdictional appendices.

TABLE 7.1-2 UNION COUNTY (COUNTY-WIDE) HAZARD RANKING TABLE

Hazard	Level of Concern	Rationale	Source
Flood	High	Widespread impacts, history of occurrences in the county, significant annual damages	FEMA Flood Insurance Studies, FEMA Flood Insurance Rate Maps, FEMA Public Assistance records, FEMA National Flood Insurance Program claims data, US Army Corps of Engineers (USACE), and National Oceanographic and Atmospheric Administration (NOAA), studies and records.
Storm Surge-Hurricane/Nor'easter/ Tropical Storm	High	Moderate probability, potential for significant impacts to eastern coastal areas; high hurricane/nor'easter/tropical storm	NOAA-NCEI, HAZUS, USACE

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Hazard	Level of Concern	Rationale	Source
High Wind – Straight-line Winds	High	Hurricanes: Relatively low historic probability; potential for widespread impacts; Tropical Storms: Low to moderate probability; potential for widespread impacts; Nor'easters: Moderate probability of more extreme events, potential for moderately widespread impacts; Severe Storms: High probability of occurrences, but losses are typically limited.	NOAA and National Climatic Data Center (NCEI) records, New Jersey Department of Community Affairs - Division of Codes and Standards, New Jersey State Climatologist (Rutgers)
Severe Storm – Winter Weather (Includes Ice Storm)	High	High annual probability, widespread impacts, but losses generally limited except in most extreme events.	NOAA-NCEI, National Weather Service (NWS), New Jersey State Climatologist (Rutgers)
Hazardous Materials Release – Fixed Site	High	High annual probability with impacts potentially severe in site-specific areas.	US Environmental Protection Agency, FEMA HAZUS (Hazards US) software, the Right-to - Know (RTK) Network, US Environmental Protection Agency (EPA).
Hazardous Materials Release – Transportation	High	Moderate to high annual probability, but impacts limited in severity and area.	The RTK Network - Emergency Response Notification System (ERNS)
Extreme Temperature – Cold	High	Relatively high annual probability, but impacts are limited.	NOAA-NCEI, New Jersey State Climatologist (Rutgers), National Weather Service
Extreme Temperature – Heat	High	Relatively high annual probability, but impacts are limited.	NOAA-NCEI, New Jersey State Climatologist (Rutgers), National Weather Service
Dam Failure	Medium	Low annual probability based on historical data but impacts potentially significant in site-specific areas.	New Jersey Department of Environmental Protection (DEP) - Dam Safety and Flood Control.
Drought	Medium	High annual probability but impacts generally limited.	NOAA-NCEI; New Jersey State Department of Agriculture DEP
Hail	Medium	High annual probability but impacts are limited in severity and area.	NOAA-NCEI, New Jersey State Climatologist (Rutgers), National Weather Service
Erosion-Hurricane/Nor'easter/ Coastal Storm	Medium	Relatively high annual probability, but impacts are limited to northeastern coastal areas.	NOAA, The New Jersey Beach Profile Network (NJBPN), USACE
High Wind – Tornado	Medium	Moderate to high annual probability, widespread impacts, but losses generally limited except in most extreme events.	NOAA-NCEI, New Jersey State Climatologist (Rutgers), National Weather Service
Earthquake / Geological	Low	Very low probability	United States Geologic Survey (USGS), New Jersey Geologic Survey (NJGS).
Landslide* (non-seismic)	Low	Low probability with losses typically limited.	NJGS
Severe Storm* – Lightning	Low	High annual probability but impacts generally limited.	NOAA-NCEI, New Jersey State Climatologist (Rutgers), National Weather Service.
Wildfire*	Low	High annual probability of site-specific events but impacts generally limited.	NOAA, New Jersey Forest Fire Service, DEP.

Hazard	Level of Concern	Rationale	Source
Animal Disease	Low	There are no animal farms or zoos in Union County and only 1 stable.	Steering Committee Input
Civil Unrest	Medium	Historic records reported in the 2019 New Jersey State Hazard Mitigation Plan (State HMP) indicate that Union county has previously been a target of civil disturbance. The State HMP also reports a correlation between the instances of civil unrest and higher population density in larger cities. In Union County, the Steering Committee noted that there needs to be a coordinated municipal/county response to civil unrest.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input
Cyber Attack	High	The State HMP notes that all of New Jersey is vulnerable to Cyber Attack. In Union County, government, business, & individual networks are susceptible.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input
Economic Collapse	Medium	The State HMP notes that all of New Jersey is vulnerable to Economic Collapse. In Union County, the Steering Committee noted that the County needs to provide a safety net for its residents.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input
Nuclear Hazards	Medium	Union County does not have a large plant but does have smaller Source of nuclear power. Based on the ACS 2015 estimates, there are 512,032 people within 50-mile radius of the Indian Point Nuclear Powerplant (New York), including portions of Union County.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input
Pandemic	High	The State HMP notes that all of New Jersey is vulnerable to the effects of pandemic, especially areas with higher population density. The Steering Committee noted that the County needs to have a coordinated municipal/county response. They need to periodically assess the adequate supply of PPE and hospital capacity.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input
Power Failure	High	The Steering Committee notes that, especially in winter, the County needs a coordinated plan for people on oxygen and other medical equipment. Aside from the importance of power to heat homes, power is vital to maintain out-of-hospital lifesaving systems for patients such as oxygen concentrators and ventilation machines.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input
Terrorism	High	Being geographically located close to NYC makes Union County a terrorist target. In September 2016, bombs were discovered next to Elizabeth Train Station.	2019 New Jersey State Hazard Mitigation Plan Steering Committee Input

Note: The data in this table is intended only to give a general sense of the significance of hazards in the county, relative to each other. See Appendix A for a complete listing of all Source. *These hazards were determined to have limited risk and thus no risk assessment was conducted.

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7.2 HAZARDS SUMMARY

The Steering Committee identified eight of the 25 hazards profiled as multi-jurisdictional or county-wide hazards of high concern. These are significant hazards that have the potential to impact at least two of the 20 jurisdictions participating in the 2021 HMP update. As the regulations indicate, all of these identified hazards must be profiled, their vulnerability assessed, and mitigation actions developed for them.

A total of eight hazards were considered high. These hazards are listed below:

- Flood
- Storm Surge-Hurricane/Nor'easter/Tropical Storm
- High Wind–Straight-Line Winds
- Severe Storm–Winter Weather (Includes Ice Storm)
- Hazardous Materials Release – Fixed Sites
- Hazardous Materials Release – Transportation
- Extreme Temperature – Cold
- Extreme Temperature – Heat

A total of five hazards were considered medium hazards of concern. These hazards are listed below:

- Dam Failure
- Drought
- Hail
- Erosion-Hurricane/Nor'easter/Tropical Storm
- High Wind - Tornado

The remaining four hazards were considered low hazards of concern. These hazards included:

- Earthquake / Geologic
- Landslide (Non-Seismic)
- Severe Storm - Lightning
- Wildfire

In the 2016 HMP update, in addition to the hazards selected for the multi-jurisdictional or county-wide risk assessments, a subset of the 25 hazards included in the Plan update were also identified, profiled, and in some cases risk assessments completed for each participating municipality. The hazards selected for the risk assessment were identified by the same process as the one described above. See municipality specific appendices (Appendices Volume I-Jurisdictional Information) for detailed hazard identification and risk assessments for select hazards of concern for each jurisdiction. In the 2021 HMP update, risk analyses were performed by municipality and included in this county-wide assessment.

7.2.1 CONSISTENCY WITH THE NEW JERSEY STATE HAZARD MITIGATION PLAN

As part of the process of developing the Union County Hazard Mitigation Plan Update, the planning team carefully reviewed the 2019 New Jersey State Hazard Mitigation Plan Update (State HMP), with the goal of ensuring consistency between the two documents, primarily in the areas of hazard identification, risk assessment and mitigation strategy.

For the 2021 HMP update, Union County Division of Emergency Services reviewed the human-based hazards included in the State HMP and decided to profile the following human-based hazards to the 2021 HMP update:

- Animal Disease
- Civil Unrest
- Cyber Attack
- Economic Collapse
- Nuclear Hazards
- Pandemic
- Power Failure
- Terrorism

Union County Division of Emergency Services decided not to profile the following human-based hazards found in the State HMP because they were not deemed to be applicable to Union County:

- Crop Failure
- Fishing Failure

7.2.2 ASSESSING VULNERABILITY: IDENTIFYING CRITICAL FACILITIES

An inventory of Union County's georeferenced assets (i.e. identified assets with specific, identified locations) was created in order to identify and characterize property and persons potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability can be evaluated for each asset. Under this assessment, two categories of assets were created and then further assessed through a geographic information systems (GIS) analysis. Assets were initially compiled from Homeland Infrastructure Foundation-Level Data (HIFLD), NJ Geographic Information Network (NJGIN) and NJ Department of Environmental Protection (DEP) and then refined through input from each municipality. The two categories of assets include:

- Critical Facilities: Includes childcare facilities, educational facilities (colleges, universities, and PreK-12), fire stations, first aid, hospitals, long-term care facilities, police stations, and local facilities including but not limited to municipality-owned facilities.

- Critical Infrastructure: Includes airports, cell towers/radio frequency towers, dams, electric substations, gas stations, port facilities, pump stations, wastewater treatment plants, water treatment facilities, and other utilities deemed critical to each municipality.

Table 7.2-1 Summary of Critical Facilities and Critical Infrastructure by Municipality provides a comprehensive breakdown, by jurisdiction, of georeferenced assets that have been identified for inclusion in the Union County HMP Vulnerability Assessment. As part of the Municipal Meeting Planning Process, the Project Team shared the Critical Facility and Critical Infrastructure list generated from GIS with each Union County jurisdiction and made changes based on local feedback.

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TABLE 7.2-1 SUMMARY OF CRITICAL FACILITIES AND CRITICAL INFRASTRUCTURE BY MUNICIPALITY (AS OF 6-17-21)

Jurisdiction	Critical Facilities	Critical Infrastructure	Total
Berkeley Heights Township*	25	17	42
Clark Township	20	3	23
Cranford Township	37	7	44
Elizabeth City	114	17	131
Fanwood Borough	8	0	8
Garwood Borough	7	0	7
Hillside Township	22	0	22
Kenilworth Borough	10	3	13
Linden City	64	25	89
Mountainside Borough	19	3	22
New Providence Borough	25	2	27
Plainfield City	77	0	77
Rahway City	30	8	38
Roselle Borough	23	0	23
Roselle Park Borough	20	0	20
Scotch Plains Township**	53	9	62
Springfield Township	24	7	31
Summit City	58	6	64
Union Township	49	9	58
Westfield Town	58	1	59
Winfield Township	6	0	6
Total	749	117	866

Source: 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities
*Each wastewater pump station was counted as an individual piece of infrastructure
**Five additional pieces of critical infrastructure were identified by Scotch Plains Township (two rail lines and three utility transmission lines). Due to the constraints of GIS software, these pieces of infrastructure were excluded from risk analysis.

7.2.3 SUMMARY DESCRIPTION OF THE COUNTY'S VULNERABILITY TO HAZARDS

The DMA 2000 legislation and related FEMA planning guidance require mitigation plans to include discussion of community vulnerability to natural hazards. Vulnerability is generally defined as the damage (including direct damages and loss of function) that would occur when various levels of hazards impact a structure, operation, or population. For example, vulnerability can be expressed as the percent damage to a building when it is flooded, or the number of days that a government office will be shut down after a wind storm, assuming there is sufficient detailed data available to support the calculations.

In the 2016 HMP update, it was determined that because this HMP includes many jurisdictions and data is often not detailed, it was not practical to complete vulnerability assessments on the many individual assets, operations, and populations in individual jurisdictions. However, it was

appropriate for participating municipalities to embark on a program of addressing these data deficiencies over the next five years in anticipation of the next HMP update. As a part of the 2021 HMP update planning process, the Project Team collected data on critical facilities and critical infrastructure from Federal and State Source, which was reviewed and updated by each participating jurisdiction. These data were used to create the vulnerability assessments found throughout this section.

As illustrated in the present section of the HMP, Union County is subject to numerous natural and manmade hazards, although in some cases the hazards have rarely impacted the area, or their effects have been relatively minor. As is the case with many parts of the mid-Atlantic, although relatively localized, flooding is the most frequent and most damaging natural hazard in central New Jersey and Union County. However, it is important to recognize that several other hazards present significant risks (i.e. potential for future losses) to the County, even though they have occurred infrequently in the past, or have not caused much damage.

In particular, earthquakes (although improbable) present risks to various communities in the County because there are many relatively old structures that may be prone to failure if shaken by an earthquake. In order to accurately characterize vulnerabilities (and hence risks) at a local level, it will be necessary to study assets on a site-specific basis. There is also some vulnerability to wind in the County, mainly from hurricanes and tropical storms. While severe hurricanes are rare events in this area of the country, tropical storms and nor'easters are fairly common, and many structures in the communities are vulnerable to high winds. Most of the other hazards are either localized or improbable, and therefore, while various elements in the communities may be vulnerable to such hazards, the likelihood of them occurring in any specific location is very small.

7.2.4 OVERVIEW OF THE TYPE AND LOCATION OF HAZARDS

In the initial phase of the planning process, Union County's Steering Committee reviewed the hazards profiled in the 2016 HMP update. The Steering Committee determined that the same 18 hazards posed the greatest threat to Union County but combined Ice Storm with Severe Weather-Winter Weather. For the 2021 HMP update, Union County added eight additional human-based hazards based on the State HMP. **Table 7.2-2 Hazard Identification** summarizes the hazards included in the 2021 HMP update.

TABLE 7.2-2 HAZARD IDENTIFICATION

Natural Hazards
Dam Failure
Drought
Earthquake/Geological
Erosion–Hurricane/Nor'easter/Coastal Storm
Extreme Temperature–Cold
Extreme Temperature – Heat
Flood
Hail
High Wind – Straight-Line Winds
High Wind – Tornado

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Natural Hazards
Landslide (non-seismic)
Severe Storm – Lightning
Severe Storm – Winter Weather (Includes Ice Storm)
Storm Surge –Hurricane/Nor'easter/Tropical Storm
Wildfire
Human-based Hazards
Hazardous Materials Release – Fixed Site
Hazardous Materials Release – Transportation
Animal Disease
Civil Unrest
Cyber Attack
Economic Collapse
Nuclear Hazards
Pandemic
Power Failure
Terrorism
Note: Impacts from Climate Change and Sea Level Rise will be addressed in each applicable hazard.

The following section profiles each of the 25 hazards listed above and includes a description of the hazard, location and extent of the hazard, severity of the hazard, impact on life and property, and past occurrences of the hazard.

7.3 DAM FAILURE

7.3.1 HAZARD DESCRIPTION

A dam is defined by the New Jersey Department of Environmental Protection (DEP) as any artificial dike, levee, or other barrier, which is constructed for the purpose of impounding water on a permanent or temporary basis, that raises the water level five feet or more above the usual, mean, low water height when measured from the downstream toe-of-dam to the emergency spillway crest or, in the absence of an emergency spillway, the top-of-dam.

A dam failure can be defined as the unintended release or surge of impounded water. A failure can cause significant property damage, injury, and in some cases death downstream of where the dam failed. The severity of a dam failure can also vary widely. There is the potential for total collapse of a dam, but less significant failures are more likely as a result of an overtopping (inadequate spillway design, debris blockage), foundation defects, or seepage. Overtopping of a dam during a flood event due to clogged debris has the potential to be catastrophic. According to USGS, in 1972 the Dam Failure in Rapid South Dakota occurred after the Canyon Lake Dam became clogged with debris and the dam was overtopped.

According to DEP, dam failures can result from a variety of causes including lack of maintenance, seismic activity, improper design or construction, or during large storm events. Significant rainfall

can quickly inundate an area and cause floodwaters to overwhelm a reservoir. If the spillway of the dam cannot safely pass the resulting flows, water will begin flowing in areas not designed for such flows and failure may occur.

According to FEMA, intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods can occur within several hours of the beginning of heavy rainfall, and dam failure may occur within hours of the first signs of breaching. Other failures can take much longer to occur, from days to weeks, as a result of debris jams or the accumulation of melting snow. To prevent, or reduce the probability of a failure, existing dams are periodically inspected by professional engineers. **Table 7.3-1 New Jersey Dam Inspection Schedule** summarizes the dam inspection schedule for New Jersey, including Union County.

TABLE 7.3-1 NEW JERSEY DAM INSPECTION SCHEDULE

Dam Class	Regular Inspection	Formal Inspection
Class I Large Dam	Annually	Once Every Three Years
Class I Dam	Once Every Two Years	Once Every Six Years
Class II Dam	Once Every Two Years	Once Every 10 Years
Class III Dam	Once Every Four Years	Only as Required
Class IV Dam	Once Every Four Years	Only as Required

Source: DEP – Dam Safety and Flood Control

Dams are typically ranked by hazard classification, which is determined by the potential for infrastructure and property damages downstream if a dam failure were to occur. The three hazard classifications include high hazard, significant, and low and are defined as follows:

- **High-Hazard Potential Dams** are those whose failure or operational failure will probably cause loss of life and/or significant infrastructure losses.
- **Significant-Hazard Potential Dams** are those whose failure or operational problems are unlikely to cause loss of human life, but can cause economic loss, environmental damage, disruption of lifelines, or other concerns.
- **Low-Hazard Potential Dams** are those whose failure would probably cause no loss of human life and only low economic and/or environmental losses, which would typically be limited to the dam owner's property.

7.3.2 LOCATION

According to the DEP there are a total of 24 dams in Union County as of 2018. Of the 24 dams, data from the DEP indicates that eight are no longer in existence or have been removed. This reduces the total number of dams in Union County to 23. The DEP – Bureau of Dam Safety separates New Jersey dams into three hazard classifications. These hazard classifications include high hazard, significant, and low and are based upon the guidelines outlined in the New Jersey Administrative Code – Dam Safety Standards (NJAC: 7-20): Dam Classifications. The following table lists the dams, including the municipality name, hazard classification, the river or stream the dam is located along, the last inspection date and the name of the dam. The table is ordered by hazard classification that ranks the potential for loss of life and infrastructure and property damages downstream if a dam failure were to occur. The three hazard classifications include high-hazard potential (H), significant-hazard potential (S), and low-hazard potential (L); these are defined at the bottom of the table. Other Structures are dams DEP database classifies structures that are not technically dams within their database (O).

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In Union County, three dams are classified as high-hazard potential by the DEP-Bureau of Dam Safety and Flood Control: Robinson's Branch Reservoir Dam (Clark Township), Clearwater Detention Dam (New Providence Borough), and Shackamaxon Dam (Scotch Plains Township). Each municipality that has a high hazard potential dam has a corresponding mitigation action to reduce the risk of dam failure.

TABLE 7.3-2 INVENTORY OF UNION COUNTY DAMS, ORDERED BY HAZARD CLASSIFICATION

Municipality Name	Dam Name	Hazard Class	River/Stream
Clark Township	**Robinson's Branch Reservoir Dam**	**H**	**Robinsons Branch**
New Providence Borough	**Clearwater Detention Dam**	**H**	**Salt Brook**
Scotch Plains Township	**Shackamaxon Dam**	**H**	**Lambert's Run**
Clark Township	Jackson Pond Dam	S	Rahway River
Clark Township	Bloodgoods Pond Dam	S	Rahway River
Cranford Township	Kenilworth Blvd. Dam	S	Nomaheaan Brook
Mountainside Borough	Echo Lake Upper Dam	S	Nomahegan Creek
Mountainside Borough	Echo Lake Dam	S	Normahegan Brook
Rahway City	Milton Lake Dam	S	Robins Branch Rahway River
Scotch Plains Township	Seeley's Pond Dam	S	Green Brook
Springfield Township	Briant Park Dam	S	Van Winkle Brook
Berkeley Heights Township	Murray Hill Farm Detention Dam	L	Passaic River-TR
Cranford Township	Sperry Pond Dam	L	Rahway River
Cranford Township	Hansel Dam	L	Rahway River
Cranford Township	Droescher's Dam	L	Rahway River
Cranford Township	Nomahegan Park Dam	L	Rahway River-TR
Elizabeth City	Ursino Dam	L	Elizabeth River
Linden City	1A Dam	L	Morses Creek
Linden City	Bayway Refinery No. 2 Dam	L	Morses Creek
Mountainside Borough	Surprise Lake Dam	L	Blue Brook
Rahway City	Ritchie Dam	L	Rahway River
Rahway City	Rahway Dam	L	Rahway River-TR
Scotch Plains Township	No Name Dam	L	Green Brook Raritan River
Westfield Town	Mindowaskin Lake Dam	L	Rahway River
Berkeley Heights Township	Horseshoe Road Detention Basin Dam	O	Emerson Brook
Berkeley Heights Township	John Runnels Hospital Dam	O	Green Brook Raritan River
Berkeley Heights Township	Bonnie Burn Dam	O	Green Brook Raritan River
Linden City	Draesher Dam	O	Morse Creek
New Providence Borough	Murray Hill Estates Dam	O	Passaic River
Union Township	Faitoute Dam	O	Elizabeth River
Union Township	Salem Dam	O	Elizabeth River

Municipality Name	Dam Name	Hazard Class	River/Stream
Watchung Borough	Seeley's Mill Pond Dam	O	Blue Brook

Hazard Classes (Source: New Jersey Administrative Code - Dam Safety Standards (NJAC: 7-20): Dam Classifications)

H = High-Hazard Potential: Loss of life likely (if failure were to occur)

S = Significant-Hazard Potential: Loss of life not likely but the potential for significant property damage

L = Low-Hazard Potential: Loss of life not likely and minimal infrastructure or property damage other than the structure itself

O = Other Structures: DEP Dams database classifies structures that are not technically dams within their database. These include dams that are less than 5 feet, have been removed, never built, failed, etc.

Source: 2018 DEP–Bureau of Dam Safety and Flood Control, 2020 Union County

Table 7.3-3 Union County Dams Summary summarizes the number of dams by municipality and hazard class.

TABLE 7.3-3 UNION COUNTY DAMS SUMMARY

Jurisdiction	Total High-Hazard Potential Dams	Total Significant-Hazard Potential Dams	Total Low-Hazard Potential Dams	Overall Total	Other Structures
Berkeley Heights Township	0	0	1	1	3
Clark Township	1	2	0	3	0
Cranford Township	0	1	4	5	0
Elizabeth City	0	0	1	1	0
Fanwood Borough	0	0	0	0	0
Garwood Borough	0	0	0	0	0
Hillside Township	0	0	0	0	0
Kenilworth Borough	0	0	0	0	0
Linden City	0	0	2	2	1
Mountainside Borough	0	2	1	3	0
New Providence Borough	1	0	0	1	1
Plainfield City	0	0	0	0	0
Rahway City	0	1	2	3	0
Roselle Borough	0	0	0	0	0
Roselle Park Borough	0	0	0	0	0
Scotch Plains Township	1	1	1	3	0
Springfield Township	0	1	0	1	0
Summit City	0	0	0	0	0
Union Township	0	0	0	0	2
Westfield Town	0	0	1	1	0
Winfield Township	0	0	0	0	0

Source: 2018 DEP–Bureau of Dam Safety and Flood Control, 2020 Union County

The previous 2016 HMP update included a map of dam locations in Union County. For security reasons, this map has been removed from the publicly available plan.

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7.3.3 EXTENT

In 1921, the New Jersey Legislature created the Bureau of Dam Safety and Flood Control, which instituted laws relating to the construction, repair, and inspection of existing and proposed dam structures. The law was amended in 1981 and became known as the Safe Dam Act. New Jersey's Dam Safety program is administered by DEP's Division of Engineering and Construction, Dam Safety Section. The severity of a dam failure event can depend on various aspects related to the size of the dam, the extent of the failure, the velocity of the floodwaters released, and the intensity of the downstream development.

7.3.4 PREVIOUS OCCURRENCES AND LOSSES

The DEP indicates there have been no previous catastrophic dam failures in New Jersey, but the number of small failures has risen over the past few years. This has been primarily due to a combination of lack of inspection and the number of dams nearing the end of their design life. While not considered a failure, The Linden City has reported that several times a year, water exceeds the limits of the Jackson Pond and Bloodgoods Dams.

The DEP–Bureau of Dam Safety and Flood Control lists dam failures in New Jersey from several major flooding events including Hurricane Floyd in September of 1999 and the Sparta storm in 2000. Review of these floods identified three dam failures in Union County. The Shackamaxon Dam, Seeley's Pond Dam, and Bloodgoods Dam all partially failed after Hurricane Floyd. The partial dam failures are described below:

- **Shackamaxon Dam** (Scotch Plains Township). This dam partially failed after floodwaters eroded the discharge channel.
- **Seeley's Pond Dam** (Scotch Plains Township). Floodwaters partially destroyed the masonry spillway cap and the upper portion of the dam.
- **Bloodgoods Dam** (Clark Township). The DEP–Dam Safety and Flood Control Site does not provide a description for this failure.

As part of the 2021 HMP update, additional dam failure events were researched for Union County, however the DEP–Bureau of Dam Safety and Flood Control does not list any dam failure events after Tropical Storm Irene from August 27-28, 2011. The Association of State Dam Safety Officials (ASDSO) Dam Safety Incident Database does not report dam safety incidents in New Jersey since 2015.

7.3.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of three previous dam failure events in Union County between 1950 and 2020, the County experiences a dam failure event on average slightly more than once every 23 years. With one event every 23 years, there is roughly a 19.67% probability of at least one occurrence of dam failure in Union County in the next five years.

Considering the three past events, the Steering Committee ranked dam failure as a medium risk hazard (See **Table 7.1-2 Union County (County-wide) Hazard Ranking Table** for a complete list of hazard rankings).

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.3.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of dam failure.

As a medium risk hazard, the Steering Committee determined that the three high-hazard dams should be addressed in the risk assessment (Section 6) of the 2016 HMP update. A more detailed analysis of the high hazard dams identified in the previous 2016 HMP update is available in Section 7.3.7 Vulnerability Assessment.

7.3.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the State HMP, dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hygrograph changes, it is conceivable that the dam can lose some or its entire designed margin of safety, also known as freeboard. Loss of designed margin of safety may cause floodwaters more readily to overtop the dam or create unintended loads. Such situations could lead to a dam failure.

According to the 2020 New Jersey Scientific Report on Climate Change (NJ Climate Change Report) by DEP, the climate of New Jersey is already changing and will continue to change over the course of this century. Precipitation is expected to increase over the next several decades in the State. The NJ Climate Change Report states that the frequency of instances of extreme annual precipitation ("wet years") has increased, while the frequency of "dry years" has decreased statewide. As of 2020, the wettest year on record was 2018. In 2018, total precipitation was approximately 65 inches (165.1 cm), approximately 18 inches above normal. An analysis of statewide precipitation data from 1895 to 2019 shows a weakly significant increase in the total annual precipitation. Annual precipitation totals for the last 10 years show a 7.9% increase over the long-term average.

The NJ Climate Change Report states that New Jersey's annual precipitation is expected to increase by 4% to 11% by 2050. Seasonal variations are anticipated to occur with small decreases in the amount of precipitation occurring in summer months and small increases in winter months. Increased winter temperatures will result in more rain, and as a result, fewer snowfalls.

The NJ Climate Change Report states that although precipitation is expected to increase, extreme precipitation is the most likely concern for New Jersey. Several studies have found increases in the frequency and amount of heavy precipitation in the Northeastern United States over the last century. Extreme precipitation events have increased in the Northeastern United States by 71% over the last 50 years, which is at a faster rate over the past three decades than anywhere else in the United States.

Because of climate change, the intensity and frequency of precipitation events is anticipated to increase. For example, heavy precipitation events where more than 2-4 inches (5-10 cm) falls in a single day are projected to increase on a national scale. As annual precipitation increases, so will the size and frequency of floods. As a result, the failure probability of low, significant, and under-designed high hazard dams may increase according to the State HMP.

7.3.7 VULNERABILITY ASSESSMENT

Impacts

According to the USACE National Inventory of Dams (NID), as of a partial update from November 2019-January 2020, there were 91, 457 dams in the United States. Of this total, there were 834 dams in New Jersey. A total of 229 (27%) of the dams in New Jersey are categorized as either high hazard, and 339 (41%) are significant hazard dams and pose a risk to life and property. Dam failure

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has the potential for catastrophic impact on life and property. This risk can be reduced by proper design, construction, and routine maintenance and inspection.

Exposure and Damages

The dam failure hazard was prioritized by the Steering Committee as medium. The County-wide potential impact of the dam failure hazard is mostly limited to the areas immediate adjacent to and downstream from dams. Although accurately predicting the probability of dam failure is impractical, where possible, the jurisdictional appendices include projected losses on downstream communities and structures.

The following tables present summary exposure data for census blocks intersecting 500-ft wide stream buffer downstream from the high hazard dams, an analysis performed as part of the 2016 HMP update. The data includes land use classification of the exposed land area, as well as the housing unit count and exposed population, based on 2010 Census data.

TABLE 7.3-4 LAND USES 500-FT DOWNSTREAM OF HIGH HAZARD DAMS AS OF THE 2016 HMP UPDATE

Municipality Name	Dam Name	Commercial (Acres)	Other (Acres)	Residential (Acres)	Total (Acres)
Clark Township/Rahway City	Robinson's Branch Reservoir Dam	7.85	75.24	112.40	195.49
New Providence Borough	Clearwater Detention Dam	18.06	29.21	109.30	156.57
Scotch Plains Township	Shackamaxon Dam	5.29	150.55	209.49	365.33
Grand Total		31.20	255.00	431.19	717.39

TABLE 7.3-5 LAND USES 500-FT DOWNSTREAM OF HIGH HAZARD DAMS AS OF THE 2016 HMP UPDATE

Municipality Name	Dam Name	Population	Housing Units
Clark Township/Rahway City	Robinson's Branch Reservoir Dam	1,258	477
New Providence Borough	Clearwater Detention Dam	1,118	393
Scotch Plains Township	Shackamaxon Dam	1,812	987
Grand Total		4,188	1,857

NJOEM and DEP are currently developing an enhanced risk assessment that will be included as part of the State HMP. The enhanced risk assessment will allow the State to comply with FEMA's requirements of the High-Hazard Potential Dam (HHPD) Grant Program. The enhanced risk assessment will query, gather, and review existing documentation for the applicable HHPDs, develop and perform a screening level risk assessment, including a failure mode assessment and a downstream impact assessment, and develop mitigation goals, actions, and funding sources for HHPDs. Union County's HMP will reference and include the State's enhanced dam risk assessment as the preferred risk assessment for Union County dams, once that assessment is complete.

The 2019 Standardized Risk Template for Multi-Jurisdictional Mitigation Plans published as part of the State HMP assumes that dam failure risk is calculated based on the proportion of parcel area within the estimated inundation area from a dam's Emergency Action Plan (EAP). If a dam's EAP in unavailable, the inundation area can be estimated using a 1.5-mile radius buffer downstream of each dam. For the 2021 HMP update, an inundation area was calculated for each dam located in

Union County by creating a 1.5-mile radius buffer around each dam in ArcMap. Since upstream and downstream flows were not considered in the analysis, it is possible we have overestimated the number and percentage of critical facilities as some may be upstream of the dam.

Table 7.3-6 Total Number of and Replacement Cost Value (RCV) for Critical Facilities with Risk of Dam Failure and **Table 7.3-7 Total Number of and Replacement Cost Value (RCV) for Critical Infrastructure and Utilities with Risk of Dam Failure** shows the total number and percentage of critical facilities and critical infrastructure in the estimated inundation areas for all Union County dams by municipality along with their estimated replacement cost value (RCV). To calculate RCV, we approximated the market value of improvements on each of the parcels in Union County using MOD-IV and taxation rates from 2020 provided by the NJ Office of Information Technology, Office of GIS (NJOGIS) and NJ Division of Taxation. Georeferenced critical facility data points were then intersected with the parcel layer to attribute the parcel's market value of improvements to each critical facility.

TABLE 7.3-6 TOTAL NUMBER OF AND REPLACEMENT COST VALUE (RCV) FOR CRITICAL FACILITIES

Jurisdiction	Number of Critical Facilities with Risk of Dam Failure	Percentage of Critical Facilities with Risk of Dam Failure	RCV of Critical Facilities with Risk of Dam Failure
Berkeley Heights Township	25	100%	$102,028,121.80
Clark Township	20	100%	$118,776,352.20
Cranford Township	37	100%	$148,682,013.88
Elizabeth City	100	88%	$1,801,095,108.32
Fanwood Borough	5	63%	$3,401,549.11
Garwood Borough	7	100%	$2,348,409.27
Hillside Township	21	95%	$53,360,595.49
Kenilworth Borough	10	100%	$19,579,215.60
Linden City	62	97%	$228,210,322.44
Mountainside Borough	19	100%	$128,235,768.04
New Providence Borough	25	100%	$151,893,598.90
Plainfield City	0	0%	$0.00
Rahway City	29	97%	$348,900,230.15
Roselle Borough	10	43%	$21,467,248.09
Roselle Park Borough	3	15%	$5,291,897.87
Scotch Plains Township	50	94%	$610,550,543.98
Springfield Township	23	96%	$75,727,649.86
Summit City	52	90%	$260,960,987.55
Union Township	21	43%	$832,017,958.69
Westfield Town	58	100%	$135,566,267.79
Winfield Township	6	100%	$6,763,890.88
Union County Total	583	78%	$5,054,857,729.91

Source: 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities, 2020 NJOGIS, 2020 NJ Division of Taxation

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TABLE 7.3-7 TOTAL NUMBER OF AND REPLACEMENT COST VALUE (RCV) FOR CRITICAL INFRASTRUCTURE AND UTILITIES WITH RISK OF DAM FAILURE

Jurisdiction	Number of Critical Infrastructure and Utilities with Risk of Dam Failure	Percentage of Critical Infrastructure and Utilities with Risk of Dam Failure	RCV of Critical Infrastructure and Utilities with Risk of Dam Failure
Berkeley Heights Township	17	100%	$112,269,093.14
Clark Township	3	100%	$0.00
Cranford Township	7	100%	$305,440.26
Elizabeth City	14	82%	$1,555,439.57
Fanwood Borough	0	0%	$0.00
Garwood Borough	0	0%	$0.00
Hillside Township	0	0%	$0.00
Kenilworth Borough	2	67%	$0.00
Linden City	12	48%	$57,770,831.19
Mountainside Borough	3	100%	$2,164,337.73
New Providence Borough	2	100%	$0.00
Plainfield City	0	0%	$0.00
Rahway City	7	88%	$140,245,670.10
Roselle Borough	0	0%	$0.00
Roselle Park Borough	0	0%	$0.00
Scotch Plains Township	8	89%	$1,101,399.48
Springfield Township	4	57%	$3,653,164.58
Summit City	3	50%	$953,926.00
Union Township	4	44%	$1,983,072.24
Westfield Town	1	100%	$0.00
Winfield Township	0	0%	$0.00
Union County Total	87	74%	$322,002,374.30

Source: 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities, 2020 NJOGIS, 2020 NJ Division of Taxation

7.4 DROUGHT

7.4.1 HAZARD DESCRIPTION

A drought is an extended dry climate condition when there is not enough water to support urban, agricultural, human, or environmental water needs. It usually refers to a period of below normal rainfall but can also be caused by drying bores or lakes, or anything that reduces the amount of liquid water available. Drought is a recurring feature of nearly all the world's climatic regions.

Drought is the result of a decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. Hydrological drought is related to the effects of precipitation shortfalls on streamflows and reservoir, lake, and groundwater levels.

Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.

Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. This may also be called a water management drought.

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services. Impacts are commonly referred to as direct or indirect. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of direct impacts. The consequences of these impacts illustrate indirect impacts. For example, a reduction in crop, rangeland, and forest productivity may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced tax revenues because of reduced expenditures, increased crime, foreclosures on bank loans to farmers and businesses, migration, and disaster relief programs.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption and cause a decrease in hydroelectric power. Water quality may also decline while the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

7.4.2 LOCATION

Droughts may occur anywhere in the United States and is possible throughout the planning area. Effects seen in different regions vary depending on normal meteorological conditions such as precipitation and temperature, as well as geological conditions such as soil type and subsurface water levels. The State of New Jersey is divided into six drought regions that provide a regulatory basis for coordinating local responses to regional water-supply shortages. The six drought regions are based on watershed and water-supply considerations and coincide with municipal boundaries. Each municipality in New Jersey is assigned to a drought region based on the watershed covering and supplying water to the municipality. All of Union County is located in the Central Drought Region (DEP Division of Water Supply and Geoscience).

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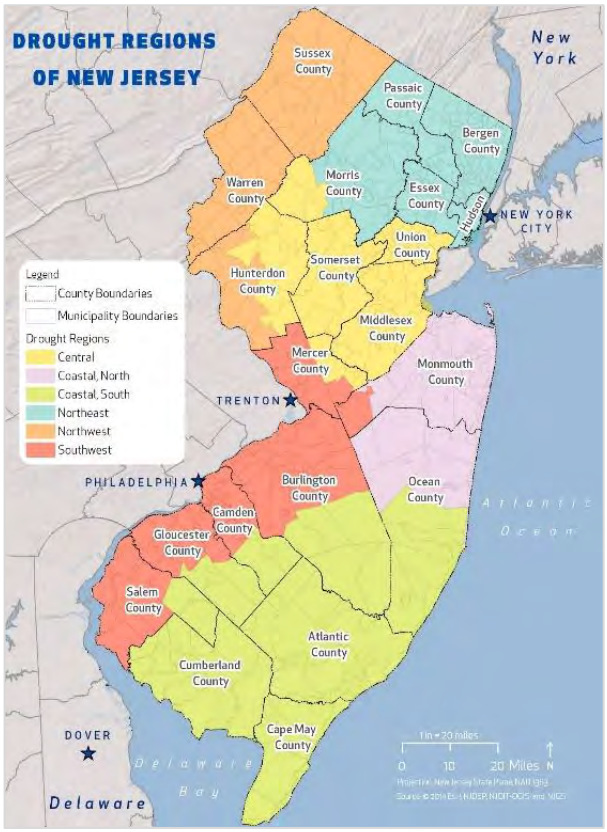
FIGURE 7.4-1 NEW JERSEY DROUGHT REGIONS



Source: State HMP

7.4.3 EXTENT

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. According to FEMA, the severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

According to NOAA National Weather Service Climate Prediction Center, one method used by scientists to calculate the severity and duration of a drought is the Palmer Drought Severity Index (PDSI). The PDSI indicates the prolonged and abnormal moisture deficiency or excess and indicate general conditions, not local variations caused by isolated rain. The PDSI is an important climatological tool for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather.

The equation for the PDSI was empirically derived from the monthly temperature and precipitation scenarios of 13 instances of extreme drought in western Kansas and central Iowa and by assigning an index value of -4 for these cases. Conversely, a +4 represents extremely wet conditions. From these values, 7 categories of wet and dry conditions can be defined. **Table 7.4-1 Palmer Drought Severity Index** identifies the values used to define the PDSI.

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TABLE 7.4-1 PALMER DROUGHT SEVERITY INDEX (PDSI)

Palmer Drought Severity Index
-4.0 or less (Extreme Drought)
-3.0 or -3.9 (Severe Drought)
-2.0 or -2.9 (Moderate Drought)
-1.9 to +1.9 (Near Normal)
+2.0 or +2.9 (Unusual Moist Spell)
+3.0 or +3.9 (Very Moist Spell)
+4.0 or above (Extremely Moist)

Source: NOAA, National Weather Service - Climate Prediction Center

7.4.4 PREVIOUS OCCURRENCES AND LOSSES

According to the NCEI database, Union County has experienced 11 drought events in the period from 1950 to 2013. No additional events were identified from the NOAA NCEI or SHELDUS database between 2008 and 2013. All 11 events were between 2001 and 2002. The database provides no indication as to why there are no events prior to 2001, although presumably occurrences follow the same pattern and frequency as shown in the NCEI list. The events are listed by month. For example, if a drought lasts several continuous months, it is listed in the database as separate events. If the continuous months are combined into single events, the number of events is reduced from 11 to two.

In addition to the NCEI, data from the Northeast Regional Climate Center was also reviewed to identify past drought events in Northern New Jersey. The climate center provides historical data for severe and extreme droughts that are divided into three categories that include the Northern Climate Division, Southern Climate Division, and Coastal Climate Division. Considering the widespread impacts associated with droughts, the events listed for the Northern Climate Division were considered to also impact Union County. Table 4-6 in the previous 2016 HMP update shows northern New Jersey droughts that were classified with a PSDI of severe or extreme (-3.0 to -4.0) for a period of two months or greater from 1950 – 2013. The table shows there have been nine events between 1949 and 2013. The events listed also capture the two events identified above from the NCEI. No additional drought events were identified by the NCEI database from January 2013 to July 2020.

7.4.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of nine previous drought events in Union County between 1949 and 2020, the County experiences a drought event on average approximately once every eight years. With one event every eight years, there is roughly a 49% probability of at least one drought event occurring in Union County in the next five years.

Considering the impacts from the nine past events, the Steering Committee ranked droughts as a medium risk hazard. As a medium risk hazard, the Steering Committee determined that drought would be included as part of the more detailed risk assessment.

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Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.4.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of drought.

7.4.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the 2020 New Jersey Scientific Report on Climate Change (NJ Climate Change Report), the frequency of drought and heatwave conditions is increasing across the nation, and the Northeastern United States is anticipated to experience a greater frequency of droughts lasting 3-6 months or longer in the future. Further, as different climate norms are changing, usually insignificant events occurring simultaneously can create a significant event together. For example, drought conditions may arise from the concurrence of a heatwave and extended periods of dry weather during the summer. The NJ Climate Change Report also notes that water consumption has been increasing in some parts of New Jersey, and that local water supplies may be stressed as changes in precipitation patterns and particularly extended periods of low rainfall increase the frequency of drought.

7.4.7 VULNERABILITY ASSESSMENT

Impacts

Droughts have the ability to impact many sectors of the economy and reach well beyond the area experiencing physical drought. Drought impacts are commonly referred to as direct or indirect. Reduced crop productivity, increased fire hazard, reduced water levels, and damage to wildlife and fish habitat are a few examples of direct impacts. Drought can cause extensive damage to commercial and residential structure foundations, framing and walls, levees, roads, bridges, pipelines and other integral infrastructure. Indirect impacts of drought include increased prices for food, unemployment, and reduced tax revenues because of reduced supplies of agriculture products dependent upon on rainfall.

While all residents of Union County could be adversely affected by drought conditions, which could limit water supplies and present health threats, during summer drought, or hot and dry, conditions elderly persons, small children, infants and the chronically ill who do not have adequate cooling units in their homes may become more vulnerable to injury and/or death. However, the NCEI reported no known deaths, injuries or property damage from droughts in the planning area from any of the past events identified.

Exposure and Damages

The drought hazard was prioritized by the Steering Committee as medium. The County-wide potential impact of the drought hazard is very small, as the most significant impacts related to all but the most severe droughts are limited to damage to agricultural concerns. There is little or no agriculture in Union County, so the risks are minimal. The 2016 HMP update applicable jurisdictional appendices contain a more detailed analysis of vulnerabilities and potential impacts of this hazard. Although accurately predicting the probability of drought is impractical, where possible the jurisdictional appendices include projected losses to agriculture. There are no significant vulnerabilities to structures from the drought hazard.

The 2019 Standardized Risk Templated for Multi-Jurisdictional Mitigation Plans published as part of the State HMP categorizes the potential risks of drought into Groundwater Impacts and Crop Failure. Groundwater Impacts are calculated by the number of wells, intakes, and treatment plants while Crop Failure is calculated by comparing market value of products sold to the agriculture land

area. **Table 7.4-2 Total Number of Wells by Jurisdiction** shows the total number of wells by municipality based on data collected for the NJ Private Well Testing Act. The total number of intakes and treatment plants by municipality were not identified as they are not readily available.

TABLE 7.4-2 TOTAL NUMBER OF WELLS BY JURISDICTION

Jurisdiction	Total Number of Wells
Berkeley Heights Township	28
Clark Township	<10
Cranford Township	<10
Elizabeth City	<10
Fanwood Borough	0
Garwood Borough	0
Hillside Township	0
Kenilworth Borough	0
Linden City	<10
Mountainside Borough	<10
New Providence Borough	0
Plainfield City	<10
Rahway City	0
Roselle Borough	0
Roselle Park Borough	0
Scotch Plains Township	18
Springfield Township	<10
Summit City	<10
Union Township	<10
Westfield Town	<10
Winfield Township	0

Source: DEP, NJ Private well testing act data summary (Sep. 2002-Apr 2014)

Crop failure is not a significant concern for Union County, as there is little agricultural activity. According to the Tax Year 2019 New Jersey Farmland Data Report, there are only 16 acres (0.025 sq. mi.) of harvested cropland in Union County, divided between Cranford Township (6 acres or 0.009 sq. mi.), Scotch Plains Township (6 acres or 0.009 sq. mi.), and Westfield Town (5 acres or 0.008 sq. mi.). The United States Department of Agriculture (USDA) 2017 Census of Agriculture does not report the total market value of agricultural products sold in Union County; because there are so few farms, sales have been withheld to avoid disclosing data for individual operations.

7.5 EARTHQUAKE/GEOLOGICAL

7.5.1 HAZARD DESCRIPTION

According to FEMA, an earthquake is "…a sudden motion or trembling caused by an abrupt release of accumulated strain in the tectonic plates that comprise the earth's crust." These rigid plates, known as tectonic plates, are some 50 to 60 miles in thickness and move slowly and continuously over the earth's interior. The plates meet along their edges, where they move away from or pass

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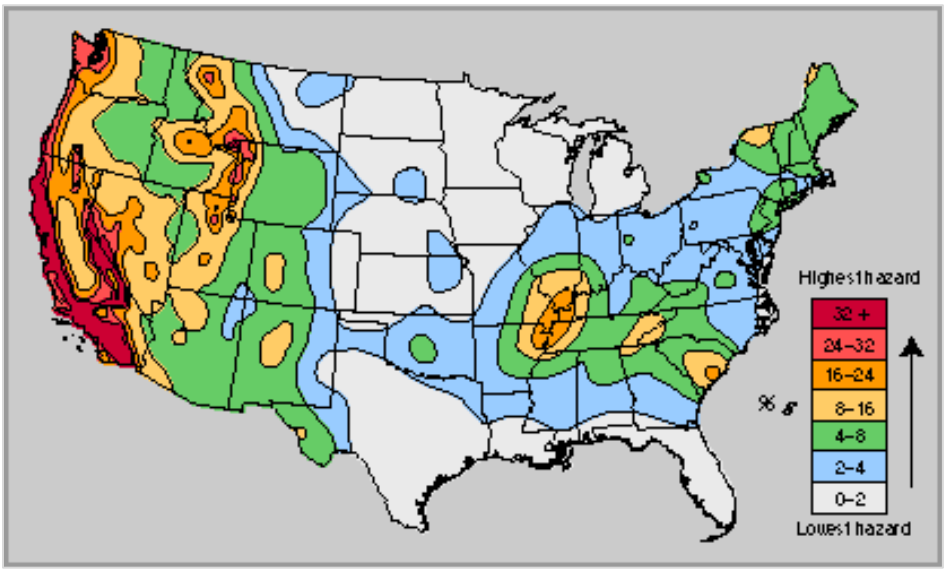
under each other at rates varying from less than a fraction of 1″ up to 5″ per year. While this sounds small, at a rate of 2″ per year, a distance of 30 miles would be covered in approximately 1 million years. **Figure 7.5-1 United State Earthquake Zones** shows a US Geological Survey (USGS) seismic probability map for the continental United States, with Union County being located in the 4-6 zone.

FIGURE 7.5-1 UNITED STATES EARTHQUAKE ZONES



Source: USGS

The vibration or shaking of the ground during an earthquake is described by ground motion. Severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves.

The following are the two kinds of seismic waves:

- P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion), with particle motion in the same direction as wave travel. They move through the earth at approximately 15,000 mph.
- S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side-to-side (horizontal motion) due to particle motion at right-angles to the direction of wave travel. Unreinforced buildings are more easily damaged by S waves.

Earthquakes are often relatively short duration, but there may be aftershocks and other effects (such as liquefaction) that prolong and exacerbate their effects. The potential for either of these effects depends on local conditions and other technical factors that are not discussed in this Plan. There is some potential for seismic activity virtually anywhere on the earth. Locations that are close to tectonic faults, however, are much more likely to be impacted by earthquakes than other places.

The USGS and other organizations develop maps to indicate the relatively probability of earthquakes in particular areas.

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7.5.2 LOCATION

Review of the State HMP and other Source indicates that earthquakes are most likely to occur in the northern parts of the State (including Union County), where significant faults are concentrated. The entire planning area is susceptible to the effects of earthquakes.

In 1996, the USGS produced probabilistic Seismic Hazard Maps for the United States. The USGS revises these maps roughly every six years or so to reflect newly published or thoroughly reviewed earthquake science and to keep pace with regular updates of the building code. The USGS maps were updated in 2002 and 2008 with revision incorporated in 2010. The 2010 USGS National Seismic Hazard Maps display earthquake ground motions for various probability levels across the United States and are applied in seismic provisions of building codes, insurance rate structures, risk assessments, and other public policy. This update of the maps incorporates new findings on earthquake ground shaking, faults, seismicity, and geodesy. The resulting maps are derived from seismic hazard curves calculated on a grid of sites across the United States that describe the frequency of exceeding a set of ground motions.

The 2016 HMP update included the USGS National Seismic Hazard Map produced in 2014 showing peak ground acceleration (pga) with a 2% chance of being exceeded over 50 years. **Figure 7.5-2 2018 Long-Term National Seismic Hazard Map** displays the most recent 2018 Long-Term USGS National Seismic Hazard Map that show peak ground acceleration (pga) with a 2% probability of being exceeded over 50 years, for a firm rock site. The map shows that highest hazard areas in the State can be found in northeastern New Jersey (shaded yellow) and decreases to the south (shaded green). In comparison to the 2014 Seismic Hazard Map, the 2018 version indicates the same hazard level in north-central New Jersey.

In 2002, the DEP, New Jersey Geological and Water Survey (NJGWS, formerly known as the New Jersey Geologic Survey) completed an Earthquake Loss Estimation Study for Union County. The NJGWS acquired and analyzed geologic, topographic, and test-boring data in order to map seismic soil class, liquefaction susceptibility, and landslide susceptibility for Union County. The soil class, liquefaction, and landslide susceptibility were then entered into the FEMA HAZUS (Hazards U.S.) model for each census track in the county.

The Study completed by the NJGWS identified and mapped the distribution and thickness of 12 surface materials for Union County. Mapping the soil type for each census track identifies areas that are susceptible to soil liquefaction. **Figure 7.5-3 Union County, New Jersey Soil Liquification Susceptibility** below is a soil liquefaction map for Union County. The map identifies the eastern coastal region as the main area of high susceptibility for soil liquefaction. As part of the 2021 HMP update this study and data was reviewed and determined to be the most recent earthquake study data available from the NJGWS.

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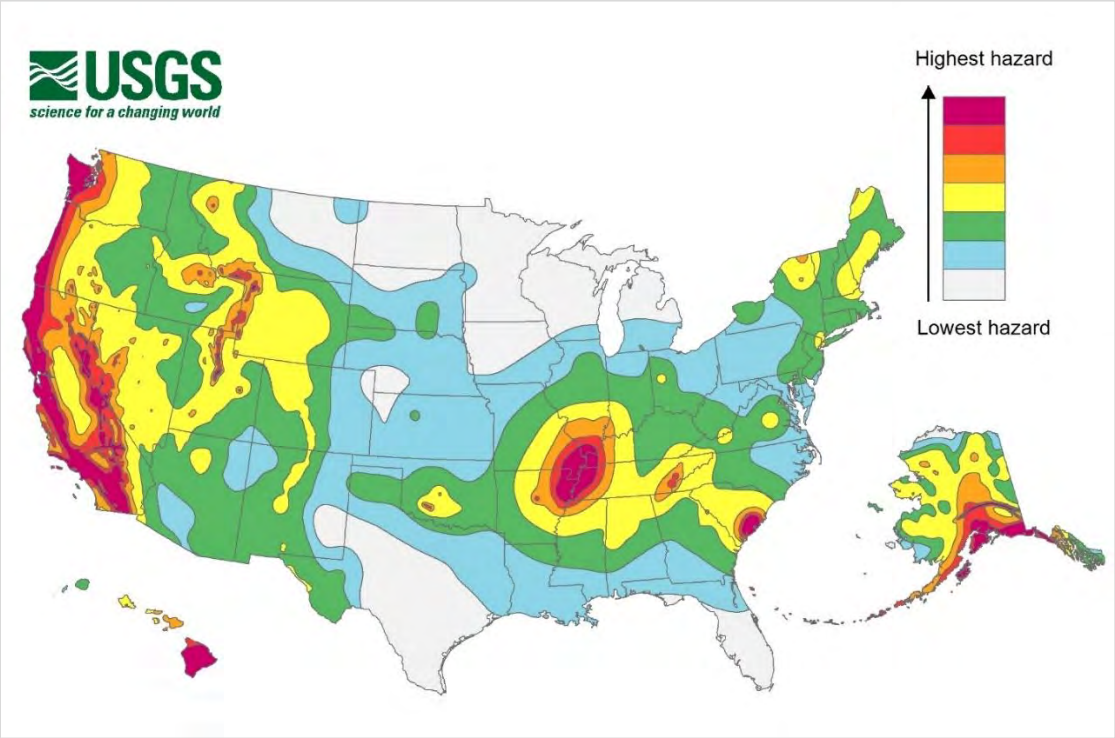
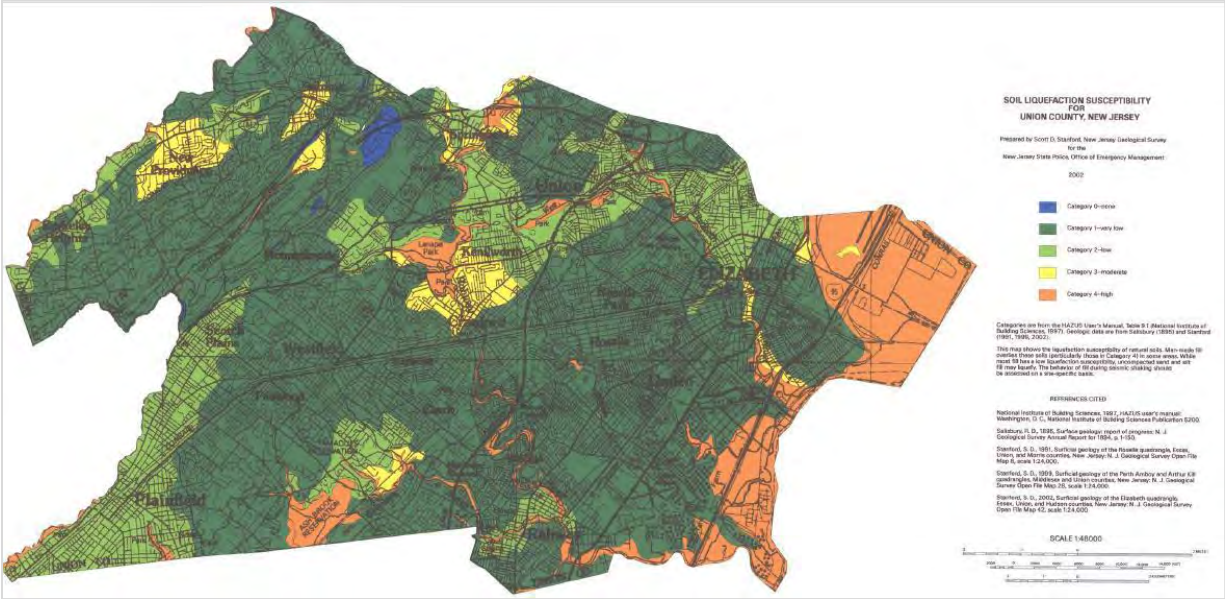
FIGURE 7.5-2 2018 LONG-TERM NATIONAL SEISMIC HAZARD MAP, SHOWING PEAK GROUND ACCELERATIONS HAVING A 2% PROBABILITY OF EXCEEDANCE IN 50 YEARS



Source: USGS, 2018 Long-Term U.S. National Seismic Hazard Map

FIGURE 7.5-3 UNION COUNTY, NEW JERSEY SOIL LIQUEFACTION SUSCEPTIBILITY



Source: Earthquake Loss Estimation Study for Union County, New Jersey: Geologic Component New Jersey Geologic Survey, 2002

7.5.3 EXTENT

Over the past 200 or more years, seismic events in Union County have been relatively low on magnitude and intensity scales. A review of data on historical earthquake occurrences from the

USGS and NJGWS indicate that Union County has experienced few and minor earthquakes, on average, over the past 200-plus years. As shown in **Figure 7.5-3 Union County, NJ Soil Liquification Susceptibility**, the probability of any severe earthquake in the area is low to moderate. The severity of earthquakes is influenced by several factors, including the depth of the quake, the geology in the area, and the soils. NJGWS indicates that the severity of soil liquefaction is dependent on the soils grain size, thickness, compaction, and degree of saturation.

7.5.4 PREVIOUS OCCURRENCES AND LOSSES

To identify past earthquake occurrences that have potentially impacted Union County, earthquake data from the NJGWS was reviewed. The NJGWS earthquake data indicates there have been 180 earthquakes with epicenters in New Jersey between 1783 and June 2013. During this 230-year time period most have been minor with magnitudes ranging from 0.4 to 5.3 and depths up to 25 km below sea level. Of the 180 earthquakes, none had an epicenter in Union County. A review of Earthquake Epicenters in New Jersey as compiled by the New Jersey Geological Survey dated September 9, 2020 indicates that there have been 30 additional earthquakes in New Jersey since June 2013. Of these 30 additional earthquakes, none had an epicenter in Union County.

Figure 7.5-4 Earthquake Epicenters in Northern New Jersey displays historical earthquakes with epicenters in northern New Jersey during this time period between 1783 and September 2020. The map also highlights earthquakes that have occurred within a 25-mile buffer extending out from Union County. These earthquake epicenters are included within the area circled on the map. A total of 145 earthquake epicenters have occurred within this 25-mile buffer.

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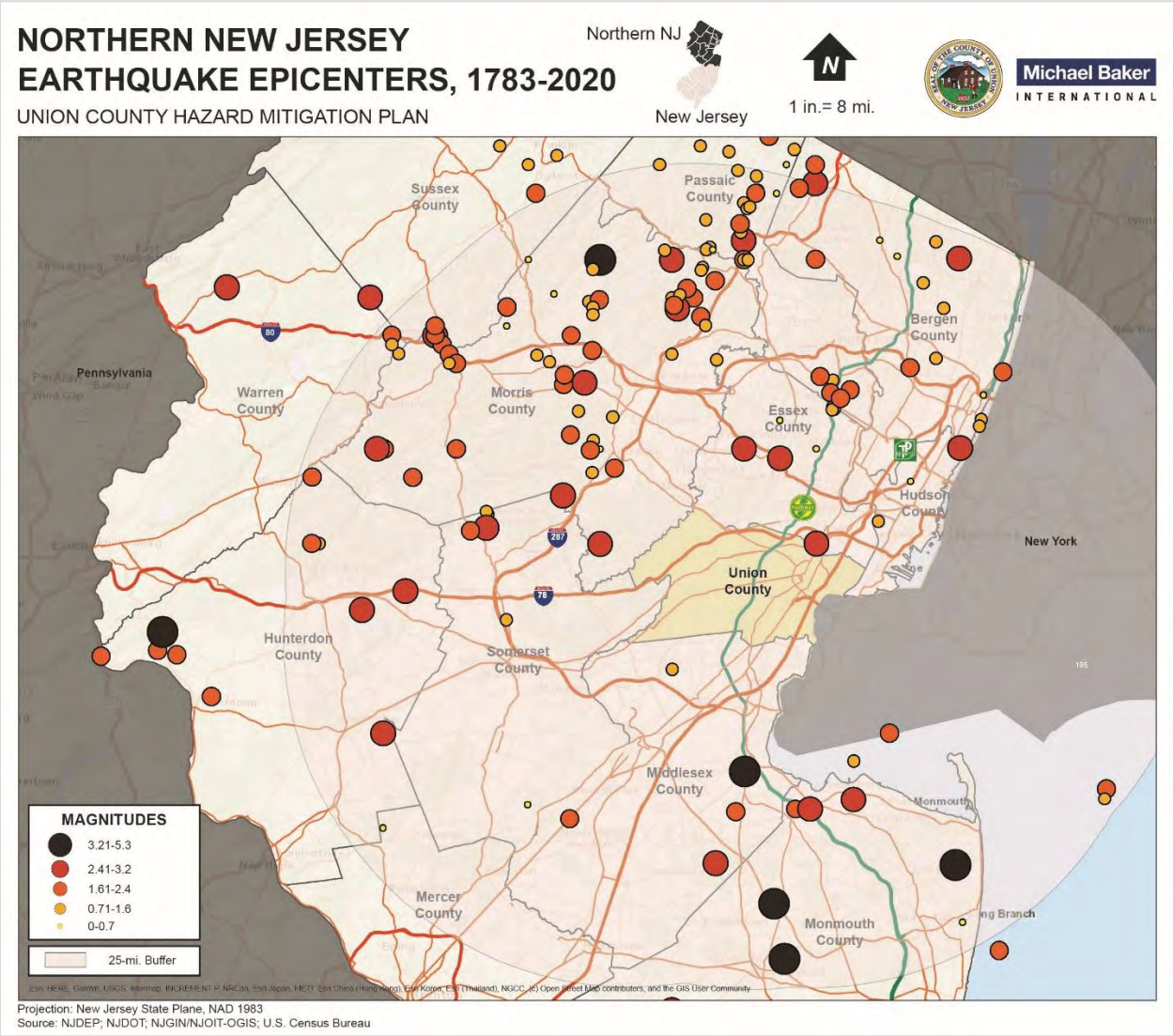
FIGURE 7.5-4 EARTHQUAKE EPICENTERS IN NORTHERN NEW JERSEY



Source: DEP, New Jersey Geological and Water Survey, June 2014
Note: This map was developed using DEP Geographic Information System data, but this secondary product has not been verified by DEP and is not state-authorized.

Table 7.5-1 Five Most Recent Earthquakes Within a 25-mile Buffer of Union County, 2017-2020 shows the five most recent earthquakes within a 25-mile buffer of Union County. The most recent event near Union County occurred on September 9, 2020 when a 5.0 magnitude earthquake occurred in Freehold, New Jersey (Monmouth County). and **Table 7.5-2 Top Five Magnitude Earthquakes Within a 25-mile Buffer of Union County, 1783-2020** identifies the top five magnitude events within a 25-mile buffer of Union County between 1783 and 2020. The table shows the second largest earthquake within this radius was also the September 9, 2020 earthquake in Freehold. **Table 7.5-3 Five Most Recent Earthquakes Within a 25-Mile Buffer of Union County, 2017-2020** includes the four closest earthquakes to Union County between 1783 and 2020 (within 5 miles of Union County). The closest earthquake epicenter to Union County was a 2.4 magnitude event that occurred on March 5, 1861 in Newark, New Jersey.

TABLE 7.5-1 FIVE MOST RECENT EARTHQUAKES WITHIN A 25-MILE BUFFER OF UNION COUNTY, 2017-2020

Event Date	Epicenter	Magnitude
11/8/2017	3.5 km NW of Keansburg, NJ (Sandy Hook Bay)	1.38
11/15/2018	21.3 km NE of Long Branch, NJ	1.4
4/12/2019	0.6 km S of Clifton, NJ	1.8
8/3/2019	4.1 km E of Butler, NJ	0.8
9/9/2020	2.1 km SSE of East Freehold, NJ	5

Source: DEP, New Jersey Geological and Water Survey, September 2020

TABLE 7.5-2 TOP FIVE MAGNITUDE EARTHQUAKE EVENTS WITHIN A 25-MILE BUFFER OF UNION COUNTY, 1783-2020

Event Date	Epicenter	Magnitude
11/30/1783	Rockaway, NJ West of New York City	5.3
9/9/2020	2.1 km SSE of East Freehold, NJ	5
09/01/1895	Sayreville, NJ Near South Amboy, NJ	4.1
6/1/1927	Rumson, NJ Near Asbury Park, NJ	3.9
1/30/1979	Marlboro, NJ	3.5

Source: DEP, New Jersey Geological and Water Survey, September 2020

TABLE 7.5-3 THE THREE CLOSEST EARTHQUAKES TO UNION COUNTY, 1783 - 2020

Event Date	Epicenter	Magnitude
03/05/1861	Newark, NJ	2.4
03/10/1979	Bernardsville, NJ	3.1
06/09/2011	2 km SE of S. Plainfield, NJ	1.6
07/08/2014	3 km W of Jersey City, NJ	1.6

Source: DEP, New Jersey Geological and Water Survey, September 2020

7.5.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of 145 previous earthquakes having epicenters within 25 miles of Union County between 1783 and 2020, the County experiences an earthquake event on average approximately than once every 1.6 years. With one event roughly every 1.6 years, there is a 99% probability of at least one future earthquake event occurring within a 25-mile radius of Union County in the next five years. Considering the impacts from the 145 past events have all been relatively minor, the Steering Committee ranked earthquakes as a low risk hazard.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.5.6 Potential Effects of Climate Change below for a discussion of how climate change may alter the frequency of earthquakes.

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7.5.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

The State HMP notes that it is challenging to provide projections of future climate change for a specific region, and shorter-term projections (linked to existing trends) are less challenging than longer term projections. It is currently unknown how global climate change may impact earthquake probability. Melting glaciers may induce tectonic activity as large masses of ice that currently exert pressure on the Earth's surface turn to water runoff. This can cause the Earth's crusts to readjust, which may cause seismic plates to slip.

The State HMP also indicates that future climate changes could magnify the secondary impacts of earthquakes. Increased soil saturation from repetitive storms could cause liquification during seismic activity. Increased water storage in dams could cause dam failure during seismic events as well.

7.5.7 VULNERABILITY ASSESSMENT

The primary cause of earthquake damage to man-made structures is ground shaking. Depending on the severity of ground shaking, debris and falling building material can create a threat to life and property. Severe enough ground shaking, particularly for longer periods, can result in the complete collapse of some unreinforced or lightly engineered structures. The amount of ground-shaking depends on how soft and how deep the soil is, and on the type of bedrock lying beneath it. Also important is whether the soil type will lose strength, liquefy or slide downhill when shaken.

Damage can be increased when soft soils amplify ground shaking. FEMA's National Earthquake Hazard Reduction Program (NEHRP) developed five soil classifications defined by their shear-wave velocity that impact the severity of an earthquake. The soil classification system ranges from A to E, as noted in **Table 7.5-4 NEHRP Soil Classifications**, where A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses.

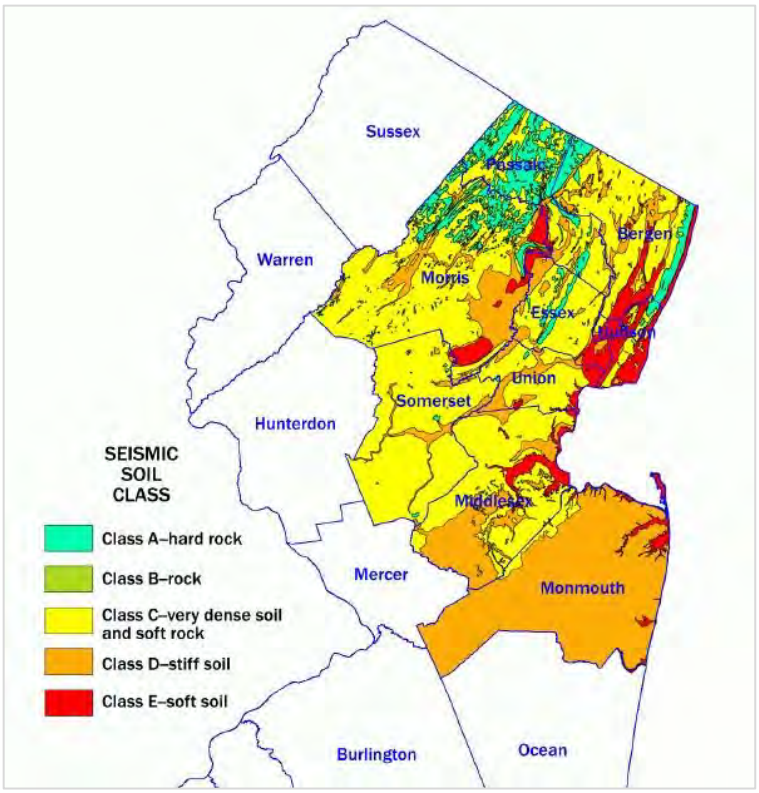
TABLE 7.5-4 NEHRP SOIL CLASSIFICATIONS

Soil Classification	Description
A	Hard Rock
B	Rock
C	Very Dense soil and soft rock
D	Stiff soils
E	Soft soils

Source: FEMA

Figure 7.5-5 Seismic Soils in Northeastern New Jersey identifies the NEHRP soils for New Jersey counties located in the northeast quadrant the State. The map was produced by the New Jersey Geological and Water Survey (NJGWS) as part of the Earthquake Loss Estimation Study for New Jersey. The majority of Union County falls within Class C – Very Dense Soil and Soft Rock. Approximately 20% of the area is located within Class D – Stiff Soil. The far eastern part of the County is located within Class E – Soft Soil.

FIGURE 7.5-5 SEISMIC SOILS IN NORTHEASTERN NEW JERSEY



Source: New Jersey Geological and Water Survey

There are no known deaths or injuries from earthquakes in Union County. Some of the past earthquake events caused minor property damage including broken windows or contents falling from shelves. Although the probability of a significant earthquake occurring in this region is relatively small, the effects on life and property in the area could be significant, so a risk assessment is included in the following subsection.

Earthquake vulnerabilities are primarily related to the fragility of structures and infrastructure. Fragility is the tendency of a structure to be damaged when subjected to shaking. When structures or infrastructure are damaged or fail under such loads, there is also a high potential for interrupted services, deaths and injuries.

The earthquake hazard was prioritized by the Steering Committee as low, so it is not the subject of more detailed assessment in this section or the jurisdictional appendices. The County-wide potential impact from the earthquake hazard is relatively small because of the low probability of significant shaking. However, if the area were subject to intense or long-duration ground shaking, there would be high potential for failure of vulnerable structures, such as those comprised of unreinforced masonry construction.

Complementary to calculations presented in 2010 HMP, the seismic risk analysis presented herein concentrated on applying updated HAZUS analysis on an annual level exposure. Calculations were performed using HAZUS-MH with general Level I analysis with slight modification of the soil map (instead of default value at Category D, the prevalent Category C soils were used instead).

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While the 2010 analysis used deterministic scenarios, HAZUS calculations used probabilistic scenario for annualized direct building losses. Loss projections were calculated for 50-year and 100-year horizons, using 7% discount rate and pertinent multipliers of 13.80 and 14.27, respectively. **Table 7.5-5 Seismic Losses** displays the 50-year and the 100-year seismic losses projected at the county-level.

TABLE 7.5-5 SEISMIC LOSSES

Annualized	50-year horizon	100-year horizon
$1,208,870	$16,682,406	$17,250,575

Source: HAZUS-MH

The table and the map below present distribution of annualized building losses for every municipality in Union County. The calculation did not include loss of life and risk to underground infrastructure.

TABLE 7.5-6 UNION COUNTY ANNUALIZED TOTAL BUILDING LOSSES BY MUNICIPALITY

Municipality	Structural Damage	Non-Structural Damage	Building Damage	Contents Damage	Inventory Loss	Relocation Cost
Elizabeth City	$26,420	$117,520	$143,960	$48,320	$1,670	$15,790
Hillside Township	$6,270	$25,410	$31,670	$11,770	$570	$3,590
Union Township	$15,880	$64,230	$80,140	$28,420	$1,100	$8,850
Kenilworth Borough	$3,680	$13,820	$17,500	$7,070	$540	$1,960
Roselle Park Borough	$3,000	$12,890	$15,890	$5,180	$120	$1,610
Roselle Borough	$4,520	$20,000	$24,510	$8,380	$350	$2,480
Linden City	$12,910	$49,870	$62,810	$22,280	$1,000	$7,370
Rahway City	$6,970	$30,200	$37,190	$13,280	$420	$4,340
Winfield Township	$180	$950	$1,140	$320	$0	$130
Clark Township	$4,580	$18,710	$23,290	$8,250	$230	$2,480
Westfield Town	$8,520	$35,570	$44,090	$14,460	$130	$4,480
Garwood Borough	$1,320	$5,640	$6,960	$2,560	$140	$800
Cranford Township	$7,440	$30,820	$38,260	$13,500	$340	$4,150
Springfield Township	$5,690	$21,990	$27,680	$9,930	$270	$3,270
Summit City	$6,740	$28,590	$35,320	$12,140	$230	$3,740
New Providence Borough	$4,040	$16,270	$20,310	$7,270	$270	$1,970
Berkeley Heights Township	$4,510	$17,760	$22,260	$7,320	$150	$2,010
Mountainside Borough	$3,060	$12,190	$15,260	$5,710	$220	$1,550

Municipality	Structural Damage	Non-Structural Damage	Building Damage	Contents Damage	Inventory Loss	Relocation Cost
Scotch Plains Township	$6,090	$25,390	$31,480	$10,120	$130	$2,950
Fanwood Borough	$1,770	$7,350	$9,110	$2,900	$30	$830
Plainfield City	$9,920	$42,330	$52,250	$17,200	$330	$5,920
Total Union County	$143,510	$597,500	$741,060	$256,380	$8,240	$80,270

Source: HAZUS-MH

TABLE 7.5-7 UNION COUNTY ANNUALIZED TOTAL BUILDING LOSSES BY MUNICIPALITY

MUNICIPALITY	Income Loss	Rental Income Loss	Wage Loss	Total Loss
Elizabeth City	$5,600	$12,560	$7,810	$235,650
Hillside Township	$1,070	$2,090	$1,380	$52,130
Union Township	$3,640	$4,970	$5,090	$132,150
Kenilworth Borough	$880	$1,120	$990	$30,070
Roselle Park Borough	$550	$1,030	$760	$25,170
Roselle Borough	$730	$1,470	$980	$38,880
Linden City	$2,500	$5,150	$3,010	$104,110
Rahway City	$1,930	$2,520	$2,950	$62,580
Winfield Township	$0	$100	$10	$1,700
Clark Township	$1,150	$1,330	$1,470	$38,210
Westfield Town	$1,900	$2,400	$2,560	$70,000
Garwood Borough	$510	$520	$550	$12,020
Cranford Township	$1,440	$2,080	$2,000	$61,790
Springfield Township	$1,260	$1,850	$1,770	$46,020
Summit City	$1,930	$2,200	$2,900	$58,470
New Providence Borough	$800	$1,000	$960	$32,570
Berkeley Heights Township	$770	$980	$1,100	$34,580
Mountainside Borough	$930	$760	$1,150	$25,580
Scotch Plains Township	$1,380	$1,550	$1,710	$49,320
Fanwood Borough	$230	$360	$340	$13,810
Plainfield City	$1,860	$3,610	$2,920	$84,060
Total Union County	$31,060	$49,650	$42,410	$1,208,870

Source: HAZUS-MH

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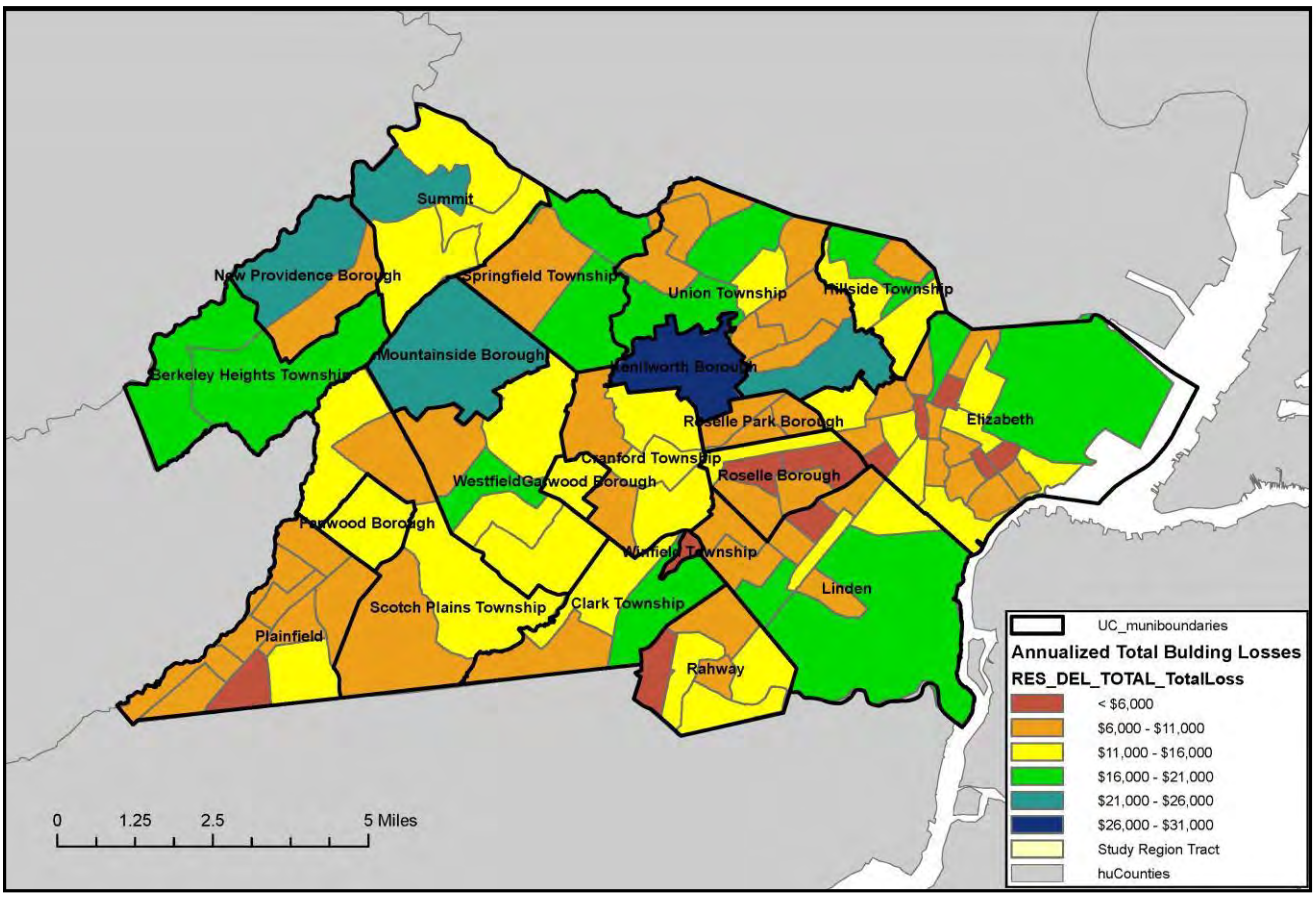
FIGURE 7.5-6 ESTIMATED SEISMIC RISK TO UNION COUNTY TOTAL ANNUALIZED LOSSES PER CENSUS TRACT



Source: HAZUS-MH

7.6 EROSION (INCLUDING HURRICANE/NOR'EASTER/TROPICAL STORM)

7.6.1 HAZARD DESCRIPTION

Coastal erosion is the wearing away of land or the removal of beach or dune sediments by wave action, tidal currents, wave currents, wind, or drainage. Coastal erosion is a dynamic process that is constantly occurring at varying rates along the coasts and shorelines of the United States. Numerous factors can influence the severity and rate of coastal erosion including human activities, tides, the possibility of rising sea levels, and the frequency and intensity of hurricanes. Strong storms and hurricanes can erode large sections of coastline with a single event. The process of coastal erosion results in permanent changes to the shape and structure of the coastline. Human activities such as poor land use practices and boating activities can also accelerate the process of coastal erosion.

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Billions of dollars of economic development are potentially threatened by the impacts of coastal erosion. In a report to Congress in the year 2000, the Federal Emergency Management Agency estimated that erosion may cost property owners along the coast $500 million a year in structural damages and loss of land. The report also stated as many as 87,000 residential homes may be at risk of eroding into the oceans or Great Lakes over the next 60 years.

A range of studies have assessed the susceptibility of the New Jersey coast to erosion. Several of the more significant studies have included a report by the United States Army Corps of Engineers (USACE) in 1971, a study by the DEP in 1981, and study by the Rutgers University Institute of Marine and Coastal Sciences in 1996. The 1971 study conducted by the USACE considered economic, ecological, and other variables along with physical measures of shoreline change to determine the severity of New Jersey coastal erosion. The study classified the majority of the New Jersey coastline as critically eroding. According to Future Sea Level Rise and the New Jersey Coast (June 2005), a successive study by the DEP in 1981 calculated the severity of shoreline erosion (considering only physical factors) and categorized 32.9 % as critically eroding, 18 % as significantly eroding, 38.5 % as moderately eroding and 10.6 % as non-eroding.

In southern New Jersey the Town of Cape May Pont is vulnerable to beach erosion due to waves from the Atlantic Ocean and the Delaware Bay. The Town is roughly a mile-long beachfront community located on the southern tip of New Jersey. Between 1994 and 2002, the USACE installed several Beach Saver Reefs and a Double-T sill (inverted double fabricated parking garage floor) to limit the effects of coastal erosion. The Double T sill was installed to retain sediment behind the structure and create a perched beach.

According to the USACE Coastal and Hydraulics Laboratory, since 2002, the USACE has been closely monitoring the project completing numerous surveys including profiles and settlement surveys, sediment samples, and wave and current measurements.

7.6.2 LOCATION

The State of New Jersey has over 130 miles of coastline, most of which is within close proximity to major metropolitan centers of the mid-Atlantic. Beach restoration and maintenance is an ongoing process for New Jersey. The state legislature provides $25 million annually for beach restoration, and many beaches on the Atlantic are currently under either a design, engineering, or a construction phase, for this purpose. In Union County the erosion problem is predominately concentrated along the Arthur Kill River (16 kilometers of shoreline) and Newark Bay (nine kilometers of shoreline), which are located along the far eastern portion of the Cities of Elizabeth and Linden. Specific areas susceptible to erosion include Eddy Avenue Park and a portion of the Peach Orchard Brook in the Linden City experience fairly significant erosion problems.

Union County is part of the New York District of the U.S. Army Corps of Engineers (USACE). USACE is currently conducting a New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study, which is a coastal storm risk management study that the covers the New York & New Jersey Harbor and tidally affected tributaries, including the Raritan and Rahway Rivers, Newark Bay, and Arthur Kill that border Union County (including the communities of City of Elizabeth City Linden, and Rahway City); the study area extends into most Union County except for its westernmost municipalities. On July 15, 2016, the States of New York and New Jersey executed the study's feasibility cost-sharing agreement. The scope of work for the study is an estimated $19.4 million over six years. On February 19, 2019, the study released an interim report which identified and

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analyzed alternatives ranging from harbor-wide coastal storm risk management methods to perimeter only management; alternative 2 includes beach restoration. Public meetings on the Interim Report were held from March to November 2019. Further studies are currently underway to identify the Tentatively Selected Plan.

For information about USACE projects in Union County focused on flood risk management, please refer to Section 7.9 Flood.

7.6.3 EXTENT

Episodic storm erosion generates the most significant erosion along the New Jersey coast. Typically, these storms can impact the coast over periods of hours (tropical cyclones) to several days (nor'easters). Although the storm events are short-lived, the resulting erosion can be equivalent to decades of long-term coastal change. The actual quantity of sediment eroded from the coast is a function of storm tide elevation relative to land elevation, the duration of the storm and the characteristics of the storm waves. During severe coastal storms, it is not uncommon for the entire berm and part of the dune to be removed from the beach. The amount of erosion is also dependent on the pre-storm width and elevation of the beach. If the beach has been left vulnerable to erosion due to the effects of recent storms, increased erosion is likely. The time necessary for the beach to naturally recover from significant erosion can often be on the order of years to decades.

According to FEMA, coastal erosion is measured as the rate of change in the position or horizontal displacement of a shoreline a period of time. Review of the State HMP indicates a number of factors can determine whether a community experiences vulnerable to greater long-term erosion or accretion:

- Exposure to high-energy storm waves;
- Sediment size and composition of eroding coastal landforms feeding adjacent beaches;
- Near-shore bathymetric variations which direct wave approach;
- Alongshore variations in wave energy and sediment transport rates;
- Relative sea level rise;
- Frequency and severity of storm events; and
- Human interference with sediment supply (e.g. revetments, seawalls, jetties) (Woods Hole Sea 2003).

7.6.4 PREVIOUS OCCURRENCES AND LOSSES

The 2016 HMP update highlights some of the major events that have caused coastal erosion in Union County. In addition to these larger events described in the previous plan, minor coastal erosion occurred from storm events in 1994, 1998, 2002, and 2012. A review of the NOAA NCEI Storm Events Database from January 2013 through July 2020 yields no instances of coastal flooding, high surf, hurricane, storm surge/tide, tropical depression, or tropical storm that would lead to instance of coastal erosion. A review of flood events during this same time period did not yield any instances of erosion, either.

7.6.5 PROBABILITY OF FUTURE OCCURRENCES

As mentioned above, the erosion problem is an ongoing problem along many areas of the Union County shoreline along the Arthur Kill. It is difficult, if not impossible, to assign a probability to the near constant small ongoing erosion that may occur over a continuous period of time. However, a probability can be assigned to larger storm events such as nor'easters, hurricanes and coastal storms that can result in significant storm induced coastal erosion. The erosion hazard was prioritized by the Steering Committee as medium.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.6.6 Potential Effects of Climate Change below for a discussion of how climate change may alter the frequency of erosion.

7.6.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the State HMP, climate change may impact coastal areas in different ways. Sea-level rise, storm frequency and intensity changes, and increases in precipitation and ocean temperatures all impact coastal areas. NASA indicates that temperature increase may lead to an increase in storm frequency, thereby creating more erosion-causing weather events.

7.6.7 VULNERABILITY ASSESSMENT

Erosion from coastal storms has the potential to cause significant property damage particularly to more densely populated beach communities on the Atlantic coast. Potentially billions of dollars of coastal development may be damaged or destroyed by the effects of erosion. Additionally, the loss of beach shoreline can also have a negative impact on a community due to the potential loss of tourism. The coastal erosion problem has been studied by various federal, state and local agencies and organizations. The New Jersey Beach Profile Network (NJBPN) has been monitoring and surveying beach erosion along the New Jersey coastline since 1986. The survey data produced by the NJBPN includes cross-sectional profiles and quantitative measurements of volumetric changes along the profiles over time.

Although specific river and stream corridors within Union County periodically experience erosion, the most significant potential for this hazard to affect structures, infrastructure and people occurs in the easternmost jurisdictions, including Linden, Elizabeth, and Rahway. The County-wide potential impact of the erosion hazard is small, as impacts related to all but the most severe events are limited to areas in the eastern County that are not highly populated or built. See the applicable jurisdictional appendices for a more detailed analysis of vulnerabilities and potential impacts of this hazard.

The 2019 Standardized Risk Templated for Multi-Jurisdictional Mitigation Plans published as part of the State HMP calculates exposure to coastal erosion by determining the areas with a proportion of a parcel or census block lying within 120 FT of beach or erodible shoreline, known as Coastal Erosion Susceptible Area (CESA). That said, neither the New Jersey Department of Environmental Protection (DEP) Shoreline Classifications used in the State HMP nor the New Jersey Beach Profile Network (NJBPN) classify the shoreline along Union County. Since the shoreline classification is unknown, we cannot determine the percentage of erodible shoreline in Union County.

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7.7 EXTREME TEMPERATURE–COLD

7.7.1 HAZARD DESCRIPTION

The extreme cold hazard can be defined as temperatures that are significantly below normal. The severity of extreme temperature events are measured by temperature, duration and humidity. Most events are of less than a week in duration but can occasionally last for longer periods up to several weeks.

A cold wave is classified as a rapid drop of 20˚F, to below between 28˚F and 10˚F, depending on the time of year and whether the drop occurs in the southern or northern half of the state, within a 24-hour period. When this occurs, outdoor industrial, commercial, agricultural and social activity must be curtailed, or additional precautions taken.

The consequences of extreme cold on humans are intensified by high winds which increase the rate of heat loss and has the effect of making it feel colder than the actual air temperature. Wind chills can make extreme cold temperatures even more dangerous. Very strong winds combined with temperatures slightly below freezing can have the same chilling effect as a temperature nearly 50˚F lower in a calm atmosphere. Arctic explorers and military experts have developed what is called the wind-chill factor, which calculates an equivalent calm-air temperature for the combined effects of wind and temperature. In effect, the index describes the cooling power of air on exposed flesh and to a lesser extent a clothed person. Wind-chill temperatures throughout New Jersey annually fall below 0˚F a number of times each winter.

At very cold temperatures, the most serious concern is the risk of hypothermia or dangerous overcooling of the body. Extreme cold temperatures combined with high winds can lead to frostbite or freezing of the exposed extremities such as fingers, toes, nose and ear lobes. Hypothermia could be fatal in absence of immediate medical attention.

Cold weather injuries are summarized as follows:

- **Frostnip:** The freezing of the top layers of skin tissue and is normally reversible. It mostly affects the cheeks, earlobes, fingers, and toes. Symptoms include numbness, top layer of skin feeling hard and rubbery, but deeper tissue is soft. Skin becomes waxy.
- **Frostbite:** The actual freezing of the tissue and/or body part. Ice crystals form inside the skin that can destroy the tissues, potential for losing skin or part of a finger, toe, or foot. Frostbite affects the ears, nose, fingers, and toes most often. Superficial frostbite includes all layers of skin, and deep frostbite can include freezing of muscle and/or bone. Symptoms include skin that is white and has a wooden feel all the way through.
- **Hypothermia:** The general cooling of the body. When the body drops much below the normal temperature of 98.6˚F, serious problems can arise. Severe hypothermia can lead to death. Symptoms of mild hypothermia include uncontrolled shivering, numbness of hands, and the inability to complete tasks with hands. At the point of severe hypothermia shivering stops, a person is unable to walk, and pulse and respiration rates decrease.

7.7.2 LOCATION

The entire planning area is subject to the hazards associated with extreme cold temperatures.

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7.7.3 EXTENT

The severity of extreme cold temperature events are measured by temperature, duration, and humidity. Most events are of less than a week in duration but can occasionally last for longer periods up to several weeks.

7.7.4 PREVIOUS OCCURRENCES AND LOSSES

The NCEI database indicates there have been four recorded extreme cold temperature events in Union County during the period 1950-2013. Although the query results begin in 1950, the first reported event was in 2000. Three of the four events listed in the database occurred within a 10-day period in January of 2000. These three events were most likely from one cold air mass lingering over the area for an extended period of time and can be combined into a single event. If the January 2000 cold spell is considered one event, the number of events identified in the NCEI database is reduced to two. There are most likely additional extreme cold events prior to 2000 that are not captured in the database. No indication is given in the database as to why there are no events identified prior to 2000, although the pattern is most likely similar with a couple of extreme cold temperature events occurring about every five years. No additional cold/wind chill or extreme cold/wind chill events were identified by the NCEI database from January 2013 to July 2020 for Union County.

The structure of the NCEI database combines the extreme cold and extreme heat into temperature extremes. The database indicates there have been no deaths and no injuries from the two extreme cold events in Union County.

In addition to querying the NCEI for past extreme cold events in NJ, data from the Office of the New Jersey State Climatologist was also reviewed. **Figure 7.7-1 New Jersey's Extreme Temperature and Precipitation Months, 1895-2019** below shows months with both hot and cold temperature extremes over 124 years for the State of New Jersey. The data shows that the extreme cold months over the past 124 years tend to occur before 1930.

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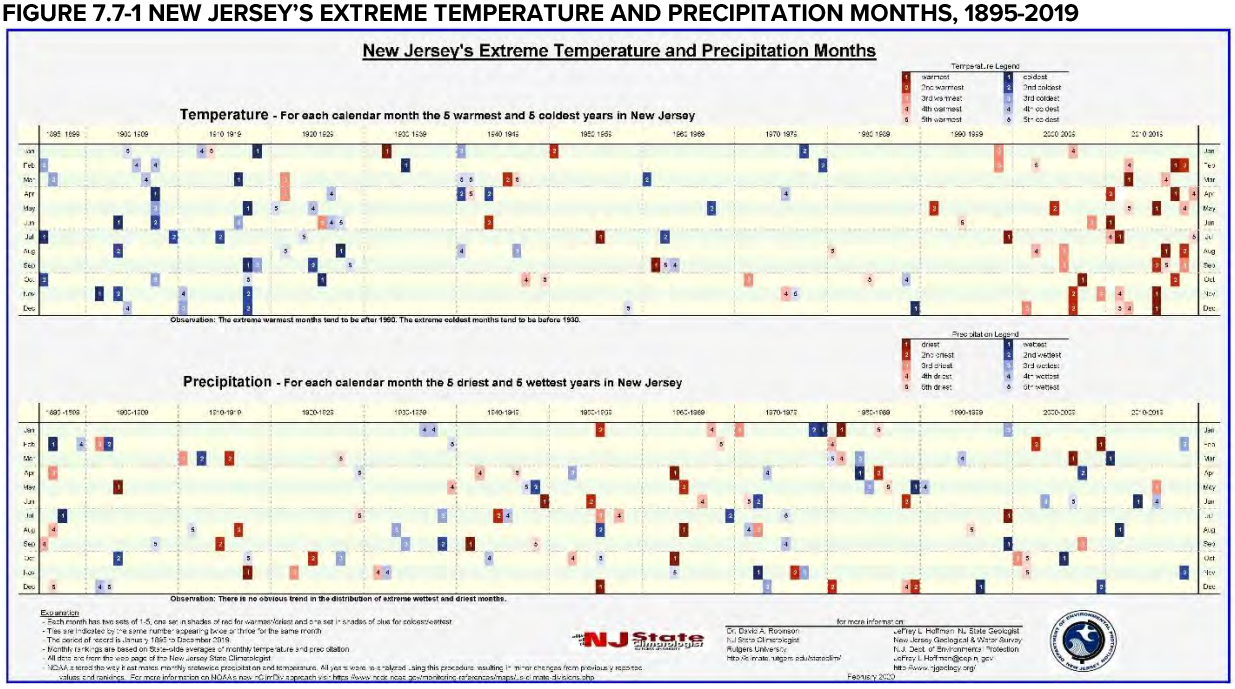
FIGURE 7.7-1 NEW JERSEY'S EXTREME TEMPERATURE AND PRECIPITATION MONTHS, 1895-2019



Source: Office of the New Jersey State Climatologist (ONJSC), February 2020

7.7.5 PROBABILITY OF FUTURE OCCURRENCES

Based on the two events between 2000 and 2020, an extreme cold temperature event occurs on average approximately once every ten years. With one event every ten years, there is roughly a 41% probability of at least one extreme temperature (cold) event occurring in Union County in the next five years. Although there have only been a few events documented in the NCEI database, the Steering Committee ranked extreme temperature (cold) as a high-risk hazard.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.7.6 Potential Effects of Climate Change below for a discussion of how climate change may change the frequency of extreme cold events.

7.7.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the 2020 New Jersey Scientific Report on Climate Change, New Jersey's rate of warming is faster than the rest of the Northeast region and the world. It is expected that annual average temperature will continue to increase and be felt more during the winter, resulting in less intense extreme cold events and fewer days below freezing.

7.7.7 VULNERABILITY ASSESSMENT

Damages from extreme cold temperatures are generally confined to effects on humans, although occasionally there may be relatively minor effects on infrastructure such as freezing pipes or electric grids.

While all residents of Union County could be adversely affected by extreme cold conditions, with rare exceptions there are no significant or long-term damages associated with this hazard. This hazard was prioritized by the Steering Committee as *high*, mostly because the hazard occurs regularly and affects nearly everyone in the County. The County-wide potential impact of the extreme cold hazard is very small, as evidenced by historical records, which show little or no

specific damage from cold (as opposed to winter storms and snow). There are no significant vulnerabilities to structures from the cold hazard, and no expected recurrent losses.

In addition to traffic accidents (which are discussed elsewhere in this section of the Plan) and freezing damage to infrastructure, perhaps the most significant winter storm/cold related risk in Union County is hypothermia. The 2016 HMP update referred to derived expected figures on hypothermia deaths in Union County from national statistics, in the absence of readily-available open-source records for the County. The 2016 HMP update used the *National Health Statistics Report* entitled *Deaths Attributed to Heat, Cold and other Weather Events in the United States, 2006 to 2010* by the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC). In the date range indicated in the title, there were 6,652 deaths nationwide related to exposure to cold, including other contributing factors. This translates to an annual national figure of 1,330.

For the 2021 HMP update, the statewide mortality rate was for hypothermia from 1999-2016 was determined from the CDC National Center for Health Statistics' CDC WONDER online database. Jurisdiction-level risks from hypothermia were then derived from statewide statistics, based on population. In **Table 7.7-1 Estimate Hypothermia Risk in Union County, By Jurisdiction** below, the annual risk figure is estimated using the FEMA value of life (see documentation supporting the Benefit-Cost Analysis Toolkit 6.0, entitled *FEMA Benefit-Cost Analysis (BCA) Toolkit 6.0 Release Notes*).

TABLE 7.7-1 ESTIMATED HYPOTHERMIA RISK IN UNION COUNTY, BY JURISDICTION

Jurisdiction	2018 Population Estimate	Est. Municipal Deaths Related to Cold Exposure	Annual Risk
Berkeley Heights Township	13,417	0.03	$196,223.63
Clark Township	15,614	0.03	$228,354.75
Cranford Township	23,882	0.05	$349,274.25
Elizabeth City	128,153	0.25	$1,874,237.63
Fanwood Borough	7,602	0.01	$111,179.25
Garwood Borough	4,334	0.01	$63,384.75
Hillside Township	21,895	0.04	$320,214.38
Kenilworth Borough	8,160	0.02	$119,340.00
Linden City	42,033	0.08	$614,732.63
Mountainside Borough	6,820	0.01	$99,742.50
New Providence Borough	12,808	0.02	$187,317.00
Plainfield City	50,508	0.10	$738,679.50
Rahway City	29,370	0.06	$429,536.25
Roselle Borough	21,582	0.04	$315,636.75
Roselle Park Borough	13,568	0.03	$198,432.00
Scotch Plains Township	24,183	0.05	$353,676.38
Springfield Township	17,398	0.03	$254,445.75
Summit City	21,921	0.04	$320,594.63

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Jurisdiction	2018 Population Estimate	Est. Municipal Deaths Related to Cold Exposure	Annual Risk
Union Township	58,158	0.11	$850,560.75
Westfield Town	30,086	0.06	$440,007.75
Winfield Township	1,574	0.00	$23,019.75
Union County	553,066	1.08	$8,088,590.25

Source: 2017 CDC National Center for Health Statistics, 2020 FEMA, 2019 U.S. Census Bureau

7.8 EXTREME TEMPERATURE–HEAT

7.8.1 HAZARD DESCRIPTION

FEMA defines extreme summer heat as the combination of very high temperatures and exceptionally humid conditions. If such conditions persist for an extended period of time, it is called a heat wave. Heat stress can be indexed by combining the effects of temperature and humidity, as shown in **Table 7.8-1 Heat Index and Disorders**. The index estimates the relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer. The higher the temperature or humidity, the higher the apparent temperature.

TABLE 7.8-1 HEAT INDEX AND DISORDERS

Danger Category		Heat Disorders	Apparent Temperatures (°F)
IV	Extreme Danger	Heatstroke or sunstroke imminent.	>130
III	Danger	Sunstroke, heat cramps, or heat exhaustion likely; heat stroke possible with prolonged exposure and physical activity.	105-130
II	Extreme Caution	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and physical activity.	90-105
I	Caution	Fatigue possible with prolonged exposure and physical activity.	89-90

Source: FEMA, 1997; NWS, 1997

In the northeastern United States periods of warmer than normal temperatures typically occur several times a summer. Extreme heat waves may occur about once every five years or so where maximum daily temperatures exceed 100°F for an extended period of time. The passing of a cold front usually moderates temperatures after a few days to a week.

The main impact of extreme heat is its effect on the human body. In a very hot environment, the most serious concern is heat stroke. In absence of immediate medical attention, heat stroke could be fatal. Heat stroke fatalities do occur every summer. Heat exhaustion and fainting (syncope) are less serious types of illnesses which are not fatal but interfere with a person's ability to work.

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The major human risks associated with extreme heat can be summarized as follows.

- **Heatstroke:** Considered a medical emergency, heatstroke is often fatal. It occurs when the body's responses to heat stress are insufficient to prevent a substantial rise in the body's core temperature. While no standard diagnosis exists, a medical heatstroke condition is usually diagnosed when the body's temperature exceeds 105°F due to environmental temperatures. Rapid cooling is necessary to prevent death, with an average fatality rate of 15% even with treatment.
- **Heat Exhaustion:** While much less serious than heatstroke, heat exhaustion victims may complain of dizziness, weakness, or fatigue. Body temperatures may be normal or slightly too moderately elevated. The prognosis is usually good with fluid treatment.
- **Heat Syncope:** This refers to sudden loss of consciousness and is typically associated with people exercising who are not acclimated to warm temperatures. Causes little or no harm to the individual.
- **Heat Cramps:** May occur in people unaccustomed to exercising in the heat and generally ceases to be a problem after acclimatization.

Temperatures that are significantly above normal are considered extreme temperatures. There is no specific point when air temperatures are defined as significantly above normal. However, the National Weather Service (NWS) will initiate alert procedures such as special weather statements when the heat index is expected to exceed 105°F-110°F (depending on local climate), for at least two consecutive days according to NOAA's Heat Wave Description. Heat stress can be indexed by combining the effects of temperature and humidity.

7.8.2 LOCATION

The entire planning area is subject to the hazards associated with extreme temperatures from high heat.

7.8.3 EXTENT

The severity of extreme heat events are measured by temperature, duration, and humidity. Most events are less than a week in duration. In the northeastern U.S., periods of warmer than normal temperatures typically occur several times a summer. Extreme heat waves may occur about once every five years or so where maximum daily temperatures exceed 100°F for an extended period of time. The passing of a cold front usually moderates temperatures after a few days to a week.

Heat kills by pushing the body beyond its limits. Under normal conditions an internal thermostat produces perspiration that evaporates and cools the body. The human body dissipates heat by varying the rate and depth of blood circulation, by losing water through the skin and sweat glands, and as a last resort, by panting, when blood is heated above 98.6°F. Sweating cools the body through evaporation. However, high relative humidity retards evaporation, robbing the body of its ability to cool itself. When heat gain exceeds the level the body can remove, body temperature begins to rise, and heat related illnesses and disorders may develop.

Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. The Heat Index (HI) is the temperature the body feels when heat and humidity are combined. **Table 7.8-2 Temperature Versus Relative Humidity** and

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Table 7.8-3 Heat Index Versus Possible Effects illustrate the heat index and its potential effects on the human body.

TABLE 7.8-2 TEMPERATURE VERSUS RELATIVE HUMIDITY

Temperature (F)	Relative Humidity (%)					
	90%	80%	70%	60%	50%	40%
80	85°	84°	82°	81°	80°	79°
85	101°	96°	92°	90°	86°	84°
90	121°	113°	105°	99°	94	90°
95		133°	122°	113°	105°	98°
100			142°	129°	118°	109°
105				148°	133°	121°
110						135°

*This chart is based upon shady, light wind conditions; exposure to direct sunlight can increase the HI by up to 15°F.
** Due to the nature of the heat index calculation, the values in the table has an error +/- 1.3F.

Source: National Weather Service

TABLE 7.8-3 HEAT INDEX VERSUS POSSIBLE EFFECTS

High Temperature	Possible Heat Disorder
80°F - 90°F	Fatigue possible with prolonged exposure and physical activity.
90°F - 105°F	Sunstroke, heat cramps and heat exhaustion possible.
105°F - 130°F	Sunstroke, heat cramps, and heat exhaustion likely, and heat stroke possible.
130°F or greater	Heat stroke highly likely with continued exposure.

Source: National Weather Service

7.8.4 PREVIOUS OCCURRENCES AND LOSSES

The NCEI database indicates there have been 12 recorded extreme temperature events related to high heat in Union County during the period 1950–2013. Although the query results begin in 1950, the first reported event was in 1995. There are most likely additional extreme heat events prior to 1995 that are not captured in the NCEI database. The database provides no indication as to why there are no events prior to 1995. One can presume that heat events have occurred at an increased rate since 1995; the total number of days over 90 degrees Fahrenheit has increased from 17 to 23 (approximately 36%) according to the New Jersey State Health Assessment Data Union County Public Health Profile Report. The events are divided into the category type of excessive heat or heat wave. Note that a heat wave is defined by NOAA as a period of abnormally and uncomfortably hot and unusually humid weather with temperatures of at least 90 degrees for at least three consecutive days. Excessive heat watches and warnings are issued when heat index values are forecast to reach or exceed 105 degrees for at least two consecutive hours.

Table 7.8-4 Reported Extreme Heat Events, Union County, 2014-2020 lists the extreme heat events from NCEI for Union County since the last plan update. NCEI reports 11 events of Excessive Heat or Heat from January 2014 to July 2020.

NCEI reports heat events by National Weather Service (NWS) Zone. Union County is divided into two zones: Western Union and Eastern Union. If one were to combine the events that occurred in both Western and Eastern Union on the same day, then only 8 distinct heat events have impacted Union County from January 2014 to July 2020.

Western Union includes the following municipalities:

- Berkeley Heights Township
- Fanwood Borough
- Garwood Borough
- Mountainside Borough
- New Providence Borough
- Plainfield City
- Scotch Plains Township
- Springfield Township
- Summit City
- Westfield Town

Eastern Union includes the following municipalities:

- Elizabeth City
- Hillside Township
- Linden City
- Rahway City
- Roselle Borough
- Roselle Park Borough
- Winfield Township

Clark Township, Cranford Township, Kenilworth Borough, and Union Township are divided between Western and Eastern Union.

TABLE 7.8-4 REPORTED EXTREME HEAT EVENTS, UNION COUNTY, 2014-2020

Date	Location	Hazard Type	Injuries (Direct)	Deaths (Direct)	Property Damage
7/28/2016	Eastern Union	Heat	17	0	0
8/12/2016	County-wide	Excessive Heat	0	0	0
8/13/2016	County-wide	Excessive Heat	0	0	0
7/20/2017	Eastern Union	Heat	0	0	0
7/19/2019	Eastern Union	Heat	0	0	0
7/19/2019	Eastern Union	Excessive Heat	0	0	0
7/20/2019	Eastern Union	Excessive Heat	0	0	0
7/21/2019	Western Union	Excessive Heat	0	0	0
		Total	17	0	0

Source: NOAA/NCEI

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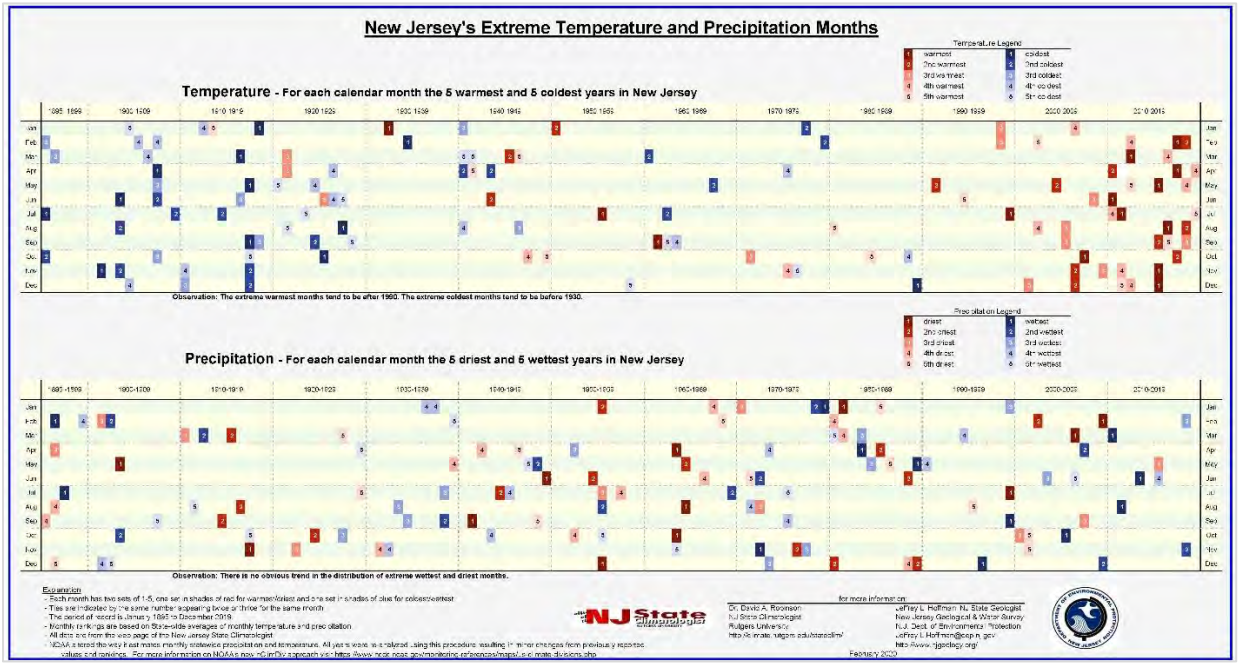
According to NCEI, one of the worst extreme heat-related events occurred in July 1999. A very strong and oppressive high-pressure system that extended from the surface to aloft gave New Jersey a brutal heat wave that included the entire Independence Day weekend. High temperatures reached the 90s for the first time on the July 3, but sweltering humidity and record-breaking maximum temperatures of around 100°F degrees occurred from Independence Day through the July 6 of the month.

The structure of the NCEI database combines the extreme cold and extreme heat into temperature extremes. The database indicates there have been 12 deaths and no injuries in Union County from excessive heat-related events. Ten of the 12 reported deaths were from one event that occurred from July 4–6, 1999. From the description provided in the NCEI database, the 12 deaths appear to cover all parts of New Jersey impacted by the event, not just Union County. During the July 4–6 heat wave, the NCEI database indicates three deaths occurred in Union County. The combination of the temperature and humidity during this event produced heat indices of around 110°F during the afternoon of each day. Damages from the extreme high temperature hazard are generally confined to effects on humans, although occasionally there may be relatively minor effects on infrastructure such as electric grids.

As mentioned in the Previous Occurrences and Losses subsection of the Extreme Temperature (Cold) section, data from the Office of the New Jersey State Climatologist was also reviewed to identify historical heat events. **Figure 7.8-1 New Jersey's Extreme Temperature and Precipitation Months, 1895-2019** shows months with both hot and cold temperature extremes over the past 124 years for the State of New Jersey. The data shows that the extreme warm months over the past 124-years tend to occur after 1990. This New Jersey trend is consistent with scientific evidence of rising global temperature averages over the past 30 years.

FIGURE 7.8-1 NEW JERSEY'S EXTREME TEMPERATURE AND PRECIPITATION MONTHS, 1895-2019



Source: Office of the New Jersey State Climatologist (ONJSC), February 2020

7.8.5 PROBABILITY OF FUTURE OCCURRENCES

Based on the 20 events between 1995 and 2020, on average, an extreme heat event occurs approximately once every 1.25 years. With one event every 1.25 years, there is roughly a 99.97% probability of at least one extreme heat event occurring in Union County in the next five years. Considering the 20 past events over the past 25 years, the Steering Committee ranked extreme temperature (heat) as a high-risk hazard.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.8.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of extreme heat events.

7.8.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to DEP's 2020 New Jersey Scientific Report on Climate Change, New Jersey's rate of warming is faster than the rest of the Northeast region and the world. By 2050, average annual temperatures in New Jersey are projected to increase by 4.1°F to 5.7°F. By 2050, heatwaves are projected to increase in both frequency and duration and will impact larger areas. A 55% increase in summer heat-related deaths in the 2020s (as compared to the 1990s) could result from climate change.

Environmental Justice Assessment

In 2020, the State of New Jersey passed an Environmental Justice law directing DEP to compile a list of overburdened communities in the state. The State defines an overburdened community as: "any census block group, as determined in accordance with the most recent United States Census, in which:

- at least 35 percent of the households qualify as low-income households (at or below twice the poverty threshold as determined by the United States Census Bureau);
- at least 40 percent of the residents identify as minority or as members of a State recognized tribal community; or
- at least 40 percent of the households have limited English proficiency (without an adult that speaks English "very well" according to the United States Census Bureau)."

There are 277 census block groups in 15 municipalities in Union County that qualify as overburdened communities. The 15 municipalities with overburdened communities are Clark Township, Cranford Township, Elizabeth City, Hillside Township, Kenilworth Borough, Linden City, Plainfield City, Rahway City, Roselle Borough, Roselle Park Borough, Scotch Plains Township, Springfield Township, Summit City, Union Township and Westfield Town.

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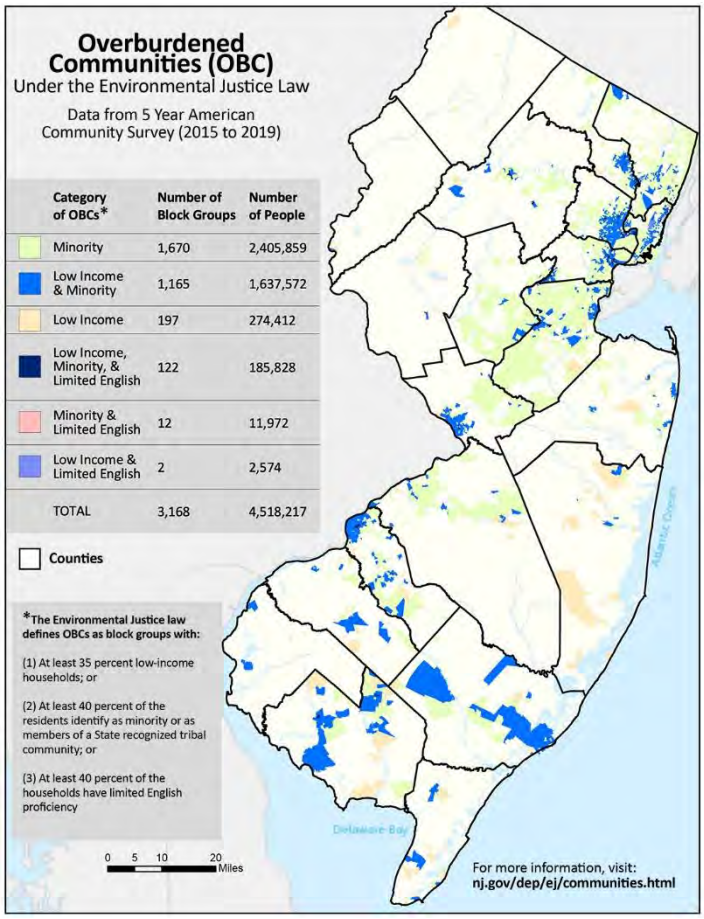
FIGURE 7.8-2 STATEWIDE OVERBURDENED COMMUNITIES MAP



Source: DEP Office of Environmental Justice

Union County's overburdened communities are concentrated in the eastern portion of the County. These communities all have at least 40% of the residents that identify as minority or as members of a State recognized tribal community. Communities with high concentrations of both low-income and minority populations are concentrated in the Elizabeth City, the Linden City, the Rahway City, Roselle Borough, Hillside Township, Kenilworth Borough and the Plainfield City. Communities with high concentrations of low-income, minority, and limited English-speaking populations are concentrated in the Elizabeth City and the Plainfield City.

Union County's overburdened communities live in the County's urban areas. According to DEP's 2020 New Jersey Scientific Report on Climate Change, heatwaves may be particularly pronounced in urban, densely populated areas, like the cities of Union County, due to urban heat island effect; areas with more concrete and asphalt absorb more heat and amplify the effects of heat on urban populations.

According to the *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*, published by the U.S. Global Change Research Program in 2018, urban populations may experience both heat stress due to urban heat islands, and poor air quality due to high concentrations of urban air pollutants like ground-level ozone during extreme temperature events. Young children, older adults, linguistically isolated communities, poor communities and those with preexisting health conditions (i.e. asthma) are particularly vulnerable to negative health

impacts from heat stress and poor air quality. Households that lack sufficient insulation and air conditioning are also more exposed to heat stress.

7.8.7 VULNERABILITY ASSESSMENT

While all residents of Union County could be adversely affected by extreme heat conditions, with rare exceptions there are no significant or long-term damages associated with this hazard. The extreme heat hazard was prioritized by the Steering Committee as *high*, mostly because the hazard occurs regularly and affects nearly everyone in the County. The County-wide potential impact of the extreme heat hazard is very small, as evidenced by historical records, which show little or no specific damage from heat. There are no significant vulnerabilities to structures from the heat hazard, and no expected recurrent losses.

As indicated above, excessive heat is not yet a major health threat in the northeastern U.S., although this may change due to climate change. However, it is possible to estimate risks in Union County by deriving state-level information. The 2016 HMP update referred to derived expected figures on hypothermia deaths in Union County from national statistics, in the absence of readily available open-source records for the County. The 2016 HMP update used the *National Health Statistics Report* entitled *Deaths Attributed to Heat, Cold and other Weather Events in the United States, 2006 to 2010* by the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC). In the date range indicated in the title, there were 3,332 deaths nationwide related to excessive heat. This translates to an annual national figure of 476.

For the 2021 HMP update, the statewide mortality rate was for hyperthermia (excessive heat) from 1999-2016 was determined from the CDC National Center for Health Statistics' CDC WONDER online database. Jurisdiction-level risks from excessive heat are then derived as a proportion to the statewide statistics, based on population. In **Table 7.8-5 Estimated Heat Exposure Risk in Union County, by Jurisdiction** below, the annual risk figure is estimated using the FEMA value of life (see documentation supporting the Benefit-Cost Analysis Toolkit 6.0, entitled *FEMA Benefit-Cost Analysis (BCA) Toolkit 6.0 Release Notes*).

Since the 2016 HMP update, the New Jersey State Health Assessment Data database has released *Hospitalization and Emergency Department Visits for Heat Related Illnesses: Annual Age-Adjusted Hospitalization Rates per 100,000, May through September, 2015-2019* as a part of the Union County Public Health Profile Report. The annual age-adjusted hospitalization rate for Union County was 0.71 per 100,000 for May through September, 2015-2019. This rate is lower than the statewide rate of 1.32 per 100,000 for the same time period. This rate captures inpatient hospital admissions or emergency department visits for heat-related illness or hyperthermia.

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TABLE 7.8-5 ESTIMATED HEAT EXPOSURE RISK IN UNION COUNTY, BY JURISDICTION

Jurisdiction	2018 Population Estimate	Est. Municipal Deaths Related to Heat Exposure	Annual Risk
Berkeley Heights Township	13,417	0.01	$67,420.43
Clark Township	15,614	0.01	$78,460.35
Cranford Township	23,882	0.02	$120,007.05
Elizabeth City	128,153	0.09	$643,968.83
Fanwood Borough	7,602	0.01	$38,200.05
Garwood Borough	4,334	0.00	$21,778.35
Hillside Township	21,895	0.01	$110,022.38
Kenilworth Borough	8,160	0.01	$41,004.00
Linden City	42,033	0.03	$211,215.83
Mountainside Borough	6,820	0.00	$34,270.50
New Providence Borough	12,808	0.01	$64,360.20
Plainfield City	50,508	0.03	$253,802.70
Rahway City	29,370	0.02	$147,584.25
Roselle Borough	21,582	0.01	$108,449.55
Roselle Park Borough	13,568	0.01	$68,179.20
Scotch Plains Township	24,183	0.02	$121,519.58
Springfield Township	17,398	0.01	$87,424.95
Summit City	21,921	0.01	$110,153.03
Union Township	58,158	0.04	$292,243.95
Westfield Town	30,086	0.02	$151,182.15
Winfield Township	1,574	0.00	$7,909.35
Union County	553,066	0.37	$2,779,156.65

Source: 2017 CDC National Center for Health Statistics, 2020 FEMA, 2019 U.S. Census Bureau

7.9 FLOOD (INCLUDES TIDAL, FLASH, AND RIVERINE FLOODING)

7.9.1 HAZARD DESCRIPTION

Flooding is defined as a condition of partial or complete inundation of normally dry land, typically in a floodplain, due to a variety of conditions. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding.

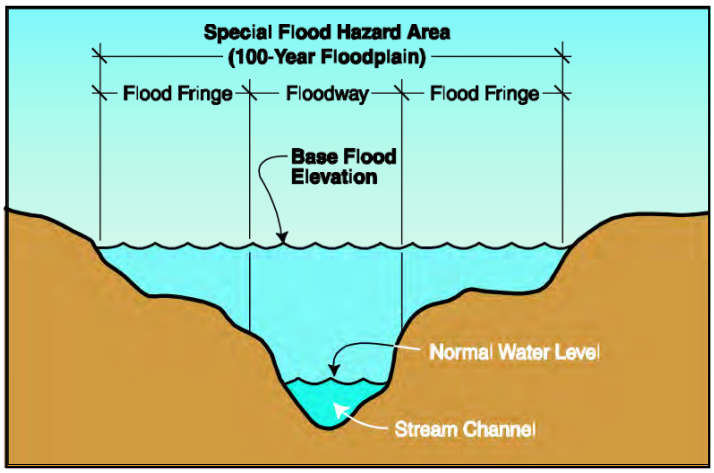
Flooding is the accumulation of water within a water body (e.g., stream, river, lake, or reservoir) and the overflow of excess water onto adjacent floodplains. Floodplains are usually lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected. Nationwide, hundreds of floods occur each year, making them one of the most common hazards in the United States according to FEMA. There are a number of categories of floods in the United States, including the following:

- Riverine flooding, (river channel, flash floods, alluvial fan floods, ice-jam floods, dam breaks)
- Local drainage or high groundwater levels
- Fluctuating lake levels
- Coastal flooding, including storm surges
- Debris flows
- Subsidence

While there is no sharp distinction between riverine floods, flash floods, alluvial fan floods, ice jam floods, and dam-break floods, these types of floods are widely recognized and may be helpful in considering the range of flood risk and appropriate responses. The most common kind of flooding event is riverine flooding, also known as overbank flooding. Riverine flooding occurs as a result of excess rainfall or rapid snowmelt causing the overflow of rivers, streams, and lakes. This type of flooding occurs when the flow of rainwater runoff is greater than the carrying capacities of the natural drainage systems. There are several types of riverine floods, including headwater, backwater, interior drainage, and flash flooding.

Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions, to wide, flat areas in plains and coastal regions. The amount of water in the floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics. In steep valleys, flooding is usually rapid and deep, but of short duration, while flooding in flat areas is typically slow, relatively shallow, and may last for long periods of time.

FIGURE 7.9-1 FLOODPLAIN DEFINITION



Source: FEMA, August 2001

Flash floods involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the tearing out of trees, undermining of buildings and bridges, and scouring new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. Dam failure and ice jams may also lead to flash flooding.

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Alluvial fan floods occur in the deposits of rock and soil that have eroded from mountainsides and accumulated on valley floors in the pattern of a fan. Alluvial fan floods often cause greater damage than overbank flooding due to the high velocity of the flow, amount of debris, and broad area affected. Human activities may exacerbate flooding and erosion on alluvial fans via increased velocity along roadways acting as temporary drainage channels or changes to natural drainage channels from fill, grading, and structures.

Ice jam flood occur when an upstream part of a river thaws first (possibly because it flows away from the equator), and the ice gets carried downstream into the still-frozen part. Masses of ice can become lodged under bridges and other weirs, causing an ice dam, flooding areas upstream of the jam. After the ice dam breaks apart, the sudden surge of water that breaks through the dam can then flood areas downstream of the jam. While this usually occurs in spring, it can happen as winter sets in when the downstream part becomes frozen first. Dam-break floods may occur due to structural failures (e.g., progressive erosion), overtopping or breach from flooding, or earthquakes.

Local drainage floods may occur outside of recognized drainage channels or delineated floodplains for a variety of reasons, including concentrated local precipitation, a lack of infiltration, inadequate facilities for drainage and stormwater conveyance, and/or increased surface runoff. Such events often occur in flat areas, particularly during winter and spring where the ground is frozen. Drainage floods are found also in urbanized areas with large impermeable surfaces. High groundwater flooding is a seasonal occurrence in some areas but may occur in other areas after prolonged periods of above-average precipitation.

7.9.2 LOCATION

According to the Union County FEMA Flood Insurance Study (September 20, 2006), Union County is partially bordered by the Passaic River to the west, Newark Bay and the Arthur Kill to the east. The county is bordered by the Rahway River to the southeast, and the Green Brook River to the southwest. The topography of the county is generally flat to gentle rolling, with elevations increasing from east to west, but is marked by low parallel ridges generally running a northeast direction. The Watchung Mountains, in the extreme western portion of the county, comprise the largest of these ridges. Elevations in the county range from less than ten feet in the marshes of the east, along Arthur Kill, to greater than 500 feet in the Watchung Mountains.

Numerous areas within Union County are susceptible to localized flooding from excess rain events, stormwater runoff, local drainage problems, overbank flooding, and other sources. All of the municipalities within the county experience some degree of flooding. This section highlights several of the significant flood areas throughout Union County.

One of the best sources for determining flood risk for an area is review of the Flood Insurance Rate Maps (FIRMs) produced by FEMA. According to FEMA, the FIRM is the official map of a community on which FEMA has delineated both the special flood hazard areas (1% annual chance of flooding) and the risk premium zones applicable to the community. Flood mapping and analyses throughout this HMP utilized a combination of FEMA Digital Flood Insurance Rate Map (DFIRM) floodplain data (effective September 20, 2006) and Preliminary FIRMS (dated February 3, 2015 and April 18, 2016). The effective FIRM is the official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. The DFIRM data

released in 2006 included updates to the Flood Insurance Study (FIS) based on revised hydrologic and hydraulic analysis for the Rahway River that was completed in March 2006. In addition, updated hydraulic information for the Elizabeth River in Hillside Township was developed by the USACE – New York District. Previous flood studies in Union County were completed in the 1970's and 1980's.

Figure 7.9-2 Floodplain Map of Union County, Figure 7.9-3 Floodplain Map of Union County-Group 1, **Figure 7.9-4 Floodplain Map of Union County-Group 2, Figure 7.9-5 Floodplain Map of Union County-Group 3, and Figure 7.9-6 Floodplain Map of Union County-Group 4** show various flood zones in Union County from the effective FIRM. These maps are broken into four groups based on geography in order to zoom in to the sections of the County.

The flood zone designations are defined by FEMA as follows:

- **Zone A** (1 % annual chance of flooding). Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
- **Zone AE** (1 % annual chance of flooding). Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. In most instances, base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
- **Zone AH** (1 % annual chance of flooding). Areas with a 1% annual chance of flooding where shallow flooding (usually areas of ponding) can occur with average depths between 1' and 3'.
- **Zone AO** (1 % annual chance of flooding). Areas with a 1% annual chance of flooding, where shallow flooding average depths are between 1' and 3'.
- **X500** (0.2 % annual chance of flooding). Represents areas between the limits of the 1% annual chance of flooding and 0.2% chance of flooding.

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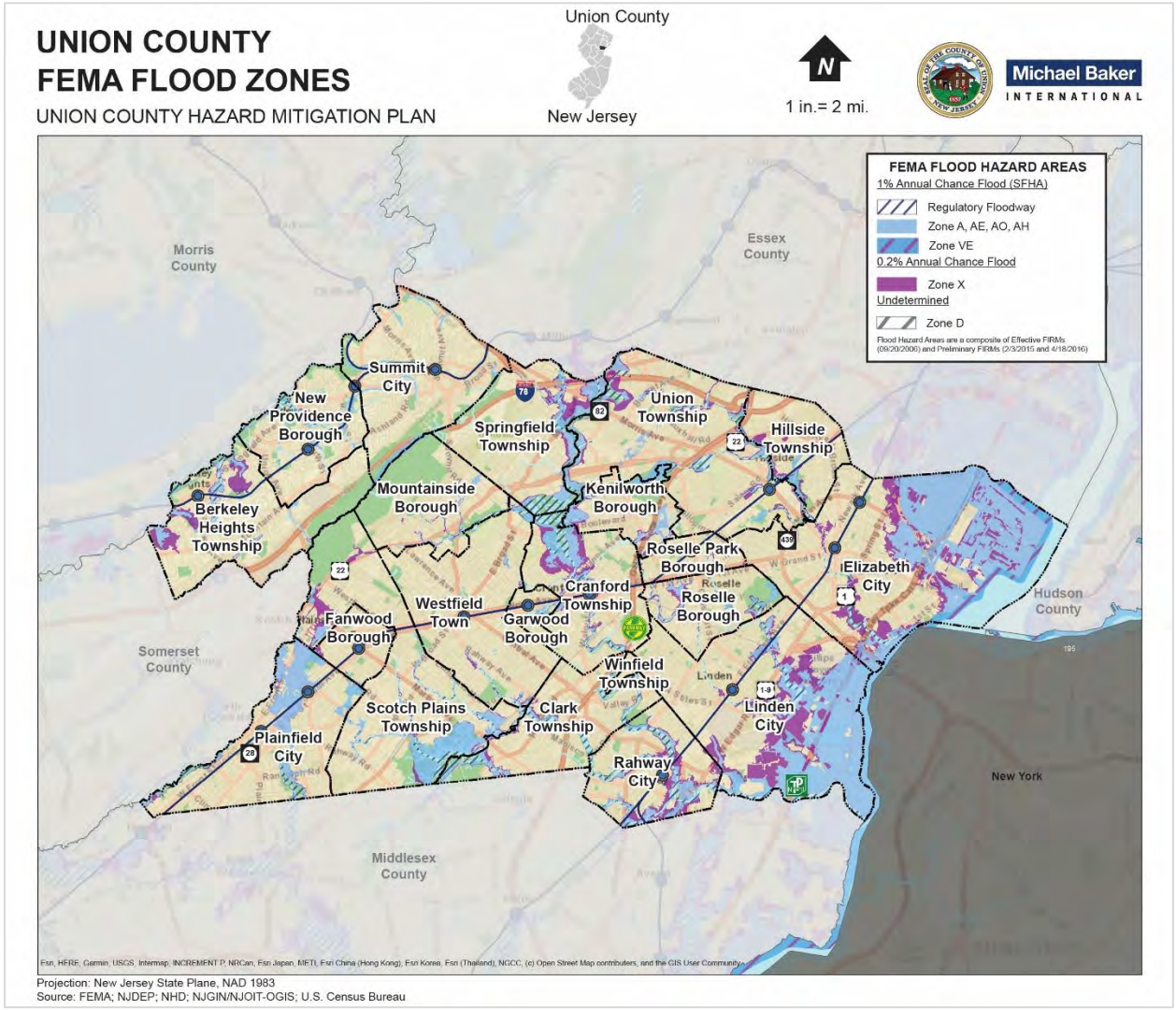
FIGURE 7.9-2 FLOODPLAIN MAP OF UNION COUNTY



Projection: New Jersey State Plane, NAD 1983
Source: FEMA; NJDEP; NHD; NJGIN/NJOIT-OGIS; U.S. Census Bureau

FIGURE 7.9-3 FLOODPLAIN MAP OF UNION COUNTY-GROUP 1

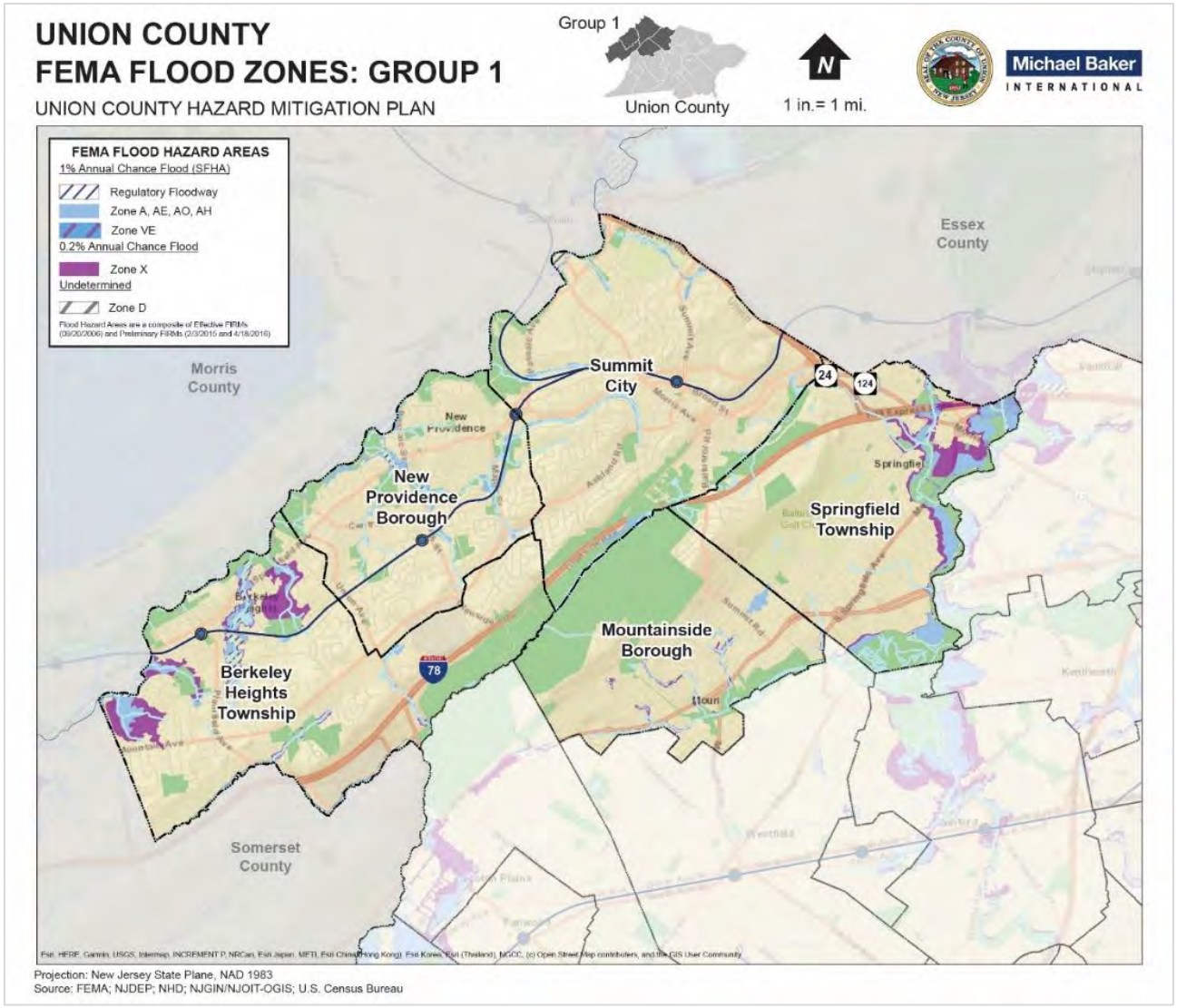


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FIGURE 7.9-4 FLOODPLAIN MAP OF UNION COUNTY-GROUP 2

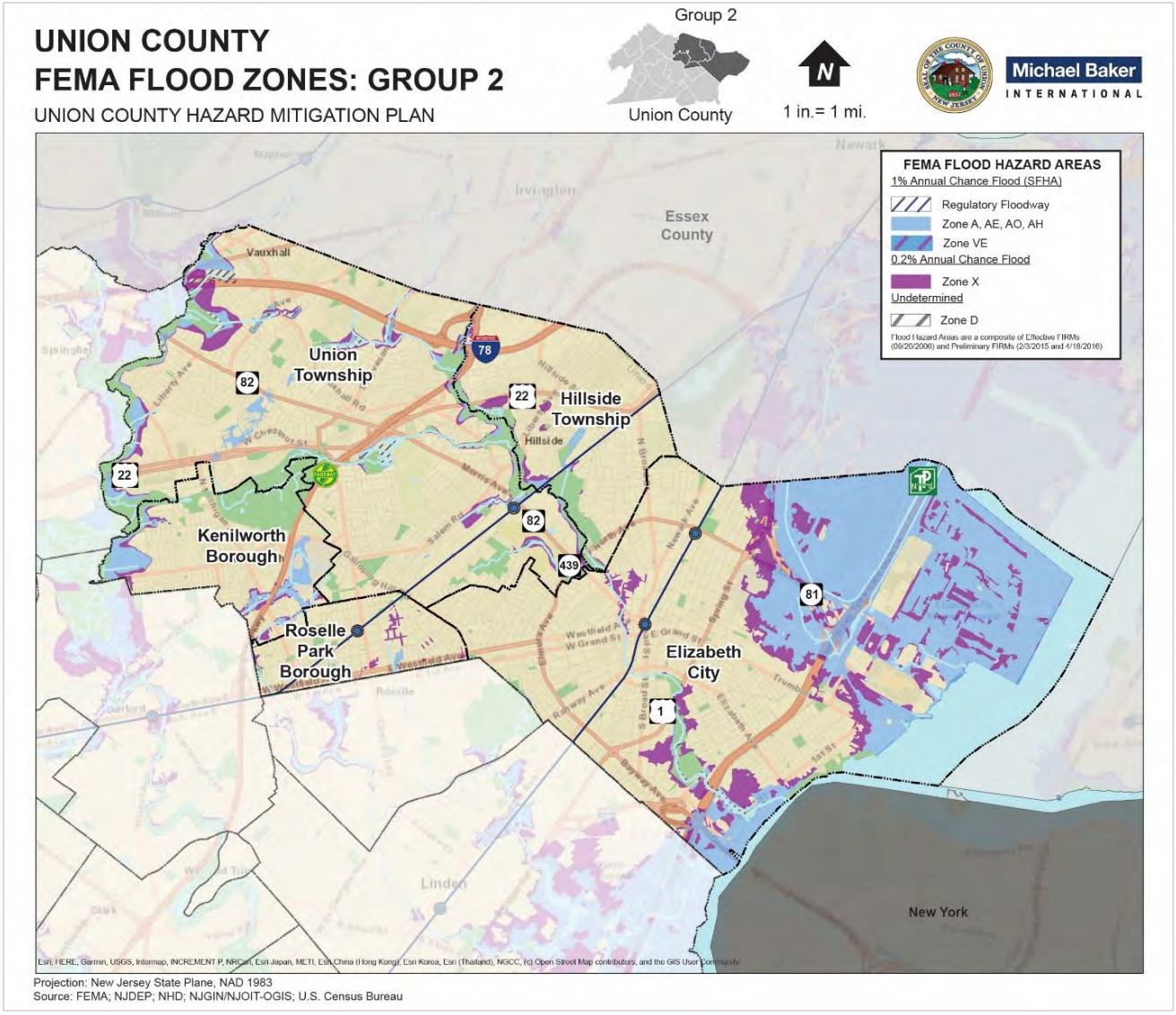

FIGURE 7.9-5 FLOODPLAIN MAP OF UNION COUNTY-GROUP 3

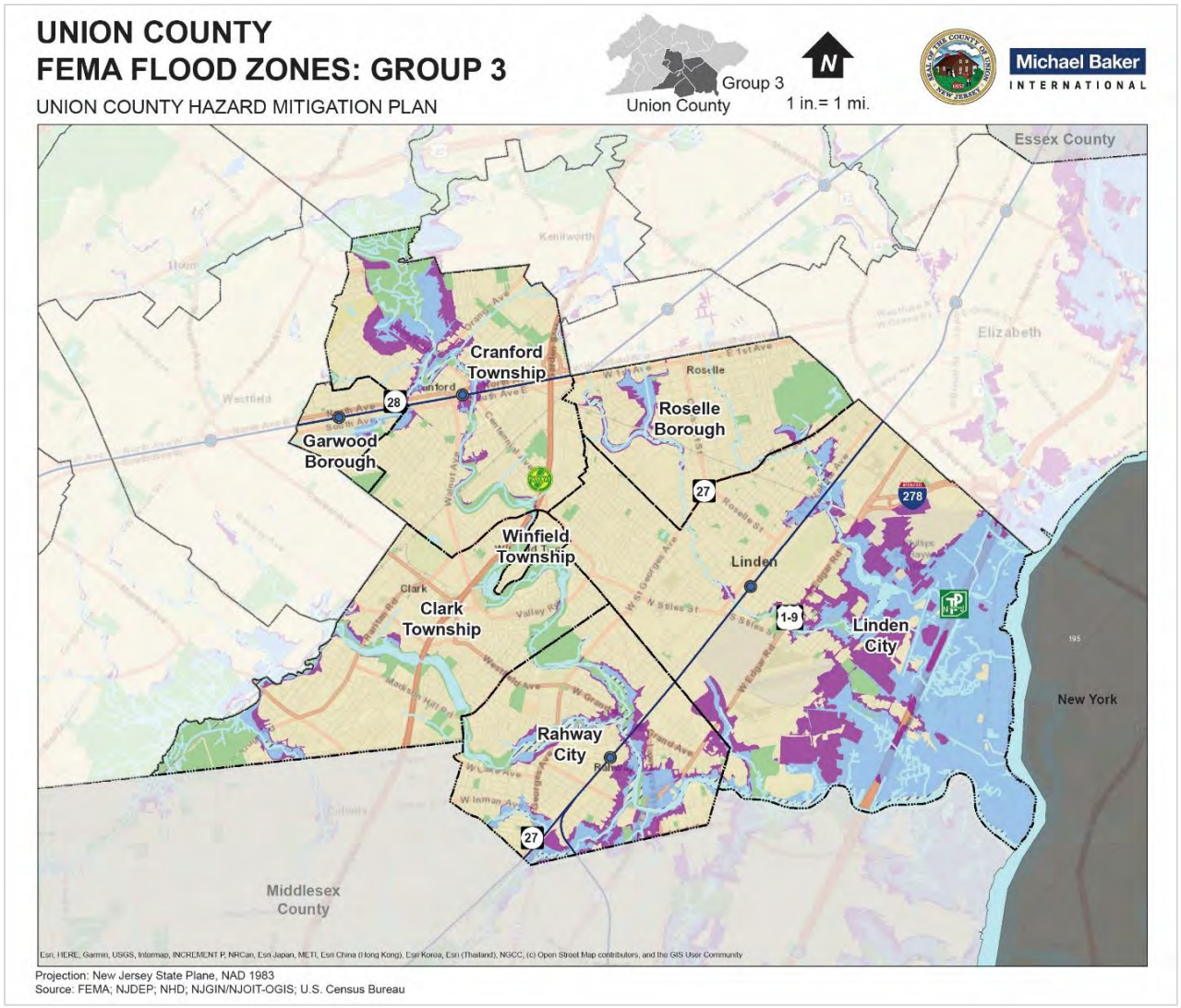

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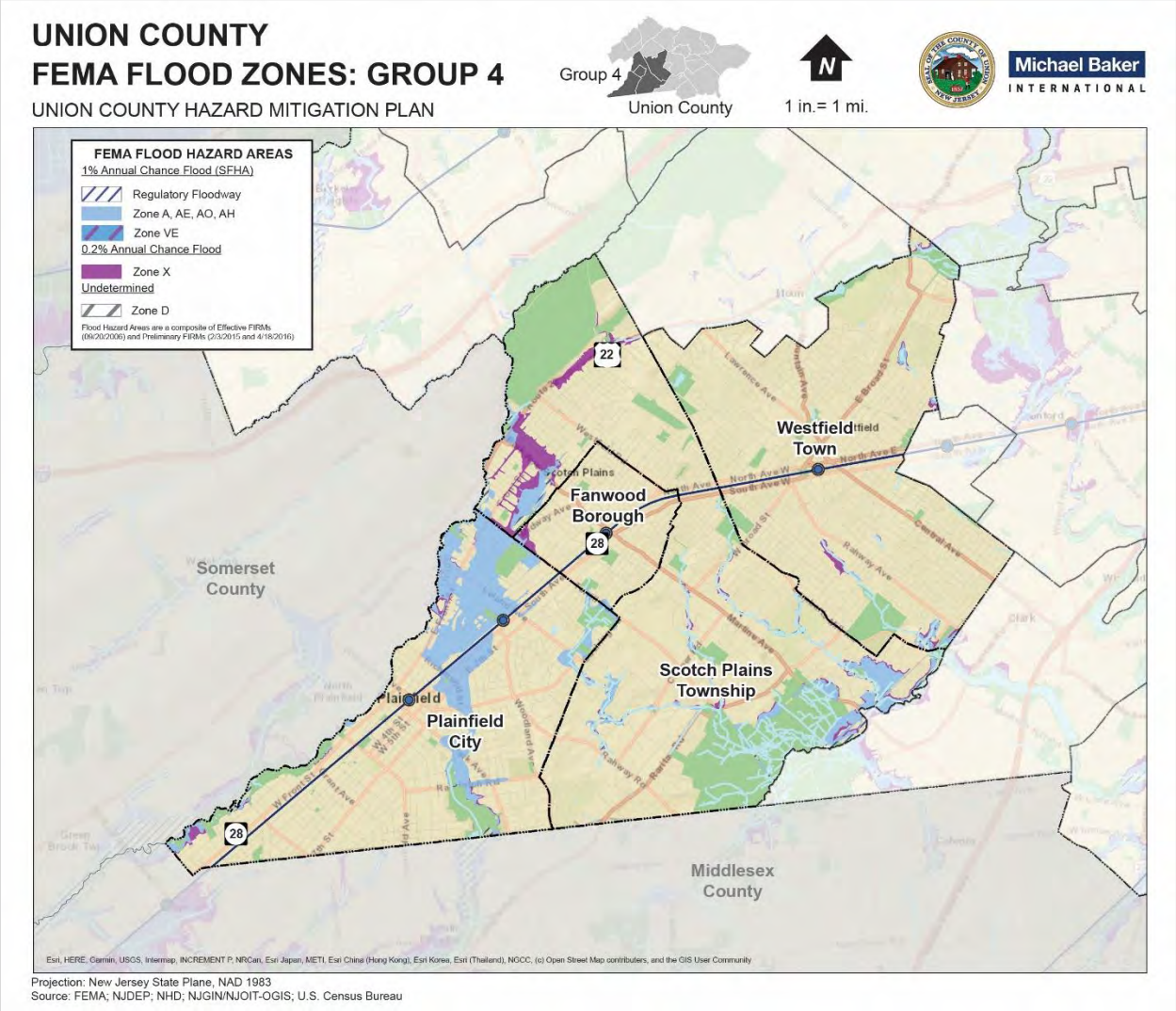
FIGURE 7.9-6 FLOODPLAIN MAP OF UNION COUNTY-GROUP 4



The 100-year floodplain includes areas with a 1% annual chance of flooding and includes zones A, AE, AH and AO. In the figures above, the A zones are colored blue. The majority of the 1% annual chance flooding areas follow the major rivers in Union County including the Arthur Kill, Newark Bay, the Rahway River, Passaic River, and the Green Brook River. The 500-year floodplain includes areas with a 0.2% annual chance of flooding. The 0.2% annual chance flooding is shown on the above figures in purple and represents the areas between the limits of the 100-year and 500-year floodplains. Flood maps identifying the most recent flood mapping for each participating municipality can be found in the individual municipality appendices (See Appendices Volume I-Jurisdictional Information).

During its fiscal year 2009, FEMA began transitioning to a new approach to floodplain mapping. The Risk Mapping, Assessment, and Planning (RiskMAP) activities built on the pre-existing map modernization program to leverage state, local, and tribal expertise to enhance quality data and further public awareness. Shortly after Superstorm Sandy, FEMA released Advisory Base Flood Elevations (ABFE) maps for coastal (eastern) Union County. For more information on these maps, please see the 2016 HMP update. More current flood data has subsequently been released by

FEMA in the form of Preliminary FIRMS dated February 3, 2015 and April 18, 2016. All Union County jurisdictions were revised and updated during the FEMA FIS study dated April 18, 2016. It should be noted that Union County is part of the FEMA Region II Coastal Restudy to re-examine flood hazards for coastal New York and New Jersey. To create revised flood maps for these coastal communities, FEMA is using new storm surge analysis and wave modeling. This coastal restudy is in response to New York City's 2015 appeal of the region's 2013-2015 preliminary FIRMS. New preliminary FIRMS for the region are anticipated for 2023.

The following subsections highlight several of the major flood areas throughout Union County. These include the Rahway River, Green Brook Sub Basin, and Passaic River.

Rahway River Flooding

The Rahway River is 24 miles long and drains a land area of 41 square miles of Essex, Middlesex, and Union counties. There are 24 municipalities in the Rahway River watershed including Maplewood, Millburn, South Orange, and West Orange in Essex County; Carteret and Edison in Middlesex County; and Cranford, Mountainside, Springfield and Rahway in Union County. The Rahway River consists of four distinct branches. The West Branch begins in Verona and flows south through South Mountain Reservation and directly through downtown Millburn. The East Branch originates between West Orange and Montclair and travels South Orange and Maplewood. These two branches converge near Route 78 in Springfield and flow through the Clark and Union Townships and the City of Cranford. The confluence of the Robinson's and the South Branches of the river occurs in Rahway. The river continues through Linden and Carteret forming the boundary between Middlesex and Union counties and then drains into the Arthur Kill.

According to the Rahway River Association, the Rahway River is the source of drinking water for the 26,500 people in the Rahway City.

The most damaging floods of record within the Rahway River Basin resulted from the storms of July 1938, May 1968, August 1971, August 1973, July 1975, June 1992, October 1996, July 1997, Tropical Storm Floyd in September 1999, the April 2007 Nor'easter, and Hurricane Irene in August, 2011. After the April 2007 storm, the United States Army Corp of Engineers (USACE)-New York District, in their *Flood Damage Reduction and Ecosystem Restoration Study*, indicated that 70 to 100 homes suffered major damage to first floor and foundations. Union and five other New Jersey counties were part of a Federal Disaster Declaration related to the April 2007 storm. Some of the more recent major flooding events along the Rahway River are summarized below.

Rahway River Basin Flood Risk Management – Feasibility Study

In 1999, the USACE-New York District published a *Flood Damage Reduction and Ecosystem Restoration Study* within the Rahway River Basin. The Rahway Basin is 89.1 square miles and encompasses Essex, Union, and Middlesex counties. The flooding within the Rahway River Basin has been caused principally by the rapid development of the area, which has resulted in a large increase of storm water runoff. Floods have caused damage to houses, businesses, municipal facilities, and public infrastructure. The study identified two potential flood damage reduction sites, one on the Rahway River main stem in Cranford and one on Robinson's Branch of the Rahway River in Rahway, according to the USACE's *Flood Damage Reduction and Ecosystem Restoration Study*-Fact Sheet from April 2014.

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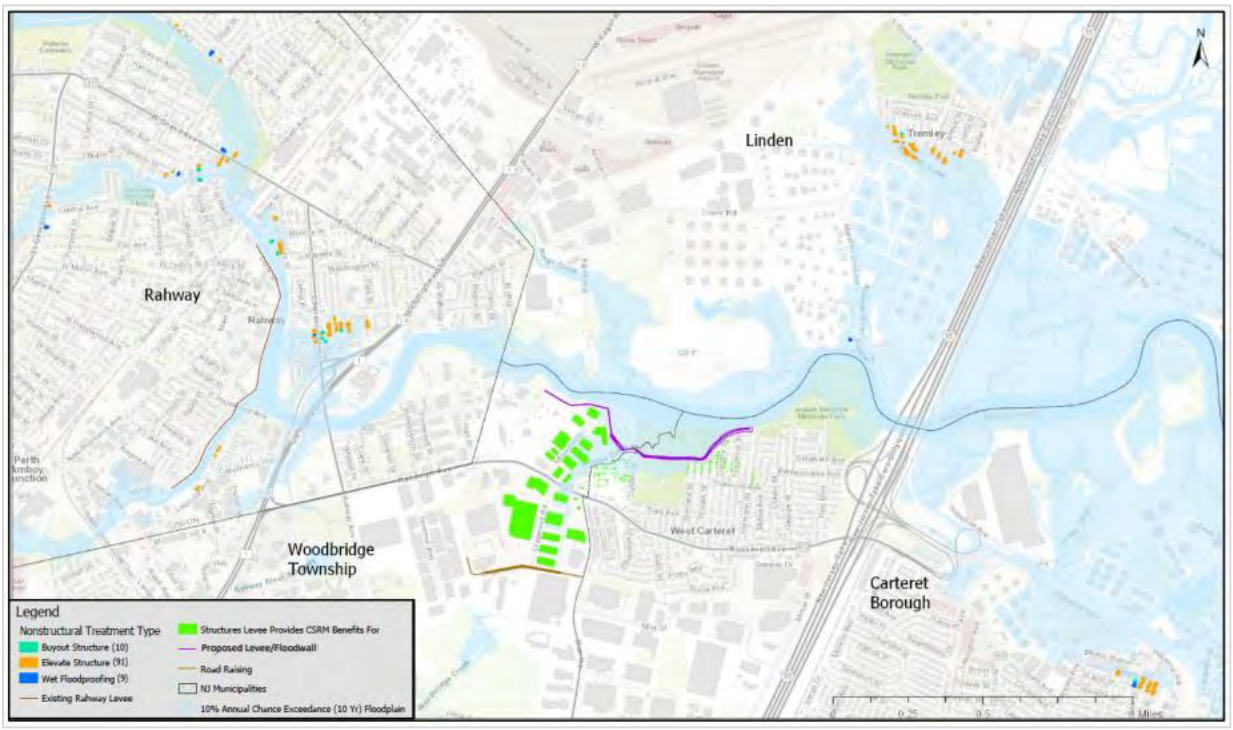
According to the USACE Rahway River Basin (Tidal), NJ Storm Risk Management Feasibility Study fact sheet dated July 8, 2020, a *Draft Integrated Feasibility Report and Environmental Assessment* was released for public and agency review in May 2017 and a public meeting was held during the review period. After an alternatives analysis was conducted, the New York District selected the Recommended Plan. The Recommended Plan consists of the construction of a levee segment in Joseph Medwick Park in Middlesex County, and the elevation, buyout and floodproofing of properties in the Rahway City (Union County), Borough of Carteret (Middlesex County), and Linden City (Union County). A *Final Integrated Feasibility Report and Environmental Impact Statement* and *Chief's Report* were both approved. The report is now under review by the Office of Management and Budget (OMB) and Assistant Secretary of the Army for Civil Works. The project will be recommended to Congress for construction authorization.

Figure 7.9-7 Rahway River Basin Coastal Storm Risk Management Recommended Plan, reproduced from the *Final Integrated Feasibility Report and Environmental Impact Statement*, shows the locations of the proposed wet floodproofing, structure elevation, and structure buyouts in the study area.

FIGURE 7.9-7 RAHWAY RIVER BASIN COASTAL STORM RISK MANAGEMENT RECOMMENDED PLAN



Source: USACE, April 2020, Final Integrated Feasibility Report & Environmental Assessment, Rahway River Basin, New Jersey Coastal Storm Risk Management Feasibility Study

In Union County, efforts from local, state and federal agencies have helped to reduce flooding within municipalities impacted by the Rahway River. In Cranford Township and the Rahway City, floodplain management and infrastructure improvements have contributed to reducing flood related damages. In Cranford Township, improvements have included a new stormwater drainage system, floodgates, and swale protection between Oak Lane and Herring Avenue. See municipal appendices for Cranford Township, the Rahway City and Springfield Township for additional details

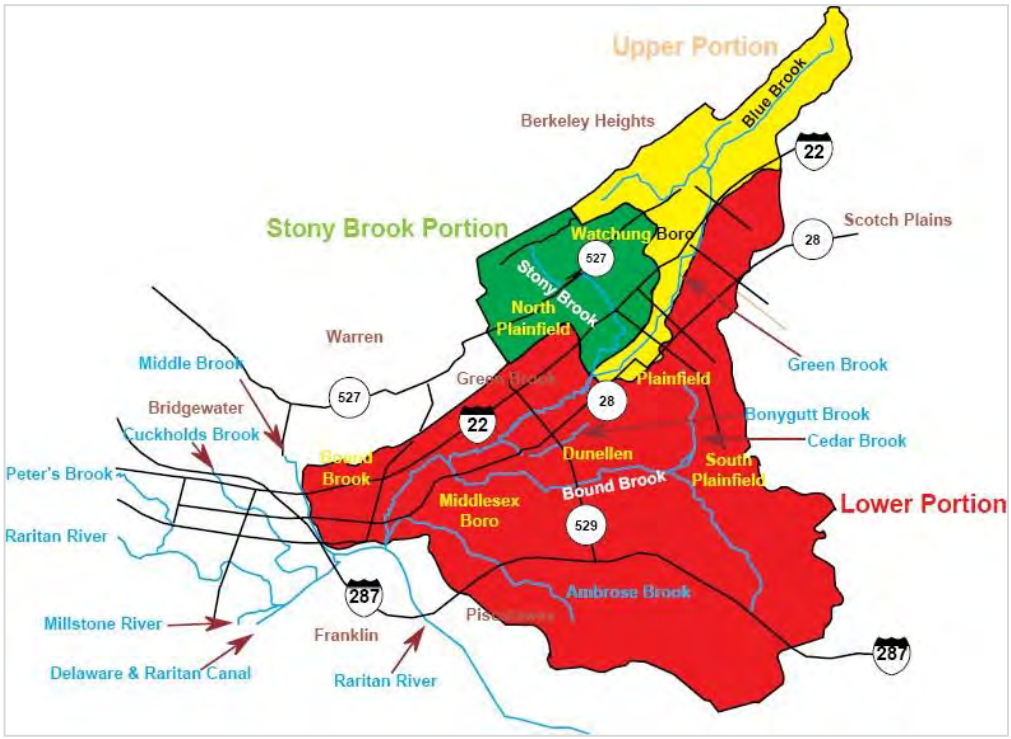
about specific areas of flood concern, past flooding events along the Rahway River, and ongoing flood studies for this area of the County.

Green Brook Sub-Basin

In the southwestern portion of Union County, the Green Brook River creates a portion of the border between Union and Somerset Counties. This portion of the County is part of the Green Brook Sub Basin. The Basin covers an area 65 square miles and includes portions of three counties and 13 municipalities. In the past, the Green Brook Sub Basin has experienced severe, and sometimes devastating, flood damages, according to the USACE - Raritan River Basin, Green Brook Sub Basin, NJ, Flood Damage Reduction Project – Fact Sheet.

The U.S. Army Corp. of Engineers (USACE)–New York District has studied this area extensively in the past and has completed several flood control projects within the Basin, with additional projects currently in progress. **Figure 7.9-8 Green Brook Sub Basin: Upper Portion, Stony Brook Portion, and the Lower Portion** is a map that divides the Basin into three areas; Upper Portion, Stony Brook Portion, and the Lower Portion. The majority of the Upper Portion and the northeastern part of the Lower Portion are within Union County, and were impacted by major flood events in 1973, 1996, and 1999 (Tropical Storm Floyd). According to the USACE Tropical Storm Floyd caused two deaths and approximately $80 million in damages within the Green Brook Sub Basin, partially located in Union County. Due to the regional location of the Green Brook River, as part of this HMP update, the County met with Somerset County to discuss any regional mitigation actions both counties could implement to reduce flood risk. Both counties agree that additional studies to understand flood risk to address historic losses would be beneficial (Community Action # 22-06).

FIGURE 7.9-8 GREEN BROOK SUB BASIN: UPPER PORTION, STONY BROOK PORTION, AND THE LOWER PORTION



Source: USACE–New York District

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In response to the 1971 and 1973 floods, the Green Brook Flood Control Commission was authorized by the State of New Jersey. The Commission is comprised of representatives from Middlesex, Somerset, and Union counties and is comprised of volunteer representatives appointed by the flood-affected municipalities and counties, as well as the State. The participating municipalities in Union County include the Plainfield City and Scotch Plains Township, according to the Green Brook Flood Control Commission website.

Most of the flooding problems within the Plainfield City originate from the Green Brook River in Scotch Plains and in the area of Leland Avenue, and flow through streets across the basin before being diverted into Cedar Brook. The diversion leads to a condition where flood depths are deeper farther from the stream than they are in the immediate area. The result is a large floodplain throughout the northern portion of the city even though the majority of the Green Brook flows are contained within and adjacent to its banks, according to the Union County FEMA FIS dated September 20, 2006. The NFIP repetitive loss list for the Plainfield City indicates that portions of Netherwood Avenue and Johnston Avenue have experienced moderate to severe flooding in the past.

Passaic River Flooding

The banks of the Passaic River are relatively steep and cause the water-surface elevations to rise significantly during periods of intense rainfall. The Union County Flood Insurance Study (FIS) indicates major floods have occurred along the Passaic in 1903, 1905, 1907, 1936, 1971, and 1973. The flood of August 1973 was the worst flood event ever recorded at a gauging station in 45 years. The flood gage in Chatham Borough recorded a peak discharge of 3,380 CFS according to the Union County FEMA FIS dated September 20, 2006. More recently the Passaic River experienced significant flooding in August 2011 after Hurricane Irene. Other recent minor flooding events occurred in March 2010 and March 2011.

In the Township of Berkley Heights, the Passaic River flows along the northern corporate limits in a relatively flat valley. During high flood stages, the Passaic River floods the adjacent plain, and flooding becomes especially widespread at junction points between four tributaries. Overbank flooding is also common among tributaries of the Passaic River during medium-to low-frequency flood flows because backwater flow from the Passaic tends to build up sediment in the downstream portions of the tributaries, according to the Union County FEMA FIS dated September 20, 2006.

According to a NJ.com article titled “Passaic River flooding solution likely five to 20 years away, panel says,” the problem with the Passaic River flood is due to the river not being uniformly owned by one entity. When debris needs to be de-snagged, sediment needs to be dredged and structures need to be approved, there is no single authoritative body responsible for the work. Residents pinpoint Riverbend Avenue and Snyder Avenue in Berkeley Heights as particularly troublesome during Hurricane Irene.

7.9.3 EXTENT

Flood severity is measured in various ways, including frequency, depth, velocity, duration, and contamination, among others. In Union County, the metrics used to characterize the severity of the flood hazard depends on what part of the county is being considered, but generally the most important factor is how often floods occur.

Floods have been and continue to be the most frequent, destructive, and costly natural hazard facing Union County. Most recently, the county has been impacted by six significant flood events, in 1996, 1999, 2005, and 2007, 2011, and 2012. Hurricane Irene in August 2011 was the most severe on record along the Rahway River Basin, where flood peaks were the highest ever recorded at five of the 20 long- term stream gages. The stream gages on the Elizabeth River and the two stream gages on the Rahway River at Springfield and Rahway recorded new peaks of record for 90, 74, and 90 years of record, respectively, according to the *USGS Hurricane Irene and the Associated Floods of August 27-30, 2011 in New Jersey, Scientific Investigations Report 2013-5234*.

Because of the nature of floods, discussions of extent (which FEMA considers analogous to potential severity) are necessarily location specific. The jurisdictional appendices to this HMP include narrative and metrics related to flood extent on a local level. Very generally, flood extent in Union County ranges from a few inches of overland flow and ponding in some areas, to high-velocity flooding of multiple- foot depths in others. The latter type of flooding is found in close proximity to the two major flood Source in the County, the Rahway and Elizabeth Rivers. As noted, specifics about flood hazards are discussed in detail in the municipal appendices.

7.9.4 PREVIOUS OCCURRENCES AND LOSSES

To identify past occurrences of flooding in Union County queries were performed for both the NOAA NCEI database and SHELDUS database from the Hazards and Vulnerability Research Institute (HVRI). The NCEI database indicates that there have been 86 flood events in Union County in the period from 1984 to 2013. Of these 86 events, 13 flood events between 1950 and 2013 have resulted in property damage. The SHELDUS database included 10 flood events in Union County between 1950 and 2013 (six with property damage). Recent flood events causing property damage have occurred in 1996, 1999, 2005, 2007, 2011 and 2012. Since the 2016 HMP update, there have been 48 flood or flash flood events in Union County. If all events occurring on the same day in different locations are combined, there were 26 days with flood or flash flood events from January 2013 to July 2020. These events are listed in **Table 7.9-1 Flood Events, Union County, 2013-2020** below. No injuries, deaths, or property damage was reported for flood or flash flood events from January 2013 to July 2020. Note that additional flood events not listed in the NCEI database may have resulted in property and infrastructure damages. Estimated property damages for these floods may not have been listed in the database because either the data was unavailable, or the damages were only minor and therefore not reported to the NCEI.

TABLE 7.9-1 FLOOD EVENTS, UNION COUNTY, 2013-2020

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
6/2/2013	Linden City, Elizabeth City	Flash Flood	0	0	0
6/7/2013	Rahway City, Springfield Township	Flood	0	0	0
7/1/2013	Rahway City	Flash Flood	0	0	0
8/28/2013	Elizabeth City, Union Township	Flash Flood	0	0	0
11/27/2013	Springfield Township	Flood	0	0	0
4/30/2014	Berkeley Heights Township, New Providence Borough, Garwood Borough, Linden City, Rahway City, Mountainside Borough, Scotch Plains Township, Clark Township, Springfield Township, Cranford Township	Flood	0	0	0

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Date	Location	Hazard Type	Injuries	Deaths	Property Damage
5/1/2014	Cranford Township, Mountainside Borough, Linden City, Rahway City	Flood	0	0	0
7/2/2014	Garwood Borough	Flash Flood	0	0	0
1/18/2015	Springfield Township, Union Township	Flood	0	0	0
5/31/2015	Union Township	Flash Flood	0	0	0
6/1/2015	Kenilworth Borough, Union Township	Flash Flood	0	0	0
6/15/2015	Summit City	Flash Flood	0	0	0
8/19/2015	Berkeley Heights Township, New Providence Borough, Mountainside	Flash Flood	0	0	0
2/24/2016	Clark Township	Flash Flood	0	0	0
7/25/2016	Berkeley Heights Township, New Providence Borough, Garwood Borough	Flash Flood	0	0	0
4/16/2018	Springfield Township	Flood	0	0	0
7/3/2018	Berkeley Heights Township, New Providence Borough, Clark Township, Garwood Borough	Flash Flood	0	0	0
7/27/2018	Garwood Borough	Flash Flood	0	0	0
8/4/2018	Berkeley Heights Township, New Providence Borough	Flash Flood	0	0	0
8/11/2018	Fanwood Borough, Scotch Plains Township	Flash Flood	0	0	0
5/29/2019	Garwood Borough	Flood	0	0	0
7/18/2019	Clark Township, Cranford Township, Scotch Plains Township, Westfield Town	Flash Flood	0	0	0
7/22/2019	Rahway City	Flash Flood	0	0	0
7/31/2019	Elizabeth City, Hillside Township	Flash Flood	0	0	0
7/6/2020	Roselle Borough	Flash Flood	0	0	0
7/22/2020	Cranford Township, Garwood Borough, Union Township	Flash Flood	0	0	0
		Total	0	0	0

Source: NOAA/NCEI, 2020. Storm Events Database.

In addition to the flood events listed in the NCEI and SHELDUS databases between 1950 and 2020, the Union County FIS indicates that a major flood event also occurred in 1971. The more recent major floods that have occurred in Union County are summarized below. Incidents that have been declared a Major Disaster by the President are indicated by the disaster number (DR).

1/19/1996 (DR-1088) –Severe Storms and Flooding. The flash flooding of the afternoon and early evening of January 19, 1996 led to larger river flooding that extended through January 21 of the month. Strong southerly winds ushered very mild and moisture laden air into the region following a blizzard that hit New Jersey just days earlier. Street flooding became a major problem early on due to the rains and significant snowmelt. River and stream flooding occurred later in the afternoon

of January 19 and continued well into the next day. In Union County, flood damages were estimated at $3 million according to NOAA's NCEI database.

10/19/1996 (FEMA DR-1145) –Severe Storms and Flooding. A strong low pressure system slowly moved off the southern New Jersey coast on October 19. The storm produced heavy rains with rainfall totals of up to 8" in some parts of Union County. Heavy rainfall produced serious flooding of many rivers and small streams in Union County as well as serious widespread street and poor drainage flooding. The Rahway River in Springfield reached its' second highest level of record. In Cranford, downstream of Springfield, 100 homes were evacuated, and in Rahway, further downstream, 75 homes and one high rise apartment were evacuated due to rising flood waters. The Union County Office of Emergency Management (OEM) estimated damages within the county at $4 million in damages to private homes and $300,000 to public infrastructure according to NOAA's NCEI database.

9/16/1999 (DR-1295) –Hurricane Floyd. This fall hurricane put the entire Eastern Seaboard on flood watch, including every county in New Jersey. Although downgraded from a hurricane by the time it hit New Jersey, the storm lasted approximately 18 hours and resulted in rainfall totals of up to almost 12" in parts of Union County. The Rahway River at Springfield was above its flood stage of 5.5' on the September 16 and September 17. The crest stage of 10.67' occurred around 10:00pm on September 16. The NCEI database indicates that in Union County initial damage estimates from the New Jersey OEM at $4.2 million. A more detailed review of the FEMA Project Worksheets indicates that the Public Infrastructure damages alone totaled just over $8.6 million. The most significant damages occurred in the Rahway City when overbank flooding from Robinson's Branch of the Rahway River resulted in floodwaters destroying the City's library.

For a more description of the damages caused by Tropical Storm Floyd in Union County, particularly on the Rahway River, please see the subsection below titled "Tropical Storm Floyd".

04/02/2005–Severe Storms and Flooding. On April 2 and April 3 heavy rains from an intense low pressure system caused widespread flooding throughout northern New Jersey. The NJOEM estimated that the flooding forced 6,000 residents from their homes and caused a total of $60 million in damages. In Union County the damages were estimated at $12 million according to NOAA's NCEI database.

4/15/2007 (DR-1694) –Severe Storms and Inland and Coastal Flooding. A seven-day Nor'easter deluged New Jersey with up to 9" of rain, causing millions of dollars of damage and killing three residents. Statewide damage was estimated at $180 million. In Union County maximum rainfall totals were 7.3" near Cranford Township in the central part of the county. The NCEI database estimated damages in Union County at $2.7 million. The most significant damages occurred in Cranford Township where the storm resulted in a total of 66 residential homes flooded above their first floor elevations, 427 homes with flooded basements, and over $2.3 million in public infrastructure damage according to the Cranford Township Engineering Report on Tax Day Storm (April 15-17, 2007).

For a more description of the damages caused by this event in Union County, particularly on the Rahway River, please see the subsection below titled "April 15-17, 2007 Nor'easter".

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04/02/2010 –Severe Storms and Flooding. A slow moving storm moving north along the Atlantic coast produced heavy rains from March 12 - 15, 2010. Rainfall amounts were greatest in central and northeastern New Jersey. One of the highest rainfall totals was reported at USGS gage in Mountainside, New Jersey.

08/28/2011 (DR-4021) – Hurricane Irene. Hurricane Irene made landfall along the Outer Banks of North Carolina on August 27, 2011 as a Category 1 hurricane. The storm re-emerged over the Atlantic and made a second landfall as a tropical storm on August 28th in the Little Egg Inlet in southeastern New Jersey. Large portions of the county experienced flooding, with the most severe occurring in the municipalities of Cranford, Springfield, and Rahway. These areas were mainly impacted by flooding from the Rahway River. The United States Geological Survey (USGS) indicated the peak flood stage along the Rahway River at Rahway was 2.5 feet higher than the previous peak of record. The storm flooded thousands of residential homes in Cranford including the downtown area. The event was considered the worst flood event in Cranford's history with an estimated $75 million in property damages. See Appendix 3, Cranford Township, for additional details about the impacts of Irene. In other areas of the county, police used boats to rescue nearly 90 people from their homes on flooded streets in Rahway and Springfield. In Rahway significant flooding occurred along West Grand Avenue and Rahway Avenue. An estimated 30,000 Union County residents were left without power according to an article on the Union County, NJ website titled "Union Continues Response in Aftermath of Hurricane Irene".

For a more description of the damages caused by this event in Union County, particularly on the Rahway River, please see the subsection below titled "Hurricane Irene".
10/29/2012 (DR-4086) – See subsection below for a summary of Hurricane Sandy.

FIGURE 7.9-9 HURRICANE IRENE, FLOODING IN CRANFORD TOWNSHIP

Source: SternAssociates.com

FIGURE 7.9-10 HURRICANE IRENE, FLOODING IN DOWNTOWN CRANFORD

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Source: SternAssociates.com

Tropical Storm Floyd

In September 1999, Tropical Storm Floyd (DR-1295) caused significant flooding in parts of Union County. FEMA Public Assistance (PA) Project Worksheets (PWs) indicate that infrastructure damages in Union County totaled just over $8.6 million. Of this amount, slightly more than $5 million in damages occurred in the Rahway City. The downgraded hurricane resulted in over a foot of rain in the Rahway City, flooding portions of St. Georges and Central Avenues along the Robinson's Branch of the Rahway River. Overbank flooding from Robinson's Branch resulted in water entering the Rahway Public Library, completely inundating the library basement with about 1.5' of water on the first floor. This was the eighth time the library had experienced flooding in its 32-year history. The FEMA Public Assistance program determined the library was damaged beyond repair. FEMA awarded over $4.4 million in funds for construction of a new facility. An additional $558,000 was also provided by FEMA for content damages such as library books and computers. According to a press release by the Rahway City data March 20, 2004, in 2005, the new Rahway Public Library was completed outside the floodplain behind City Hall.

Table 7.9-2 Project Worksheet Summary for Hurricane Floyd (DR-1295) Applicants in Union County Along the Rahway River and its Tributaries, Ordered by PW Total identifies the FEMA Public Assistance funds provided to applicants after Tropical Storm Floyd for municipalities located along the Rahway River (and its tributaries). The PWs indicate that the majority of the damages are from flooding along the Rahway River. However, some of the damages were attributable to flooding from other Source, as well as water intrusion into buildings resulting from high winds and rain. The table shows that the highest amount of FEMA PA funds was provided along the Rahway River, following Hurricane Floyd, to the Rahway City. Almost all of the PA funds for this applicant were a result of the building damages (Category E) to the City Library described above, according to the FEMA Region II Public Assistance Program.

TABLE 7.9-2 PROJECT WORKSHEET SUMMARY FOR HURRICANE FLOYD (DR-1295) APPLICANTS IN UNION COUNTY ALONG THE RAHWAY RIVER AND ITS TRIBUTARIES, ORDERED BY PW TOTAL

Applicant Name	Cat. A	Cat. B	Cat. C	Cat. E	Cat. F	TOTAL

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Rahway City	$43,577	$35,151	$1,665	$5,010,776	$0	$5,091,168
Springfield Township	$40,917	$45,573	$3,818	$527,363	$13,194	$630,865
Cranford Township	$111,441	$84,298	$151,800	$1,418	$0	$348,956
Union Township	$79,974	$44,176	$0	$10,161	$7,254	$141,565
Garwood	$15,196	$26,047	$0	$28,218	$2,000	$71,461
Clark Township	$29,726	$0	$0	$39,042	$0	$68,768
Linden City	$35,742	$18,583	$0	$0	$0	$54,325
Kenilworth Borough	$26,379	$26,339	$0	$0	$0	$52,719
Union Township CAO, Inc.	$0	$0	$0	$15,903	$0	$15,903
Cranford First Aid Squad	$0	$1,808	$0	$5,009	$0	$6,817
Rahway Board of Education	$0	$1,198	$0	$0	$0	$1,198
Total	$382,952	$283,172	$157,283	$5,637,890	$22,448	$6,483,745

Note: For these applicants, no damages were reported for FEMA Categories D and G.
Source: FEMA Region II–Public Assistance Program

The FEMA Public Assistance categories are generally defined as follows:

- Category A: Emergency work, primarily debris clearance.
- Category B: Emergency protective measures.
- Category C: Permanent repair work, roads, and bridges.
- Category D: Permanent repair work, water control facilities.
- Category E: Permanent repair work, public buildings.
- Category F: Permanent repair work, utilities.
- Category G: Permanent repair work, parks, and recreation facilities.

April 15-17, 2007 Nor'easter

The April 15 and 16, 2007 Nor'easter caused significant flooding in Cranford. The storm resulted in a total of 494 residential structures flooded; 66 homes were flooded above their first-floor elevations and 427 homes had flooded basements. In addition, over $2.3 million in public infrastructure damage was recorded. This storm had a major impact on public infrastructure including approximately 4,000' of the dike system, the High Street Baldwin/Court footbridge, the Township Municipal Building, the Canoe Club and minor damage to the Hansel Dam at Sperry Park, according to the Engineering Report on Tax Day Storm (April 15-17, 2007) published by Cranford Township.

Hurricane Irene

On August 28, 2011 Hurricane Irene caused historic flooding along portions of the Rahway River, particularly the communities of Cranford, Springfield and Rahway. As part of the 2016 HMP update FEMA Public Assistance (PA) records were reviewed (as of June 2014) for all applicants within Union County. **Table 7.9-3 Project Worksheet Summary for Hurricane Irene (DR-4021) Applicants in Union County Along the Rahway River and its Tributaries, Ordered by PW Total** identifies the FEMA PA funds provided to applicants after Irene for municipalities located along the Rahway River (and its tributaries). The table shows that as of June 2014 Cranford Public Schools has received the highest amount of FEMA PA funds of any applicant located along the Rahway River. As a result of Irene, Cranford Public Schools has received a total of $1,536,824. The majority of these funds ($1,487,461) were associated with emergency protective measures. Compared to Tropical Storm Floyd, infrastructure damages from Irene along the Rahway River were less than half of the total damages from Floyd. As of the 2016 HMP update, development of PWs for these applicants was ongoing and the total estimated damages for this region may increase significantly once all damages are identified and PWs completed by FEMA.

TABLE 7.9-3 PROJECT WORKSHEET SUMMARY FOR HURRICANE IRENE (DR-4021) APPLICANTS IN UNION COUNTY ALONG THE RAHWAY RIVER AND ITS TRIBUTARIES, ORDERED BY PW TOTAL

Applicant Name	Cat. A	Cat. B	Cat. C	Cat. D	Cat. E	Cat. F	TOTAL
Cranford Public Schools	$0	$1,487,461	$0	$0	$49,363	$0	$1,536,824
Cranford Township	$487,706	$134,446	$32,385	$34,146	$59,814	$0	$748,497
Clark Township	$116,931	$93,654	$0	$0	$1,847	$0	$212,432
Kenilworth Borough	$59,430	$60,613	$4,697	$0	$0	$0	$124,741
Cranford First Aid Squad	$0	$2,884	$0	$0	$35,023	$0	$37,907
Union Township DPW	$0	$0	$0	$0		$25,873	$25,873
Clark Public Schools	$3,742	$2,467	$0	$0	$5,017	$0	$11,225

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Applicant Name	Cat. A	Cat. B	Cat. C	Cat. D	Cat. E	Cat. F	TOTAL
Union Township Board of Ed.	$0	$0	$0	$0	$5,456	$0	$5,456
Grand Total	$667,810	$1,778,525	$37,082	$34,146	$156,520	$25,873	$2,702,956

Source: FEMA Region II–Public Assistance Program

Hurricane Sandy

In late October of 2012, Union County was impacted by Hurricane Sandy (DR-4086), a late season hurricane that originated as a tropical wave from the west coast of Africa. Sandy traveled across Cuba and other parts of the Caribbean, before moving northeastward, parallel to the coast of the southeastern United States. Sandy reached a secondary peak intensity of 85 knots while it turned northwestward toward the mid-Atlantic states. Sandy weakened somewhat and then made landfall as a post-tropical cyclone near Brigantine, New Jersey with 70-knot maximum sustained winds on October 29, 2012. Because of its tremendous size, however, Sandy drove a catastrophic storm surge into the New Jersey and New York coastlines.

With the highest storm surge levels on record, Sandy produced widespread damage to coastal and inland communities in New Jersey. In Union County the storm surge flooded the coastal areas of the County. See Section 7.18 Storm Surge for additional information about the storm surge flooding associated with Hurricane Sandy including a Union County inundation map. Although the flooding was substantial along the coastal portions of Union County, review of FEMA Public Assistance records indicates that infrastructure damages (including public facilities) related to flooding from Sandy was relatively minimal. In Union County the majority of the public infrastructure damages from Sandy were related to high winds. In the City of Elizabeth, project worksheets related to Hurricane Sandy totaled $7,189,980.23, with most damage along the Arthur Kill waterfront.

The City of Linden suffered substantial residential damage and after the storm, entered into New Jersey DEP's Blue Acres Program to buyout the substantially damaged structures. The Linden Roselle Sewerage Authority had substantial damage and the City requested a FEMA TAC team to assist the Authority in writing their claim, which resulted in HMGP grant funding. The Department of Public Works had a very large Category E claim as Sandy washed through the facility.

Information provided by the NFIP can be used as an indication of the potential for flooding in Union County, and the amount of damage it has caused in the past. It is recognized that relying on just NFIP data may not provide as comprehensive a picture as possible as not all people with flood damage belong to the NFIP or have submitted claims to the NFIP. But review of prior NFIP flood claims can help reveal areas of the county that are vulnerable to damages from flooding. In recent years, FEMA has focused considerable attention to insured, repetitive loss properties. By definition, these are properties that have had two or more flood insurance claim payments of at least $1,000 each over a ten-year period. In Union County, 434 residential and commercial properties have been identified as repetitive loss properties. Collectively, claim holders have received payments of just over $20.3 million (the figure includes claim payments for both building and contents damages).

7.9.5 PROBABILITY OF FUTURE OCCURRENCES

Based on past and recent history, certain parts of Union County clearly have a high probability of flooding repeatedly in the future. Several areas adjacent to the Rahway River and portions of the Green Brook River area of the county have flooded several times in the past. With a total of 112

past flood events in Union County between 1950 and 2020, the County experiences a flood event on average more than twice every year. With roughly two events every year, it is highly likely that that there will be at least one flood events in Union County in the next five years. Recent severe flooding in Union County suggests that the repeated flooding in specific areas is likely to occur again in the future. Considering the impacts from flooding, the Steering Committee ranked floods as a high-risk hazard (See **Table 7.1-2 Union County (County-wide) Hazard Ranking Table** for a complete list of hazard rankings).

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.9.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of flood events.

7.9.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to DEP's *2020 New Jersey Scientific Report on Climate*, by 2050, annual precipitation in New Jersey is expected to increase by 4%-11%. Further, both the intensity and frequency of precipitation events is expected to increase. As a result, flood size and frequency are also expected to increase.

The *2020 New Jersey Scientific Report on Climate* also reports that sea level is rising at a faster rate in New Jersey than in other parts of the world, and coastal New Jersey will experience "sunny day" flooding more often as a result of sea level rise. For more discussion on projected sea level rise in New Jersey, please see the subsection below.

Sea Level Rise

There is also the concern of sea level rise and the impacts of future flood events to coastal communities over the next 20 to 50 years and beyond. NOAA, in partnership with FEMA the United States Army Corp of Engineers (USACE) and several other agencies has created a set of map services and related tools to help communities, residents, and other stakeholders consider risks from future sea level rise in planning for reconstruction following Hurricane Sandy. Even if current storm patterns remain the same in the future, sea level rise will increase the impact of coastal flooding during storms. The map services provided integrate FEMA's most recent special flood hazard data with four scenarios of sea level rise. These scenarios include:

- lowest
- intermediate-low
- intermediate-high
- highest

These scenarios provide estimates of global sea level rise by the year 2050 and 2100 based on the best available science synthesized by a panel of scientists from multiple federal agencies and academic institutions to provide to the U.S. They address different factors known to affect the risk of future sea level rise, including ocean warming and melting of mountain glaciers and ice sheets (NOAA – GeoPlatform Sea Level Rise Planning Tool – New Jersey and New York).

Sea level projections for New Jersey are summarized in a 2019 Rutgers University Science and Technical Advisory Panel (STAP) Report, entitled, *New Jersey's Rising Seas and Changing Coastal Storms: Report of the 2019 Science and Technical Advisory Panel*. Projections from the 2019 STAP report were subsequently used by DEP in their *2020 Scientific Report on Climate Change*. The amount of sea level rise expected is New Jersey is reported by decade from 2030 to 2150 under

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three greenhouse gas emissions scenarios: low (3.6°F/2°C average global temperature increase), medium (6.3°F/3.5°C increase), and high (9°F/5°C increase). For each decade and emissions scenario, a range of projections are presented, from high (<5% chance of exceedance) to the low (> 95% chance of exceedance). Both glacial and oceanographic phenomena were considered in these projections. **Figure 7.9-11 Projected Sea Level Rise for New Jersey** is reproduced from the 2020 Scientific Report on Climate Change and shows the projected rise in sea level in feet above the average sea level in the year 2000. Please note that the likely range represents the range of levels between which there is a 66% change the sea level rise will occur.

FIGURE 7.9-11 PROJECTED SEA LEVEL RISE FOR NEW JERSEY

Table 4.3. Sea-level Rise Projections (ft. above year 2000 average sea level) for New Jersey From 2030 to 2150 Under Low, Moderate and High Emissions Scenarios. The likely range represents the range of levels between which there is 66% chance that SLR will occur (Kopp et al. 2019).

	Chance SLR Exceeds	2030	2050	2070 Emissions			2100 Emissions			2150 Emissions		
				Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
Low End	>95% chance	0.3	0.7	0.9	1.0	1.1	1.0	1.3	1.5	1.3	2.1	2.9
Likely Range	>83% chance	0.5	0.9	1.3	1.4	1.5	1.7	2.0	2.3	2.4	3.1	3.8
	~50 % chance	0.8	1.4	1.9	2.2	2.4	2.8	3.3	3.9	4.2	5.2	6.2
	<17% chance	1.1	2.1	2.7	3.1	3.5	3.9	5.1	6.3	6.3	8.3	10.3
High End	<5% chance	1.3	2.6	3.2	3.8	4.4	5.0	6.9	8.8	8.0	13.8	19.6

*2010 (2001-2019 average) Observed = 0.2 ft

Notes: All values are 19-year means and are measured with respect to a 1991-2009 baseline. Projections are 19-year averages based on Kopp et al. (2014), Rasmussen et al. (2018), and Bamber et al. (2019). Moderate (Mod.) emissions are interpolated between the high and low emissions scenarios. Rows correspond to different projection probabilities. For example, the 'Likely Range' rows correspond to at least a 2-in-3 (66-100% chance) chance of sea-level rise from the relevant projections considered, consistent with the terms used by the Intergovernmental Panel on Climate Change (Mastrandrea et al. 2010). Note alternative methods may yield higher or lower estimates of the chances of low-end and high-end outcomes.

Source: DEP. 2020. *2020 New Jersey Scientific Report on Climate Change.*

Table 7.9-4 Total Number of Critical Facilities Vulnerable to Sea-Level Rise shows the total number and percentage of critical facilities vulnerable to sea-level rise in Union County by municipality. Potential sea-level rise inundation for an additional 3ft and 5ft of sea-level rise above current Mean Higher High Water (MHHW), including low-lying areas, were used. According to DEP, there is less than a 17% chance of sea-level rise exceeding 3.1 feet by 2070 under a moderate emissions scenario. There is also less than a 17% of sea-level rise exceeding 5.1 feet by 2100 under a moderate emissions scenario. Critical facilities are then likely to experience approximately 3ft of sea-level rise by 2070 and 5ft of sea-level rise by 2100. Please note that **Table 7.9-5 Total Number of Critical Infrastructure Vulnerable to Sea Level Rise** only includes the municipalities impacted by sea-level rise, as not all Union County municipalities are coastal or tidally-influenced.

TABLE 7.9-4 TOTAL NUMBER OF CRITICAL FACILITIES VULNERABLE TO SEA-LEVEL RISE

Jurisdiction	Number of Critical Facilities Vulnerable to Sea-Level Rise		Percentage of Critical Facilities Vulnerable to Sea-Level Rise		RCV of Critical Facilities Vulnerable to Sea-Level Rise	
	3FT MHHW	5 FT MHHW	3FT MHHW	5 FT MHHW	3FT MHHW	5 FT MHHW
Elizabeth City	2	3	2%	3%	$239,367.10	$239,367.10
Linden City	0	0	0%	0%	$0.00	$0.00
Rahway City	1	1	3%	3%	$640,388.66	$640,388.66
Union County Total	3	4	0%	1%	$879,755.77	$879,755.77

Source: 2017 NOAA 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

TABLE 7.9-5 TOTAL NUMBER OF CRITICAL INFRASTRUCTURE VULNERABLE TO SEA-LEVEL RISE

Jurisdiction	Number of Critical Infrastructure Vulnerable to Sea-Level Rise		Percentage of Critical Infrastructure Vulnerable to Sea-Level Rise		RCV of Critical Infrastructure Vulnerable to Sea-Level Rise	
	3FT MHHW	5 FT MHHW	3FT MHHW	5 FT MHHW	3FT MHHW	5 FT MHHW
Elizabeth City	3	5	18%	29%	$0.00	$373,657.76
Linden City	6	17	24%	68%	$15,548,958.95	$24,620,181.19
Rahway City	0	0	0%	0%	$0.00	$0.00
Union County Total	9	22	8%	19%	$15,548,958.95	$24,993,838.96

Source: 2017 NOAA 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

To visualize how sea-level rise will impact Union County, one can access NJFloodMapper, a free interactive web mapping service available from the NJ Adapt suite of online tools. NJ FloodMapper is hosted by the New Jersey Climate Change Resource Center.

Environmental Justice Assessment

The State of New Jersey defines an overburdened community as: “any census block group, as determined in accordance with the most recent United States Census, in which:

- at least 35 percent of the households qualify as low-income households (at or below twice the poverty threshold as determined by the United States Census Bureau);
- at least 40 percent of the residents identify as minority or as members of a State recognized tribal community; or
- at least 40 percent of the households have limited English proficiency (without an adult that speaks English “very well” according to the United States Census Bureau).”

Union County’s overburdened communities are concentrated in the eastern portion of the County. These communities all have at least 40% of the residents that identify as minority or as members of a State recognized tribal community. Communities with high concentrations of both low-income and minority populations are concentrated in the Elizabeth City, the Linden City, the Rahway City, Roselle Borough, Hillside Township, Kenilworth Borough and the Plainfield City. Communities with

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high concentrations of low-income, minority, and limited English-speaking populations are concentrated in the Elizabeth City and the Plainfield City.

According to the *New Jersey Climate & Health Profile Report*, published by the NJ Climate Adaptation Alliance in 2017, those with existing medical conditions are vulnerable to infrastructure damage from flooding and storms that may threaten medicine availability or power supply to medical equipment. Mold produced by stormwater can also exacerbate respiratory conditions. Among New Jersey residents with chronic illness (i.e. COPD, asthma, and diabetes), those of lower socioeconomic status had higher rates of preventable hospitalizations and emergency department visits after Hurricane Sandy. Further, Black adults had a higher prevalence of asthma (14%) than the general New Jersey adult population (9%) in 2017. This indicates that low-income and people of color may be disproportionately affected by the negative health impacts resulting from flooding and storms.

According to *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*, published by the U.S. Global Change Research Program in 2018, urban populations also may experience multiple climate change-related natural hazards, including extreme temperatures, extreme precipitation and flooding, and coastal flooding. These events may trigger evacuation and displacement. Vulnerable populations with a decreased ability to prepare for and cope with these events include those experiencing poverty, older adults, recent immigrants, and linguistically-isolated communities.

For more information about overburdened communities in Union County and how extreme heat may disproportionately impact them, see 7.8.6 Potential Effects of Climate Change under 7.8 Extreme Temperature-Heat.

7.9.7 VULNERABILITY ASSESSMENT

There are several ways to characterize flood impacts on life and property. These include geographic and spatial metrics, statistic data, and reports of injuries and deaths related to the hazard. Figures maintained by NCEI indicate that Union County has experienced no deaths and no injuries from past flood events.

Table 7.9-6 Flood-Related Spatial Information by Jurisdiction, Union County, New Jersey provides basic flood-related spatial data for all the jurisdictions in the County. The information includes the number of parcels in the community and the number of those parcels in the Special Flood Hazard Area (SFHA), i.e. areas with at least a one percent annual chance of flooding. These figures are not a direct proxy for risk because they do not indicate the locations or vulnerabilities of any structures or infrastructure that could be damaged by flooding. Nevertheless, the data do provide a general sense of potential exposure in the communities. For a more robust analysis of the structures and infrastructure in the SFHA, please see the HAZUS Flood Global Risk Report in Appendix Volume II A HAZUS Report.

TABLE 7.9-6 FLOOD-RELATED SPATIAL INFORMATION BY JURISDICTION, UNION COUNTY, NEW JERSEY

Jurisdiction	Number of Parcels	Parcels in SFHA
Berkeley Heights Township	4,842	1,203
Clark Township	5,262	666
Cranford Township	8,198	1,450
Elizabeth City	19,597	1,405
Fanwood Borough	2,664	89
Garwood Borough	1,568	329
Hillside Township	6,430	273
Kenilworth Borough	2,871	661
Linden City	12,272	2,020
Mountainside Borough	2,758	405
New Providence Borough	4,101	866
Plainfield City	10,235	3,354
Rahway City	8,404	2,097
Roselle Borough	5,933	1,105
Roselle Park Borough	3,491	26
Scotch Plains Township	8,036	1,576
Springfield Township	5,375	1,071
Summit City	6,996	533
Union Township	17,647	1,807
Westfield Town	9,918	377
Winfield Township	60	0
Total	146,658	21,313

Source: 2021 NJOGIS Parcels and MOD-IV Composite of New Jersey

National Flood Insurance Program Insured Structures and Repetitive Loss Properties

Perhaps the best method of characterizing flood risk in a community is to evaluate flood insurance claims. FEMA's National Flood Insurance Program (NFIP) was established by Congress in 1968, for the purpose of enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. As of Spring 2015, every incorporated jurisdiction in Union County (except Winfield) was a participating member of the NFIP. Because the NFIP has existed Flood insurance claims offer a rich source of quantitative information about past flood losses, and these data are displayed in the series of tables below. It should be recognized that this information should not be considered a perfectly reliable measure of flood risk, because it relies upon flood insurance data, in particular claims submitted to the NFIP. Not all owners of potentially flood prone property in a community purchase flood insurance, and in some cases they purchase insufficient insurance

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to cover their losses when a property does flood. Nevertheless, there in a large enough data set in Union County that the information provides a relatively good picture of the areas where flooding has occurred, and its magnitude.

Table 7.9-7 National Flood Insurance Statistics as of June 30, 2019, Union County, New Jersey provides basic NFIP statistics for all jurisdictions in Union County, current as of June 30, 2019. The column entitled "Total $ in Force" indicates the sum of all coverage for structure and contents losses, i.e. the maximum current claims value. It does not represent actual claims, which are discussed later.

TABLE 7.9-7 NATIONAL FLOOD INSURANCE STATISTICS AS OF JUNE 30, 2019, UNION COUNTY, NEW JERSEY

Jurisdiction	Joined NFIP	Total Number of Active Policies	Total $ in Force
Berkeley Heights Township	3/1/1978	190	$50,410.90
Clark Township	12/23/1971	83	$23,176.00
Cranford Township	6/25/1971	761	$206,487.30
Elizabeth City	5/7/1971	113	$50,124.70
Fanwood Borough	10/28/1977	27	$9,024.30
Garwood Borough	2/1/1977	63	$18,174.50
Hillside Township	9/14/1979	54	$15,961.50
Kenilworth Borough	3/2/1983	132	$33,279.40
Linden City	11/24/1976	205	$64,122.50
Mountainside Borough	2/16/1977	37	$11,612.50
New Providence Borough	11/23/1973	131	$38,831.90
Plainfield City	6/25/1971	1064	$241,618.90
Rahway City	12/23/1971	502	$133,548.30
Roselle Borough	7/17/1978	217	$15,232.30
Roselle Park Borough	6/4/1980	54	$45,311.80
Scotch Plains Township	9/30/1977	258	$71,745.60
Springfield Township	10/1/1971	229	$64,876.20
Summit City	2/2/1977	78	$22,951.80
Union Township	8/1/1978	311	$83,409.70
Westfield Town	12/18/1979	129	$42,513.00
Winfield Township	N/A	0	$0.00

Source: FEMA – NFIP Policy and Loss Data by Geography

The next table provides additional County-wide flood insurance data related to claims, including the number of losses and total payments. The 2016 HMP update reported on the average claim amount and the relative percentage of the average claim in a community versus the average claim County-wide. This metric illustrates the relative severity of floods. For example, Cranford appeared to be much more at risk of severe flooding (the jurisdiction accounted for 23 percent of insurance losses in the County, and the average claim was 242% of the County average) than Roselle Park, where there have been relatively few claims and their average value was only 35% of the County average. While these figures are not a definitive measure of risk, they do offer significant insight

into relative risks in the County, particularly in cases where both the numbers of losses and the percent of County average differ significantly from the average jurisdiction. Due to data access constraints, we were not able to obtain updated statistics on average claims and the percent of the County average.

TABLE 7.9-8 NFIP INSURANCE LOSS AND PAYMENT STATISTICS AS OF JUNE 30, 2019, UNION COUNTY, NEW JERSEY

Jurisdiction	Number of Losses	Total Payments
Berkeley Heights Township	86	$329,256.55
Clark Township	90	$831,315.47
Cranford Township	1323	$40,547,728.02
Elizabeth City	297	$4,764,914.69
Fanwood Borough	11	$23,966.03
Garwood Borough	35	$415,680.79
Hillside Township	206	$1,093,619.39
Kenilworth Borough	151	$1,676,773.00
Linden City	259	$5,520,811.67
Mountainside Borough	25	$156,498.02
New Providence Borough	80	$334,247.58
Plainfield City	762	$3,789,918.14
Rahway City	810	$17,773,269.79
Roselle Borough	64	$249,986.88
Roselle Park Borough	411	$7,279,876.63
Scotch Plains Township	223	$1,181,468.26
Springfield Township	328	$5,555,172.34
Summit City	84	$422,325.43
Union Township	376	$4,921,541.41
Westfield Town	31	$204,866.10
Winfield Township	7	$128,924.00

Source: FEMA – NFIP Policy And Loss Data By Geography

It is possible to complete a rudimentary flood risk assessment based on the figures in the table above. This is done by annualizing flood loss figures and projecting expected future losses (risk) over a specific planning horizon, using a present value coefficient that combines the required discount rate (7%) with the time period. The time period over which the claims occurred is 38 years, so the average annual figure for claims is $2,546,902. This annual figure can be projected over 50- and 100-year horizons using present value coefficients of 13.8 and 14.7, respectively. Thus, expected flood risks for a 50-year horizon are $35,147,247. For the 100-year horizon the figure is $37,439,459. Note that the jurisdictional appendices to this plan include more detailed loss projections (risk) and should be consulted for information about local flood hazards.

Figure 7.9-12 Total NFIP Claim Dollars as of February 2014 Union County, New Jersey shows the Countywide distribution of NFIP insurance claims from 1977 to 2014. As expected, there are

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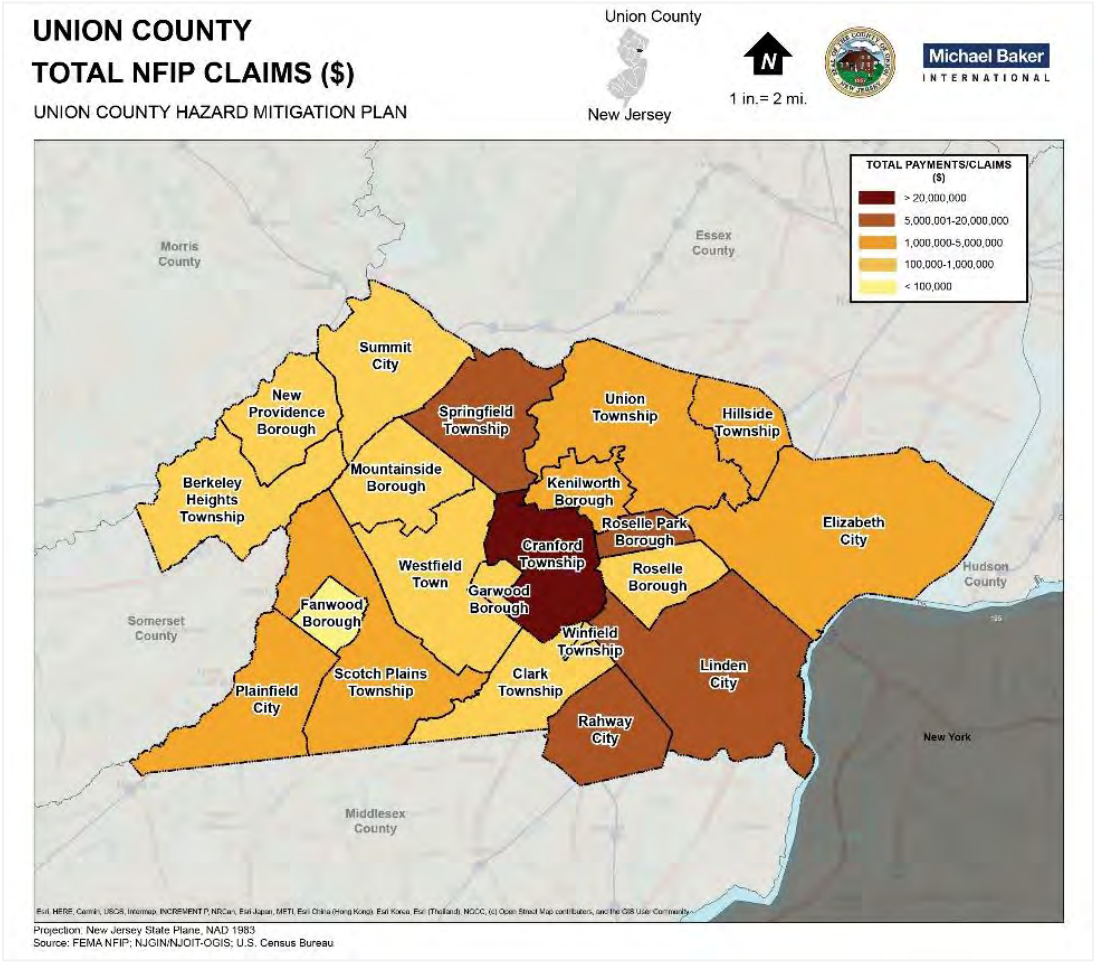
high concentrations of flood claims along the Rahway and Elizabeth Rivers, and to a lesser extent in the eastern reaches of the County.

FIGURE 7.9-12 TOTAL NFIP CLAIM DOLLARS AS OF FEBRUARY 2014 UNION COUNTY, NEW JERSEY



Source: FEMA – NFIP

Table 7.9-9 Community Rating System (CRS) Participation, Union County, NJ as of May 2020 describes CRS participation by municipality. Out of the 21 municipalities in Union County, 5 municipalities currently participate in the CRS program: Cranford Township, City of Linden City Rahway, Roselle Borough, and Roselle Park Borough. Berkeley Heights Township, Plainfield City, and Scotch Plains Township joined CRS in the 1990s but do not currently participate in the program. CRS participants gain points based on their community's flood mitigation practices. These points are used to determine the community's Class, a categorization from 10 (lowest) to 1 (highest) that comes with corresponding discounts for NFIP policyholders in the community. Of the participating municipalities in Union County, three (Cranford Township, Rahway City, and Roselle Borough) are Class 7, meaning that their NFIP policyholders in the Special Flood Hazard Area (SFHA) receive a 15% discount and policyholders outside the SFHA receive a 5% discount. The remaining two participating municipalities are Class 8, meaning their NFIP policyholders receive a 10% (in the SFHA) or 5% (outside the SFHA) discount on their flood insurance.

TABLE 7.9-9 COMMUNITY RATING SYSTEM (CRS) PARTICIPATION, UNION COUNTY, NJ AS OF MAY 2020

Jurisdiction	Community Number	Participation Status	CRS Entry Date	Current Effective Date	Class	Percent Discount for SFHA	Percent Discount for Non-SFHA
Berkeley Heights Township	340459	Rescinded	10/1/1994	5/1/1999	10	0	0
Cranford Township	345291	Current	10/1/2016	10/1/2016	7	15	5
Linden City	340467	Current	10/1/1991	10/1/2002	8	10	5
Plainfield City	345312	Rescinded	10/1/1991	10/1/1998	10	0	0
Rahway City	345314	Current	10/1/1992	10/1/2018	7	15	5
Roselle Borough	340472	Current	10/1/1992	5/1/2013	7	15	5
Roselle Park Borough	340473	Current	10/1/2015	10/1/2015	8	10	5
Scotch Plains Township	340474	Rescinded	10/1/1994	10/1/1995	10	0	0

Source: Appendix F: Community Rating System, April 2020 NFIP Flood Insurance Manual
Note: Effective May 1, 2020

National Flood Insurance Program Repetitive Loss and Severe Repetitive Loss Properties

FEMA requires a discussion of NFIP Repetitive Loss and Severe Repetitive flood loss statistics in hazard mitigation plans. The NFIP defines repetitive loss properties as those with two or more claims of more than $1,000 each during any rolling ten-year period.

The flood risk assessment method is based on analysis of NFIP data on repetitive flood loss properties. The NFIP defines repetitive loss (RL) properties as those that have received at least two NFIP insurance payments of more than $1,000 each in any rolling ten-year period. As of January 2021, Union County had 674 such properties based on data provided by FEMA Region II. **Table 7.9-10 Repetitive Loss (RL) & Severe Repetitive Loss (SRL) Statistics** below includes the number of repetitive loss properties and severe repetitive loss properties. Note that the table includes only those jurisdictions that have repetitive loss properties, so not all municipalities are listed.

TABLE 7.9-10 REPETITIVE LOSS (RL) & SEVERE REPETITIVE LOSS (SRL) STATISTICS

Jurisdiction	Total RL Properties	Total SRL Properties	Total RL and SRL Combined	Total Mitigated Properties
Berkeley Heights Township	2	1	3	0
Clark Township	11	1	12	0
Cranford Township	258	30	288	16
Elizabeth City	21	2	23	1
Garwood Borough	1	1	2	0
Hillside Township	32	2	34	0
Kenilworth Borough	10	0	10	0
Linden City	26	3	29	5
Mountainside Borough	2	0	2	0

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Jurisdiction	Total RL Properties	Total SRL Properties	Total RL and SRL Combined	Total Mitigated Properties
New Providence Borough	6	0	6	0
Plainfield City	75	4	79	0
Rahway City	114	15	129	8
Roselle Park Borough	2	0	2	0
Roselle Borough	39	4	43	3
Scotch Plains Township	19	0	19	0
Springfield Township	16	3	19	0
Summit City	3	1	4	0
Union Township	35	3	38	0
Westfield Town	2	0	2	0
Total	674	70	744	33

Source: Provided by FEMA Region II, 01/13/2021

TABLE 7.9-11 SUMMARY OF NFIP REPETITIVE LOSS STATISTICS, UNION COUNTY

Jurisdiction	Total RL Properties	Mitigated RL Properties	RL-Total Losses	RL-Total Paid	Average Claim	% County Average
Berkeley Heights Township	2	0	6	$45,509	$15,564	0.09%
Clark Township	11	0	31	$568,242	$194,485	1.19%
Cranford Township	258	9	725	$25,204,781	$8,877,649	54.18%
Elizabeth City	21	1	47	$1,484,558	$736,405	4.49%
Garwood Borough	1	0	3	$15,957	$5,319	0.03%
Hillside Township	32	0	90	$606,755	$214,207	1.31%
Kenilworth Borough	10	0	24	$140,990	$57,322	0.35%
Linden City	26	5	66	$1,797,276	$719,546	4.39%
Mountainside Borough	2	0	5	$41,477	$16,964	0.10%
New Providence Borough	6	0	12	$181,594	$90,797	0.55%
Plainfield City	75	0	187	$1,542,370	$608,793	3.72%
Rahway City	114	8	306	$9,178,132	$3,705,314	22.61%
Roselle Park Borough	2	0	5	$47,870	$19,888	0.12%
Roselle Borough	39	2	94	$546,570	$225,478	1.38%
Scotch Plains Township	19	0	51	$501,232	$214,845	1.31%
Springfield Township	16	0	43	$517,238	$209,524	1.28%
Summit City	3	0	8	$80,772	$23,628	0.14%
Union Township	35	0	91	$1,260,142	$429,900	2.62%
Westfield Town	2	0	4	$37,674	$18,837	0.11%
Total	674	25	1,798	$43,799,139	$16,384,463	---

Source: Provided by FEMA Region II, 01/13/2021

TABLE 7.9-12 REPETITIVE LOSS PROPERTIES BY OCCUPANCY CLASS, UNION COUNTY

Occupancy Class	Total RL Properties	Total SRL Properties
Single Family	559	50
Condo	2	0
2-4 Family	61	4
Other Residential	17	3
Business-Nonresidential	8	5
Other Nonresidential	33	8
Union County	680	70

Source: Provided by FEMA Region II, 01/13/2021

Flood Risk to Repetitive Loss Properties in Union County

Residential flood risk is calculated by a simple methodology that uses the FEMA default present-value coefficients from the benefit-cost analysis software modules. To perform this calculation, the flood insurance claims data were reviewed to determine an approximate period over which the claims occurred. This method should be used only for very general estimates of flood risk because the NFIP data represents only part of the flood losses in any jurisdiction. This is because there are always properties that are uninsured or under-insured.

As shown in **Table 7.9-13 Flood Risk in Union County Based on Historic NFIP Claims for Repetitive Loss Properties** there have been 5,659 flood insurance claims in the 43-year period, for an average number of 132 claims per year. Projected risks over 50- and 100-year timelines were reported in the 2016 HMP update. It must be understood that individuals can obtain and cancel flood insurance policies, and the flood hazard depends on many variables, including the weather, so this projection was simply an estimate of potential damages. Projected risk is not reported in the 2021 HMP update, as climate change is anticipated to greatly impact the frequency and intensity of flood events; a more robust climate model is suggested for future updates. The jurisdictional appendices in this 2021 HMP update include more detailed discussions of repetitive loss properties.

TABLE 7.9-13 FLOOD RISK IN UNION COUNTY BASED ON HISTORIC NFIP CLAIMS FOR REPETITIVE LOSS PROPERTIES

Data	Value
Period in years	43
Number of claims	5,659
Average claims per year	132
Total value of claims	$43,799,139
Average value of claims per year	$2,260,515.35

Source: Provided by FEMA Region II, 01/13/2021

Flood Risk to Severe Repetitive Loss Properties in Union County

The National Flood Insurance Program defines Severe Repetitive Loss as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

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- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.
- For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten- year period and must be greater than 10 days apart.

Thirteen of Union's communities have Severe Repetitive Loss (SRL) properties as of January 2021. These communities and associated SRL statistics are shown in **Table 7.9-14 Summary of NFIP Severe Repetitive Loss Statistics, Union County** below.

TABLE 7.9-14 SUMMARY OF NFIP SEVERE REPETITIVE LOSS STATISTICS, UNION COUNTY

Jurisdiction	Total SRL Losses	Mitigated SRL Properties	SRL-Total Losses	SRL-Total Paid	Average Claim	% County Average
Berkeley Heights Township	1	0	4	$62,547	$15,637	0.55%
Clark Township	1	0	10	$69,513	$6,951	0.24%
Cranford Township	30	7	132	$5,638,980	$1,325,495	46.42%
Elizabeth City	2	0	13	$344,411	$66,688	2.34%
Garwood Borough	1	0	4	$218,543	$54,636	1.91%
Hillside Township	2	0	10	$122,096	$26,517	0.93%
Linden City	3	0	19	$995,426	$152,210	5.33%
Plainfield City	4	0	20	$347,123	$68,557	2.40%
Rahway City	15	0	84	$2,975,317	$582,453	20.40%
Roselle Borough	4	1	70	$6,028,786	$273,389	9.57%
Springfield Township	3	0	13	$479,911	$111,463	3.90%
Summit City	1	0	4	$74,899	$18,725	0.66%
Union Township	3	0	22	$1,618,575	$152,885	5.35%
Total	70	8	405	$18,976,125	$2,855,606	--

Source: Provided by FEMA Region II, 01/13/2021

Flood Risk to Critical Facilities and Critical Infrastructure

The Union County Transportation Master Plan (2016) assesses the resilience of Union County's infrastructure, noting that, while all the county's transportation assets are vulnerable to climate change impacts, those assets near the coast are particularly vulnerable to flooding. Coastal transportation assets in the region include local roads, the New Jersey Turnpike, Newark Liberty International Airport, and freight rail lines.

Table 7.9-15 Total Number of Critical Facilities with Flood Risk and **Table 7.9-16 Total Number and Percentage of Critical Infrastructure and Utilities with Flood Risk** shows the total number and percentage of critical facilities in the Special Flood Hazard Area (SFHA) in Union County by municipality.

TABLE 7.9-15 TOTAL NUMBER AND PERCENTAGE OF CRITICAL FACILITIES WITH FLOOD RISK

Jurisdiction	Number of Critical Facilities in SFHA	Percentage of Critical Facilities in SFHA	Number of Critical Facilities in Zone A	Percentage of Critical Facilities in Zone A	Number of Critical Facilities in Zone V	Percentage of Critical Facilities in Zone V
Berkeley Heights Township	1	4%	1	4%	0	0%
Clark Township	2	10%	2	10%	0	0%
Cranford Township	1	3%	1	3%	0	0%
Elizabeth City	3	3%	3	3%	0	0%
Fanwood Borough	0	0%	0	0%	0	0%
Garwood Borough	0	0%	0	0%	0	0%
Hillside Township	0	0%	0	0%	0	0%
Kenilworth Borough	0	0%	0	0%	0	0%
Linden City	4	6%	4	6%	0	0%
Mountainside Borough	0	0%	0	0%	0	0%
New Providence Borough	1	4%	1	4%	0	0%
Plainfield City	11	14%	11	14%	0	0%
Rahway City	4	13%	4	13%	0	0%
Roselle Borough	0	0%	0	0%	0	0%
Roselle Park Borough	0	0%	0	0%	0	0%
Scotch Plains Township	3	6%	3	6%	0	0%
Springfield Township	6	25%	6	25%	0	0%
Summit City	0	0%	0	0%	0	0%
Union Township	2	4%	2	4%	0	0%
Westfield Town	3	5%	3	5%	0	0%
Winfield Township	0	0%	0	0%	0	0%
Union County Total	41	5%	41	5%	0	0%

Source: 2018 FEMA DFIRM and PFIRM Flood Zone Composite, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

TABLE 7.9-16 TOTAL NUMBER AND PERCENTAGE OF CRITICAL INFRASTRUCTURE AND UTILITIES WITH FLOOD RISK

Jurisdiction	Number of Critical Infrastructure in SFHA	Percentage of Critical Infrastructure in SFHA	Number of Critical Infrastructure in Zone A	Percentage of Critical Infrastructure in Zone A	Number of Critical Infrastructure in Zone V	Percentage of Critical Infrastructure in Zone V
Berkeley Heights Township	1	6%	1	6%	0	0%
Clark Township	3	100%	3	100%	0	0%
Cranford Township	3	43%	3	43%	0	0%
Elizabeth City	10	59%	9	53%	1	6%
Fanwood Borough	0	0%	0	0%	0	0%
Garwood Borough	0	0%	0	0%	0	0%
Hillside Township	0	0%	0	0%	0	0%

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Jurisdiction	Number of Critical Infrastructure in SFHA	Percentage of Critical Infrastructure in SFHA	Number of Critical Infrastructure in Zone A	Percentage of Critical Infrastructure in Zone A	Number of Critical Infrastructure in Zone V	Percentage of Critical Infrastructure in Zone V
Kenilworth Borough	0	0%	0	0%	0	0%
Linden City	22	88%	22	88%	0	0%
Mountainside Borough	3	100%	3	100%	0	0%
New Providence Borough	0	0%	0	0%	0	0%
Plainfield City	0	0%	0	0%	0	0%
Rahway City	5	63%	5	63%	0	0%
Roselle Borough	0	0%	0	0%	0	0%
Roselle Park Borough	0	0%	0	0%	0	0%
Scotch Plains Township	2	22%	2	22%	0	0%
Springfield Township	5	71%	5	71%	0	0%
Summit City	1	17%	1	17%	0	0%
Union Township	6	67%	6	67%	0	0%
Westfield Town	0	0%	0	0%	0	0%
Winfield Township	0	0%	0	0%	0	0%
Union County Total	61	52%	60	51%	1	1%

Source: 2018 FEMA DFIRM and PFIRM Flood Zone Composite, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

Table 7.9-17 Total Replacement Cost Value (RCV) for Critical Facilities with Flood Risk and **Table 7.9-18 Total Replacement Cost Value (RCV) for Critical Infrastructure and Utilities with Flood Risk** along with their estimated replacement cost value (RCV). To calculate RCV, we approximated the market value of improvements on each of the parcels in the state using MOD-IV and taxation rates from 2020 provided by the NJ Office of Information Technology, Office of GIS (NJOGIS) and NJ Division of Taxation. Georeferenced critical facility data points were then intersected with the parcel layer to attribute the parcel's market value of improvements to each critical facility. For a more robust analysis of the structures and infrastructure in the SFHA, please see the HAZUS Flood Global Risk Report in Appendix Volume II A HAZUS Report.

TABLE 7.9-17 TOTAL REPLACEMENT COST VALUE (RCV) FOR CRITICAL FACILITIES

Jurisdiction	RCV of Critical Facilities in SFHA	RCV of Critical Facilities in Zone A	RCV of Critical Facilities in Zone V
Berkeley Heights Township	$9,288,837.62	$9,288,837.62	$0.00
Clark Township	$40,025,124.68	$40,025,124.68	$0.00
Cranford Township	$38,738.52	$38,738.52	$0.00
Elizabeth City	$3,887,133.47	$3,887,133.47	$0.00
Fanwood Borough	$0.00	$0.00	$0.00
Garwood Borough	$0.00	$0.00	$0.00
Hillside Township	$0.00	$0.00	$0.00
Kenilworth Borough	$0.00	$0.00	$0.00
Linden City	$5,925,655.60	$5,925,655.60	$0.00

Jurisdiction	RCV of Critical Facilities in SFHA	RCV of Critical Facilities in Zone A	RCV of Critical Facilities in Zone V
Mountainside Borough	$0.00	$0.00	$0.00
New Providence Borough	$2,916,629.78	$2,916,629.78	$0.00
Plainfield City	$112,353,584.80	$112,353,584.80	$0.00
Rahway City	$1,530,131.65	$1,530,131.65	$0.00
Roselle Borough	$0.00	$0.00	$0.00
Roselle Park Borough	$0.00	$0.00	$0.00
Scotch Plains Township	$55,482,948.87	$55,482,948.87	$0.00
Springfield Township	$12,678,641.03	$12,678,641.03	$0.00
Summit City	$0.00	$0.00	$0.00
Union Township	$1,945,860.76	$1,945,860.76	$0.00
Westfield Town	$10,209,179.75	$10,209,179.75	$0.00
Winfield Township	$0.00	$0.00	$0.00
Union County Total	$256,282,466.51	$256,282,466.51	$0.00

Source: 2018 FEMA DFIRM and PFIRM Flood Zone Composite, FEMA Flood Zone Composite, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities, 2020 NJOGIS, 2020 NJ Division of Taxation

TABLE 7.9-18 TOTAL REPLACEMENT COST VALUE (RCV) FOR CRITICAL INFRASTRUCTURE AND UTILITIES WITH FLOOD RISK

Jurisdiction	RCV of Critical Infrastructure in SFHA	RCV of Critical Infrastructure in Zone A	RCV of Critical Infrastructure in Zone V
Berkeley Heights Township	$97,396.92	$97,396.92	$0.00
Clark Township	$0.00	$0.00	$0.00
Cranford Township	$32,360.30	$32,360.30	$0.00
Elizabeth City	$333,634,099.17	$333,634,099.17	$0.00
Fanwood Borough	$0.00	$0.00	$0.00
Garwood Borough	$0.00	$0.00	$0.00
Hillside Township	$0.00	$0.00	$0.00
Kenilworth Borough	$0.00	$0.00	$0.00
Linden City	$71,711,742.06	$71,711,742.06	$0.00
Mountainside Borough	$2,164,337.73	$2,164,337.73	$0.00
New Providence Borough	$0.00	$0.00	$0.00
Plainfield City	$0.00	$0.00	$0.00
Rahway City	$96,506.05	$96,506.05	$0.00
Roselle Borough	$0.00	$0.00	$0.00
Roselle Park Borough	$0.00	$0.00	$0.00
Scotch Plains Township	$381,146.80	$381,146.80	$0.00
Springfield Township	$3,666,763.00	$3,666,763.00	$0.00
Summit City	$118,736.63	$118,736.63	$0.00

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Jurisdiction	RCV of Critical Infrastructure in SFHA	RCV of Critical Infrastructure in Zone A	RCV of Critical Infrastructure in Zone V
Union Township	$367,915.97	$367,915.97	$0.00
Westfield Town	$0.00	$0.00	$0.00
Winfield Township	$0.00	$0.00	$0.00
Union County Total	$412,271,004.64	$412,271,004.64	$0.00

Source: 2018 FEMA DFIRM and PFIRM Flood Zone Composite, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities, 2020 NJOGIS, 2020 NJ Division of Taxation

7.10 HAIL

7.10.1 HAZARD DESCRIPTION

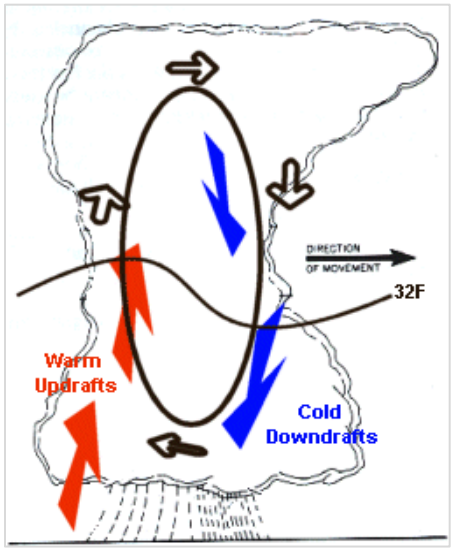
Hail is defined as balls or pieces of ice falling as precipitation from a thunderstorm. Known as hailstones, these ice balls typically range from 5 mm-50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the storm.

Hail is an outgrowth of severe thunderstorms and develops within a low-pressure front as warm air rises rapidly into the upper atmosphere and is subsequently cooled, as shown in **Figure 7.10-1 How Hail is Formed**, leading to the formation of ice crystals. According to FEMA, these are bounced about by high-velocity updraft winds and accumulate into frozen droplets, falling as precipitation after developing enough weight. The National Weather Service (NWS) defines severe thunderstorms as those with downdraft winds in excess of 58 mph and/or hail at least .75″ in diameter. While only about 10% of thunderstorms are classified as severe, all thunderstorms are dangerous because they produce numerous dangerous conditions, including one or more of the following: hail, strong winds, lightning, tornadoes, and flash flooding.

Hailstorms occur most frequently during the late spring and early summer. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation.

The size of hailstones varies and is related to the severity and size of the thunderstorm that produced it. The higher the temperatures at the earth's surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended, giving the hailstones more time to increase in size. Hailstones vary widely in size, as shown in **Table 7.10-1 Estimating Hail Size**. Note that penny size (.75″ in diameter) or larger hail is considered severe.

FIGURE 7.10-1 HOW HAIL IS FORMED



Source: NOAA

TABLE 7.10-1 ESTIMATING HAIL SIZE

Size	Inches in Diameter
Pea	.25 inch
Marble/mothball	.50 inch
Dime/Penny	.75 inch
Nickel	.875 inch
Quarter	1 inch
Ping-Pong Ball	1.5 inches
Golf Ball	1.75 inches
Tennis Ball	2.5 inches
Baseball	2.75 inches
Tea Cup	3 inches
Grapefruit	4 inches
Softball	4.5 inches

Source: NOAA

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FIGURE 7.10-2 LARGE HAILSTONE

Source: NOAA

7.10.2 LOCATION

Hailstorms occur more frequently during the late spring and early summer, when the jet stream migrates northward across the Great Plains. This period has extreme temperature changes from the ground surface upward into the jet stream, which produces the strong updraft winds needed for hail formation. The land area affected by individual hail events is not much smaller than that of a parent thunderstorm, an average of 15 miles in diameter around the center of a storm.

The potential for hail exists over the entire planning area, although the probability is relatively low compared to other parts of the U.S. There are at least a few occurrences of hail almost every year in the planning area, although for the most part they are minor.

7.10.3 EXTENT

The severity of hailstorms is measured by duration, size of the hail itself, and geographic extent. All of these factors are directly related to the weather phenomena that create the hail that occurs as part of thunderstorms. The National Weather Service (NWS) and the Tornado and Storm Research Organization (TORRO) have developed tables measuring the intensity of hail. **Table 7.10-2 Hail Intensity Scales** below combines the two intensity scales.

TABLE 7.10-2 HAIL INTENSITY SCALES

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
HO	Hard Hail	Up to 0.33	Pea	No Damage
H1	Potentially Damaging	0.33 - 0.66	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60 -0.80	Dime or Grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80 – 1.20	Nickel to Quarter	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1.2 – 1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork damage

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H5	Destructive	1.6 – 2.0	Silver Dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0 – 2.4	Lime or Egg	Aircraft bodywork dented, brick walls pitted
H7	Very Destructive	2.4 – 3.0	Tennis Ball	Severe roof damage, risk of serious injuries
H8	Very Destructive	3.0 – 3.5	Baseball to Orange	Severe damage to aircraft body
H9	Super Destructive	3.5 – 4.0	Grapefruit	Extensive structure damage. Risk of severe or even fatal injuries to persons caught in open
H10	Super Destructive	4+	Softball and up	Extensive structure damage. Risk of severe or event fatal injuries to persons caught in open

Source: NWS, TORRO – Tornado and Storm Research Organization

The planning area has a relatively low potential for significant hail events, based on previous records. Hailstorms affect areas within Union County equally and uniformly. Although the severity or extent of hailstorms is potentially as much as H-10 (Super Destructive) in the table above, events in the middle of the range are much more likely. Extreme hail events are usually localized, but the entire planning area can be considered about at equal risk. There is fairly high potential every year for smaller events lower on the scale above, with damage to exposed automobiles, trees and plants being the main kinds of effects.

7.10.4 PREVIOUS OCCURRENCES AND LOSSES

NCEI reported 18 hail events in Union County from the period 1950 through 2013. Hailstone sizes from the 18 events ranged in diameter from 0.75 inches to 1.75 inches. The SHELDUS database was also queried for the same time period and identified six additional events, all prior to 1980. According to the NCEI Storm Events database, there has been one hail event in Union County between 2013 and 2020. On October 30, 2016, thunderstorms produced penny sized hail (0.75 in. diameter) north of Cranford Township. No death, injuries, or property damage associated with this event was reported.

7.10.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of 25 previous hail events in Union County between 1950 and 2020, the County experiences a hail event on average about once every 2.8 years. With one event every 2.8 years, there is roughly an 89% probability of at least one hail event occurring in Union County in the next five years. Based on historical records from the NCEI database, the future probability of hail events in Union County is relatively high.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.10.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of hail events.

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7.10.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

The State HMP reports that scientists at the National Aeronautics and Space Administration (NASA) suggest that climate change will increase the frequency of severe thunderstorms in the United States, and that these thunderstorms may bring with them deadly lightning, damaging hail, and the potential for tornadoes. Please refer to Section 7.13.6 for a discussion of the effects of climate change on thunderstorms.

7.10.7 VULNERABILITY ASSESSMENT

There are no known instances of injuries or death from hail events in Union County. The SHELDUS database indicates property damage in Union County from hail events totaled $9,732 (none reported from NCEI). Presumably there are some damages, but most of these are likely addressed by citizens or insurance companies, and therefore there is no readily available open source record of damages.

All of Union County is subject to occasional hail. With rare exceptions there are no significant or long- term damages fairly often and has the potential to affect nearly anyone in the jurisdiction. The County- wide potential impact of the hail hazard is very small, however, as evidenced by historical records, which show little or no specific damage from hail. This is typical of such relatively minor hazards. In the case of hail, most losses are expected to be damage to vehicles. In such cases, automobile owners often make insurance claims, but such data sets are proprietary and not available for use in this plan. There are no significant vulnerabilities to structures from the hail hazard, and no expected recurrent losses, except occasional and relatively light damage to vehicles.

7.11 HAZARDOUS MATERIALS RELEASE–FIXED SITE

7.11.1 HAZARD DESCRIPTION

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in plants. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines. This section deals those hazardous materials that occur at facilities are which are known as fixed site. The next section, 7.12 Hazardous Materials Release-Transportation, deals with hazardous materials as they relate to transportation routes (off-site).

Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry-cleaning establishments or gardening supply stores. Although there are a number of Federal laws that regulate hazardous materials, including: the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Resource Conservation and Recovery Act of 1976, the Hazardous Materials Transportation Act, the Occupational Safety and Health Act, the Toxic Substances Control Act, and the Clean Air Act, accidents can and do happen.

Incidents related to the release of hazardous materials can occur as a result of human carelessness, technological failure, intentional acts, and natural hazards. When caused by natural hazards, these incidents are known as secondary hazards, whereas intentional acts are terrorism. Hazardous materials releases, depending on the substance involved and type of release, can directly cause injuries and death and contaminate air, water, and soils. While the probability of a

major release at any particular facility or at any point along a known transportation corridor is relatively low, the consequences of releases of these materials can be very serious.

In 1986, Congress passed the SARA of 1986. Title III of this legislation requires that each community establish a Local Emergency Planning Committee (LEPC) to be responsible for developing an emergency plan for preparing for and responding to chemical emergencies in that community. This emergency plan must include the following: an identification of local facilities and transportation routes where hazardous material are present; the procedures for immediate response in case of an accident (this must include a community-wide evacuation plan); a plan for notifying the community that an incident has occurred; the names of response coordinators at local facilities; and a plan for conducting exercises to test the plan. The plan is reviewed by the State Emergency Response Commission and publicized throughout the community. The LEPC is required to review, test, and update the plan each year.

7.11.2 LOCATION

Although there is no single, comprehensive source of open-source information about hazardous materials in the state, there are Source that can be queried, and the results combined into a common summary. These Source include the US Environmental Protection Agency's Toxic Release Inventory database, and the Right-to-Know (RTK) network (which also acts as a switchboard for access to several other related databases.

In 2007 the BRS was replaced with the RCRAInfo. The new reporting system no longer reports biennially, but cumulative. **Table 7.11-1 Union County Resource Conservation and Recovery Act (RCRAInfo) Hazardous Waste Summary** summarizes the number of active hazardous waste handlers in Union County. Please note that Murray Hill neighborhood contains portions of both Berkeley Heights Township and New Providence Borough. **Table 7.11 Union County Resource Conservation and Recovery Act (RCRAInfo) Hazardous Waste Summary** includes only the Union County jurisdictions that contain active hazardous waste handlers as reported by the USEPA RCRAInfo database.

TABLE 7.11-1 UNION COUNTY RESOURCE CONSERVATION AND RECOVERY ACT (RCRAINFO) HAZARDOUS WASTE SUMMARY

Jurisdiction	Active Hazardous Waste Handlers
Berkeley Heights Township	14
Clark Township	18
Cranford Township	18
Elizabeth City	127
Fanwood Borough	2
Garwood Borough	18
Hillside Township	38
Kenilworth Borough	28
Linden City	133
Mountainside Borough	10
Murray Hill Neighborhood	8
New Providence Borough	7

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Jurisdiction	Active Hazardous Waste Handlers
Plainfield City	26
Rahway City	35
Roselle Borough	22
Roselle Park Borough	7
Scotch Plains Township	12
Springfield Township	32
Summit City	26
Union Township	94
Westfield Town	16
Total	691

Source: USEPA. 2020. Envirofacts RCRAInfo Search Results

The USEPA maintains the National Priorities List (NPL), which is the list of sites of national priority among the known or threatened releases of hazardous substances, pollutants, or contaminants in the United States. The USEPA's Superfund Enterprise Management System database includes both active and archived NPL and non-NPL sites. Archived sites are those that have no further interest under the Federal Superfund Program. Active sites are those at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted under the Superfund Program. As of October 30, 2020, there are 117 active and archived NPL and non-NPL sites in Union County in the USEPA's Superfund Enterprise Management System. Of these 117 sites, 83 sites are archived, and 34 sites are active. Of the 34 active sites, only 2 are NPL sites: Chemical Control in Elizabeth City and LCP Chemicals Inc. in Linden City. Human exposure is under control at both sites.

The New Jersey Department of Environmental Protection (DEP) maintains the Known Contaminated Sites List (KCSNJ) for New Jersey, which contains sites and properties with confirmed soil or groundwater contamination equal to or greater than applicable standard; remediation at these sites is either is either required, underway, or completed. This list is uploaded daily. As of September 30, 2020, there are 1,006 known contaminated sites in Union County. **Table 7.11-2 Known Contaminated Sites in Union County as of 09/30/2020** shows the number of Known Contaminated Sites in Union County by municipality.

TABLE 7.11-2 KNOWN CONTAMINATED SITES IN UNION COUNTY AS OF 09/30/2020

Jurisdiction	Number of Sites
Berkeley Heights Township	17
Clark Township	24
Cranford Township	38
Elizabeth City	239
Fanwood Borough	15
Garwood Borough	15
Hillside Township	59
Kenilworth Borough	36
Linden City	136
Mountainside Borough	5
New Providence Borough	19
Plainfield City	56
Rahway City	56
Roselle Borough	33
Roselle Park Borough	17
Scotch Plains Township	16
Springfield Township	33
Summit City	33
Union Township	124
Westfield Town	35
Winfield Township	0
Total	1,006

Source: DEP 2020, Known contaminated site list for new jersey

7.11.3 EXTENT

The severity of a hazardous material release relates primarily to its impact on human safety and welfare and on the threat to the environment.

Threat to Human Safety and Welfare

- Poisoning of water or food Source and/or supply
- Presence of toxic fumes or explosive conditions
- Damage to personal property
- Need for the evacuation of people
- Interference with public or commercial transportation

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Threat to the environment

- Injury or loss of animals or plants or habitats that are of economic or ecological importance such as: commercial, recreation, or subsistence fisheries (marine plants, crustaceans, shellfish, aquaculture facilities) or livestock; seal haul outs; and marine bird rookeries
- Impact to recreational areas such as public beaches
- Impact to ecological reserves, forests, parks, archaeological and cultural sites

One method of classifying incident severity is by ranking from 1 to 4, with a "Level 1" incident considered minor; a "Level 2," moderate; a "Level 3," major; and a "Level 4" severe. Thresholds depend on the type of incident and hazards. Incidents categorized as minor or moderate are often associated with known hazardous materials and limited in the area impacted. Incidents categorized as major or severe are typically associated with a fire, explosion, or toxic cloud that impacts a large area, possibly disrupting essential services. Events of this magnitude present an immediate danger to the public, potentially causing deaths and injuries and may require the evacuation of large numbers of the population. Emergency response by local agencies will require assistance from outside resources to adequately respond to the incident.

In Union County the severity of hazardous material releases can be ranked by several methods. The EPA Toxic Release Inventory database within the Right-to-Know Network described above ranks the top cities for on-site releases, the top chemicals released, and the top companies for releases. The results from the TRI database show that the Linden City released just over 93.2 million pounds between 1987 and 2011, followed by the Rahway City with slightly more than 9.7 million pounds. The top chemical released during this same time period was hydrochloric acid.

7.11.4 PREVIOUS OCCURRENCES AND LOSSES

To identify past occurrences for fixed sites in Union County, the Toxic Release Inventory Explorer database was queried from the EPA's website. Beginning in 1986, as part of the Emergency Planning and Community Right-to-know Act (EPCRA), certain industries as well as federal facilities have been required to report the locations and quantities of chemicals stored on-site to state and local governments in order to help communities prepare to respond to chemical spills and similar emergencies. According to the EPA Toxic Release Inventory Program, EPCRA Section 313 requires the EPA and the States to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities and make the data available to the public as part of the Toxics Release Inventory. In 1990 Congress passed the Pollution Prevention Act that required that additional data on waste management and source reduction activities be reported under the TRI program.

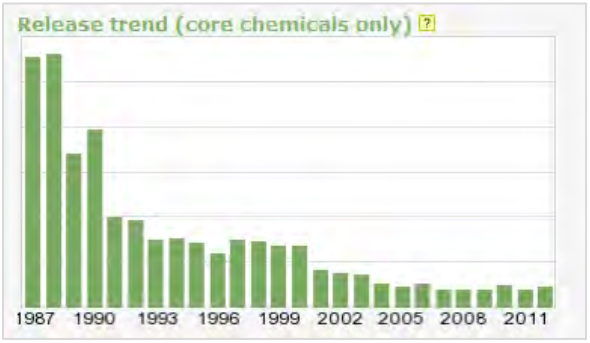
For the 2016 HMP update, the TRI database was queried for the years 2000 through 2012 for Union County. The results of the query can be found in the 2016 HMP update. The total onsite and off-site disposal or releases is reported in pounds and includes facilities for all industries and chemicals in Union County. The table results show the number of facilities reported in the TRI database for Union County declined from a high of 54 in 2001 to 33 in 2011. The quantity of the combined on and off- site disposal and releases also declined from a high of just over 3.9 million pounds in 2000 to slightly more than 2.7 million pounds in 2009. Although the total pounds released have varied by year, the overall trend has been downward over the 12-year period.

The details for each year can be found by querying the TRI Explorer database within the EPA's website. To query the database, navigate to the EPA -TRI home page located at

http://www.epa.gov/tri and select “Get TRI Data” from the menu on the left side of the page. Then select the link “TRI Explorer”, and “Facility” from the report menu.

The reduction in releases for Union County can also be show graphically by displaying the TRI trend for a list of core chemicals during the period 1987 to 2012. For standard comparison purposes, the core chemical list excludes chemicals that have been added or removed within the reporting period. The core chemical restriction is applied to all RTK bar charts that display yearly trends. **Figure 7.11-1 Union County Toxic Release Inventory Trend (Core Chemicals): 1987-2011** illustrates that from 1987-2012, the pounds released in Union County dramatically reduced from the peak in 1987 and 1988. The downward trend continued in the 1990’s and 2000’s, remaining fairly consistent for years 2005 - 2011.

FIGURE 7.11-1 UNION COUNTY TOXIC RELEASE INVENTORY TREND (CORE CHEMICALS): 1987 – 2011



Source: Right-to-Know Network – Toxic Release Inventory

For the 2021 HMP update, the TRI database was queried for the years 2013 through 2019 for Union County. The results have been aggregated by jurisdiction rather than by year and are reported in **Table 7.11-3 Union County Toxic Release Inventory: 2013-2019 Summary of On-Site and Off-Site Reported, Disposed of, or Otherwise Released (in Pounds)**. Please note that only jurisdictions with facilities identified in the TRI database are reported. During the 6-year period from 2013 to 2019, Union County facilities released nearly 24 million pounds. The highest quantity of release during this time period was in Linden City, with over 23 million pounds released in this jurisdiction alone.

TABLE 7.11-3 UNION COUNTY TOXIC RELEASE INVENTORY: 2013 – 2019
SUMMARY OF ON-SITE AND OFF-SITE REPORTED, DISPOSED OF, OR OTHERWISE RELEASED (IN POUNDS)

Jurisdiction	Total On-Site Release (pounds)	Total Off-Site Release (pounds)	Total On- and Off-Site Release (pounds)
Linden City	21,811,695	1,309,255	23,120,950
Elizabeth City	2,361	595,510	597,871
Union Township	13,716	101,402	115,118
Roselle Borough	28	40,642	40,670
Rahway City	23,577	814	24,391
Kenilworth Borough	9,876	1,831	11,707
Clark Township	10,307	698	11,005
Springfield Township	0	1	1

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Jurisdiction	Total On-Site Release (pounds)	Total Off-Site Release (pounds)	Total On- and Off-Site Release (pounds)
Hillside Township	0	0	0
Union County Total	21,871,560	2,050,152	23,921,712

Source: US EPA – Toxic Release Inventory Database, November 2020

7.11.5 PROBABILITY OF FUTURE OCCURRENCES

Based on the intensity of mixed land use in Union County (including heavy industrial and commercial uses), the likelihood that hazardous material incidents will continue to occur is high within the planning area, particularly in the eastern areas of Linden and Rahway, where there is a great deal of materials and infrastructure related to the chemical industry.

7.11.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the State HMP, hazardous materials release incidents are non-natural and therefore are not directly impacted by climate change. While secondary impacts like excessive heat on containers may be exacerbated by climate change, normal temperature fluctuations can have a similar impact on the potential for hazardous materials release.

7.11.7 VULNERABILITY ASSESSMENT

Hazardous materials incidents (fixed sites) refer to uncontrollable releases of hazardous materials at a facility, which poses a risk to the health, safety, property, and the environment (MSP/EMD). The most well-known example of a large-scale fixed-site hazardous materials incident is that which occurred at the Union Carbide plant in Bhopal, India in 1984. This incident caused 2,500 deaths and injuries to many others. Although incidents of this scale are fairly rare, smaller-scale incidents - those requiring a response and evacuation or other protective measures - are relatively common.

While there is potential for all residents of Union County to be adversely affected by hazardous materials releases, the majority of the risk is for those who are near potential release sites when events occur. The near- and long-term implications of exposure to hazardous materials depend on the type, concentration and amount of material to which someone is exposed. Other risk factors include the duration of the exposure and the time required to receive treatment.

There are significant and potential long-term damages associated with this hazard, although these must be characterized on a case-by-case basis, depending on a range of factors. This hazard was prioritized by the Steering Committee as high, because the County has numerous sites where unintentional releases are at least possible. There are no significant vulnerabilities to structures from hazardous materials releases.

7.12 HAZARDOUS MATERIALS RELEASE - TRANSPORTATION

7.12.1 HAZARD DESCRIPTION

Hazardous materials release-transportation incidents refer to uncontrollable releases of hazardous materials during transport, which pose a risk to the health, safety, property, and the environment. Small-scale incidents– those that require a response and implementation of evacuation procedures or other protective actions–are somewhat common along major US highways but can also occur through other modes of transportation including rail, water transport (shipping and ferries), air, and pipelines.

As described in Section 7.11 Hazardous Materials Release-Fixed Site, hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in plants. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

Data collected by the United States Department of Transportation (USDOT) in **Table 7.12-1 Hazardous Material Incidents by Transportation Mode Totals, 1998-2007** below shows that transportation related hazardous materials incidents are much more likely to occur on highways than through any other mode of transportation.

TABLE 7.12-1 HAZARDOUS MATERIAL INCIDENTS BY TRANSPORTATION MODE TOTALS, 1998-2007

Mode of Transportation	Number of Incidents	Associated Deaths	Associated Injuries	Damages
Air	13,558	0	152	$2,486,833
Highway	146,425	124	1,542	$446,482,507
Railway	8,633	17	1,101	$176,044,545
Water	280	0	20	$3,862,240
Total	168,896	141	2,815	$628,876,125

Source: Hazardous Materials Information System, USDOT

A one-mile radius around major transportation routes is often delineated as areas of risk if a hazardous materials incident occurs on a roadway. This demonstrates that residents and businesses near these roadways are also at risk, as chemical spills on transportation routes can impact the immediate vicinity via land, water, or air. However, incidents are not contained to these areas. There are often secondary impacts on the community following such an incident, including significant traffic congestion due to closed roadways.

7.12.2 LOCATION

In Union County, hazardous materials are transported along state and county highways, railways, utility transmission pipelines and vessels traveling navigable waterways. In addition, chemicals can also be transported throughout Union County and the region by air transportation. As shown in the list of past occurrences, the county is most vulnerable from accidents related to surface transportation mainly along Interstate 95 (NJ Turnpike).

7.12.3 EXTENT

Similar to the fixed site hazardous material releases, the severity of a hazardous material release relates primarily to its impact on human safety and welfare and on the threat to the environment. Releases are generally measured by volume and specific characteristics of the material in question.

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Threat to Human Safety and Welfare

- Poisoning of water or food Source and/or supply
- Presence of toxic fumes or explosive conditions
- Damage to personal property
- Need for the evacuation of people
- Interference with public or commercial transportation

Threat to the Environment

Injury or loss of animals or plants or habitats that are of economic or ecological importance such as commercial, recreation or subsistence fisheries (marine plants, crustaceans, shellfish, aquaculture facilities) or livestock; seal haul outs; and marine bird rookeries

- Impact to recreational areas such as public beaches
- Impact to ecological reserves, forests, parks, archaeological and cultural sites

One method of classifying incident severity is by ranking from 1 to 4, with a "Level 1" incident considered minor; a "Level 2", moderate; a "Level 3," major; and a "Level 4" severe. Thresholds depend on the sort of incident and hazards. Incidents categorized as minor or moderate are often associated with known hazardous materials and limited in the area impacted. Incidents categorized as major or severe are typically associated with a fire, explosion, or toxic cloud that impacts a large area, possibly disrupting essential services. Events of this magnitude present an immediate danger to the public, potentially causing deaths and injuries and may require the evacuation of large numbers of the population. Emergency response by local agencies will require assistance from outside reSource to adequately respond to the incident.

7.12.4 PREVIOUS OCCURRENCES AND LOSSES

For the 2016 HMP update, to identify past hazardous material transportation incidents for Union County, the EPA Emergency Response Notification System (ERNS) database was queried from the Right-to-Know website. The ERNS database is a database of incidents (spills and accidents) reported to the National Response Center. The National Response Center is operated by the U.S. Coast Guard and has become the central point of contact used for the reporting of many different kinds of incidents involving hazardous materials. The database includes 12 incident types including vessels (ships), railroads, pipelines, and surface transportation.

As part of the Plan update the database was queried between 1982 and 2012 the range of years available in the database. The query results indicated there have been 2,258 hazardous material incidents, 114 injuries, and 28 fatalities over this 20-year period. The total reported property damage during this time period was $675,000. The results of the query are shown in Figure 4-26 in the 2016 HMP update.

As shown in the 2016 HMP update, the Linden City consistently appears as one of the communities with the highest amounts of hazardous materials generated and handled. The jurisdiction is also the site of numerous transportation-related hazmat incidents. As part of the 2010 Plan, the original mitigation planning team also reviewed other records provided by the Linden City and Union County as part of the planning process, including a database provided by the County (in spreadsheet format) that listed fixed-site hazmat incidents in the County in 2004 and 2005. Again in this case, the Linden City had more incidents reported in the database than other jurisdictions. Presumably the numbers incidents correlate with the amount of hazardous materials in the county

(and by extension with the amounts of materials being transported), there may be a need for additional and more rigorous study of the nature and location of incidents. The Linden City and/or the County may wish to consider developing a more robust database to track additional details and metrics related to hazmat release incidents, with the purpose of (1) identifying any patterns that may exist [and that are not evident from reviewing existing information] and (2) developing plans or specific mitigation actions to reduce risks in the future.

For the 2021 HMP update, the USDOT Pipeline and Hazardous Materials Safety Administration (PHMSA) Hazmat Incident Report Tool was used to determine previous occurrences of hazardous materials release in Union County. PHMSA tracks hazardous materials incidents and reports incident data and summary statistics for current and previous years based on Hazardous Materials Incident Report Form 5800.1. The Hazmat Incident Report Tool was queried for hazardous materials release incidents during transportation in Union County, NJ. There have been 115 hazardous materials incidents in Union County from January 2013 to October 29, 2020. Of these incidents, 71 have occurred in Elizabeth City and 22 in Linden City. There have been no injuries or fatalities during this time. Of these incidents, 80 have occurred on highways, 31 have occurred in air travel, 3 have occurred on rail and 1 have occurred during water travel.

Please note that **Table 7.12-2 USDOT PHMSA Hazardous Materials Incident Report Summary for Union County, 2012-2020** only includes municipalities in which there have been historical hazardous materials incidents.

TABLE 7.12-2 USDOT PHMSA HAZARDOUS MATERIALS INCIDENT REPORT SUMMARY FOR UNION COUNTY, 2012-2020

Jurisdiction	Number of Incidents	Total Damages
Elizabeth City	71	$47,291
Linden City	22	$288,340
Union Township	8	$8,193
Rahway City	7	$20,271
Summit City	3	$51,301
Hillside Township	1	$2,500
Kenilworth Borough	1	$38,500
Plainfield City	1	$5,000
Springfield Township	1	$48,000
Union County Total	115	$509,396

Source: USDOT PHSA. October 30, 2020. Hazmat Incident Report Tool.

7.12.5 PROBABILITY OF FUTURE OCCURRENCE

The 2016 HMP update reported 1,340 hazardous materials release incidents related to transportation between 1982 and 2012. Between 2013 and October 30, 2020, Union County experienced another 115 incidents. With a total of 1,455 past hazardous material (transportation) incidents in Union County between 1982 and 2020, there is a 100% annual probability of a future transportation related hazardous material events occurring somewhere in Union County.

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7.12.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

Please refer to section 7.11.6 Potential Effects of Climate Change.

7.12.7 VULNERABILITY ASSESSMENT

The 2016 HMP update shows the reported hazardous materials incidents nationwide by category between 2004 and 2013. Within the graphic, the highway transportation related incidents are shaded light green. This data shows that the vast majority of hazardous materials incidents relate to highway born transport.

The data also visually demonstrates that the number of hazardous materials incidents peaked during years 2006 and 2007, gradually increasing from 2009 to 2013. As northeastern New Jersey, and Union County, continue to grow and maintain their importance as part of a transportation corridor, the likelihood for transportation-related hazardous materials releases will continue to grow.

While there is potential for all residents of Union County to be adversely affected by hazardous materials releases, the majority of the risk is for those who are near potential release sites when events occur. The near- and long-term implications of exposure to hazardous materials depend on the type, concentration and amount of material to which someone is exposed. Other risk factors include the duration of the exposure and the time required to receive treatment.

There are significant and potential long-term damages associated with this hazard, although these must be characterized on a case-by-case basis, depending on a range of factors. This hazard was prioritized by the Steering Committee as high, because the County has numerous sites where unintentional releases are at least possible. There are no significant vulnerabilities to structures from hazardous materials releases.

7.13 HIGH WIND–STRAIGHT-LINE WINDS (INCLUDES HURRICANES, NOR'EASTER, TROPICAL STORMS, THUNDERSTORMS)

7.13.1 HAZARD DESCRIPTION

For the purpose of this hazard mitigation plan, straight-line winds are defined as all winds that are not related to tornadoes. This includes winds from hurricanes, nor'easters, tropical storms, and thunderstorms. The first three hazards noted here can all be categorized as tropical cyclones and are defined as originating over tropical/subtropical waters and having an organized, cyclonic surface wind circulation. Hurricanes are defined as warm-core tropical cyclones with wind speeds of at exceeding 74 mph. Nor'easters are cyclonic storms that typically track up the east coast of the U.S., (often in winter) and often are first felt as a northeast wind. Tropical storms are warm-core tropical cyclones with sustained winds of at least 39 mph (but less than hurricane force winds). Thunderstorms are local storms produced by cumulonimbus clouds, and always accompanied by lightning and thunder. Notably, the first three of these hazards (in particular hurricanes and tropical storms) are measured and categorized primarily by their wind speed. This is also the case with thunderstorms, although as with the other hazards, their severity is also measured by rainfall. These four wind hazards are differentiated from tornadoes in that they are characterized by winds that tend to be in one general direction, rather than by highly localized, high-intensity cyclonic wind flows, as is the case with tornadoes (although in many cases the other events spawn tornadoes).

Wind is the uneven horizontal movement of air resulting from the irregular heating of the earth's surface. It can range from local breezes produced by heat from land surfaces and lasting tens of minutes to powerful global winds resulting from solar heating of the earth. Severe winds typically result from hurricanes, nor'easters, tropical storms, tornadoes, thunderstorms, or winter storms.

Hurricanes, tropical storms, and typhoons, collectively known as tropical cyclones, are among the most devastating naturally occurring hazards in the United States. They present flooding, storm surge, and high wind hazards to the communities that they impact. A hurricane is defined as a low-pressure area of closed circulation winds that originates over tropical waters. A hurricane begins as a tropical depression with wind speeds below 39 mph. As it intensifies, it may develop into a tropical storm, with further development producing a hurricane. **Table 7.13-1 Hurricane Development** below identifies the criteria for each stage of development.

TABLE 7.13-1 HURRICANE DEVELOPMENT

Stage of Development	Criteria
Tropical Depression (development)	Maximum sustained surface wind speed is < 39 mph
Tropical Storm	Maximum sustained surface wind speed ranges from 39 mph- <74 mph
Hurricane	Maximum sustained surface wind speed is at least 74 mph
Tropical Depression (dissipation)	Decaying stages of a cyclone in which maximum sustained surface wind speed has dropped below 39 mph

Source: NOAA-Hurricane Basics

Hurricanes develop from tropical cyclones, which are any type of tropical system that achieves a rotation to it. Three types of tropical cyclones that increase in intensity follow:

1. Tropical Depression. A tropical system that is made up of a large cluster of thunderstorms and has wind speeds between 23 mph and 39 mph. If a tropical depression gathers strength, it can become a tropical storm.
2. Tropical Storm. Any type of tropical system with a notable rotation and wind speeds between 39 mph and 74 mph. When a tropical storm forms, the National Hurricane Center (NHC) assigns it a predetermined name. If a tropical storm continues to gather strength, it will become a hurricane.
3. Hurricane. When a tropical cyclone gains winds in excess of 74 mph, the storm is considered a hurricane. Hurricanes are made up of different sections, all with different wind intensity.

A nor'easter is an intense low-pressure system that typically occurs during the winter months and affects the coastal areas of the northeast United States and Atlantic Canada. More specifically, it describes a low-pressure area, where the center of rotation is just off the coast and whose leading winds in the left forward quadrant rotate onto land from the northeast. The precipitation pattern is similar to other extra-tropical storms. These events can also cause coastal flooding, coastal erosion, and gale force winds.

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7.13.2 LOCATION

The entire planning area is subject to the wind effects from hurricanes, nor'easters, tropical storms, other severe events. The hurricane and tropical storm risk in the United States extends along the entire east coast from Maine to Florida, the Gulf Coast (including Florida, Alabama, Louisiana, and Texas), and Hawaii. The northeast U.S., including New Jersey, is at a moderate risk based on historical storm tracks and the number of hurricanes that have made landfall along the Atlantic coastline. **Figure 7.13-1 Wind Zones in the United States** shows how the frequency and strength of extreme windstorms vary across the United States. This FEMA Wind Zone Map is based on a combination of all past occurrences and shows that New Jersey falls within the hurricane susceptible region (shown as cross-hatching). New Jersey is also within wind Zone II, where wind speeds can reach as high as 160 mph.

FIGURE 7.13-1 WIND ZONES IN THE UNITED STATES

Source: FEMA

The high wind risk from nor'easters extends along the entire east coast. Nor'easters typically occur during the winter months and wind speeds can potentially reach hurricane force. The entire planning area is equally at risk from severe thunderstorms.

7.13.3 EXTENT

Hurricanes and tropical storms are categorized based on their wind speed. Both bring strong winds and are characterized by torrential rain that often results in widespread damage. Hurricanes can produce both extreme high winds and heavy rains. Tropical storms are most often associated with heavy rains that have the potential to produce severe flooding.

TABLE 7.13-2 SAFFIR/SIMPSON HURRICANE SCALE

Saffir-Simpson Hurricane Scale		
Category	Wind Speed	
	mph	knots
5	≥ 156	≥ 135
4	131-155	114-134
3	111-130	96-113
2	96-110	84-95
1	74-95	65-83
Non-Hurricane Classifications		
Tropical Storm	39-73	34-64
Tropical Depression	0-38	0-33

Source: NOAA

As shown in **Table 7.13-2 Saffir/Simpson Hurricane Scale**, the Saffir/Simpson Hurricane Scale is used to classify storms by numbered categories. Hurricanes are classified as Categories 1 through 5 based on central pressure, wind speed, storm surge height, and damage potential.

Hurricane winds blow in a large spiral around a relative calm center known as the eye. The eye is generally 20 to 30 miles wide, and the storm may extend outward 400 miles. As a hurricane approaches, the skies will begin to darken and winds will grow in strength. As a hurricane nears land, it can bring torrential rains, high winds, storm surges, and severe flooding. A single hurricane can last for more than two weeks over open waters and can run a path across the entire length of the eastern seaboard. August and September are peak months during the hurricane season that lasts from June 1 through November 30.

High winds from Hurricanes and Tropical Storms are capable of imposing large lateral (horizontal) and uplift (vertical) forces on buildings. Residential buildings can suffer extensive wind damage when they are improperly designed and constructed and when wind speeds exceed design levels. The effects of high winds on a building will depend on several factors:

- Wind speed (sustained and gusts) and duration of high winds
- Height of building above the ground
- Exposure or shielding of the building (by topography, vegetation, or other buildings) relative to wind direction
- Strength of the structural frame, connections, and envelope (walls and roof)
- Shape of building and building components
- Number, size, location, and strength of openings (windows, doors, vents)
- Presence and strength of shutters or opening protection
- Type, quantity, velocity of windborne debris

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Proper design and construction of residential structures, particularly those close to water or near the coast, demand that every factor mentioned above be addressed. Failure to do so may result in building damage or destruction by wind.

The severity of the wind hazard is measured primarily by velocity, although effects are clearly exacerbated by duration and the presence of windborne debris. New Jersey is not particularly prone to high wind hazards, but occasionally tropical storms or thunderstorms are severe enough to cause moderate damage in the area. The eastern portion of Union County is potentially more vulnerable from the high winds associated with hurricanes, nor'easters, and tropical storms, which often follow along the coast.

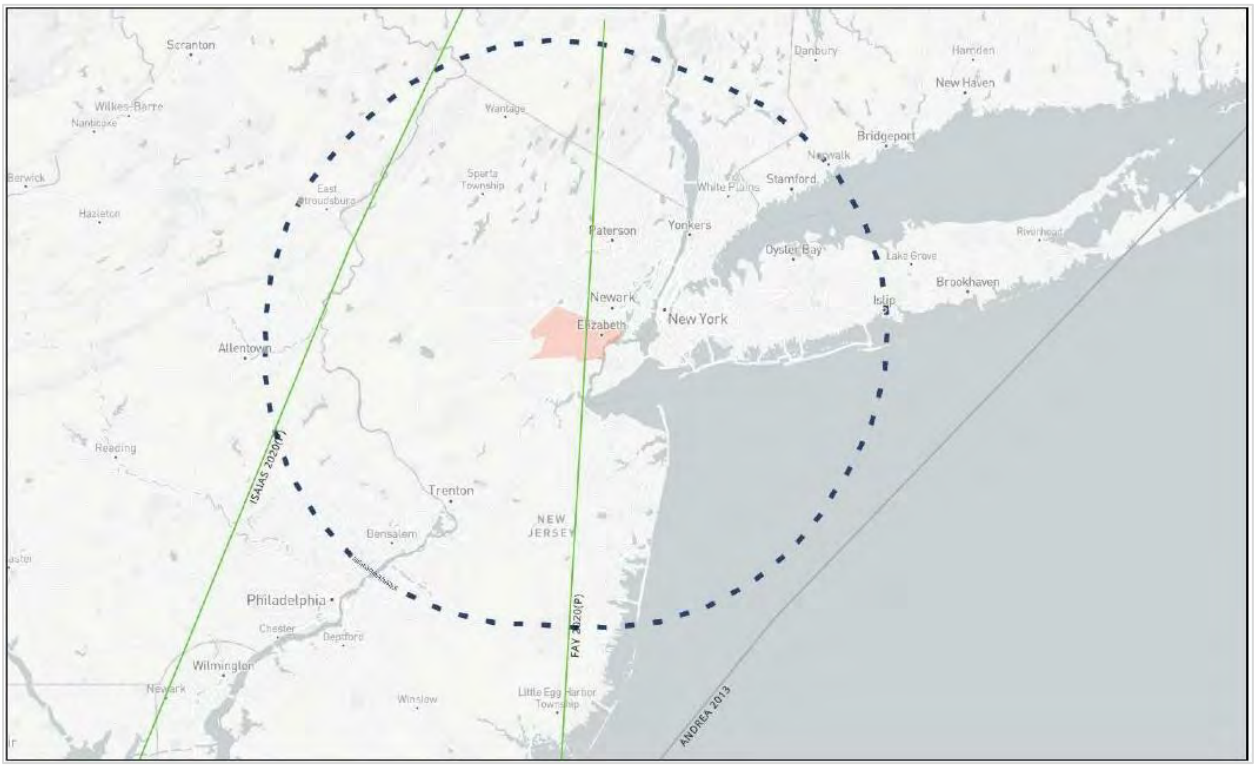
7.13.4 PREVIOUS OCCURRENCES AND LOSSES

Between 1950 and 2013, there have been numerous hurricanes, nor'easters, tropical storms, and severe storms that have impacted all or part of Union County. The NCEI database identifies that Union County has been impacted by one tropical storm event and no hurricanes between 1950 and 2013. The event listed in the database was Tropical Storm Isabel, which impacted Union County on September 18 and 19, 2003. Tropical Storm Isabel is summarized as part of the high wind events listed below. No hurricane, tropical depression, or tropical storm events were reported by the NCEI Storm Events Database from January 2013 to July 2020.

In addition to the NCEI Storm Events Database, NOAA's Historic Hurricane Tracks database was also queried to identify past hurricane events with tracks within a 65-mile radius of Union County between 1950 and 2013. The query results identified 12 hurricanes or tropical storms that impacted Union County during this time period. Most of these events were downgraded to a tropical depression or less by the time they reached New Jersey. For a table for hurricane and tropical storms that impacted Union County prior to 2013, please refer to the 2016 HMP update.

Figure 7.13-2 Hurricanes and Tropical Storms Within a 65 Mile Radius of Union County, 2013-2020 shows the 2 hurricanes and tropical storms that have impacted northern New Jersey and Union County from January 2013 to August 27, 2020: Tropical Storm Fay (2020) and Hurricane Isaias (2020). Tropical Storm Andrea (2013), an extratropical storm (gray) is also pictured in the figure below. According to the NOAA Historical Hurricane Tracks database, the path of Tropical Storm Fay went directly through eastern Union County on July 11, 2020. The map was developed using NOAA's Historic Hurricane Tracks database with the track of each storm color coded with the hurricanes' intensity (Categories 1 – 5) and tropical storm (green) as it traveled up the coastline.

FIGURE 7.13-2 HURRICANES AND TROPICAL STORMS WITHIN A 65 MILE RADIUS OF UNION COUNTY, 2013 – 2020



Source: NOAA. 2020. Coastal Service Center – Historic Hurricane Tracks database

Thunderstorms

The NCEI indicates there have been 459 thunderstorm events in the region prior to 2013. Of this total, seven events in Union County exceeded 69 mph since 1950. These seven events are summarized in the 2016 HMP update, and also includes three recent high wind events identified from the SHELDUS database. The wind speeds were unknown for these events. The following table, **Table 7.13-3 High Wind Events (Excluding Tornado Winds) Union County, 2013-2020** summarizes the 45 reported high wind, strong wind, and thunderstorm wind events from January 2013 through July 2020. As mentioned at the beginning of the assessment, Union County is divided into two zones: Western Union and Eastern Union.

TABLE 7.13-3 HIGH WIND EVENTS (EXCLUDING TORNADO WINDS) UNION COUNTY, 2013-2020

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
1/31/2013	Eastern Union	High Wind	0	0	$50,000
5/25/2013	Eastern Union	Strong Wind	0	0	$20,000
7/1/2013	Berkeley Heights Township, Summit City	Thunderstorm Wind	0	0	$50,000
9/12/2013	Berkeley Heights Township	Thunderstorm Wind	0	0	$2,000
10/7/2013	Westfield Town	Thunderstorm Wind	0	0	$500
11/1/2013	Westfield Town	Thunderstorm Wind	0	0	$3,000
1/11/2014	Eastern Union	Strong Wind	0	0	$5,000

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Date	Location	Hazard Type	Injuries	Deaths	Property Damage
7/8/2014	Cranford Township	Thunderstorm Wind	0	0	$2,000
7/23/2014	Cranford Township	Thunderstorm Wind	0	0	$2,000
8/31/2014	Springfield Township	Thunderstorm Wind	0	0	$2,000
6/28/2016	New Providence Borough	Thunderstorm Wind	0	0	$20,000
7/1/2016	Union Township	Thunderstorm Wind	0	0	$1,500
7/14/2016	Cranford Township, Fanwood Borough, Garwood Borough, Winfield Township	Thunderstorm Wind	2	0	$18,500
7/18/2016	Cranford Township, Elizabeth City, Fanwood Borough, Garwood Borough, Roselle Borough, Linden City	Thunderstorm Wind	0	0	$33,500
7/26/2016	Cranford Township, Westfield Town	Thunderstorm Wind	0	0	$3,000
10/23/2016	Eastern Union	Strong Wind	0	0	$30,000
3/2/2017	Eastern Union	Strong Wind	0	0	$10,000
6/19/2017	Elizabeth City	Thunderstorm Wind	0	0	$0
11/19/2017	Eastern Union	Strong Wind	0	0	$1,000
12/25/2017	Eastern Union	High Wind	0	0	$10,000
3/2/2018	Eastern Union	High Wind	0	0	$10,000
3/3/2018	Eastern Union	Strong Wind	0	0	$10,000
4/4/2018	Eastern Union	Strong Wind	0	0	$10,000
5/16/2018	Cranford Township	Thunderstorm Wind	1	0	$9,000
7/3/2018	Garwood Borough	Thunderstorm Wind	0	0	$1,000
7/22/2018	Eastern Union	Strong Wind	0	0	$50,000
8/3/2018	Cranford Township	Thunderstorm Wind	0	0	$2,000
9/17/2018	Summit City	Thunderstorm Wind	0	0	$5,000
11/3/2018	Western Union	Strong Wind	0	0	$50,000
1/30/2019	Eastern Union	High Wind	0	0	$10,000
2/25/2019	Eastern Union	High Wind	0	0	$50,000
6/2/2019	Mountainside Borough	Thunderstorm Wind	0	0	$10,000
6/30/2019	Cranford Township, Clark, Fanwood Borough, Garwood Borough, Plainfield City, Rahway City, Scotch Plains Township, Union Township	Thunderstorm Wind	0	0	$29,000
7/31/2019	New Providence Borough	Thunderstorm Wind	0	0	$1,000
8/7/2019	Springfield Township	Thunderstorm Wind	0	0	$7,000
8/22/2019	Roselle Borough	Thunderstorm Wind	0	0	$3,000
8/22/2019	Kenilworth Borough, Roselle Park Borough	Thunderstorm Wind	0	0	$4,000
10/16/2019	Eastern Union	High Wind	0	0	$100,000
1/8/2020	Eastern Union	Strong Wind	0	0	$50,000

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
1/12/2020	Eastern Union	Strong Wind	0	0	$50,000
1/16/2020	Eastern Union	Strong Wind	0	0	$10,000
2/7/2020	Eastern Union	Strong Wind	0	0	$50,000
4/9/2020	Linden City	Thunderstorm Wind	0	0	$0
4/13/2020	Eastern Union	High Wind	0	0	$50,000
7/23/2020	Cranford Township, Plainfield City	Thunderstorm Wind	0	0	$9,000
		Total	3	0	$844,000

Source: NOAA/NCEI. 2020. Storm Events Database.

The NWS, NOAA, and the NCEI do not specifically track nor'easter events. However, the events listed for Union County within the Ocean and Lake Surf category of the NCEI database during the 2016 HMP update along with other open data Source indicates there have been numerous nor'easters in the past that have impacted the planning area with high winds. Some of the larger nor'easter events occurred in years 1993, 1996, 2006, 2007 and 2009. An additional Nor'easter event was recorded in the NCEI Storm Events Database, classified as a Winter Storm, on January 26, 2015. This 2015 Nor'easter brought heavy snow and strong winds to eastern Union County, but no injuries, deaths, or property damage as a result of the event was reported. As mentioned above, there have been 504 thunderstorm and high wind events between 1950 and July 2020 that have impacted northern New Jersey and Union County.

Several of the hurricane, tropical storm, and nor'easter events are highlighted below.

September 27, 1985–Hurricane Gloria. After brushing the outer banks of North Carolina, the storm moved northward just off the Atlantic coast until making landfall as a Category 2 Hurricane near western Long Island, New York. Along the coastline of northern New Jersey sustained winds were approximately 80 mph with gusts over 100 mph. Hurricane Gloria caused one of the largest single power outages at the time, including about 230,000 customers in New Jersey.

October 28, 1991 (Perfect Storm). The 1991 Halloween Nor'Easter, also known as the Perfect Storm, caused strong waves of up to 30 feet (nine meters) in height. High tides along the shore were only surpassed by the 1944 hurricane, while significant bay flooding occurred. Strong waves and persistent intense winds cause extreme beach erosion. In all, damage estimates totaled $90 million (equivalent to $142 million in 2008 dollars). The event resulted in no deaths within the State of New Jersey.

March 16, 1993 (Storm of the Century). One of the most intense nor'easters to ever effect the United States. The "Storm of the Century" label was given to the event due to the record low pressure, wind speeds, temperature, and snowfall. Fallen trees from high winds left 3 million customers without electrical power.50 Wind gusts of over 70 mph were reported at New York City's LaGuardia airport.

October 18, 1996 (Nor'easter). A 5-day nor'easter that lasted from October 18– 23. Record rainfall, flooding, and high winds effected parts of New Jersey from Morris County to Camden County to Hunterdon County.

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September 18, 2003–Tropical Storm Isabel. Isabel made landfall as a hurricane near Drum Inlet, North Carolina on the September 18 and weakened as it tracked farther inland. Winds gusted were recorded up to 62 mph in New Jersey. In Union County, high winds downed numerous trees and electrical power lines, which resulted in the closure of major streets and schools. It was one of the worst power outages on record for area utilities. Jersey Central Power and Light reported that 220,000 of its customers lost power while Connectiv Energy reported about 162,000 of its customers lost power.

February 12, 2006 (Nor'easter). A Nor'easter that impacted the New Jersey shoreline with strong onshore winds that caused coastal flooding and beach erosion.

November 12-13, 2009. A powerful Nor'Easter produced wind gusts to nearly 60 mph, widespread moderate tidal flooding, heavy rain and severe beach erosion along the New Jersey coast from November 12th through the 14th. Initial damage estimates were placed at $180 million. By several measures this was one of the worst Nor'easters to affect New Jersey since 1991.

August 31, 2011 (DR-4021) – Hurricane Irene. Hurricane Irene made landfall along the Outer Banks of North Carolina on August 27, 2011 as a Category 1 hurricane. The storm re-emerged over the Atlantic and made a second landfall as a tropical storm on August 28th in the Little Egg Inlet in southeastern New Jersey. Union County experienced tropical storm force winds as a result of Irene. High winds caused widespread power outages that lasted for up to two weeks in areas that were subsequently impacted by the remnant moisture from Tropical Storm Lee several weeks later in September. An estimated 30,000 Union County residents were left without power.

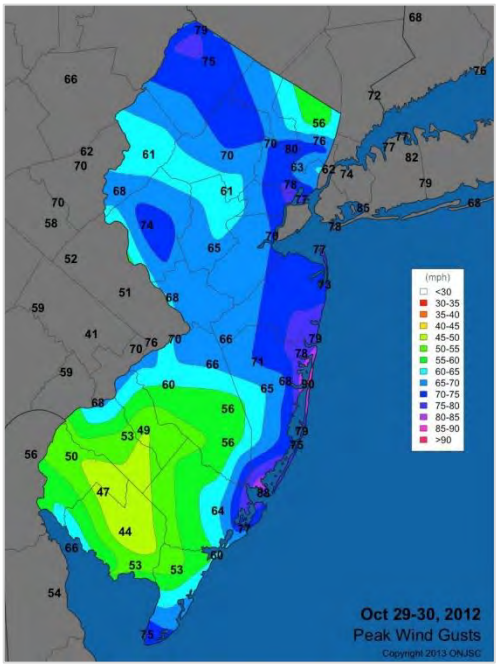
November 7, 2012 (Nor'easter). A strong Nor'Easter caused high winds along the coast, heavy snow in east central New Jersey and ten foot waves along the ocean front and minor tidal flooding along the ocean front. The event caused setbacks with restoration efforts near and along coastal areas caused by Hurricane Sandy, particularly in Monmouth and Ocean Counties. It also forced some coastal area evacuations again.

October 29, 2012 (DR-4086) - Hurricane Sandy. Sandy made landfall as a post-tropical cyclone near Brigantine, New Jersey with 80 mph maximum sustained winds on October 29, 2012 (see additional description below).

Figure 7.13-3 Sandy Peak Wind Gusts, October 29-30 2012 shows the Sandy peak wind gusts for New Jersey from October 29-30, 2012. The map shows that the peak wind gusts in northeast Union County reached 75-80 mph. The winds decreased to 70-75 mph in central Union County and 65-70 in the western half of the county. The map was produced by the Office of the New Jersey State Climatologist (ONJSC).

The Department of Energy estimates that as many as 2.6 million customers in New Jersey were without power for as long as two weeks in some jurisdictions. According to a report produced by Rutgers University about the impacts of Hurricane Sandy, the power was out the longest in Monmouth and Union Counties, losing power for an average period of ten and nine days respectively. In Union County damages to public infrastructure totaled roughly $14.7 million based on review of FEMA Public Assistance (PA) Project Worksheet (PW) records. Review of the PWs for Union County indicates the majority of the damages and cleanup costs (debris removal from public roadways) resulted from high winds associated with the event.

FIGURE 7.13-3 SANDY PEAK WIND GUSTS, OCTOBER 29-30 2012



Source: Office of the New Jersey State Climatologist (ONJSC)

Review of FEMA Public Assistance (PA) Project Worksheets (PWs) indicates that the majority of infrastructure damages in Union County were a result of high winds. **Table 7.13-4 Project Worksheet Summary for Hurricane Sandy (DR-4086) by Category** below summarizes the FEMA PWs by Category for Union County. The table shows that infrastructure damages (including debris removal and emergency protective measures) in Union County totaled slightly more than $14.7 million as of June 2014. Of this total, category A (Debris Removal) had the highest of all categories with debris removal costs totaling just over $9 million.

TABLE 7.13-4 PROJECT WORKSHEET SUMMARY FOR HURRICANE SANDY (DR-4086) BY CATEGORY

FEMA Category	Total Damages
A	$9,040,923
B	$4,943,492
C	$191,142
E	$415,742
F	$77,270

Source: FEMA Region II–Public Assistance Program

July 10, 2020-Tropical Storm Fey. Tropical Storm Fay made landfall on July 10, 2020 slightly northeast of Atlantic City, NJ. According to the summary of Tropical Storm Fey published by the National Weather Service (NWS) New York, NY, an observed 1.71 inches of rain fell between 2pm and 4pm for a total of 2.78 at Newark-Liberty International Airport. In nearby Staten Island, maximum wind gusts reached 43 mph according to unofficial observations reported by the NWS New York, NY. In Union County, a trained spotter reported a downed tree across the road near the intersection of Orange Ave and Linden Pl. in Cranford Township. No damages from this downed tree were reported.

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August 4, 2020-Tropical Storm Isaias (DR-4574). Tropical Storm Isaias passed by the New York City metro region on the afternoon of August 4, 2020 and brought with it tropical storm force winds that caused widespread damage to the region according to the summary of Tropical Storm Isaias from the NWS New York, NY. Sustained winds of 47 mph and a gust of 68 mph were measured at Newark Liberty International Airport. In Union County, NWS New York, NY reports that large tree limbs and wires fell on Crescent Place in Cranford Township. For more information about how Tropical Storm Isaias resulted in power failure across Union County, refer to Section 7.26 Power Failure in this Risk Assessment. Union County was not part of New Jersey's disaster declaration for Tropical Storm Isaias.

7.13.5 PROBABILITY OF FUTURE OCCURRENCE

The planning area has been impacted by 14 hurricanes or tropical storms over the last 70 years. On average, Union County experiences the wind effects of a hurricane every five years. With one event every five years, there is an approximately 67% probability of at least one hurricane or tropical storm event impacting Union County in the next five years. Recent hurricanes such as Sandy and Irene over the past few years suggest that future hurricanes or tropical storms are likely to affect Union County again in the future. However, as mentioned, almost all had been downgraded to tropical storm or tropical depression status by the time they reached New Jersey. In the future, Union County can be considered at moderate to high risk from experiencing the high wind effects from hurricanes and tropical storms.

The risk is also considered moderate from nor'easters. New Jersey experiences one or two storms every year that could potentially be classified as nor'easters, but not all of these are severe enough to cause significant damages or result in disaster declarations. Union County has been impacted by high winds from five nor'easters over the past 24 years. The planning area is affected by a strong nor'easter on average about every five years.

With multiple thunderstorms, high winds, and strong wind events each year, there is a 100% probability of at least one thunderstorm occurrence in Union County in the next five years. Considering the impacts from straight line winds, the Steering Committee ranked High Winds – Straight Line Winds as a high-risk hazard (See **Table 7.1-2 Union County (County-wide) Hazard Ranking Table** for a complete list of hazard rankings).

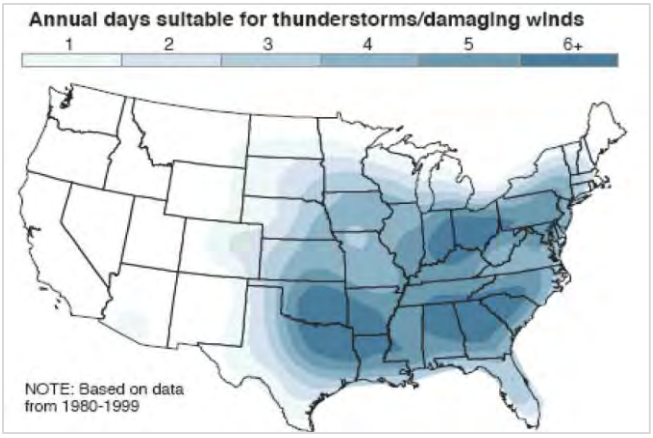
Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.13.6 Potential Effects of Climate Change below for a discussion of how climate change may change the frequency of hurricanes, tropical storms, Nor'easters, thunderstorms, and other straight-line wind events.

7.13.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to DEP's 2020 *New Jersey Scientific Report on Climate Change*, atmospheric and oceanic warming may result in increases in the frequency and intensity of storms. In particular, tropical storms gain their energy from ocean water. A warmer ocean and atmosphere increase the amount of energy in a tropical storm system and thus increases the potential for more intense tropical storms. Reduced vertical wind shear (the magnitude and directional difference between winds in the lowest region on Earth's atmosphere) may also contribute to an increase in hurricane intensity. There is greater scientific uncertainty surrounding the potential effects of climate change on nor'easters.

DEP's 2020 New Jersey Scientific Report on Climate Change states that climate change may also increase the likelihood of severe thunderstorms. The State HMP reports that scientists at the National Aeronautics and Space Administration (NASA) suggest that the United States will face more severe thunderstorms in the future, with deadly lightning, damaging hail, and the potential for tornadoes in the event of climate change. A 2007 study conducted by NASA predicts that smaller storm events like thunderstorms will also be more dangerous due to climate change. As prepared by the NWS in 2010, **Figure 7.13-4 Annual Days Suitable for Thunderstorms/Damaging Winds** identifies those areas, particularly within the eastern United States, that are more prone to thunderstorms, including New Jersey.

FIGURE 7.13-4 ANNUAL DAYS SUITABLE FOR THUNDERSTORMS/DAMAGING WINDS



Source: State HMP

7.13.7 VULNERABILITY ASSESSMENT

The NCEI Storm Events Database indicates that Union County has experienced 45 thunderstorm and high wind events between 2013 and 2020. During this period there were no deaths, 3 injuries, and $844,000 in property damage. The information in the NCEI Storm Events Database reflects a significant part of the costs of recovery from strong winds. However, there are also very significant costs associated with interrupted business, lost wages, lost tax base, etc. that are very difficult to quantify, but are nevertheless important metrics for determining the severity of the risk.

To protect life and property from wind events, all counties within the State of New Jersey, including Union County, are required to comply with the design wind loads developed by the International Building Code (IBC) and the International Residential Code (IRC). The NJDCA Division of Codes and Standards: Bulletin No. 3-4 Wind Speed Map indicates that the building code administered within the incorporated areas of Union County require all new construction to be designed and constructed to 100 mph wind loads. **Figure 7.13-5 American Society of Civil Engineers (ASCE) New Jersey Wind Zone Map** identifies the minimum design wind speeds for New Jersey.

All residents of Union County are subject to the effects of high wind. As noted elsewhere, these effects include direct impacts on specific structures and (perhaps more significantly) power interruptions. This hazard was prioritized by the Steering Committee as high, mostly because the hazard occurs regularly and affects nearly everyone in the County, particularly when there are significant hazard events like hurricanes or nor'easters, which have often resulted in long power outages related to trees falling on power lines. Potential impacts are widespread, though generally not life-threatening. Many structures in the County are vulnerable to high winds, but this is

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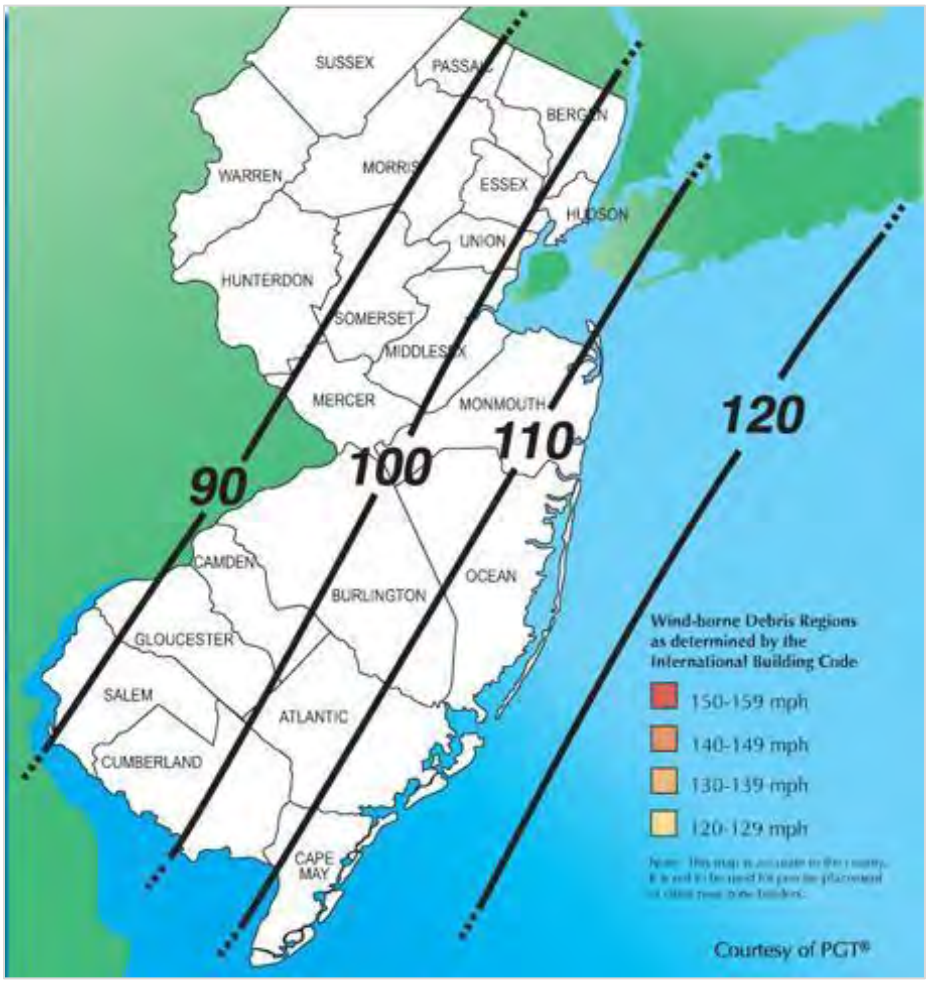
predominately related to trees and tree limbs falling on buildings, rather than direct wind damage to them. Because such losses are general borne by either property owners or insurance companies, it is generally not possible to obtain any information about wind damage to structures, except publicly owned structures.

FIGURE 7.13-5 AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) NEW JERSEY WIND ZONE MAP



Source: ASCE Minimum Design Loads for Buildings and other Structures

Risk Calculations

This subsection describes the risk assessment for the high wind–straight-line wind hazard (non-tornado). As discussed previously, this hazard category includes high winds related to hurricanes, tropical storms, nor'easters, and thunderstorms. The risk calculations are completed using both the data and methodology of FEMA HAZUS-MH. The model has been substantially improved in last several years and gives estimates for both the hazard profiles and for the risk calculations on a census-tract basis.

The first step in the risk assessment process is to determine wind profiles for the Union County. Using the probabilistic models within HAZUS-MH, the table below shows the wind hazard profiles for Union County at various frequencies:

TABLE 7.13-5 UNION COUNTY WIND HAZARD PROFILES MAXIMUM SUSTAINED WIND SPEEDS (1 MIN, OVER OPEN SURFACE)

Return Interval [years]	Maximum Wind Speed [mph]	Probability of occurrence
10	21	0.1
20	48	0.05
50	67	0.02
100	88	0.01
200	89	0.005
500	101	0.002
1000	113	0.001

Source: FEMA HAZUS-MH

The wind risk assessment for the county was then conducted using the same HAZUS-MH Hurricane Wind Module. All figures are based on 50-year and 100-year time horizon and a 7% discount rate (used to determine net present value of the risk, as required by the OMB).

A query from HAZUS model was used as the basis for total structure and content values for each land use category for Union County:

TABLE 7.13-6 UNION COUNTY: SQUARE FOOTAGE AND VALUE FOR PREDOMINANT ASSET CLASSES

Land Use Category	Total Square Footage	Structure Value (HAZUS)	Contents Value (HAZUS)
Residential	252,757,313	$33,128,555,000	$16,569,892,000
Commercial	73,158,517	$9,285,270,000	$9,780,452,000
Industrial	27,137,582	$2,871,349,000	$4,075,882,000
Agriculture	1,130,511	$97,738,000	$97,738,000
Education	4,819,935	$760,297,000	$760,297,000
Government	1,271,134	$167,709,000	$185,235,000
Religious	5,228,263	$725,907,000	$823,415,000
Total	365,503,255	$47,036,825,000	$32,292,911,000

SOURCE: HAZUS-MH 2.1

HAZUS-MH performed hurricane wind risk calculations over the suite of probabilistic storms with the above return periods and produces annualized results in various direct and indirect loss categories, over the range of seven principal occupancy classes. Based on the Federal OMB-prescribed discount rate of 7%, annualized losses were subsequently converted into 50-year and 100-year horizon projections, utilizing conversion factors of 13.80 and 14.27, respectively.

In similar fashion, risk calculations were performed for all individual jurisdictions within the Union County. A breakdown of annualized losses for the seven principal land uses in all 21 Union County municipalities is presented in the table below. For the projected losses over the 50-year and 100-year horizon, annualized damages still need to be multiplied by the factors of 13.80 and 14.27, respectively.

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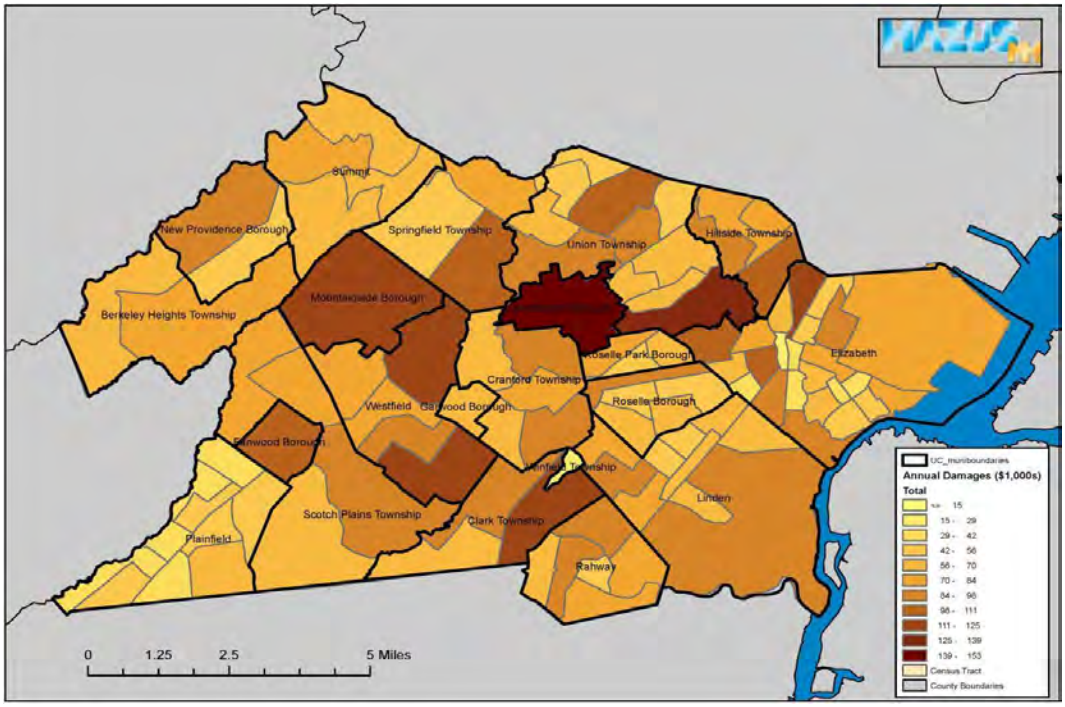
The total annualized damages, broken down by the census tract are depicted in HAZUS-MH output. Census tract 34039033600 (encompassing the entire Borough of Kenilworth) has the highest annual losses in the amount of $152,748.

FIGURE 7.13-6 ESTIMATED HURRICANE WIND RISK TO UNION COUNTY TOTAL ANNUALIZED LOSSES PER CENSUS TRACT



SOURCE: HAZUS-MH Hurricane Wind Module

TABLE 7.13-7 ESTIMATED HURRICANE WIND RISK TO UNION COUNTY ASSETS BASED ON ANNUALIZED LOSSES PER BASIC OCCUPANCY CLASS, OVER THE 50-YEAR AND 100-YEAR HORIZONS

Occupancy Class	Residential	Commercial	Industrial	Agricultural
Total SF	252,757,313	73,158,517	27,137,582	1,130,511
Annualized Building Damages	$4,557,335	$527,193	$198,546	$7,008
Annualized Contents Damages	$866,399	$244,028	$147,196	$3,572
Annualized Inventory Loss	$0	$6,866	$22,023	$423
Annualized Relocation Cost	$303,048	$83,765	$12,089	$1,024
Annualized Business Income Lost	$625	$46,917	$2,552	$61
Annualized Rental Loss	$175,233	$44,935	$2,242	$41
Annualized Lost Wages	$1,472	$50,292	$4,108	$24
Total Annualized Damages	$5,904,112	$1,003,995	$388,756	$12,153
50-year Risk	$81,482,647	$13,856,136	$5,365,223	$167,717
100-year Risk	$84,245,772	$14,326,006	$5,547,161	$173,404

Occupancy Class	Religious	Government	Education	TOTAL
Total SF	4,819,935	1,271,134	5,228,263	365,503,255
Annualized Building Damages	$36,633	$7,990	$32,936	$5,367,640
Annualized Contents Damages	$13,683	$3,808	$15,554	$1,294,240
Annualized Inventory Loss	$0	$0	$0	$29,313
Annualized Relocation Cost	$4,959	$1,774	$5,959	$412,617
Annualized Business Income Lost	$2,358	$93	$1,482	$54,089
Annualized Rental Loss	$433	$513	$325	$223,721
Annualized Lost Wages	$5,545	$5,908	$3,489	$70,837
Total Annualized Damages	$63,611	$20,086	$59,744	$7,452,457
50-year Risk	$877,897	$277,214	$824,531	$102,851,365
100-year Risk	$907,667	$286,614	$852,492	$106,339,115

SOURCE: HAZUS-MH Hurricane Wind Module

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TABLE 7.13-8 ESTIMATED HURRICANE WIND RISK TO UNION COUNTY JURISDICTIONS ANNUALIZED LOSSES PER BASIC OCCUPANCY CLASS

Municipality Name	Res.	Comm.	Industrial	Ag.	Religious	Gov.	Education	Annualized Loss
Berkeley Heights Township	$129,973	$10,311	$2,713	$269	$709	$384	$518	$144,876
Clark Township	$214,391	$33,252	$9,649	$738	$2,387	$704	$2,233	$263,355
Cranford Township	$324,985	$39,433	$18,245	$607	$2,820	$966	$9,176	$396,232
Elizabeth	$1,186,709	$273,086	$91,138	$509	$16,472	$6,148	$11,090	$1,585,151
Fanwood Borough	$93,033	$4,988	$1,254	$270	$521	$50	$142	$100,257
Garwood Borough	$46,576	$9,274	$7,222	$127	$468	$324	$288	$64,279
Hillside Township	$251,080	$48,530	$30,990	$216	$2,018	$775	$3,827	$337,437
Kenilworth Borough	$94,358	$29,853	$26,133	$502	$1,292	$28	$582	$152,748
Linden City	$491,076	$149,474	$49,281	$394	$4,474	$1,797	$2,862	$699,357
Mountainside Borough	$87,514	$14,505	$8,855	$227	$506	$199	$262	$112,067
New Providence Borough	$114,198	$12,169	$7,624	$414	$1,181	$308	$820	$136,714
Plainfield City	$368,711	$41,053	$13,817	$389	$6,374	$1,722	$8,780	$440,847
Rahway City	$335,151	$59,463	$25,212	$395	$4,535	$2,249	$3,276	$430,282
Roselle Borough	$254,345	$23,015	$23,573	$126	$1,797	$320	$1,205	$304,382
Roselle Park Borough	$164,532	$18,504	$4,937	$1,638	$661	$310	$1,016	$191,599
Scotch Plains Township	$263,222	$18,978	$2,765	$2,944	$2,700	$195	$1,441	$292,244
Springfield Township	$186,085	$35,677	$8,992	$297	$2,106	$440	$2,061	$235,657
Summit City	$228,881	$31,054	$6,242	$472	$3,140	$304	$2,326	$272,419
Union Township	$645,680	$106,780	$47,308	$924	$5,994	$842	$5,016	$812,545
Westfield Town	$409,660	$44,437	$2,784	$693	$3,349	$1,949	$2,425	$465,298
Winfield Township	$13,955	$160	$20	$0	$108	$70	$399	$14,712
Total	$5,904,112	$1,003,995	$388,756	$12,153	$63,611	$20,087	$59,744	$7,452,457

SOURCE: HAZUS-MH Hurricane Wind Module

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7.14 HIGH WIND–TORNADO

7.14.1 HAZARD DESCRIPTION

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most tornadoes do not touch the ground, but when the lower tip of a tornado touches the earth, it can cause extensive damage. Tornadoes often form in convective cells such as thunderstorms or at the front of hurricanes. According to FEMA, tornadoes may also result from earthquake induced fires, wildfires, or atomic bombs. The formation of tornadoes from thunderstorms is explained in **Figure 7.14-2 Formation of Tornadoes.**

Tornadoes in the dissipating stage can appear like narrow tubes, or ropes, twisting into all manner of curls, twists, and s-shapes. These tornadoes, such as the one pictured in Figure D-12.2-2, are roping out, or becoming a *rope tornado*. Multiple-vortex tornadoes can appear as a family of swirls circling a common center, or may be completely obscured by condensation, dust, and debris, appearing to be a single funnel. In addition to these appearances, tornadoes may be obscured completely by rain or dust. These tornadoes are especially dangerous, as even experienced meteorologists might not spot them.

Figure 7.14-1 Historic Tornado Activity in the United States, Summary per 1,000 Square Miles illustrates the frequency of tornado strikes in the United States per 1,000 square miles. While tornadoes can occur in any month and at all hours of the day or night, they occur with greatest frequency during the late spring and early summer months during late afternoon and early evening hours.

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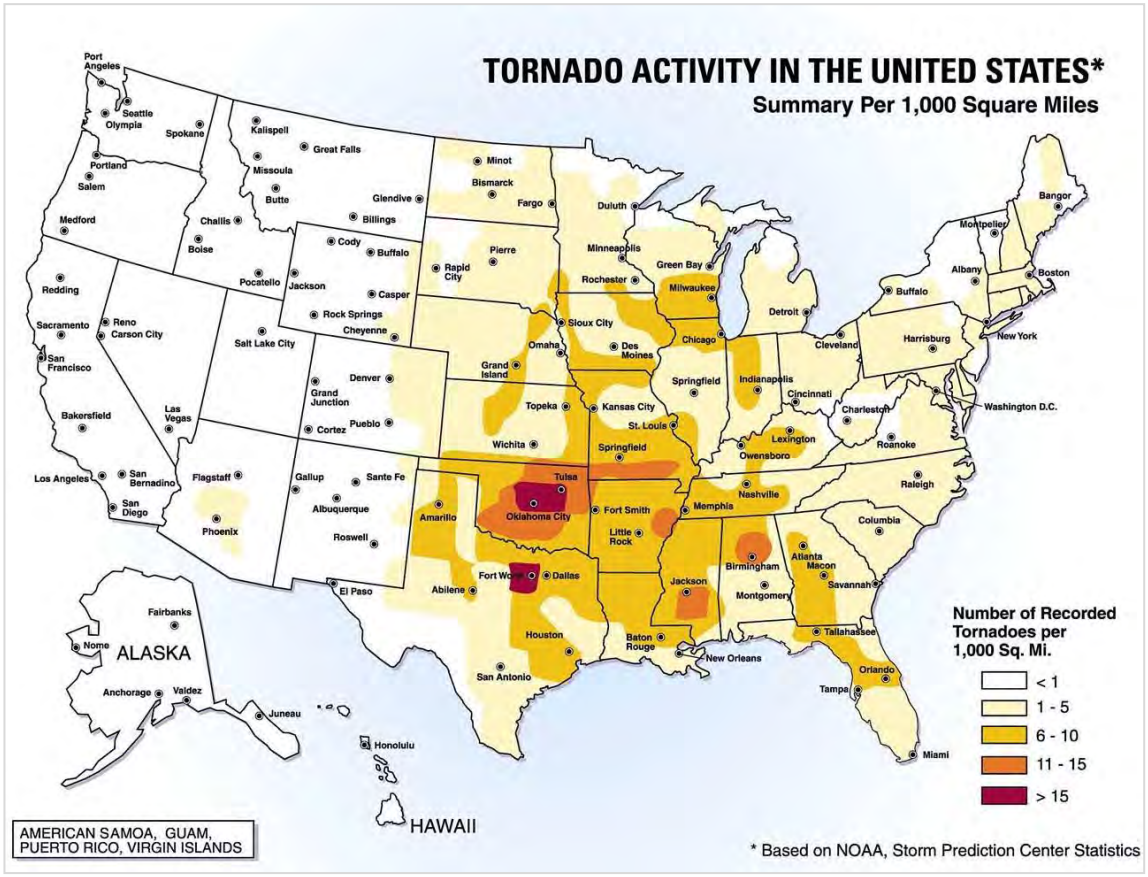
FIGURE 7.14-1 HISTORIC TORNADO ACTIVITY IN THE UNITED STATES, SUMMARY PER 1,000 SQUARE MILES



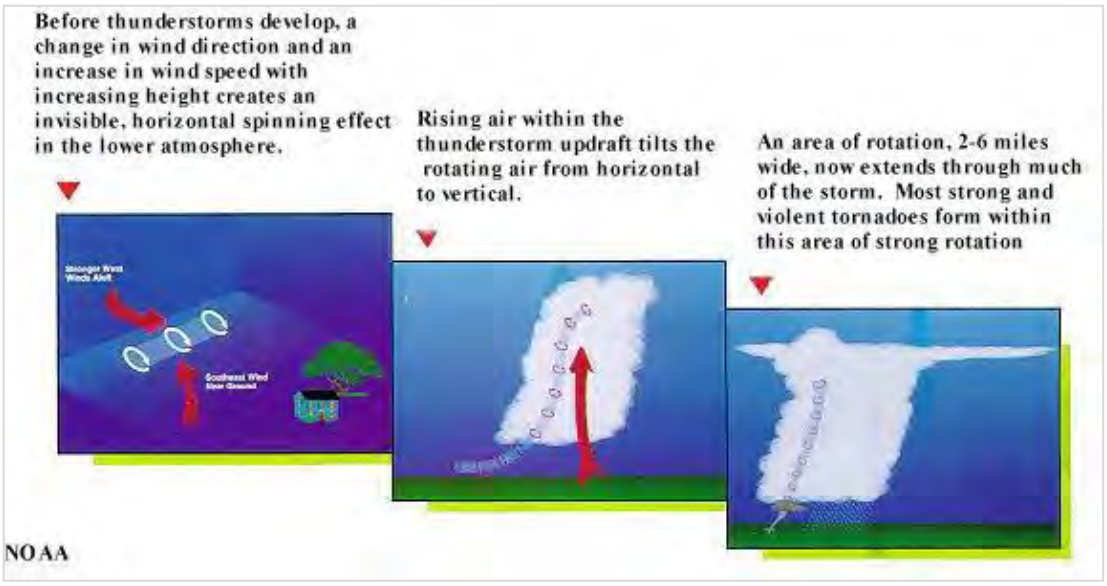
Source: NOAA

The severity and duration of tornadoes is a function of several factors, including weather conditions, topography and the F class of the event. As noted earlier, tornado severity is measured with the Fujita scale, an empirical system that classifies events after they occur. In some cases there are anomalous patterns for various reasons (including the reliability and completeness of reporting), but generally speaking smaller events are more probable, larger (more severe) ones are less likely.

Tornado duration is usually relatively short, varying from a matter of seconds to several minutes on the ground, although in rare cases they can last significantly longer. The path width of a single tornado generally is less than 0.6 miles. The path length of a single tornado can range from a few hundred yards to miles. A tornado typically moves at speeds between 30 and 125 mph and can generate internal winds exceeding 300 mph.

Most tornadoes take on the traditional appearance of a narrow funnel, a few hundred yards across, with a small cloud of debris near the ground. Tornadoes can appear, however, in all manner of shapes and sizes.

FIGURE 7.14-2 FORMATION OF TORNADOES



Source: NOAA

Small, relatively weak landspouts might only be visible as a small swirl of dust on the ground. While the condensation funnel may not extend all the way to the ground, if associated surface winds are greater than 40 mph (64 km/h), it is considered a tornado. Large single-vortex twisters, often violent, can look like a large wedge stuck into the ground, and are known as wedge tornadoes or wedges. Wedges can be so wide that they appear to be a block of dark clouds. Even experienced storm observers may not be able to tell the difference between a low-hanging cloud and a wedge tornado from a distance.

7.14.2 LOCATION

According to NOAA/NCEI US Tornado Climatology Historical Records and Trends, from 1991 - 2010, Texas experienced the highest average annual number of tornadoes with 155, followed by Nebraska (96), Florida (66), and Oklahoma (62). During this time period New Jersey averaged two tornado events per year. NOAA has recorded 1 - 5 tornadoes per 1,000 square miles across the northern half of New Jersey, including Union County. All regions of Union County have been subject to tornados. A map of previous occurrences is available as **Figure 7.14-3 Union County Tornadoes, 1950-2019.**

7.14.3 EXTENT

Tornado damage severity is measured by the Fujita Tornado Scale ('F-Scale), named after Dr. T. Theodore Fujita who first introduced the scale in 1971. The Fujita Scale assigns numerical values based on wind speed and categorizes tornadoes from 0 to 5. The scale is based on damage caused by a tornado related to the fastest quarter-mile wind speed at the height of a damaged structure. The letter "F" precedes the numerical value. Tornadoes are related to larger vortex formations, and therefore often form in convective cells such as thunderstorms or in the right forward quadrant of a hurricane, far from the hurricane eye.

As shown in the following table, tornadoes are measured by the Fujita Scale, an empirical system that determines the severity by observed damages (last column).

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TABLE 7.14-1 THE FUJITA TORNADO SCALE

Category	Wind Speed	Description of Damage
F0	40 mph-72 mph	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73 mph-112 mph	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113 mph-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158 mph-206 mph	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207 mph-260 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318 mph	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.

Source: FEMA 1997

In February of 2007 the F-Scale was replaced with a more accurate Enhanced Fujita Scale (Enhanced F- scale). It was the Jarrell, Texas tornado of May 27, 1997 and the Oklahoma City/Moore tornado of May 3, 1999 that brought to the forefront the problem that perhaps the wind estimates were too high in the F-Scale. The changes to the original scale were proposed by a committee of meteorologist and engineers searching for a more accurate method of assessing the magnitude of tornadoes. The modifications made to the F-scale were limited to ensure that the new Enhanced F-scale could continue to support the original tornado database found within the NCEI.

The Enhanced F-scale is a set of wind estimates (not measurements) based on observed damages after a tornado. Its uses three-second gusts estimated at the point of damage based on a judgment of eight levels of damage to 28 indicators that include various commercial and residential building types, transmission towers, poles, and trees.

According to NOAA, similar to the original scale, the new Enhanced F-scale includes five classes ranging from EF0 to EF5. The wind speeds from the Fujita Scale were used as basis for development of the Enhanced F-scale. The following Table displays the wind speed ranges for the original Fujita Scale, the derived wind speeds (Enhanced F-scale), and the new Enhanced F-scale currently in use since February of 2007.

TABLE 7.14-2 WIND SPEED COMPARISON OF THE FUJITA SCALE AND ENHANCED FUJITA SCALE

Fujita Scale			Derived EF Scale		Operational EF Scale	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: NOAA – National Weather Service

New Jersey currently ranks thirty-seventh for frequency of tornadoes when compared to other states. Tornadoes have an impact on Union County equally and uniformly. The severity of the tornadoes identified in the NCEI Storm Events Database for Union County ranged from F0 to an F1.

7.14.4 PREVIOUS OCCURRENCES AND LOSSES

The NCEI and SHELDUS report a total of 13 tornadoes in Union County between 1950 and 2013. The databases documented seven F0 and six F1 tornados. These events are listed in the 2016 HMP update. The NCEI Storm Events Database reports one tornado event in Union County from January 2014 to July 2020, which was a F0 tornado.

TABLE 7.14-3 TORNADO EVENTS, UNION COUNTY, 2013-2020

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
8/7/2019	Cranford	Tornado	0	0	$117,000
Total	--	--	0	0	$117,000

Source: NOAA/NCEI. 2020. Storm Events Database.

Figure 7.14-3 Union County Tornadoes, 1950-2018 through **Figure 7.14-7 Union County Tornadoes, 1950-2018-Group 4** identifies tornado locations in Union County between 1952 and 2018. The tornado data is from the National Weather Service's Storm Prediction Center and appears to only include some of the past events. Highlighted on the map are the three tornado paths for events that occurred in 1985, 1998, and 2013.

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FIGURE 7.14-3 UNION COUNTY TORNADOES, 1950-2018

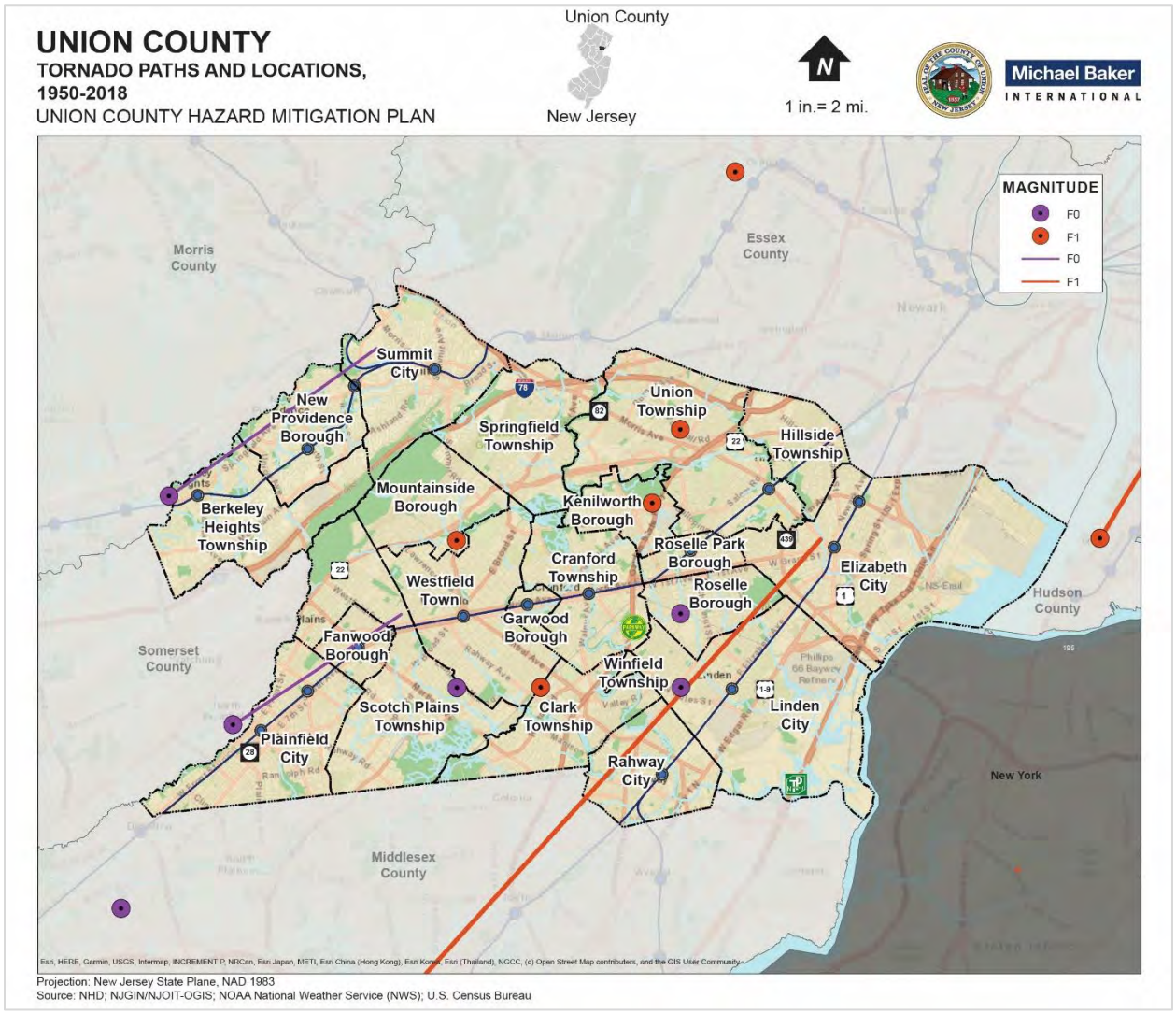

FIGURE 7.14-4 UNION COUNTY TORNADOES, 1950-2018-GROUP 1

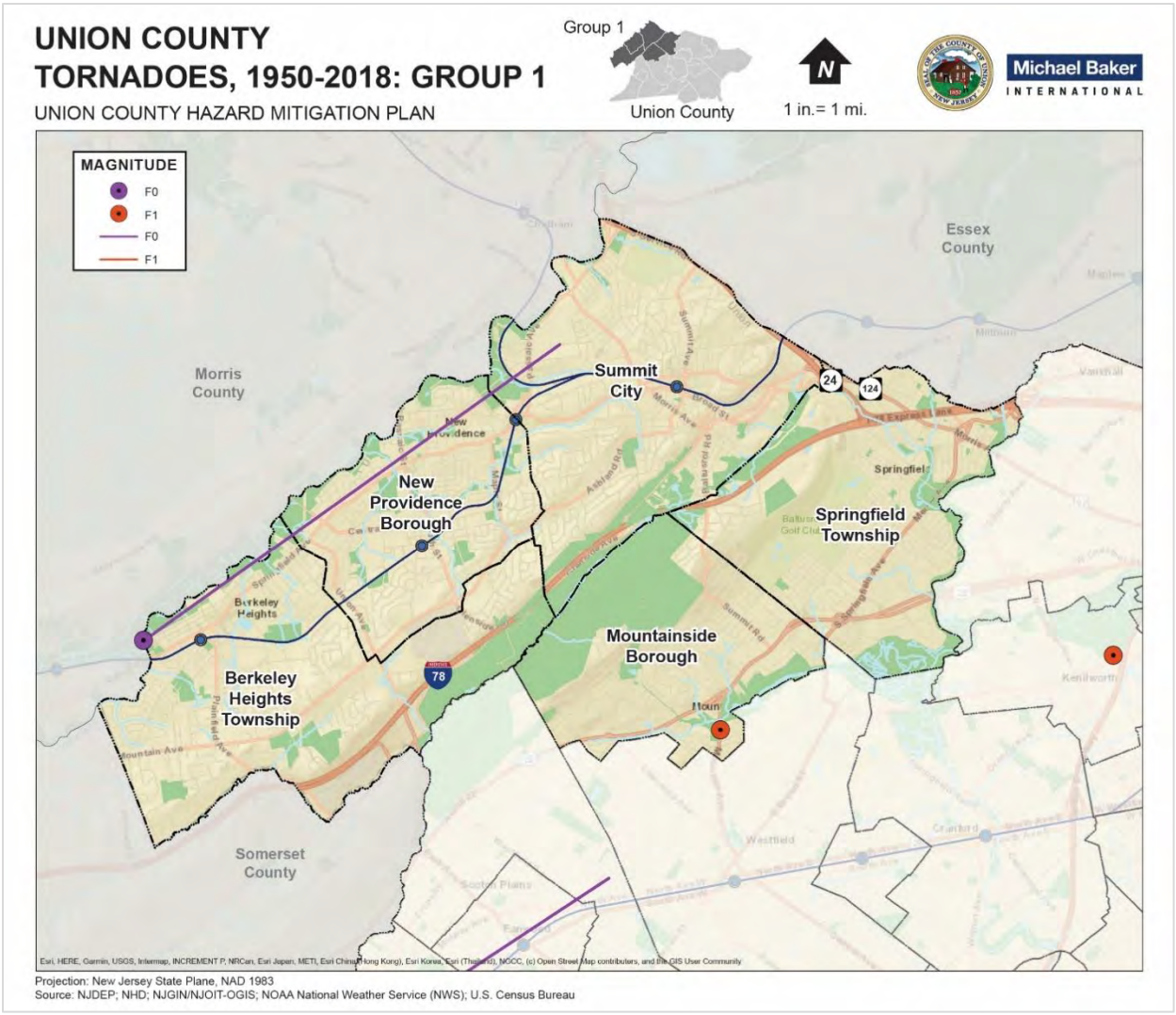

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FIGURE 7.14-5 UNION COUNTY TORNADOES, 1950-2018-GROUP 2

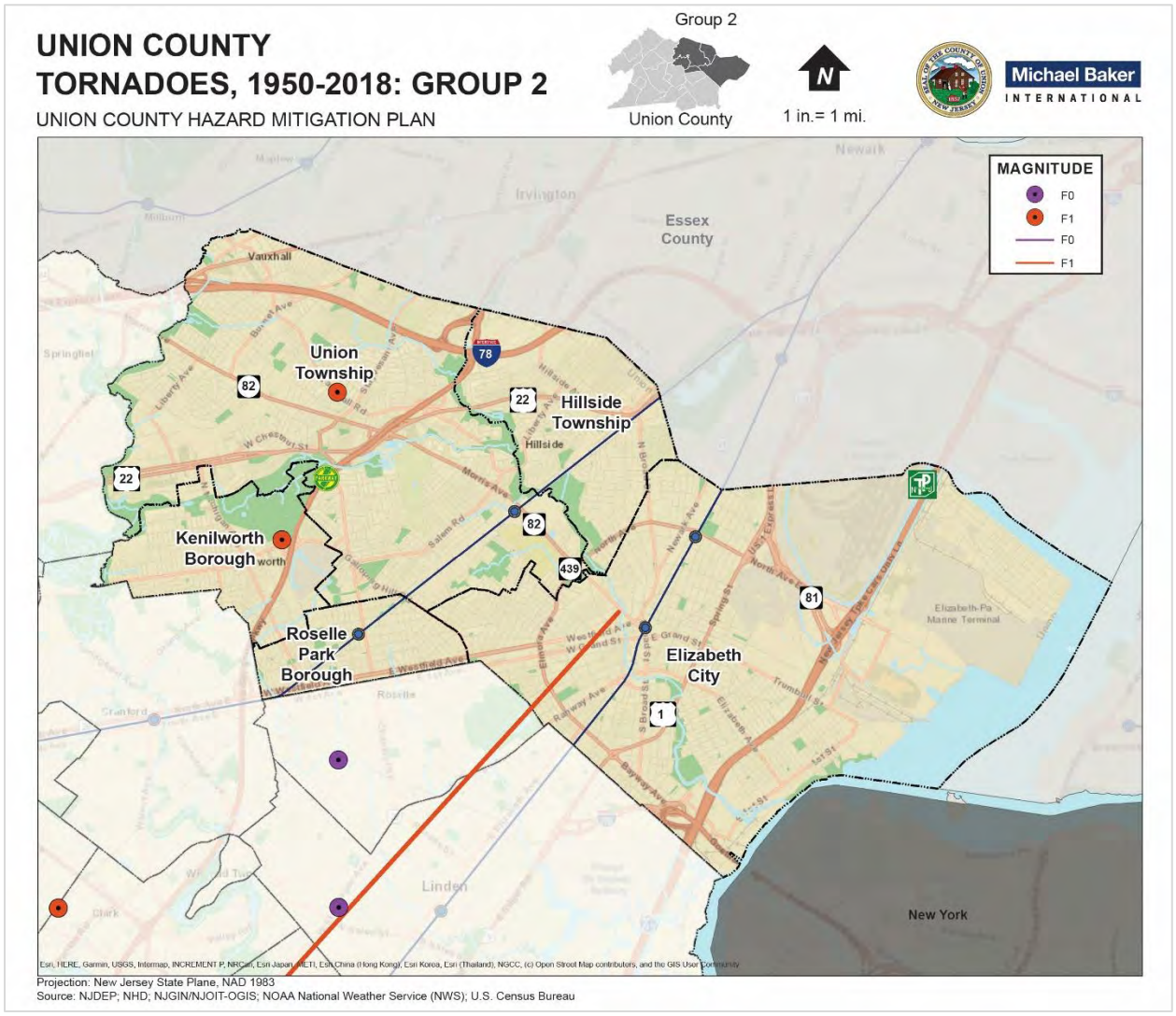

FIGURE 7.14-6 UNION COUNTY TORNADOES, 1950-2018-GROUP 3

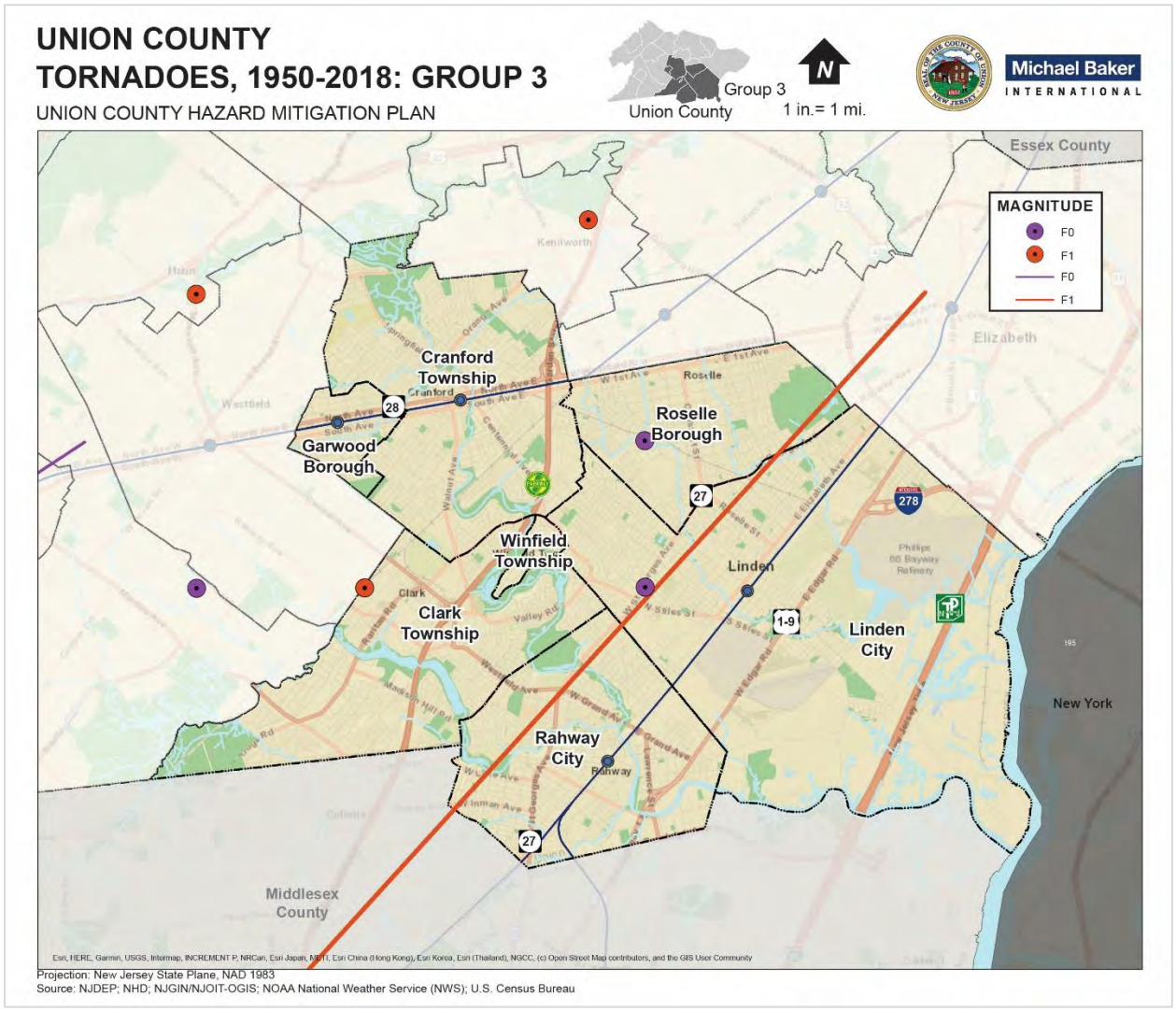

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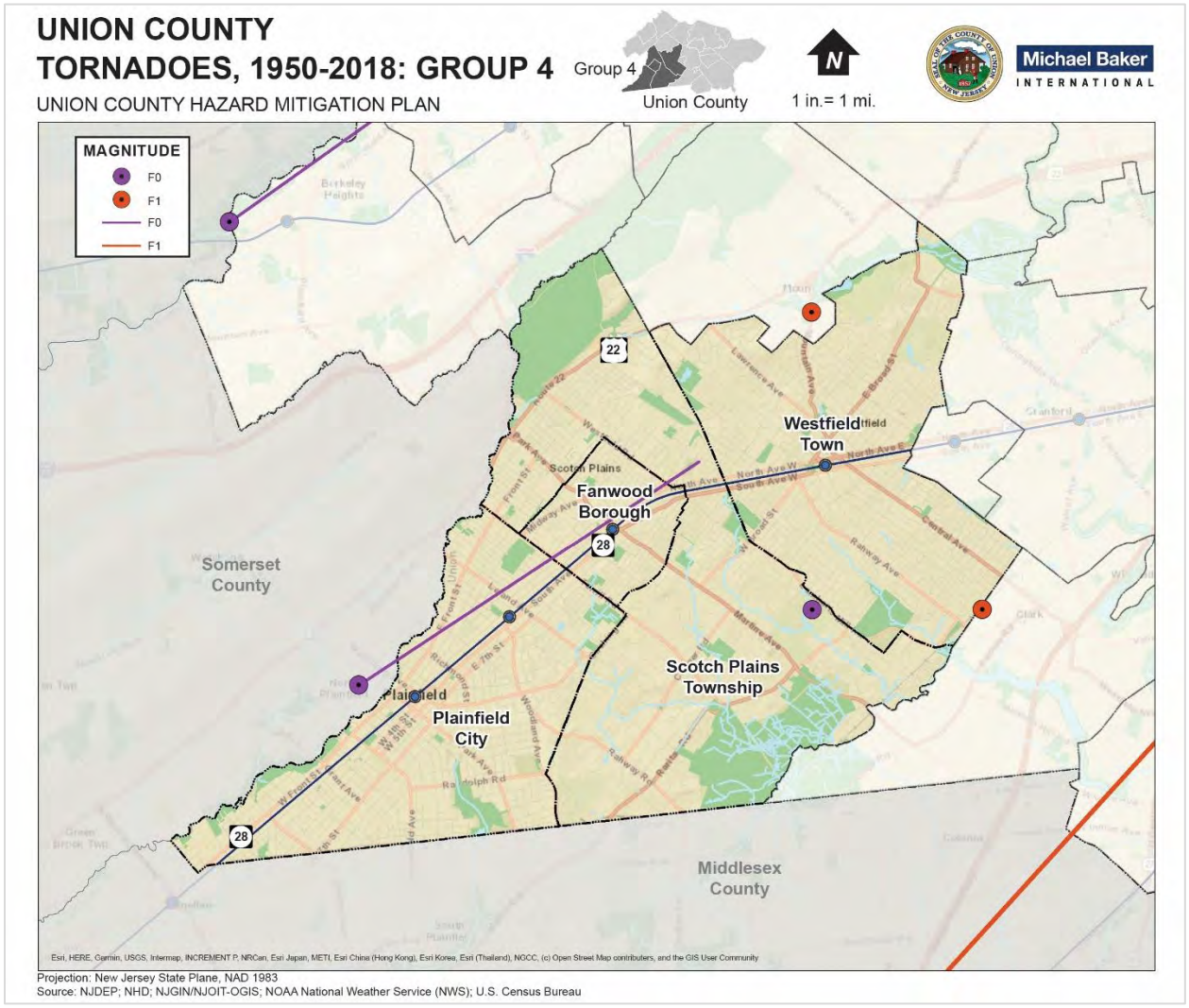
FIGURE 7.14-7 UNION COUNTY TORNADOES, 1950-2018-GROUP 4



7.14.5 PROBABILITY OF FUTURE OCCURRENCES

Based on previous occurrences, the probability of future tornado events in Union County is one event every five years. The overall impact to the planning area from tornadoes is moderate considering the frequency and magnitude of the past occurrences. Note that Section 6 of this hazard mitigation Plan includes a more detailed discussion about tornado risk in Union County.

With a total of 14 past tornado events in Union County between 1950 and 2020, the County experiences a tornado event on average every five years. With one event every five years, there is a 20% annual empirical probability of a future tornado events occurring in Union County and an approximately 67% chance of at least one tornado event occurring in Union County the next five years.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.14.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of tornado events.

7.14.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

The State HMP reports that scientists at the National Aeronautics and Space Administration (NASA) suggest that climate change will increase the frequency of severe thunderstorms in the United States, and that these thunderstorms would bring with them deadly lightning, damaging hail, and the potential for tornadoes. Please refer to Section 7.13.6 for a discussion of the effects of climate change on thunderstorms.

7.14.7 VULNERABILITY ASSESSMENT

The NCEI Storm Events Database reports there have been no deaths and three injuries from tornadoes in Union County. Tornadoes have caused an estimated $9.57 million in property damage as of the 2016 HMP update. The most property damage occurred from an F1 tornado on July 26, 1994, two miles north of Kenilworth Borough. The tornado was 100 yards wide and was on the ground for approximately two miles. The tornado caused an estimated $5 million in damages and injured three people according to the NCEI Storm Events Database. NCEI provides no additional details about the event.

People living in manufactured or mobile homes are most exposed to damage from tornadoes. Even if anchored, mobile homes do not withstand high wind speeds as well as permanent, site-built structures. Older residential structures are also more vulnerable to damages from a tornado.

All residents of Union County are subject to the effects of tornadoes, although they are relatively uncommon in this part of the country. As noted elsewhere, potential effects include direct impacts on specific structures and (perhaps more significantly) power interruptions. There is always the risk of injury and deaths in tornadoes as well. This hazard was prioritized by the Steering Committee as medium, mostly because the hazard occurs very infrequently, and impacts tend to be highly localized. Property losses from tornadoes are generally general borne by either property owners or insurance companies, so it is usually not possible to obtain any information about wind damage to structures, except publicly owned-ones.

To quantify tornado risks further, the methodology used in this assessment applied Tornado Module FEMA BCAR 4.8 software and related references (FEMA BCAR Tornado Methodology, May 2009). A statistical count for Union County was developed for all six levels of the Enhanced Fujita (EF) scale, formulated through its annual probability of occurring. For each of the EF levels, an analysis was performed for the probability of human injury and death, and degree of damage inflicted upon a typical residential structure in Union County as shown in **Table 7.14-4 BCAR 4.8 Outputs for Tornado Risks in Union County**.

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TABLE 7.14-4 BCAR 4.8 OUTPUTS FOR TORNADO RISKS IN UNION COUNTY

Class	Tornado Count [illegible]	Annual Probability of [illegible]	Level of Damage Caused to Single Family Residential Structure	Degree of Damage	Probability of Average Injury	Probability of Death
EF0	6.78	0.00007%	None or very minor damage	1%	0%	0%
EF1	17.19	0.00137%	Minor damage	5%	5%	0%
EF2	5.00	0.00178%	Moderate damage	20%	10%	0%
EF3	1.21	0.00190%	Severe damage/partial collapse	55%	10%	5%
EF4	0.54	0.00288%	Total collapse	90%	20%	10%
EF5	0	0.00000%	Complete destruction	95%	30%	50%

Source: BCAR, NOAA/NCEI, SHELDUS

In quantifying tornado risks, the values for average human injury and death were assumed at the default level of $748,509 and $6,412,265, respectively. These values were adopted from FEMA guidance documentation and are derived from FAA and insurance studies. The value for the average residential structure is at $250/sq. ft., at the average size of 2,000 square feet.

Tornado risk was calculated by applying composite annualized number of injuries and deaths to the population of the county (467,186). Similarly, the annualized direct structural losses (where the representative structure is a 2,000 square foot single-family residence) were applied to the total number of structures in the County (158,486).

The analysis showed that the annual count for average injury at the county level is at 4.734, and for the death 1.79. In monetary terms, the risk for damages, injuries, and death is displayed in annualized values, as well as projections for the 50-year, and 100-year horizon:

TABLE 7.14-5 ANNUAL, 50-YEAR, AND 100-YEAR ESTIMATED RISK FROM TORNADO EVENTS

Tornado Risk	Direct Losses	Average Injury	Death
Annualized	$3,221,470	$3,543,334	$11,480,063
50-year horizon	$44,456,291	$48,898,002	$158,424,863
100-year horizon	$45,970,382	$50,563,369	$163,820,493

7.15 LANDSLIDE (NON-SEISMIC)

7.15.1 HAZARD DESCRIPTION

A landslide is a natural geologic process involving the movement of earth materials down a slope, including rock, earth, debris, or a combination of these, under the influence of gravity. However, there are a variety of triggers for landslides such as: a heavy rainfall event, earthquakes, or human activity. The rate of landslide movement ranges from rapid to very slow. A landslide can involve large or small volumes of material. Material can move in nearly intact blocks or be greatly deformed and rearranged. The slope may be nearly vertical or fairly gentle according to Delano and Wilshusen (2001).

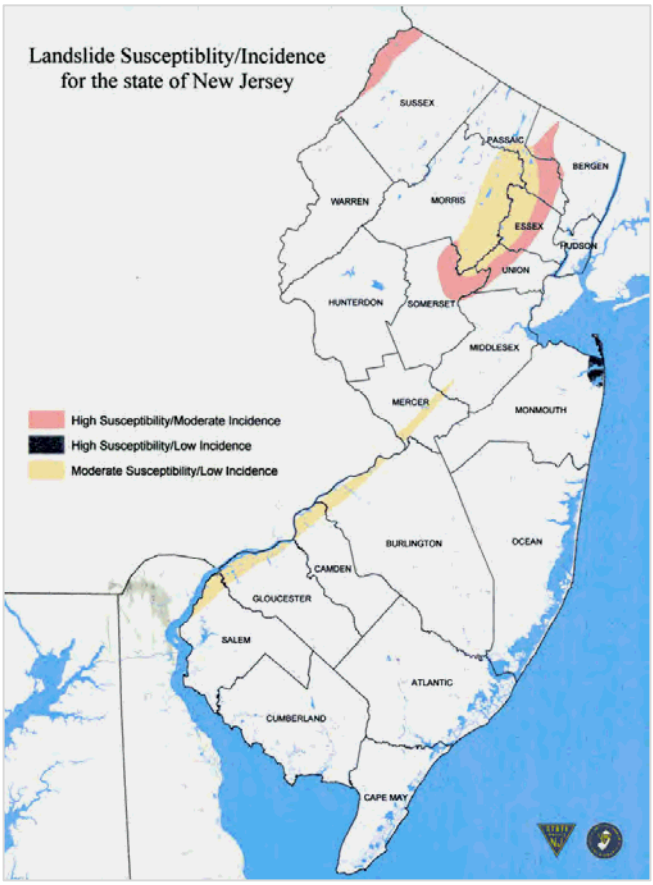
Landslides are usually associated with mountainous areas but can also occur in areas of generally low relief. In low-relief areas, landslides occur due to steepening of slopes: as cut and fill failures (roadway and building excavations), river bluff failures, collapse of mine waste piles, and a wide variety of slope failures associated with quarries and open-pit mines according to USGS's 2004 Landslide Types and Process.

7.15.2 LOCATION

According to USGS's 2004 Landslide Types and Process, landslides are usually associated with mountainous areas but can also occur in areas of generally low relief. In low-relief areas, landslides occur due to steepening of slopes: as cut and fill failures (roadway and building excavations), river bluff failures, collapse of mine waste piles, and a wide variety of slope failures associated with quarries and open-pit mines.

The New Jersey Geological and Water Survey (NJGWS) has developed several landslide susceptibility maps for Union County and the State of New Jersey. In Union County, the area most susceptible to landslides is concentrated near the northwestern portion of the County. As shown in **Figure 7.15-1 New Jersey Landslide Susceptibility/Incidence Map**, the majority of this portion of the county is shaded red indicating that the landslide susceptibility is considered high in this area with moderate incidence. The landslide susceptibility is considered low in the remainder of the planning area.

FIGURE 7.15-1 NEW JERSEY LANDSLIDE SUSCEPTIBILITY/INCIDENCE MAP



Source: New Jersey Geological and Water Survey

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In 2002, as part of the Earthquake Loss Estimation Study for Union County, the NJGWS produced a landslide susceptibility map using six landslide classes from the HAZUS model (HAZUS User Manual Table 9.2 - National Institute of Building Sciences). The six landslide classes are broken down into two general categories; Landslide Class A (strongly connected rock) and Landslide Class B (weakly connected rock). **Figure 7.15-2 Union County Landslide Susceptibility Map** identifies the landslide susceptibility areas in Union County based on the color-coded landslide classes. The map shows the most susceptible landslide areas appear to be concentrated along the Watchung Mountains in Springfield and Scotch Plains Townships and Mountainside Borough. The majority of the landslide susceptibility areas in the county are within the Landslide Class B III, shaded green on the map. These areas are considered to have weakly connected rock and soil, with a slope angle of 10-15 degrees.

7.15.3 EXTENT

Landslides are considered highly site-specific events and are concentrated in areas of steep slopes. The severity of the landslide hazard depends on a combination of slope angle and the geologic material underlying the slope.

7.15.4 PREVIOUS OCCURRENCES AND LOSSES

The NJGWS indicates there have been 345 landslides statewide in New Jersey between 1782 and December 2019. With the exception of several landslides in the southern half of New Jersey, nearly all of these events occurred in the northern and central part of the State. **Figure 7.15-3 Landslides in Union County** through **Figure 7.15-4 Landslides in Union County-Group 1** identify the landslides that have occurred in in Union County. In Union County, there have been five landslides (two debris flows, two rockfall, and one slump) during this time period. All five of these events occurred in the western part of the county in the Watchung Mountains.

FIGURE 7.15-2 UNION COUNTY LANDSLIDE SUSCEPTIBILITY MAP

Source: Earthquake Loss Estimation Study for Union County, New Jersey: Geologic Component (New Jersey Geologic Survey, 2002

FIGURE 7.15-3 UNION COUNTY LANDSLIDES, 1782-2019

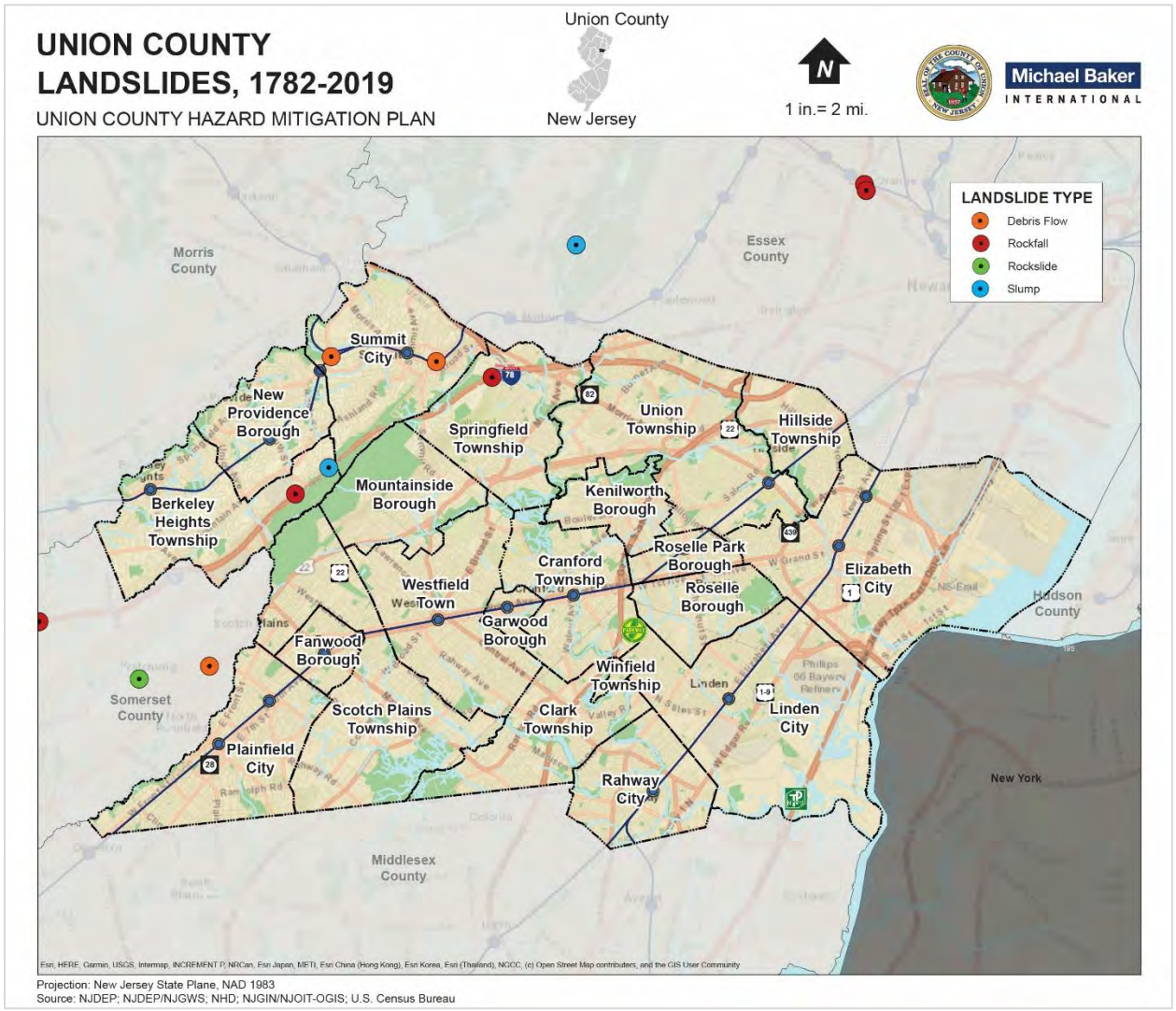

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FIGURE 7.15-4 UNION COUNTY LANDSLIDES, 1782-2019-GROUP 1

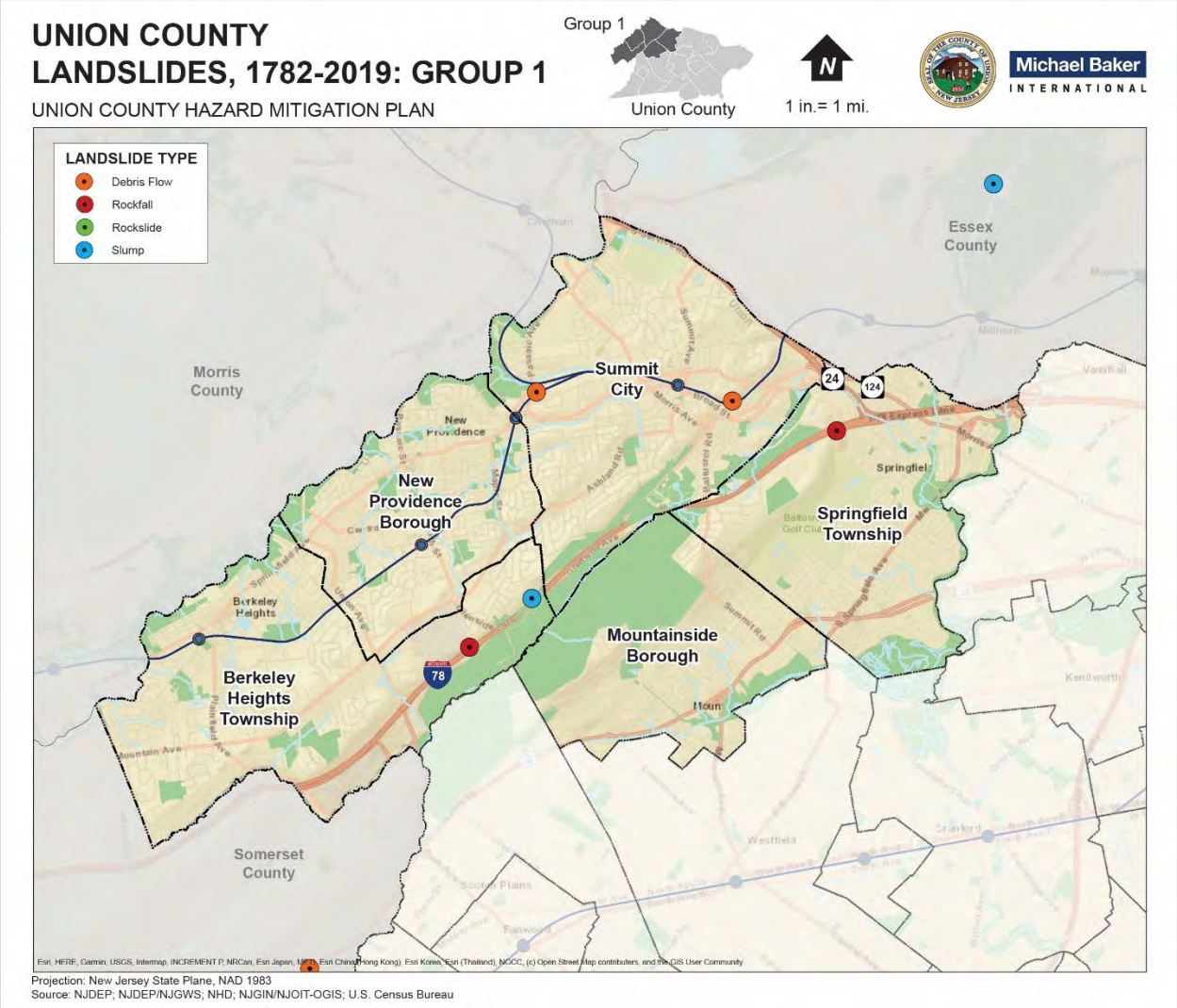

Table 7.15-1 Recent Landside Events in Union County summarizes the landslide events in Union County through December 2019 not profiled in the previous 2016 HMP update. While the rockfall event in Berkeley Heights Township occurred prior to the 2016 HMP update, it was not included in the plan and it thus included in the table below.

TABLE 7.15-1 RECENT LANDSLIDE EVENTS IN UNION COUNTY

Municipality	Event Date	Landslide Type	Cause	Injuries	Deaths	Property Damage	Material Quantity/ Length	Description
Berkeley Heights Township	02/XX/ 2010	Rockfall	Weathering	0	0	Unknown	10 CY	Rockwall along Rt. 78 WB, estimated location.
Springfield Township	02/XX/ 2017	Rockfall	Weathering	0	0	No	1 CY	

Note: exact dates unknown.
Source: DEP, New Jersey Geological and Water Survey, September 2020

The United States Geological Survey (USGS) maintains a U.S. Landslide Inventory as a part of its USGS Landslide Hazard Program. The inventory is based on the NJGWS data from 2018, so incidents depicted in the NJGWS data match that in the USGS inventory except that it is missing the rockfall event from February 2017.

7.15.5 PROBABILITY OF FUTURE OCCURRENCES

Landslide probabilities are largely a function of surface geology but are also influenced by both weather and human activities, as noted above. With a total of five past landslide events in Union County between 1782 and 2019, the County experiences a landslide event on average roughly every 47 years. With one event every 47 years, there is an approximately 10% probability of at least one landslide event occurring in Union County in the next five years. The probability of future landslides having a significant impact on property and life in the planning area is relatively low. Considering the low impacts from landslide, the Steering Committee ranked landslide as a low risk hazard. While a more detailed risk assessment was not conducted at part of the 2016 HMP update, one was conducted for the 2021 HMP update in accordance with the requirements of the New Jersey State Hazard Mitigation Plan 2019 Standardized Risk Template for Multi-Jurisdictional Mitigation Plans.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.15.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of landslide events.

7.15.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the State HMP, future climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. The increase in global temperature could affect the snowpack and its ability to hold and store water. Warming temperatures also could increase the occurrence and duration of droughts, which could increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. All of these factors could increase the probability for landslide occurrences.

7.15.7 VULNERABILITY ASSESSMENT

According to the NJGWS (as shown in **Figure 7.15-2 Union County Landslide Susceptibility Map**), the western portion of Union County is moderately to highly susceptible to landslides. Although moderately susceptible to landslides, there are no known instances of injuries or death from past events in the county. The western part of the county is of relatively low population density (between 500 and 1,000 people per square mile). Given these factors, it is reasonable to presume that impacts on life and property will continue to be minimal, although future development must avoid areas where the hazard is present.

As shown in **Table 7.15-2 NJGWS-Defined Landslide Susceptibility by Jurisdiction**, the Union County municipalities with landslide susceptibility are Springfield Township, Mountainside Borough, Berkeley Heights Township, Summit City, Scotch Plains Township, Hillside Township, New Providence Borough, and Westfield Town. The municipality with the largest percent of total land area susceptible to landslide is Springfield Township (5.29%). **Table 7.15-2 NJGWS-Defined Landslide Susceptibility by Jurisdiction** is ordered by percent of total land area in NJGWS-defined landslide susceptibility area.

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TABLE 7.15-2 NJGWS-DEFINED LANDSLIDE SUSCEPTIBILITY BY JURISDICTION

Jurisdiction	Total Land Area of Municipality (Acres)	Total Land Area in NJGWS-Defined Landslide Susceptibility Area (Acres)	Percent of Total Land Area in NJGWS-Defined Landslide Susceptibility Area (Acres)
Springfield Township	3,310.27	175.17	5.29%
Mountainside Borough	2,585.23	129.55	5.01%
Berkeley Heights Township	4,003.75	141.53	3.53%
Summit City	3,860.55	71.19	1.84%
Scotch Plains Township	5,795.72	85.23	1.47%
Hillside Township	1,780.28	4.33	0.24%
New Providence Borough	2,373.73	4.45	0.19%
Westfield Town	4,314.43	3.62	0.08%
Clark Township	2,850.37	0.00	0.00%
Cranford Township	3,117.19	0.00	0.00%
Elizabeth City	8,904.07	0.00	0.00%
Fanwood Borough	857.34	0.00	0.00%
Garwood Borough	415.77	0.00	0.00%
Kenilworth Borough	1,376.32	0.00	0.00%
Linden City	7,082.06	0.00	0.00%
Plainfield City	3,819.08	0.00	0.00%
Rahway City	2,586.87	0.00	0.00%
Roselle Borough	1,692.81	0.00	0.00%
Roselle Park Borough	783.63	0.00	0.00%
Union Township	5,814.20	0.00	0.00%
Winfield Township	114.93	0.00	0.00%

Source: NJGWS 2016; NJOGIS 2020
Source: FEMA Flood Zone Composite, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

There are no critical facilities or critical infrastructure with landslide risk in Union County.

7.16 SEVERE STORM – LIGHTNING

7.16.1 HAZARD DESCRIPTION

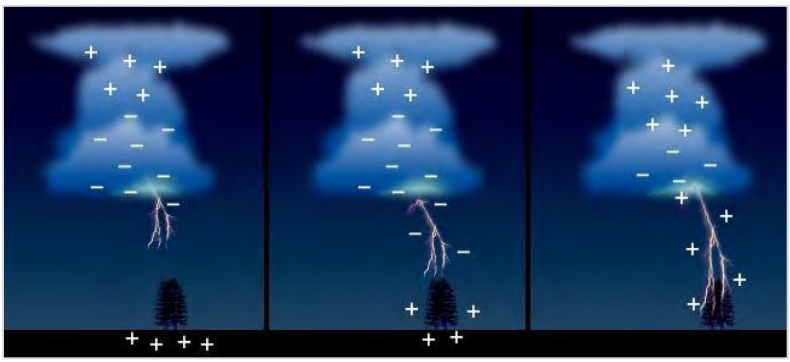
Lightning is a powerful natural electrostatic discharge produced during a thunderstorm. This abrupt electric discharge is accompanied by the emission of visible light and other forms of electromagnetic radiation. The electric current passing through the discharge channels rapidly heats and expands the air into plasma producing acoustic shock waves (thunder) in the atmosphere.

Lightning, which occurs during all thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best

conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures higher than 50,000˚F. The rapid heating and cooling of the air near the channel causes a shock wave, which produces thunder.

Lightning typically occurs as a by-product of a thunderstorm. The action of rising and descending air in a thunderstorm separates positive and negative charges, with lightning the result of the buildup and discharge of energy between positive and negative charge areas. Water and ice particles may also affect the distribution of the electrical charge. In only a few millionths of a second, the air near a lightning strike is heated to 50,000°F, a temperature hotter than the surface of the sun. Thunder is the result of the very rapid heating and cooling of air near the lightning that causes a shock wave.

FIGURE 7.16-1 FORMATION OF LIGHTNING



Source: University Corporation for Atmospheric Research

The hazard posed by lightning is significantly underrated. High winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. While many lightning casualties happen at the beginning of an approaching storm, more than half of lightning deaths occur after a thunderstorm has passed. The lightning threat diminishes after the last sound of thunder but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat continues to exist. Lightning has been known to strike more than 10 miles from the storm in an area with clear sky above.

Lightning is the most dangerous and frequently encountered weather hazard that most people in the United States experience annually. Lightning is the second most frequent killer in the United States, behind floods and flash floods, with nearly 100 deaths and 500 injuries annually. These numbers are likely to underestimate the actual number of casualties because of the under reporting of suspected lightning deaths and injuries. Cloud-to-ground lightning can kill or injure people by either direct or indirect means.

According to the National Oceanic and Atmospheric Administration (NOAA), an average of 20 million cloud-to-ground flashes has been detected every year in the continental United States. About half of all flashes have more than one ground strike point, so at least 30 million points on the ground are struck on average each year. In addition, there are roughly five to 10 times as many cloud-to-cloud flashes as there are to cloud-to-ground flashes (as of July 7, 2013).

Cloud-to-ground lightning is nearly always associated with thunderstorms and related weather phenomena. Thunderstorms occur in most warm and hot months, and occasionally at other times

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as well. The entire planning area is subject to the lightning hazard. While the duration of individual lightning strikes is only milliseconds, the duration of thunderstorms that create the lightning ranges from very short periods (15 minutes or less) to long periods when the storms are relatively stationary.

Damages from lightning hazards are generally limited to those related to power surges and contact with electrical equipment. In some cases ungrounded structures are hit by lightning and experience damage, either as a direct result of the lightning or via fires secondary to the hazard. There are also reports of brushfires being started by lightning, although these are usually relatively small and quickly contained. No reliable database or information exists to determine the cost of recovery from lightning.

7.16.2 LOCATION

Lightning occurs over the entire planning area, particularly during the spring and summer months.

7.16.3 EXTENT

Severe lightning events can occur anywhere in the planning area. Even during common events, the lightning current can branch off to strike a person from a tree, fence, pole, or other tall object. In addition, electrical current may be conducted through the ground to a person after lightning strikes a nearby tree, antenna, or other tall object. The current also may travel through power lines, telephone lines, or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture. Lightning may use similar processes to damage property or cause fires.

7.16.4 PREVIOUS OCCURRENCES AND LOSSES

There were 13 instances of lightning reported in the NCEI Storm Events Database for Union County from 1950 to 2013. All 13 events occurred between 1994 and 2009. The database provides no indication as to why there are no events prior to 1994, although presumably occurrences roughly follow the same pattern and frequency as shown in the NCEI list. Clearly, there are many such events every year, but they are presumably not significant enough to reach the threshold for reporting to NOAA/NCEI for inclusion in the database. Since 2013 until July 2020, there have been three instances of lightning reported by NCEI Storm Events Database which are listed in **Table 7.16-1 Lightning Events, Union County, 2013-2020**.

TABLE 7.16-1 LIGHTNING EVENTS, UNION COUNTY, 2013-2020

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
7/14/2014	Garwood Borough	Lightning	0	0	$8,000
7/3/2018	Cranford Township	Lightning	0	0	$6,000
6/25/2019	Roselle Park Borough	Lightning	0	0	$20,000
Total			0	0	$34,000

Source: NOAA/NCEI. 2020. Storm Events Database.

The most significant lightning event occurred in the Rahway City on September 3, 1995. A lightning strike at a lumber yard started a fire and causing extensive damage estimated at $2 million in property damage.

7.16.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of 16 past lightening events in Union County between 1994 and July 2020, the County experiences a lightning event on average roughly every 1.6 years. With one significant event roughly every 1.6 years, there is an over 99% probability of at least one lightning event occurring in Union County in the next five years. Events in Union County will most likely continue to occur in the future but impacts on property and life in the planning area will most likely be relatively low. Considering the low impacts from lightning, the Steering Committee ranked lightning as a low priority hazard (See **Table 7.1-2 Union County (County-wide) Hazard Ranking Table** for a complete list of hazard rankings).

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.16.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of lightening events.

7.16.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

The State HMP reports that scientists at the National Aeronautics and Space Administration (NASA) suggest that climate change will increase the frequency of severe thunderstorms in the United States, and that these thunderstorms would bring with them deadly lightning, damaging hail, and the potential for tornadoes. Please refer to Section 7.13.6 for a discussion of the effects of climate change on thunderstorms.

7.16.7 VULNERABILITY ASSESSMENT

About 100 deaths and 500 injuries are reported annually across the U.S. from this hazard. According to the NCEI Storm Events Database, in Union County there were no deaths, one injury, and $2,039,500 in property damages related to lightning from 1950 to July 2020. In the City of Elizabeth, most of the facilities damage caused by Superstorm Sandy was the result of storm surge. Two million dollars of property damage was from a single lightning event on June 3, 1995 in the Rahway City. The low injury and death rate from previous lightning events points to a relatively low vulnerability for lightning hazards in the planning area. The Steering Committee rated this hazard low priority.

Although local information about lightning damages, injuries and deaths is not readily available, it is possible to derive such risks using national-level data from open Source. A 2013 publication by the National Fire Protection Association entitled Lightning Fires and Lightning Strikes provides excellent statistics. According to the report, annual national damages related to lightning total $112,750,000. The large majority of damages is from lightning-induced structure fires, both residential and non- residential. The report noted above provides much more information regarding types of fires and locations, but this is not germane to the Union County HMP. Table 4-45 in the 2016 HMP update shows the estimated lightning risk from physical damages in Union County jurisdictions. The monetary risk figures in the following two tables are calculated using the FEMA value of life figures from the BCAR guidance (inflated to present value) and present value coefficients representing the planning horizons at a 7% discount rate.

All residents of Union County are potentially subject to damages from lightning. However, as discussed above, while lightning is very common, significant damages resulting from it are not. Structures in the County are generally not vulnerable to lightning, and when damages do occur they are usually the responsibility of property owners or their insurance companies. As such, there is little or no information about damages. The Steering Committee rated this hazard low priority.

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7.17 SEVERE STORM – WINTER WEATHER

7.17.1 HAZARD DESCRIPTION

Winter weather can produce storm events where the dominant type of precipitation only occur at cold temperatures, such as snow or sleet, or a rainstorm where ground temperatures are cold enough to allow ice to form (i.e. freezing rain). In temperate continental climates, these storms are not restricted to the winter season, and may occur in the late autumn and early spring. Also, there are very rare occasions when they form in summer, although it would have to be an abnormally cold summer, such as the summer of 1816 in the northeast United States. In many locations in the northern hemisphere, the most powerful winter storms usually occur in March and, in regions where temperatures are cold enough, April.

The following descriptions provide the commonly used definitions of winter storms:

- **Winter storm:** A storm with significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation.
    - Non-mountainous areas - heavy snowfall is 4″ or more in a 12-hour period, or 6″ or more in a 24-hour period
    - Mountainous areas-12″ or more in a 12-hour period or 18″ or more in a 24-hour period
- **Blizzard:** A storm with considerable falling and/or blowing snow combined with sustained winds or frequent gusts of 35 mph or greater that frequently reduces visibility to less than one-quarter mile.

Winter weather typically forms along a front generally following the meandering path of the jet stream. These storms, called mid-latitude cyclones or extra-tropical cyclones, differ from hurricanes, in that they move from west to east as opposed to east to west. These weather patterns carry cold air from Canada and the Rockies into the southern United States.

Winter storms vary in size and strength and include heavy snowstorms, blizzards, freezing rain, sleet, ice storms and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death. Severe winter and ice storms can cause unusually heavy rain or snowfall, high winds, extreme cold, and ice storms throughout the continental United States.

NOAA describes the jet streams that carry storm systems across the United States as narrow bands of strong wind in the upper atmosphere that follow the boundaries between hot and cold air masses. These boundaries are most pronounced during the winter months, when the jet streams travel to their southernmost position over the United States and surrounding water.

The trajectory of the storm center, whether it passes close to the New Jersey coast or at a distance, largely determines both the intensity and the duration of the snowfall over the state. The zone of heaviest snowfall across New Jersey usually occurs in the southwest-to-northeast strip about 150 miles wide, approximately parallel to the path of the storm center, and about 125 and 175 miles northwest of it. If the center passes well offshore, only the southern part of New Jersey receives substantial snowfall. When the track passes close to shore, warm air from the ocean is drawn into the surface circulation, resulting in rain falling over southern New Jersey and snow over the rest of

the state. Often, a passing storm center brings rain to the south, mixed precipitation to central sections and snow to the north.

Winter storm occurrences tend to be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe ice storms, telecommunications and power can be disrupted for days. Such storms can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding.

Ice Storm

Although snow is the weather phenomenon most commonly associated with winter, ice storms can cause significant disruption to business and create treacherous driving conditions. The freezing rain that coats all objects in a sheath of ice can cause power outages, structural damage, damaging tree falls. Ice storms occur when rain droplets fall through freezing air and but do not freeze until they touch objects such as trees, roads, or structures. A clear icy sheath, known as a glaze, forms around branches, structures, and wires and has been known to bring down high-tension utility, radio, and television transmission towers.

An ice storm is defined as a storm characterized by falling freezing liquid precipitation. The term ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. The frozen precipitation falls as freezing rain and forms ice accumulations usually greater than .25″ thick that potentially cause extremely dangerous driving conditions and significant damage. Significant accumulations of ice can pull down trees and utility lines resulting in loss of power and communication.

When ice accumulations are anticipated to exceed .50″ to .25″ (depending on the state) the NWS will issue an ice storm warning.

Although snow is the weather phenomenon most commonly associated with winter, ice storms are a much greater winter menace. The freezing rain that coats all objects in a sheath of ice can cause power outages, structural damage, damaging tree falls. Ice storms occur when rain droplets fall through freezing air and but do not freeze until they touch objects such as trees, roads, or structures. A clear icy sheath, known as a glaze, forms around branches, structures and wires and has been known to bring down high-tension utility, radio, and television transmission towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians according to NOAA's National Weather Service (NWS).

When air temperatures are only slightly below freezing at the surface, elevated structures such as bridges and overpasses will freeze first. This can make driving conditions extremely hazardous. As the surface temperature lowers to around 30˚F or lower, the freezing rain will begin coating all objects.

7.17.2 LOCATION

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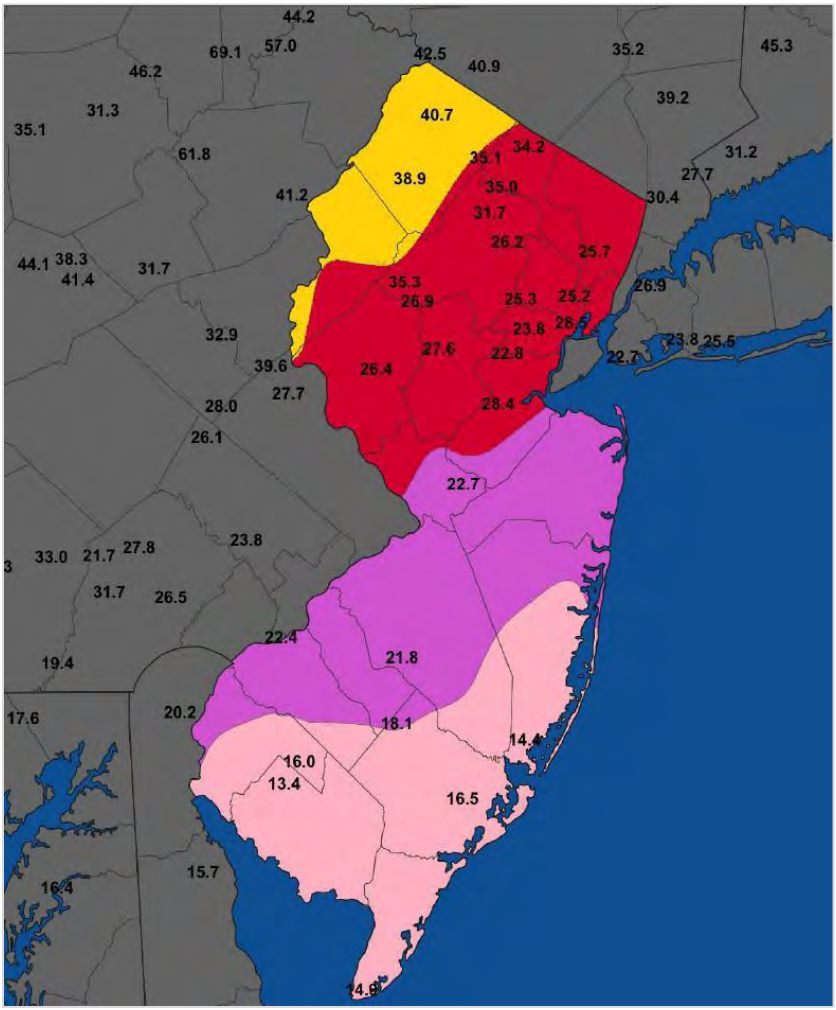
The potential for winter storms is uniform for the entire planning area. All people and assets are considered to have the same degree of exposure. Seasonal snowfall in New Jersey varies from an average of about 13" in Cumberland County to as much as 40" in parts of Sussex County. There is, however, significant variation from year to year. February is the month when maximum accumulations on the ground are usually reached. **Figure 7.17-1 Average Seasonal Snowfall in New Jersey, 1981-2010** shows that in Union County the average seasonal snowfall between 1981 and 2010 has ranged from approximately 23" – 26".

FIGURE 7.17-1 AVERAGE SEASONAL SNOWFALL IN NEW JERSEY, 1981-2010



Source: Office of the New Jersey State Climatologist

Ice Storm

All regions of Union County have been subject to ice storms. Besides temperature, their occurrence depends on the regional distribution of the pressure systems, as well as local weather conditions. The distribution of ice storms often coincides with general distribution of snow. In Union County, as a coastal storm moves northeastward offshore, a cold rain may be falling in the far eastern part of the county, changing to freezing rain in the central region, and snow over the extreme western Watchung Mountains. A locality's distance to the passing storm center is often the crucial factor in determining the temperature and type of precipitation during a winter storm.

The potential for ice storms is uniform for the entire planning area. All people and assets are considered to have the same degree of exposure.

7.17.3 EXTENT

The severity of winter storms can range significantly from a dusting of snow to a blizzard. From review of the State HMP, the magnitude or severity of a severe winter storm depends on several factors including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, and time of occurrence during the day (e.g., weekday versus weekend), and time of season. The extent of the winter storm hazard is based off of a classification system developed by NOAA's National Centers for Environmental Information (NCEI) for winter storms impacting the eastern two-thirds of the United States. The ranking system, referred to as the Regional Snowfall Index (RSI) includes five categories that range from Notable to Extreme. The RSI is based on the spatial extent of the storm, the amount of snowfall, and the interaction of the extent and snowfall totals with population (based on the 2000 Census). **Table 7.17-1 Regional Snowfall Index (RSI)** identifies the five ranking categories and RSI Values.

TABLE 7.17-1 REGIONAL SNOWFALL INDEX (RSI)

Category	Description	RSI Value
1	Notable	1-3
2	Significant	3-6
3	Major	6-10
4	Crippling	10-18
5	Extreme	18+

SOURCE: NOAA, NCEI 2011

The most severe type of winter storm is the blizzard. This is perhaps the most severe type of winter storm, characterized by low temperatures, strong winds, and heavy blowing snow. In Union County there have been five snowstorms categorized as blizzards over the past 26 years. The NCEI Storm Events Database query results include winter storm events between 1994 and July 2020. In mid-March 1993, the eastern U.S. experienced one of the most intense winter storms on record. The event, known as the "Storm of the Century," caused blizzard conditions throughout most of New Jersey dumping as much 3' of snow in some parts of the state.

Ice Storm

The severity of the ice storm hazard is dependent on a variety of factors including the surface temperature, duration of the event, and thickness of the ice.

7.17.4 PREVIOUS OCCURRENCES AND LOSSES

Winter storms occur frequently enough in Union County to be a threat to people and property. Generally, the winter storm season in Union County runs from December to March. The NCEI Storm Events Database reports that in Union County there have been 36 snow and wintry mix events between 1950 and 2013. Although the query results begin in 1950 the first reported event is in 1994. It is unclear why the database does not include any events prior to 1994.

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The blizzards in December 2010 and October 2011 both received Major Disaster Declarations in Union County.

Table 7.17-2 Summary of Winter Storm Events Impacting Union County, 2013-2020 summarizes some of the major winter storm events that have impacted Union County since the 2016 HMP update. From January 2013 to July 2020, there were 55 blizzard, heavy snow, winter storm, or winter weather events in Union County. Combining events that occurred on the same day in both Western and Eastern Union, there were 29 days with a blizzard, heavy snow, winter storm, or winter weather event countywide during that time period.

Ice Storm

The NCEI Storm Events Database indicates there have been five ice storms that have impacted Union County between 1950 and 2013. In addition to the four ice storms, the database indicates there has been one wintry mix event that includes a combination of snow, sleet, and freezing rain.

Four of the five events occurred between February and March of 1994. The database provides no indication as to why there are no events prior to 1994, although presumably occurrences roughly follow the same pattern and frequency as shown in the NCEI list. According to NCEI, a typical event occurred on February 23, 1994 when one low pressure system moved past western New York State, another formed over northern Virginia. The combination of the two lows and a cold high-pressure system over Canada produced a major winter storm. The region received between 3" and 5" of snow before a dangerous coating of ice was deposited as the snow changed to sleet and freezing rain. Major transportation problems developed as roadways became extremely hazardous.

According to NCEI, the most recent event occurred on February 1, 2011 when a complex low pressures system tracked northeast bringing a mixture of snow, sleet and freezing rain to the region. A second round of heavier freezing rain and sleet occurred on the evening of the 1st, causing numerous accidents and road closures.

The NCEI reports no ice storm events from January 2013 to July 2020.

TABLE 7.17-2 SUMMARY OF WINTER STORM EVENTS IMPACTING UNION COUNTY, 2013-2020

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
2/8/2013	County-wide	Winter Storm	0	0	0
3/7/2013	County-wide	Winter Weather	0	0	0
12/14/2013	County-wide	Heavy Snow	0	0	0
1/2/2014	County-wide	Heavy Snow	0	0	0
1/21/2014	County-wide	Heavy Snow	0	0	0
2/3/2014	County-wide	Heavy Snow	0	0	0
2/5/2014	Western Union	Winter Storm	0	0	0
2/13/2014	County-wide	Winter Storm	0	0	0
1/18/2015	County-wide	Winter Weather	0	0	0
1/24/2015	County-wide	Winter Weather	0	0	0
1/26/2015	Eastern Union	Winter Storm	0	0	0

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
2/1/2015	County-wide	Heavy Snow	0	0	0
3/5/2015	County-wide	Heavy Snow	0	0	0
1/22/2016	County-wide	Winter Storm	0	0	0
1/23/2016	County-wide	Blizzard	0	0	0
1/7/2017	Eastern Union	Winter Weather	0	0	0
2/9/2017	County-wide	Winter Storm	0	0	0
3/14/2017	County-wide	Winter Storm	0	0	0
12/9/2017	County-wide	Winter Weather	0	0	0
1/4/2018	County-wide	Winter Storm	0	0	0
2/17/2018	County-wide	Winter Weather	0	0	0
3/7/2018	County-wide	Winter Weather	0	0	0
3/21/2018	County-wide	Heavy Snow	0	0	0
4/2/2018	County-wide	Winter Weather	0	0	0
11/15/2018	County-wide	Winter Storm	0	0	0
1/30/2019	County-wide	Winter Weather	0	0	0
3/2/2019	County-wide	Winter Weather	0	0	0
3/3/2019	County-wide	Heavy Snow	0	0	0
12/1/2019	County-wide	Winter Weather	0	0	0

Source: NOAA/NCEI. 2020. Storm Events Database.

7.17.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of 65 past winter storm events in Union County between 1994 and 2020, the County experiences multiple winter storm events every year; there is a 100% probability of at least one winter storm event occurring in Union County in the next five years. Based on past history, the probability of winter weather events occurring in the future is relatively high, based on previous data.

Ice Storm

Union County experiences an event that includes freezing rain or ice as part of a winter storm about once every 4.33 years, based on the five ice storms and one wintry mix event between 1994 and 2020. With one event roughly every four and one-third years, there is approximately a 73% probability of at least one ice storm event occurring in Union County in the next five years. Based on previous data, the probability of ice storms occurring in the future is relatively high. However, the overall impact to life and property throughout the planning area will most likely be low to moderate. Considering the low impacts from ice storms, the Steering Committee ranked ice storms as a low risk hazard (See **Table 7.1-2 Union County (County-wide) Hazard Ranking Table** for a complete list of hazard rankings). As a low priority hazard, the Steering Committee determined that ice storms would not be included as part of the more detailed risk assessment.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.17.6 Potential Effects of Climate Change below for a discussion of how climate change may alter the frequency of winter weather and ice storm events.

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7.17.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to DEP's *2020 New Jersey Scientific Report on Climate Change*, by 2050, annual precipitation in New Jersey is expected to increase by 4% to 11%. Seasonally, precipitation amounts are expected to slightly decrease in the summer and slightly increase in the winter. That said, increased winter temperatures will result in more rain and fewer snowfalls.

DEP's *2020 New Jersey Scientific Report on Climate Change* states that ice storms and other severe weather like thunderstorms or nor'easters have the potential to increase in power and frequency as the climate changes.

7.17.7 VULNERABILITY ASSESSMENT

The NCEI reports there have been no injuries, deaths, or property damage due to winter weather events in Union County. Presumably there are damages from winter weather events, but most likely were never reported to the NCEI.

All residents of Union County are subject to the effects of winter weather. As noted elsewhere, these effects include direct impacts on specific structures, injuries or deaths from hypothermia, traffic accidents and (perhaps most significantly) power interruptions resulting from ice-laden trees falling on power lines. This hazard was prioritized by the Steering Committee as high, mostly because the hazard occurs regularly and affects nearly everyone in the County. Potential impacts are widespread, though generally not life-threatening. Structures are generally not vulnerable to the effects of winter weather, except in the rare cases where roofs collapse under extreme snow loads. Although there is some potential for this in Union County, the risk is small. Because such losses are general borne by either property owners or insurance companies, it is generally not possible to obtain any information about winter weather- related damage to structures, expect publicly owned-ones. The Steering Committee rated this hazard a high priority.

The two most significant risks from winter weather in Union County are traffic accidents and power losses. This subsection discusses damages from traffic accidents, and uses national statistics found in the *National Health Statistics Report* entitled *Deaths Attributed to Heat, Cold and other Weather Events in the United States, 2006 to 2010*. The publication is produced by the U.S. Department of Health and Human Services Centers for Disease Control and Prevention. This report includes national statistics on deaths and injuries from traffic accidents that attributable to sleet, slush and snow.

TABLE 7.17-3 NATIONAL DEATHS AND INJURIES FROM TRAFFIC INCIDENTS, 2006-2010

Hazard	Injuries	Deaths
Snow/sleet	58,011	769
Icy pavement	45,133	580
Snow/slush	43,503	511

Source: U.S. Department of Health

For a risk analysis related to extreme cold temperatures, please refer to 7.7.7 Vulnerability Assessment under 7.7 Extreme Temperature-Cold.

Ice Storm

The NCEI Storm Events Database indicates there have been no deaths, injuries, or property damage from previous ice storms in Union County. However, ice storms most likely have caused both infrastructure and property damage such as downed electrical power lines and trees falling on houses. In addition, ice storms potentially put lives at risk from automobile accidents on ice covered roadways. With no indication of past damages from ice storms, or events that included a wintry mix, this hazard was not selected as part of the more detailed risk assessment.

7.18 STORM SURGE (INCLUDES HURRICANES, NOR'EASTERS, TROPICAL STORMS)

7.18.1 HAZARD DESCRIPTION

Storm Surge is defined as the onshore rush of sea or lake water caused primarily by the high winds that are associated with a landfalling hurricane, typhoon, or tropical cyclone and secondarily by the low pressure of the storm. Storm surge is simply water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level 15 feet or more. In addition, wind driven waves are superimposed on the storm tide. According to NOAA, this rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides.

Storm surges are characterized by several factors that allow the displacement of water from oceans, bays or rivers to travel so far inland. Much of the coastlines along the Atlantic and Gulf Coast lie less than 10' above mean sea level. These coastal areas are also densely populated making the danger from storm tides a major concern to life and property. As shown in **Figure 7.18-1 Storm Surge**, the level of surge in a particular area is also determined by the slope of the continental shelf. A shallow slope off the coast will allow a greater surge to inundate coastal municipalities.

Municipalities with a steeper continental shelf will not see as much surge inundation, although large breaking waves can still present major problems. According to NOAA, storm tides, waves, and currents in confined harbors have the potential to severely damage ships, marinas, and pleasure boats.

FIGURE 7.18-1 STORM SURGE

Source: NOAA

One tool used to evaluate the threat from storm surge is the Sea, Lake and Overland Surges from Hurricanes (SLOSH) Model. SLOSH is a computerized model run by the NHC to estimate storm

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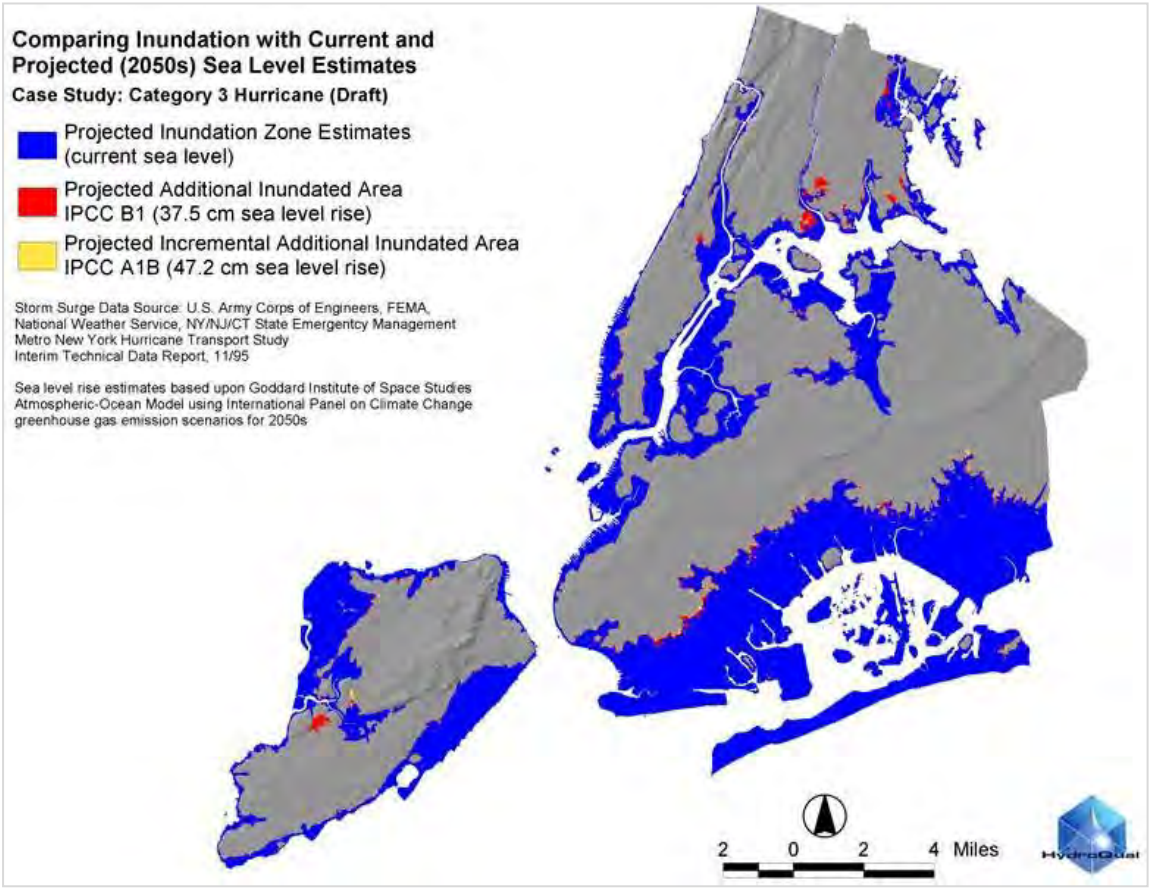
surge heights and winds resulting from historical, hypothetical, or predicted hurricanes by taking into account:

- Pressure
- Size
- Forward speed
- Track
- Winds

Graphical output from the model displays color coded storm surge heights for a particular area in feet above the model's reference level, the National Geodetic Vertical Datum, which is the elevation reference for most maps. Emergency managers often use the data produced from the SLOSH model to assist with determining which areas must be evacuated in advance of an approaching hurricane. **Figure 7.18-2 New York City Inundation Zones for a Category 3 Hurricane** identifies the inundation zone for New York City with current and projected sea level rise for a Category 3 Hurricane on a worst-case track slightly west of the City.

FIGURE 7.18-2 NEW YORK CITY INUNDATION ZONES FOR A CATEGORY 3 HURRICANE



Source: New York City Department of Environmental Protection, Goddard Institute for Space Studies

7.18.2 LOCATION

Storm surge vulnerability is closely related to elevation relative to sea level and proximity to the coast. The lower the elevation (and closer to the potential Source of flooding), the more likely it is that an area will be negatively impacted by surge. Surge can come directly from the Atlantic Ocean and various bays in the state and can occur as a result of backwater effects on rivers. The storm

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surge hazard associated with hurricanes and other severe storms has historically been responsible for coastal flooding and erosion along the New Jersey coastline. In Union County, the area along the Arthur Kill in the far eastern part of the county has the greatest vulnerability to storm surge, simply because of its location.

In 2007, FEMA's Risk Analysis Team with Region IV (Atlanta, Georgia) developed the Coastal Flood Loss Atlas (CFLA) to better assess and properly mitigate the risks and vulnerabilities associated with storm surge. The CFLA unites the National Hurricane Center's (NHC) Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model with FEMA's loss estimation model, HAZUS (Hazards US), creating an easily and readily accessible atlas of possible coastal flood conditions and losses to support pre- and post- hurricane landfall strategies.

The Risk Analysis Team developed storm surge inundation (i.e. water depth over land) grids in GIS format from SLOSH Maximum of Maximums (MOMs) outputs per hurricane category. These outputs are considered the worst-case storm surge scenarios for each Saffir-Simpson hurricane category (1 through 5) under perfect storm conditions. Local emergency management officials use MOMs to delineate storm surge evacuation zones, and the CFLA complements FEMA HES to achieve the goal of comprehensive risk and vulnerability assessments for all hurricane storm surge scenarios and evacuation zones. The CFLA establishes a baseline level of coastal flood risks and vulnerabilities that can be further assessed for better, more comprehensive understanding of coastal hazards and disasters.

Figure 7.18-3 Union County SLOSH Maximum of Maximum (MOM) Storm Surge Limit, Hurricane Categories 1-4 through **Figure 7.18-5 Union County SLOSH Maximum of Maximum (MOM) Storm Surge Limit, Hurricane Categories 1-4-Group 3** below shows the maximum storm surge extent for hurricane categories 1 through 4 in Union County. Note that the Category 5 extent is not included on the map. The CFLA summary indicated that Category 5 MOM SLOSH models have not been produced for FEMA Region II by NOAA's National Hurricane Center. Thus, there are no Category 5 loss estimates for these areas in the CFLA.

FIGURE 7.18-3 UNION COUNTY SLOSH MAXIMUM OF MAXIMUM (MOM) STORM SURGE LIMIT, HURRICANE CATEGORIES 1-4

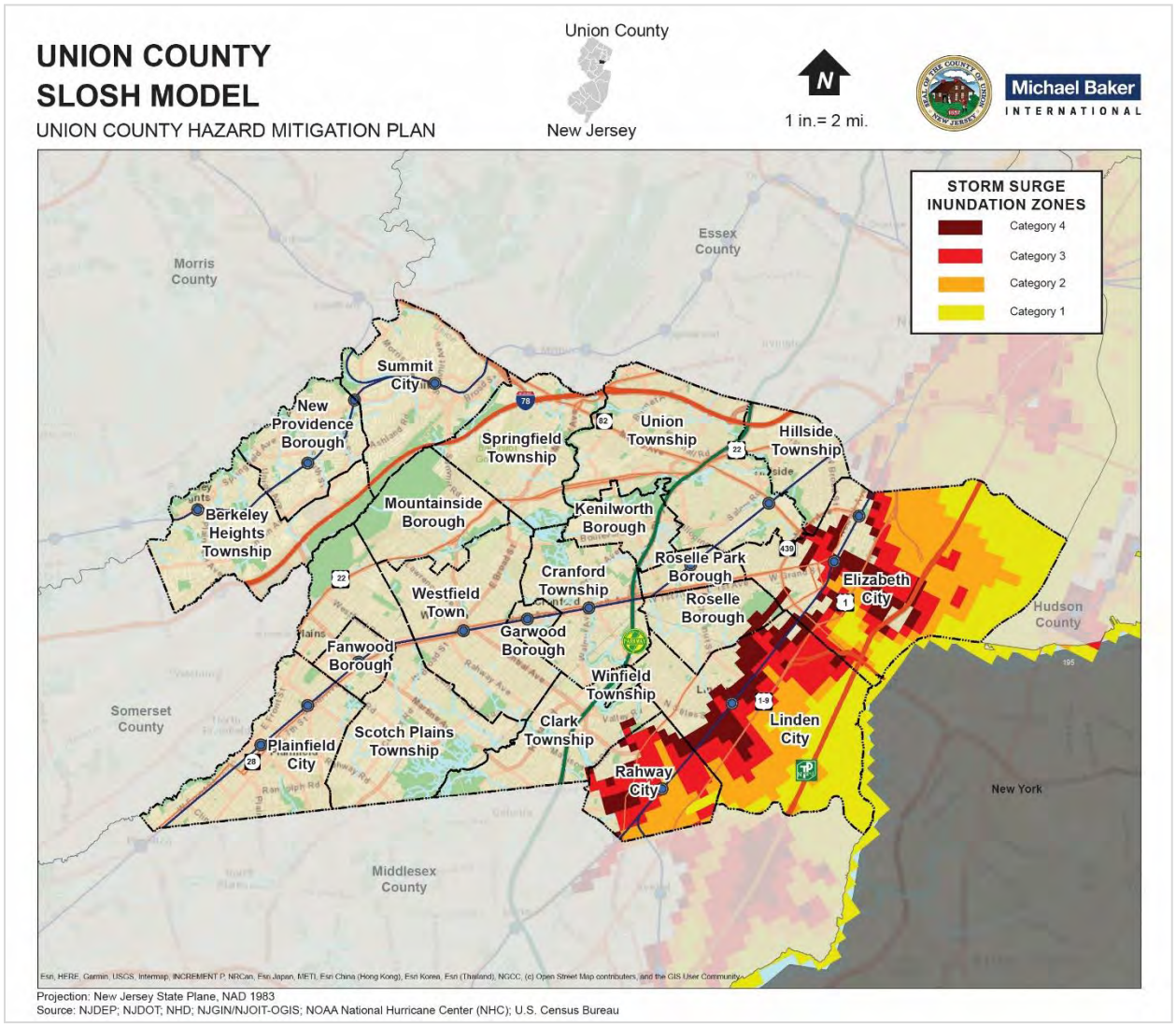

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FIGURE 7.18-4 UNION COUNTY SLOSH MAXIMUM OF MAXIMUM (MOM) STORM SURGE LIMIT, HURRICANE CATEGORIES 1-4-GROUP 2

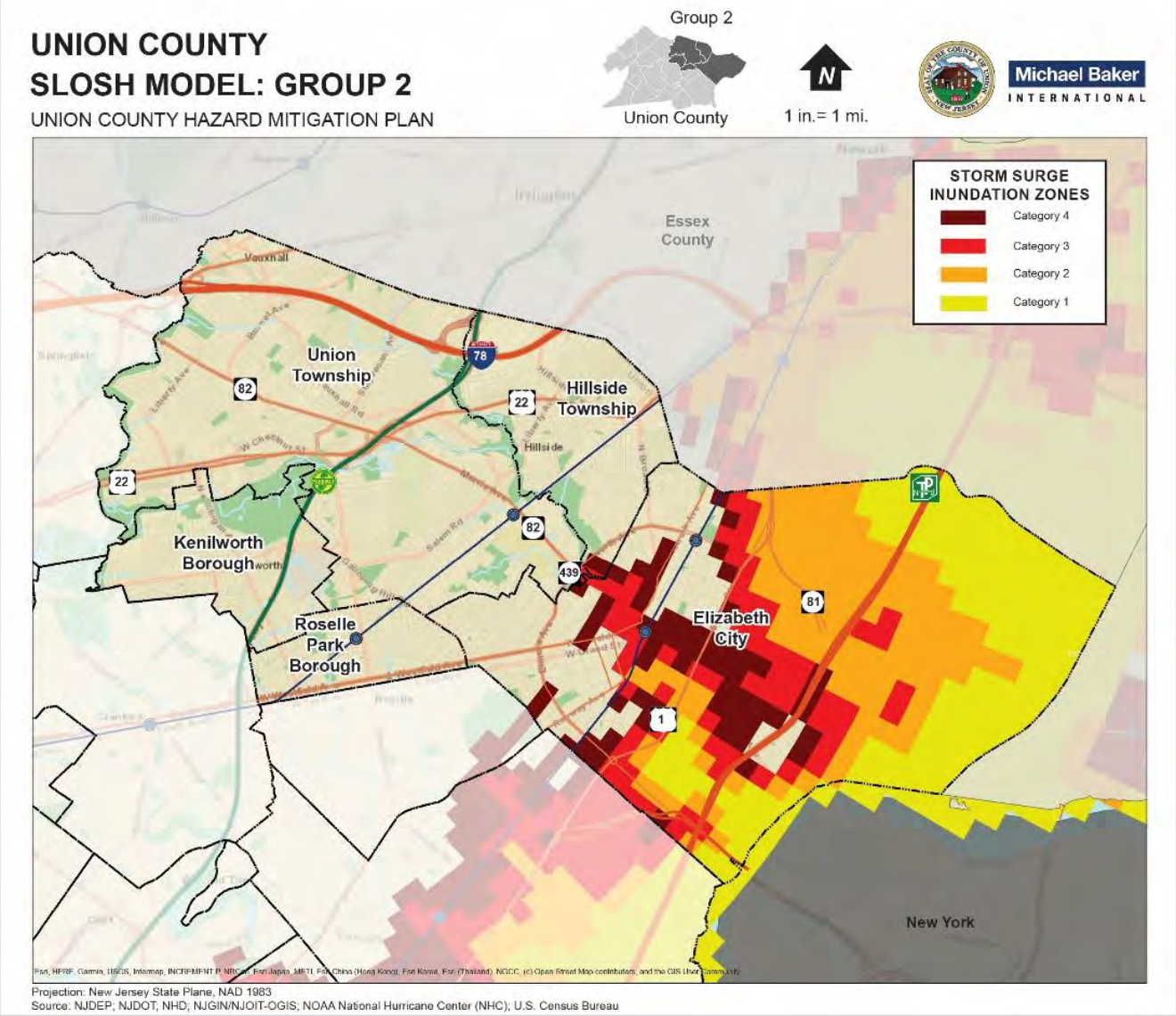
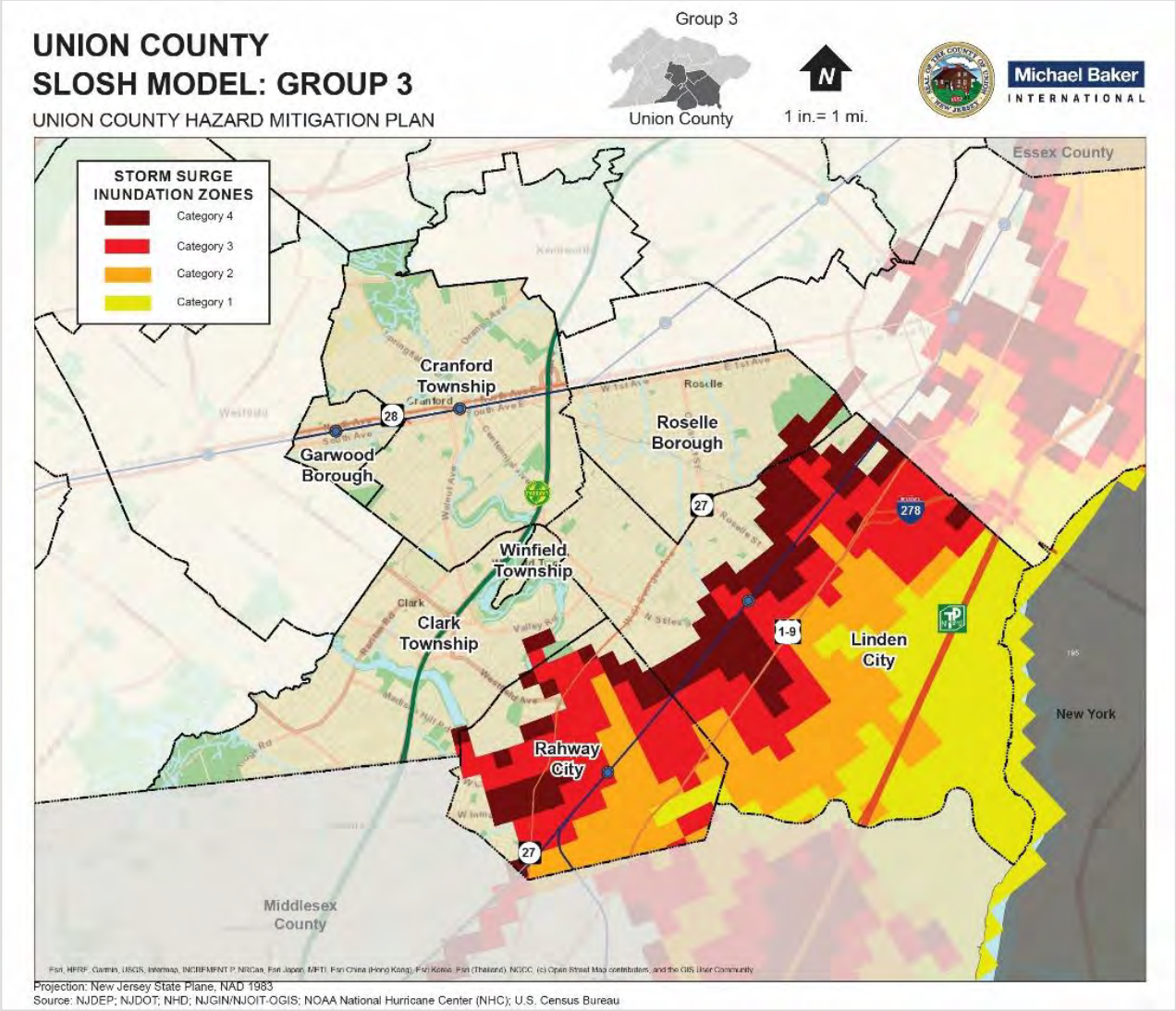


FIGURE 7.18-5 UNION COUNTY SLOSH MAXIMUM OF MAXIMUM (MOM) STORM SURGE LIMIT, HURRICANE CATEGORIES 1-4-GROUP 3



7.18.3 EXTENT

Storm surges inundate coastal floodplains by tidal elevation rise in inland bays and ports, and backwater flooding through coastal river mouths. Severe winds associated with low-pressure systems cause increase in tide levels and water surface elevations. Storm systems also generate large waves that run up and flood coastal areas. The combined effects create storm surges that affect the beach, marsh, and low-lying floodplains. Shallow offshore depths can cause storm driven waves and tides to pile up against the shoreline and inside bays. **Table 7.18-1 Factors that Influence the Severity of Storm Surge** highlights the factors that can influence the severity of coastal storms.

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TABLE 7.18-1 FACTORS THAT INFLUENCE THE SEVERITY OF STORM SURGE

Factor	Effect
Wind Velocity	The higher the wind velocity the greater the damage.
Storm Surge Height	The higher the storm surge the greater the damage.
Coastal Shape	Concave shoreline sections sustain more damage because the water is driven into a confined area by the advancing storm, thus increasing storm surge height and storm surge flooding.
Storm Center Velocity	Then slower the storm moves, the greater damage. The worst possible situation is a storm that stalls along a coast, through several high tides.
Nature of Coast	Damage is most severe on low-lying island barrier shorelines because they are easily over washed by wave action.
Previous Storm Damage	A coast weakened by even a minor previous storm will be subject to greater damage in a subsequent storm.
Human Activity	With increased development, property damage increases and more floating debris becomes available to knock down other structures.

7.18.4 PREVIOUS OCCURRENCES AND LOSSES

The structure of the NCEI Storm Events Database used to combine coastal flooding and storm surge events into a category titled “Ocean and Lake Surf.” Since the 2016 HMP update, NCEI has changed their categorization to classify “Coastal Flood” and “Storm Surge/Tide” separately. The database indicates there have no storm surge events and three coastal flooding events that have impacted Union County between 1950 and 2013. In addition to the events listed in the NCEI, Hurricane Sandy also resulted in extensive storm surge flooding. The four events are summarized in the 2016 HMP update. From January 2013 to July 2020, NCEI has reported zero storm surge/tide events in Union County.

According to NCEI, the most recent storm surge event in Union County occurred as a result of Hurricane Sandy on October 29, 2012. The storm produced three to six feet of inundation above ground level along the Arthur Kill and in the Elizabeth Port Authority Marine Terminal along Newark Bay in eastern Union County. The inundation generally extended about 2 miles inland past the New Jersey Turnpike, while a few feet of inundation occurred 5 miles inland on the Rahway River. This inundation caused areas of moderate to major damage to industrial complexes, such as the Bayway refinery. In addition, the Elizabeth Port System was disrupted for a week to repair road and rail ways, hundreds of displaced shipping containers, damaged electrical systems and other port cargo from the inundation. Also, over 10,000 cars were destroyed in the Elizabeth and Newark Port System from the saltwater inundation. The marina in the port area of Elizabeth, N.J. was also destroyed as a result of the storm surge.

According to FEMA’s Risk Assessment Mapping and Planning (RAMPP) Final Report, the surrounding neighborhoods in this area also experienced significant damage. Flooding from the surge impacted 20-30 homes in the Trembly Point neighborhood within the Linden City. The effects of the storm continued through October 31 and resulted in 60 reported casualties in New York State (48 in New York City alone), and 34 casualties in New Jersey. With the highest storm surge levels on record, Sandy produced widespread damage to coastal and inland communities in both States and estimated damages of $42 billion in New York and $30 billion in New Jersey.

After Sandy, the FEMA Modeling Task Force (MOTF), a group of modeling and risk analyst experts from FEMA Regions VIII (Denver) and IV (Atlanta) that was activated by FEMA in support of disaster response operations. The group consists of individuals with experience in multi-hazard loss modeling and impact assessments, including earthquakes, hurricanes, riverine and coastal floods (surges, tsunamis), winter storms and others. The MOTF plays an important role in coordinating hazard and modeling information from a variety of Source to develop consensus for best estimates of impacts before, during, and after events. The MOTF integrates observed information throughout disasters to verify and enhance impact assessments. The MOTF developed Sandy storm surge inundation areas for both New York and New Jersey. According to the MOTF Hurricane Sandy Impact Analysis, the surge inundation boundary was created from field-verified High-Water Marks (HWMs) and Storm Surge Sensor data from the USGS (through February 14, 2013). The MOTF used HWMs and Surge Sensor data to interpolate a water surface elevation, then subtracted from the best available Digital Elevation Model (DEM), to create a depth grid and surge boundary by state.

Figure 7.18-6 Hurricane Sandy Storm Surge Inundation Map-Union County through **Figure 7.18-8 Hurricane Sandy Storm Surge Inundation Map-Union County-Group 3** identifies the Sandy storm surge inundation area for Union County. The map shows a significant portion of eastern Union County was inundated by Sandy.

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FIGURE 7.18-6 HURRICANE SANDY STORM SURGE INUNDATION MAP – UNION COUNTY

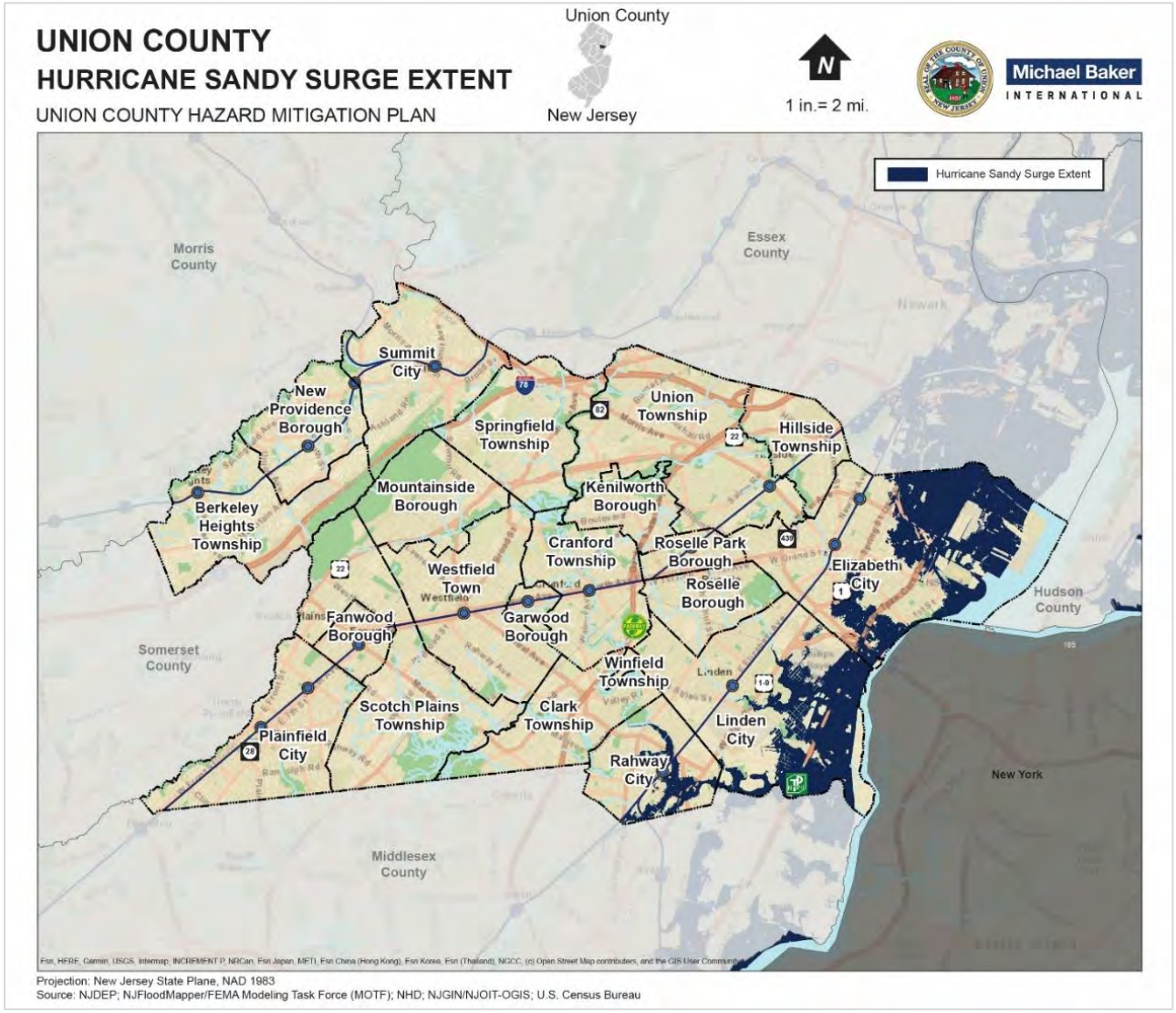

FIGURE 7.18-7 HURRICANE SANDY STORM SURGE INUNDATION MAP – UNION COUNTY-GROUP 2

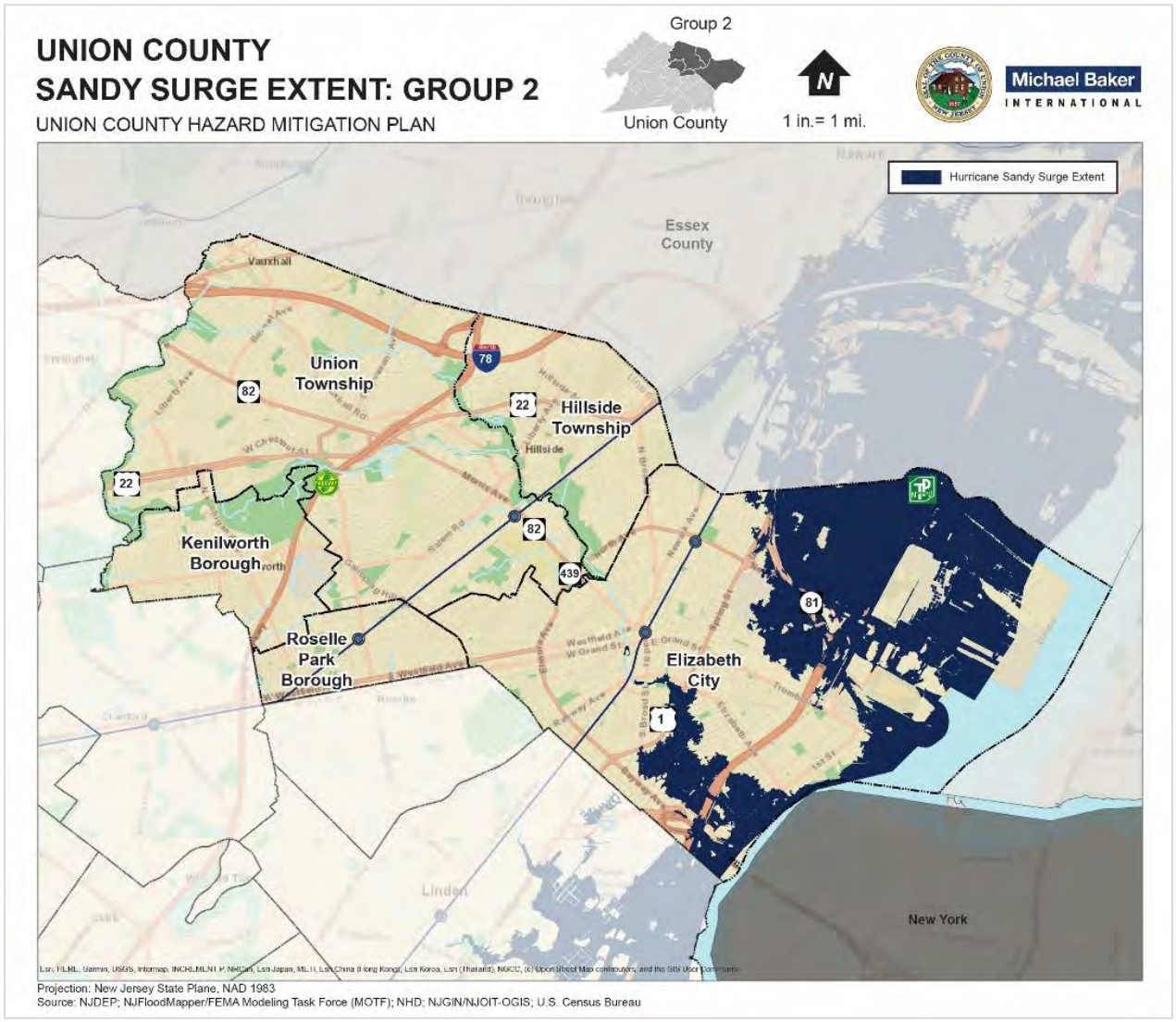

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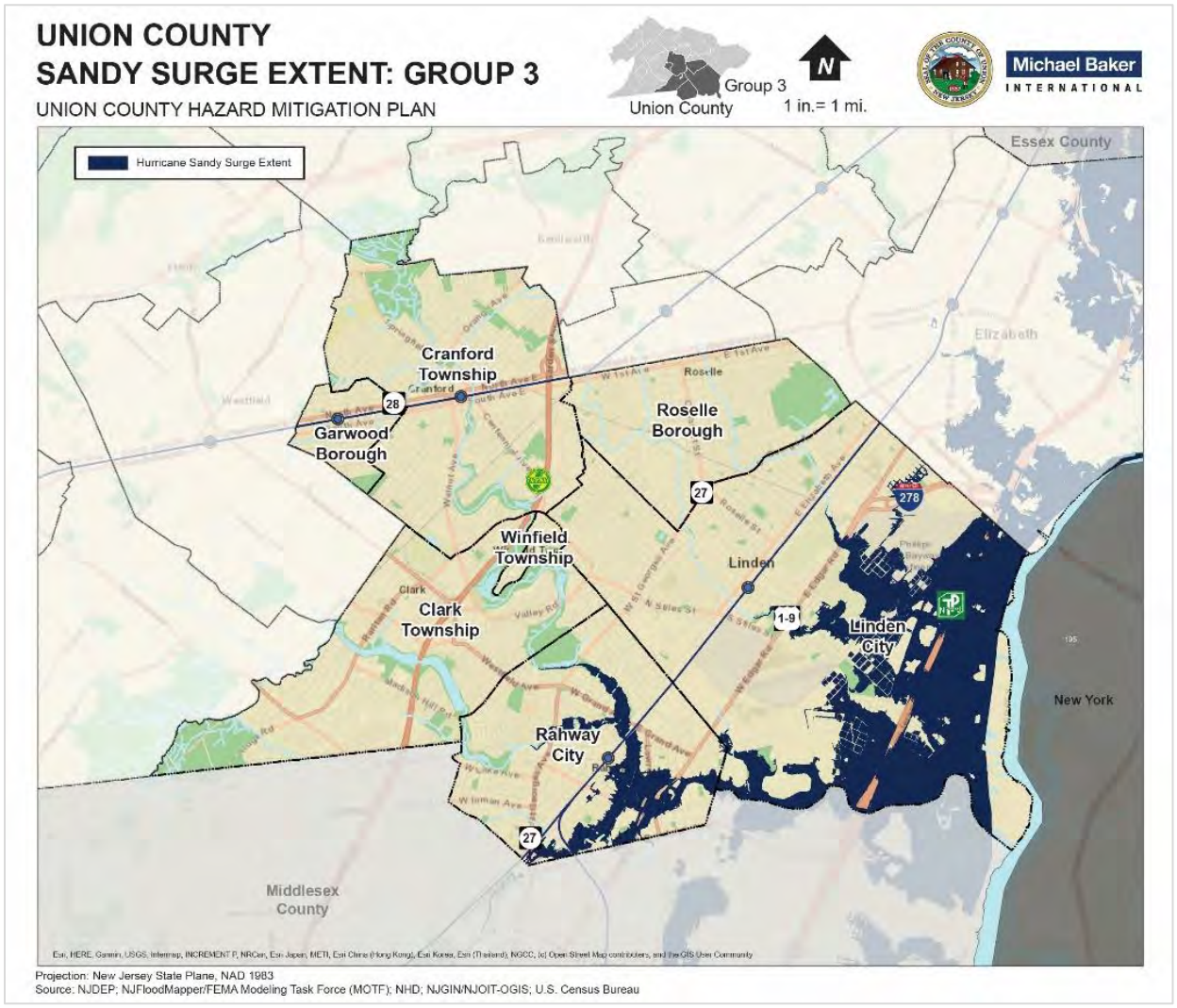
FIGURE 7.18-8 HURRICANE SANDY STORM SURGE INUNDATION MAP – UNION COUNTY-GROUP 3



As part of the analysis completed by MOTF, the team calculated the population and households exposed to the surge from Sandy. The impacts to Union County are summarized below in **Table 7.18-2 Sandy Impacts.**

TABLE 7.18-2 SANDY IMPACTS

Population/Households	
Population (2010)	536,499
Households (2010)	188,118
Population exposed to Storm Surge	17,441
Households Exposed to Surge	6,049

Source: FEMA Modeling Task Force (MOTF) Hurricane Sandy Impact Analysis

7.18.5 PROBABILITY OF FUTURE OCCURRENCES

With a total of four past storm surge events in Union County between 1950 and July 2020, the County experiences a storm surge event on average roughly every 17.5 years. With one event roughly every 17.5 years, there is an approximately 25.5% probability of at least one storm surge event occurring in Union County in the next five years. From the historical data provided in the NCEI Storm Events Database and other Source, the probability of future storm surge events occurring along far eastern part of Union County is considered high. Considering the impacts from storm surge flooding, the Steering Committee ranked storm surge as a high priority hazard.

7.18.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to DEP's 2020 New Jersey Scientific Report on Climate Change, sea-level rise will exacerbate flooding from more intense rainfall events and storms in coastal areas in addition to flooding risks from storm surge.

7.18.7 VULNERABILITY ASSESSMENT

In Union County, there have been no deaths or injuries due to storm surge. No property damage has been reported related to storm surge from open Source. Rahway City was able to provide a limited amount of surge damage data that resulted from Hurricane Floyd. The storm surge resulting from Floyd caused the Rahway River to rise to a level that significantly damaged the City library. Eight homes were also damaged to the point that they qualified for acquisition through FEMA funded programs.

Table 7.18-3 Total Number and Percentage of Critical Facilities with Risk of Storm Surge and **Table 7.18-4 Total Number and Percentage of Critical Infrastructure with Risk of Storm Surge** show the total number and percentage of critical facilities and critical infrastructure at risk of storm surge by municipality.

TABLE 7.18-3 TOTAL NUMBER AND PERCENTAGE OF CRITICAL FACILITIES WITH RISK OF STORM SURGE

Jurisdiction	Number of Critical Facilities with Risk of Storm Surge				Percentage of Critical Facilities with Risk of Storm Surge			
	Cat 1	Cat 2	Cat 3	Cat 4	Cat 1	Cat 2	Cat 3	Cat 4
Berkeley Heights Township	0	0	0	0	0%	0	0	0
Clark Township	0	0	0	0	0%	0%	0%	0%
Cranford Township	0	0	0	0	0%	0%	0%	0%
Elizabeth City	9	26	52	84	8%	23%	46%	74%
Fanwood Borough	0	0	0	0	0%	0%	0%	0%
Garwood Borough	0	0	0	0	0%	0%	0%	0%
Hillside Township	0	0	0	0	0%	0%	0%	0%
Kenilworth Borough	0	0	0	0	0%	0%	0%	0%
Linden City	0	10	23	39	0%	16%	36%	61%
Mountainside Borough	0	0	0	0	0%	0%	0%	0%
New Providence Borough	0	0	0	0	0%	0%	0%	0%
Plainfield City	0	0	0	0	0%	0%	0%	0%
Rahway City	0	8	21	27	0%	27%	70%	90%

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Jurisdiction	Number of Critical Facilities with Risk of Storm Surge				Percentage of Critical Facilities with Risk of Storm Surge			
	Cat 1	Cat 2	Cat 3	Cat 4	Cat 1	Cat 2	Cat 3	Cat 4
Roselle Borough	0	0	0	1	0%	0%	0%	4%
Roselle Park Borough	0	0	0	0	0%	0%	0%	0%
Scotch Plains Township	0	0	0	0	0%	0%	0%	0%
Springfield Township	0	0	0	0	0%	0%	0%	0%
Summit City	0	0	0	0	0%	0%	0%	0%
Union Township	0	0	0	0	0%	0%	0%	0%
Westfield Town	0	0	0	0	0%	0%	0%	0%
Winfield Township	0	0	0	0	0%	0%	0%	0%
Union County Total	9	44	96	151	1%	6%	13%	20%

Source: NOAA SLOSH Maximum Of Maximum (Mom) Storm Surge Limit, Hurricane Categories 1-4, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

TABLE 7.18-4 TOTAL NUMBER AND PERCENTAGE OF CRITICAL INFRASTRUCTURE WITH RISK OF STORM SURGE

Jurisdiction	Number of Critical Facilities with Risk of Storm Surge				Percentage of Critical Facilities with Risk of Storm Surge			
	Cat 1	Cat 2	Cat 3	Cat 4	Cat 1	Cat 2	Cat 3	Cat 4
Berkeley Heights Township	0	0	0	0	0%	0	0	0
Clark Township	0	0	0	0	0%	0	0	0
Cranford Township	0	0	0	0	0%	0	0	0
Elizabeth City	8	12	16	16	47%	71%	94%	94%
Fanwood Borough	0	0	0	0	0%	0	0	0
Garwood Borough	0	0	0	0	0%	0	0	0
Hillside Township	0	0	0	0	0%	0	0	0
Kenilworth Borough	0	0	0	0	0%	0	0	0
Linden City	20	23	25	25	80%	92%	100%	100%
Mountainside Borough	0	0	0	0	0%	0	0	0
New Providence Borough	0	0	0	0	0%	0	0	0
Plainfield City	0	0	0	0	0%	0	0	0
Rahway City	1	1	7	8	13%	13%	88%	100%
Roselle Borough	0	0	0	0	0%	0	0	0
Roselle Park Borough	0	0	0	0	0%	0	0	0
Scotch Plains Township	0	0	0	0	0%	0	0	0
Springfield Township	0	0	0	0	0%	0	0	0
Summit City	0	0	0	0	0%	0	0	0
Union Township	0	0	0	0	0%	0	0	0
Westfield Town	0	0	0	0	0%	0	0	0
Winfield Township	0	0	0	0	0%	0	0	0

Jurisdiction	Number of Critical Facilities with Risk of Storm Surge				Percentage of Critical Facilities with Risk of Storm Surge			
	Cat 1	Cat 2	Cat 3	Cat 4	Cat 1	Cat 2	Cat 3	Cat 4
Union County Total	29	36	48	49	25%	31%	41%	42%

Source: NOAA SLOSH Maximum Of Maximum (Mom) Storm Surge Limit, Hurricane Categories 1-4, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

7.19 WILDFIRE

7.19.1 HAZARD DESCRIPTION

A wildfire, also known as a forest fire, vegetation fire, grass fire, brush fire, or hill fire, is an uncontrolled fire often occurring in wildland areas, which can also consume houses or agricultural reSource. Common causes include lightning, human carelessness, and arson. Wildfires are fueled by naturally occurring or non-native species of trees, brush, and grasses. Topography, fuel, and weather are the three principal factors that impact wildfire hazards and behavior.

Wildfires often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. As mentioned, wildfires can be human-caused through acts such as arson or campfires or can be caused by natural events such as lightning. Wildfires can be categorized into three types:

1. Wildland fires occur in very rural areas and are fueled primarily by natural vegetation.
2. Interface fires occur in areas where homes or other structures are endangered by the wildfires. The fires are fueled by both natural vegetation and man-made structures. These are often referred to as Wildland Urban Interface fires.
3. Firestorms occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change, or the fuel is exhausted.

The following three factors contribute significantly to wildfire behavior:

Fuel: The type of fuel and the fuel loading (measured in tons of vegetative matter per acre) have a direct impact on fire behavior. Fuel types vary from light fuels (grass) to moderate fuels (southern rough) to heavy fuels (slash). The type of fuel and the fuel load determines the potential intensity of the wildfire and how much effort must be expended to contain and control it.

Weather: The most variable factor affecting wildfire behavior is weather. Important weather variables are precipitation, humidity, and wind. Weather events ranging in scale from localized thunderstorms to large cold fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as extended drought and low humidity can lead to extreme wildfire activity.

Topography: Topography can have a powerful influence on wildfire behavior. The movement of air over the terrain tends to direct a fire's course.

7.19.2 LOCATION

The potential for wildfires exists over the entire planning area, although the probability is relatively low because of the predominately urban nature of the planning area, as well as the fire detection and suppression capabilities that exist in the county. **Figure 7.19-1 Union County Wildfire Fuel Hazard Risk** below identifies the wildfire fuel hazard risk for Union County. According to the National Park Service Fire and Fuel Management: Definitions, ambiguous terminology, and

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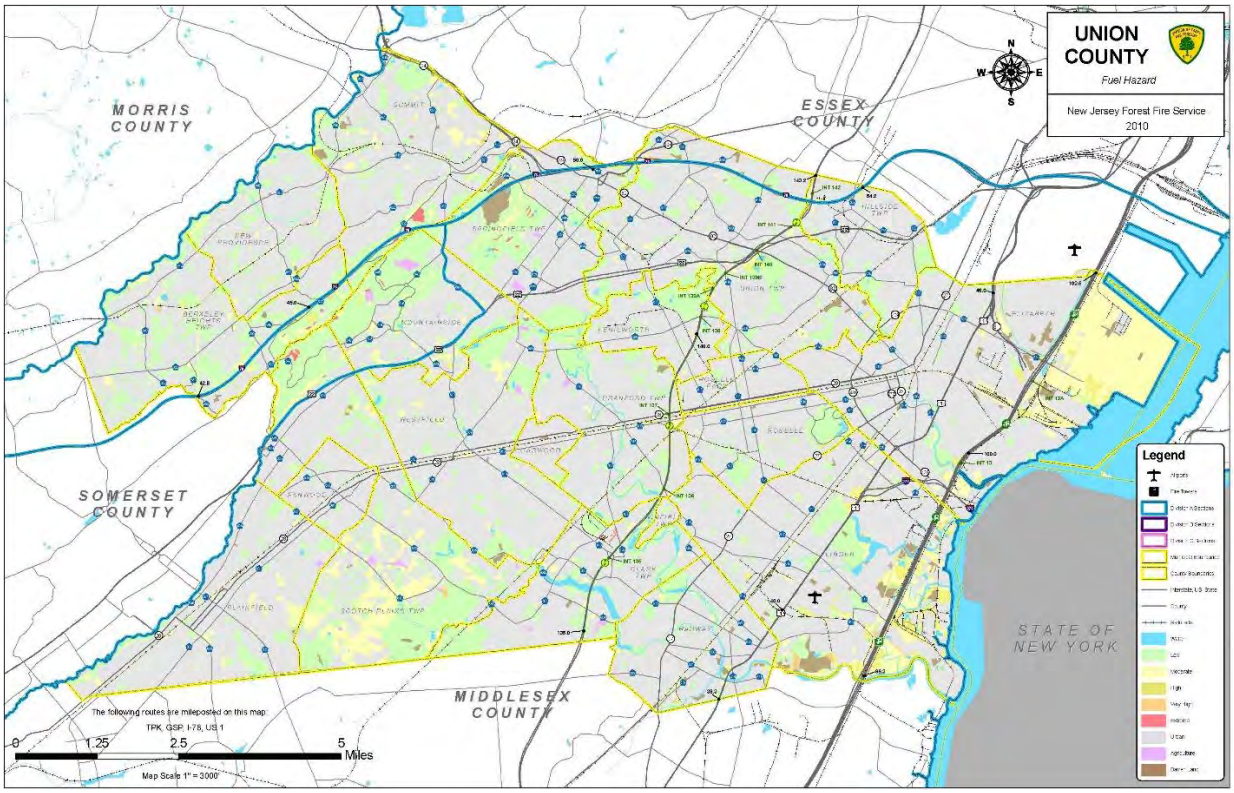
references, fuel hazard refers to the risks associated with the amount of biomass that will burn under a given set of conditions. Moisture content and fuel size are the primary determinants of availability. Arrangement and compactness of fuel may also determine availability. The map was developed based on GIS data obtained from the New Jersey Forest Fire Service (NJFFS) a division of the New Jersey Department of Environmental Protection (DEP) website. The NJFFS developed the Wildfire Fuel Hazard data based upon DEP's 2002 Land Use/Land Cover (LU/LC) datasets and DEP's 2002 10-meter Digital Elevation Grid datasets (considering both land use and slope to determine rankings).

The wildfire fuel hazard data was released for the State of New Jersey in May 2009. The map (and following table) shows that the majority of the county is located in the urban category (shaded gray) with minimal fuel hazard risk from wildfires. The high-risk areas of Union County are colored gold (high risk), orange (very high risk), and red (extreme). There are some small high and very high-risk areas predominately in southeastern Linden and eastern Elizabeth. Additionally, the extreme hazard areas are concentrated in Watchung Reservation in the northwest region of the County.

FIGURE 7.19-1 UNION COUNTY WILDFIRE FUEL HAZARD RISK



Source: DEP (GIS), New Jersey Forest Fire Service

Table 7.19-1 Union County Wildfire Fuel Hazard Risk, Number of Square Miles below identifies the number of square miles of the Union County parcel in wildfire hazard areas per wildfire fuel hazard risk category in Union County. The “Low” fuel hazard risk category has the highest number of square miles, with a total of 17.85 square miles within the County. The table also shows that the majority of the County is urban (as reflected on the map above), indicating a very low risk from the wildfire hazard.

TABLE 7.19-1 UNION COUNTY WILDFIRE FUEL HAZARD RISK, NUMBER OF SQUARE MILES

Jurisdiction	Number of Square Miles in Wildfire Hazard Areas		
	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas
Berkeley Heights Township	3.98	3.96	0.02
Clark Township	0.97	0.97	0.00
Cranford Township	15.70	15.68	0.03
Elizabeth City	6.11	5.90	0.21
Fanwood Borough	0.09	0.09	0.00
Garwood Borough	0.08	0.08	0.00
Hillside Township	0.69	0.67	0.02
Kenilworth Borough	0.94	0.92	0.01
Linden City	5.22	4.78	0.44
Mountainside Borough	2.96	2.95	0.01
New Providence Borough	1.42	1.42	0.00
Plainfield City	0.66	0.66	0.00
Rahway City	0.70	0.68	0.02
Roselle Borough	0.65	0.62	0.03
Roselle Park Borough	0.12	0.12	0.00
Scotch Plains Township	4.25	4.24	0.01
Springfield Township	2.14	2.10	0.04
Summit City	2.23	2.22	0.01
Union Township	2.59	2.54	0.04
Westfield Town	1.83	1.83	0.00
Winfield Township	0.00	0.00	0.00
Union County Total	53.33	52.43	0.90

Source: DEP (GIS), New Jersey Forest Fire Service, 2021 NJOGIS

The NJFFS has also produced wildfire risk maps in 2010 for New Jersey. **Figure 7.19-2 Union County Wildfire Risk** below identifies the wildfire risk for Union County. The map shows the wildfire risk increases towards the western half of the County. The greatest risk is located in the western area of the County, particularly Scotch Plains Township and Berkeley Heights Township.

7.19.3 EXTENT

The frequency and severity of wildfires is dependent on weather and on human activity. In the planning area, severity has historically been very low, and duration a matter of hours to a day. The risk is increased and compounded by increasing development within the zone commonly referred to as the "wildland-urban interface (WUI)." Within this zone of natural landscape, buildings become additional fuel for fires when fires do occur. Most wildland fires are man-caused and occur in the interface of developed lands and forest and range lands. In particular, the dry conditions, high temperatures, and low humidity that characterize drought periods set the stage for wildfires.

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The Colorado State Forest Service has developed a fire intensity scale (FIS) that quantifies potential fire intensity based on high to extreme weather conditions, fuels, and topography. The FIS was developed to measure wildfire intensity by magnitude. The FIS consists of six classes and ranges in magnitude from one to six and similar to the Richter scale of earthquake magnitude, each unit increase in FIS is a meaningful ten-fold increase in fireline intensity. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 6, represents extreme wildfire intensities according to the Colorado State Forest Service *Colorado Wildfire Risk Assessment Project Final Report* dated February 21, 2013.

A detailed description of the FIS classes is provided in the following table.

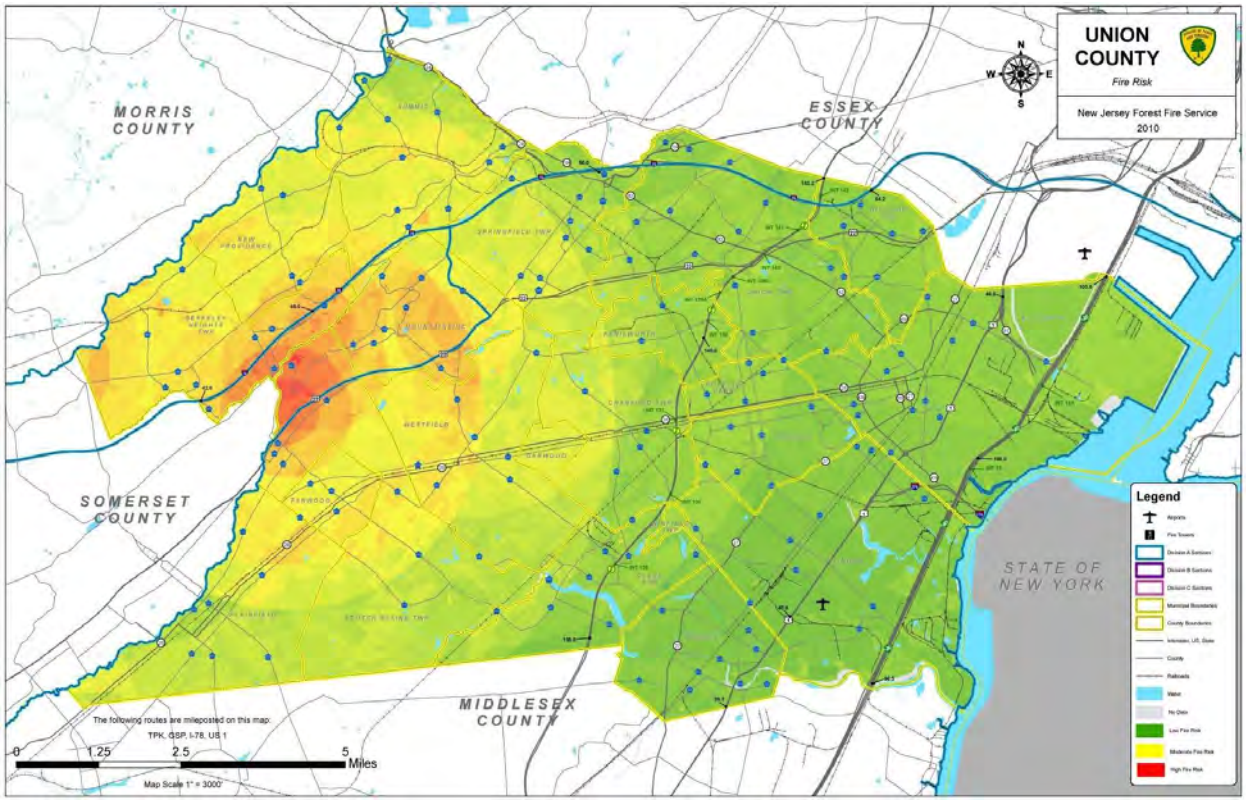
TABLE 7.19-2 WILDFIRE INTENSITY SCALE

Fire Intensity Class	Description of Fire Behavior and Potential Effects	General Preparedness Recommendations
1	Very small, discontinuous flames, usually less than 1 foot in length; very slow spread rate; no spotting. Fires suppressible by lay-firefighters without specialized tools. Very little potential for harm or damage. Fires of this intensity occur on the flanks and rear of large fires, and near the beginning and end of burning periods. These fires are relatively rare due to their slow spread rate and easy control.	**Basic preparedness measures will better protect your home and property.**
2	Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires easily suppressed by trained hand crews with protective equipment and firefighting tools. Little potential for harm or damage. This intensity class can occur at the head of a fire in a mild fire environment or on the flanks and rear of fires in more severe fire environments. This intensity class is very common, especially on fires not being actively suppressed.	**Increasing potential to cause harm or damage to life and property.** Increased preparedness measures may be needed to better protect your home and property. This is an important consideration in a scenario where sufficient firefighting reSource are not available to protect your home or property.
3	Flames up to 8 feet in length; short-range spotting is possible. Hand crews will find these fires difficult to suppress without support from aircraft or engines, but dozers and plows are generally effective. Increasing potential to cause harm or damage. This intensity class occurs at the head and flanks of fires in moderate fire environments, or near the rear of fires in heavy fuel. This intensity class is common.	**Increasing potential to cause harm or damage to life and property.** Increased preparedness measures may be needed to better protect your home and property. This is an important consideration in a scenario where sufficient firefighting reSource are not available to protect your home or property.
4	Large flames, up to 30 feet in length; short-range spotting common; medium-range spotting possible. Direct attack by hand crews and equipment is generally ineffective, indirect attack may be effective. Moderate potential for harm or damage. This intensity class is generally observed at the head of fires in moderate fire environments or near the head and flank of fires in moderate to severe fire environments. This intensity class is relatively common.	**Significant potential for harm or damage to life and property.** Extensive preparedness measures may be needed to better protect your home and property. This is an important consideration in a scenario where sufficient firefighting reSource are not available to protect your home or property.

Fire Intensity Class	Description of Fire Behavior and Potential Effects	General Preparedness Recommendations
5	Very large flames up to 150 feet in length; copious short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head. Great potential for harm or damage. This intensity class is usually observed near the head of fires in severe fire environments. Despite the high spread rate, this intensity class is relative infrequent due to the rarity of the fire environment and spread direction.	**Significant potential for harm or damage to life and property.** Similar to the previous category, extensive preparedness measures may be needed to better protect your home and property. This is an important consideration in a scenario where sufficient firefighting reSource are not available to protect your home or property.
6	Extraordinary flame size, greater than 150 feet in length; copious spotting; very strong fire-induced winds. Conditions supporting this behavior are rare and short- lived. All suppression efforts are ineffective. Great potential for harm or damage. This intensity class is usually observed near the head of fires in severe fire environments. Despite the high spread rate, this intensity class is relative infrequent due to the rarity of the fire environment and spread direction.	**Great potential for harm or damage to life and property.** Extensive preparedness measures may be needed to better protect your home and property.

Source: Colorado State Forest Service, Wildfire Risk Assessment, 2013

FIGURE 7.19-2 UNION COUNTY WILDFIRE RISK



Source: New Jersey Forest Fire Service, 2010

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7.19.4 PREVIOUS OCCURRENCES AND LOSSES

The NJFFS indicates there are approximately 1,500 wildfires that destroy 7,000 acres of forest land in New Jersey each year. A variety of Source were reviewed to identify past wildfire events in New Jersey including the NJFFS, the NCEI, the SHELDUS database, and other open Source of data. The NCEI and SHELDUS database indicate there have been no significant wildfires in Union County between 1950 and 2013. Review of additional data Source identified one wildfire event in Cranford Township on March 14, 2012. A brush fire covering about one acre of wooded area adjacent to Nomahegan Park in Cranford spread through the dry brush about 300 yards into the woods on the Cranford side of Kenilworth Boulevard according to an article on the Cranford Patch, "Large Brush Fire Spreads Through Cranford Woods" dated March 15, 2012. There have most likely been other small similar wildfire events, but due to the size did not meet the threshold to be reported as part of the data collected by the NCEI. NCEI has reported zero wildfire events in Union County between January 2013 and July 2020.

According to the New Jersey Forest Fire Service there have been no wildfire events over 100 acres in Union County between 1924 and 2011. Based on review of historical wildfire records, Union County ranks near the bottom of average annual fire incidents and number of acres burned in New Jersey.

7.19.5 PROBABILITY OF FUTURE OCCURRENCES

With only one significant past wildfire event in Union County between 1950 and 2020, the County experiences a wildfire event on average roughly once every 70 years. With one event roughly every 70 years, there is approximately a 7% probability of at least one wildfire event occurring in Union County in the next five years. The past wildfire data indicates that the probability of future wildfires occurring in the county is fairly low and will most likely have a limited impact on property and life in the planning area. Considering the extensive development (urban areas) and limited forested areas, the Steering Committee ranked wildfire as a low risk hazard (See **Table 7.1-2 Union County (County-wide) Hazard Ranking Table** for a complete list of hazard rankings). While a more detailed risk assessment was not conducted at part of the 2016 HMP update, one was conducted for the 2021 HMP update in accordance with the requirements of the New Jersey State Hazard Mitigation Plan 2019 Standardized Risk Template for Multi-Jurisdictional Mitigation Plans.

Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.19.6 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of wildfire events.

7.19.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the *2020 New Jersey Scientific Report on Climate Change*, the frequency of large wildfires is expected to increase due to hotter, drier conditions. Further, wildfire seasons could become longer.

According to the State HMP, the highest fire risk comes from hot, dry conditions. Temperature increases could warm and dry out vegetation, intensifying wildfire danger. Forest susceptibility to wildfires changes due to altered fuel loads and fuel moisture. Further, winds that spread fire may increase due to climate change, creating faster and harder to contain fires that are more likely to expand into residential neighborhoods.

7.19.7 VULNERABILITY ASSESSMENT

There are no records of deaths or injuries and no recorded loss of property from wildfires in the planning area. Although there have been no reported injuries or property damage from wildfires the areas of highest risk to life and property in Union County can be identified by examining the Wildland Urban Interface (WUI). The United States Forest Service (USFS) defines WUI as the area where houses meet or intermingle with undeveloped wildland vegetation. This makes the WUI a focal area for human-environment conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline. The WUI is where wildfire poses the biggest risk to human lives and structures. Using GIS, the USFS integrated U.S. Census and USGS National Land Cover Data, to map the risk areas related to the WUI. Please refer to the 2016 HMP update for a depiction of the Wildland Urban Interface (WUI) in Union County

In 2020, the USDA Forest Service published the Wildfire Risk to Communities project, which depicts wildfire hazard and risk for communities across the United States. **Figure 7.19-3 Wildfire Exposure Type** through **7.19-7 Wildfire Exposure Type-Group 4** depicts where homes would be directly exposed to wildfire from adjacent wildland vegetation, indirectly exposed to wildfire from indirect Source such as embers and home-to-home ignition, or not exposed to wildfire due to distance from direct and indirect ignition Source (> 1 mile).

FIGURE 7.19-3 WILDFIRE EXPOSURE TYPE

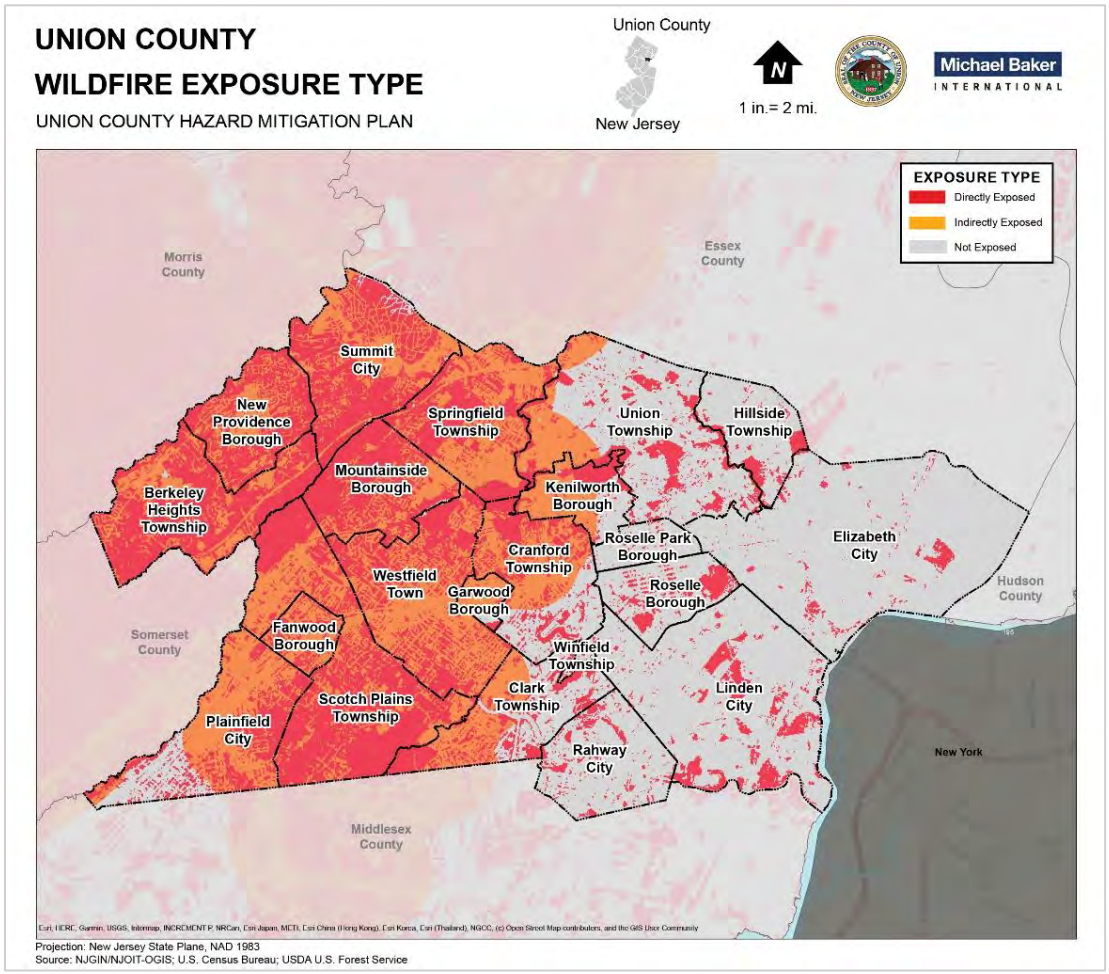

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FIGURE 7.19-4 WILDFIRE EXPOSURE TYPE-GROUP 1

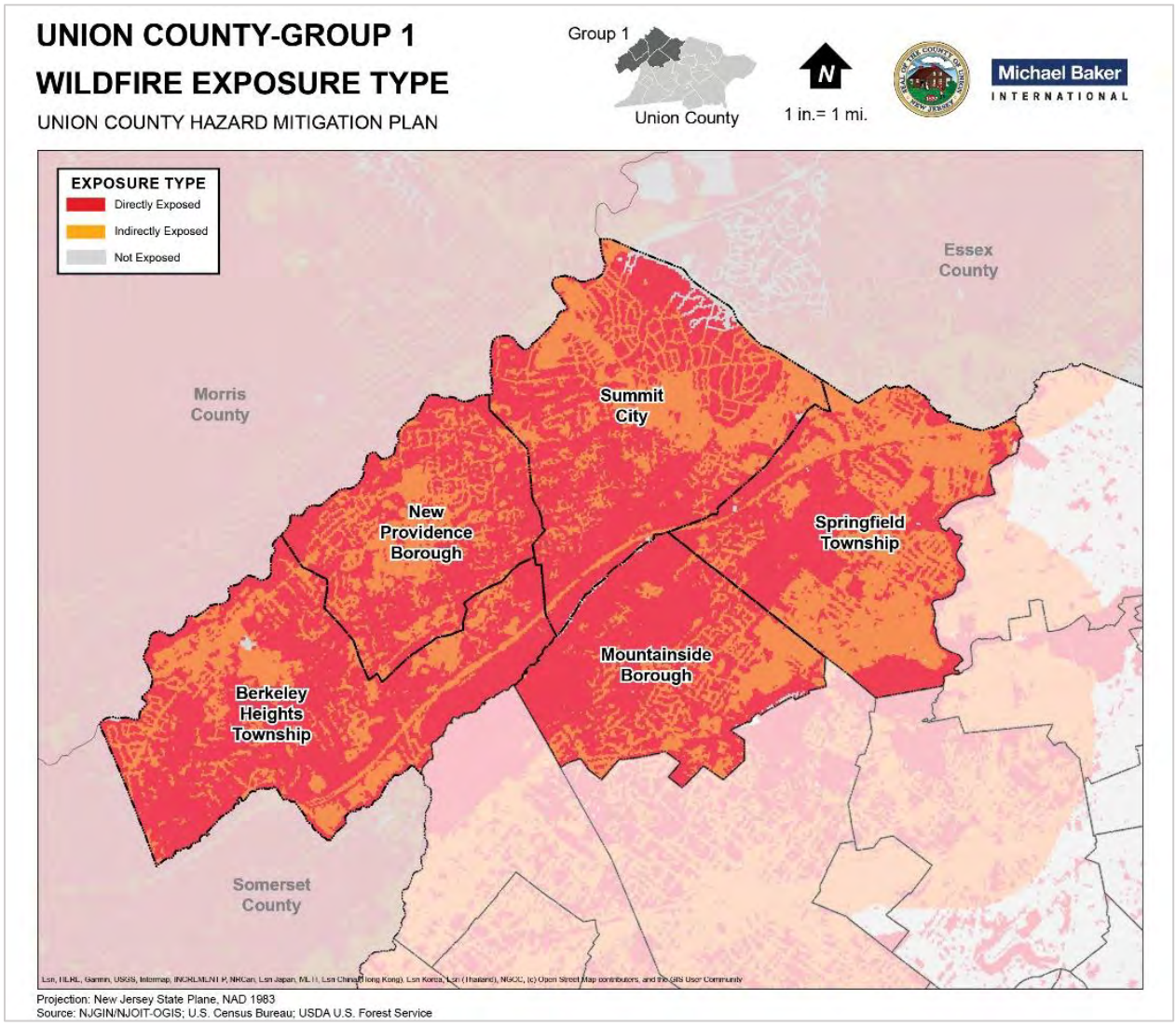

FIGURE 7.19-5 WILDFIRE EXPOSURE TYPE-GROUP 2

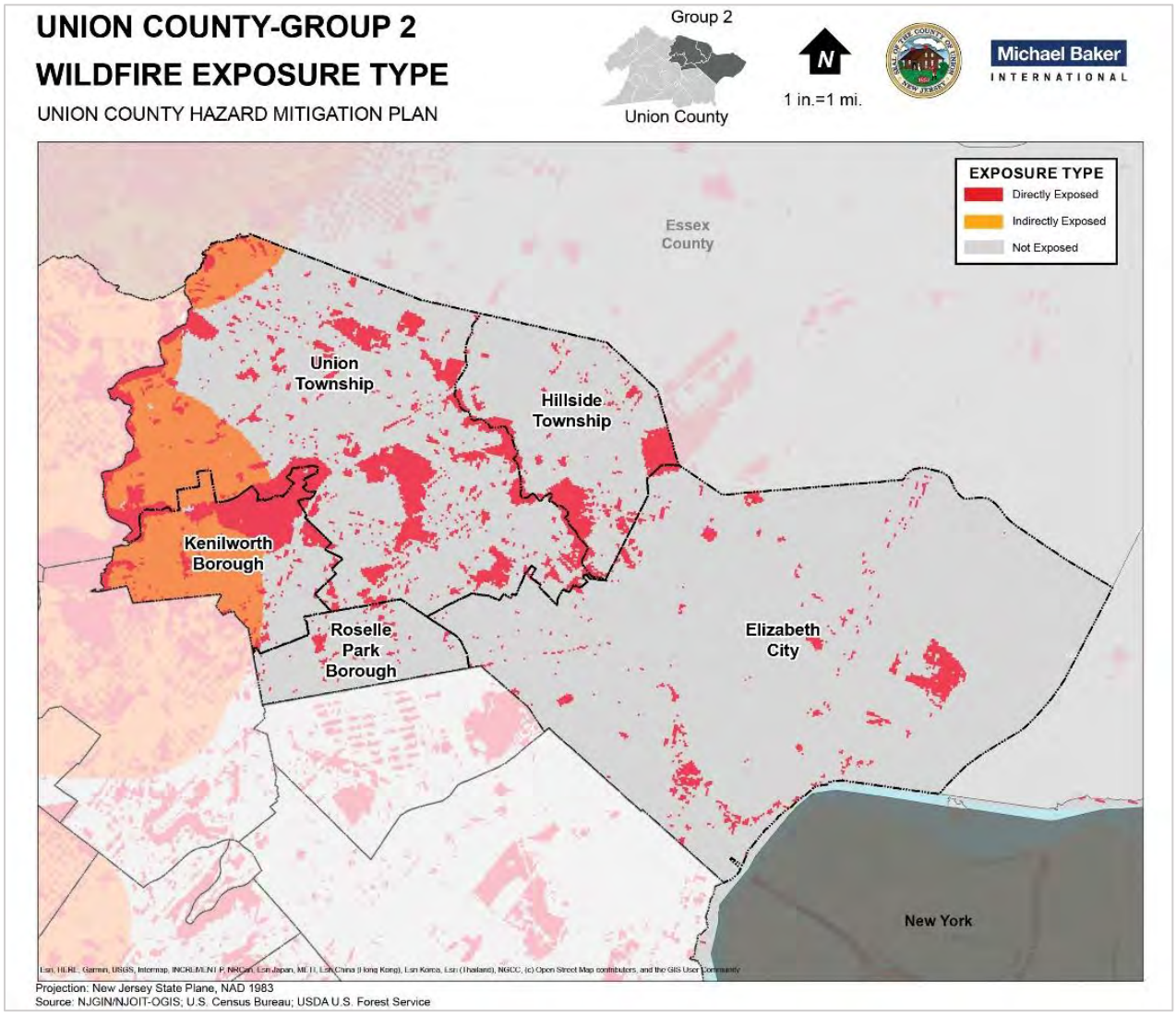

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FIGURE 7.19-6 WILDFIRE EXPOSURE TYPE-GROUP 3

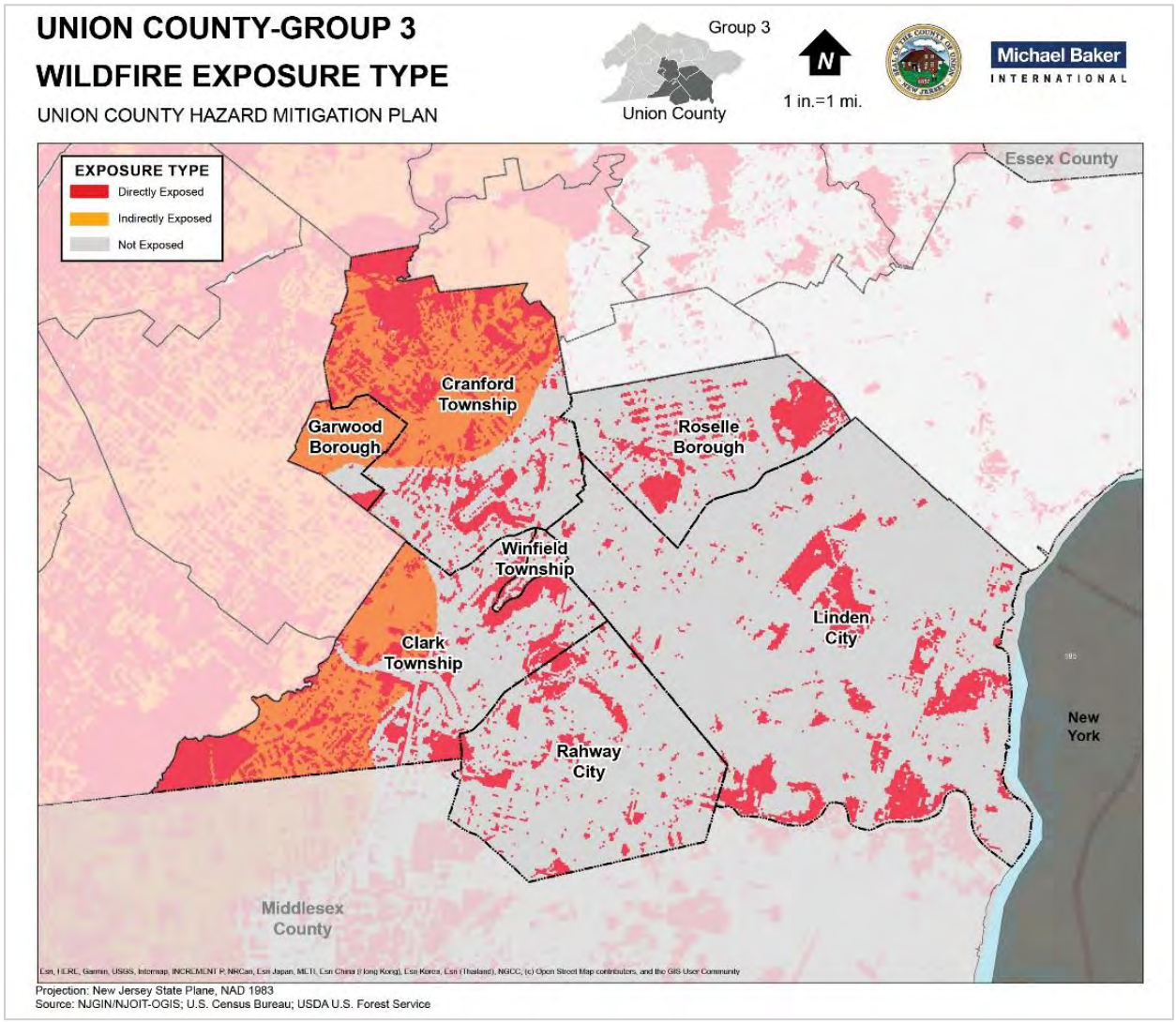
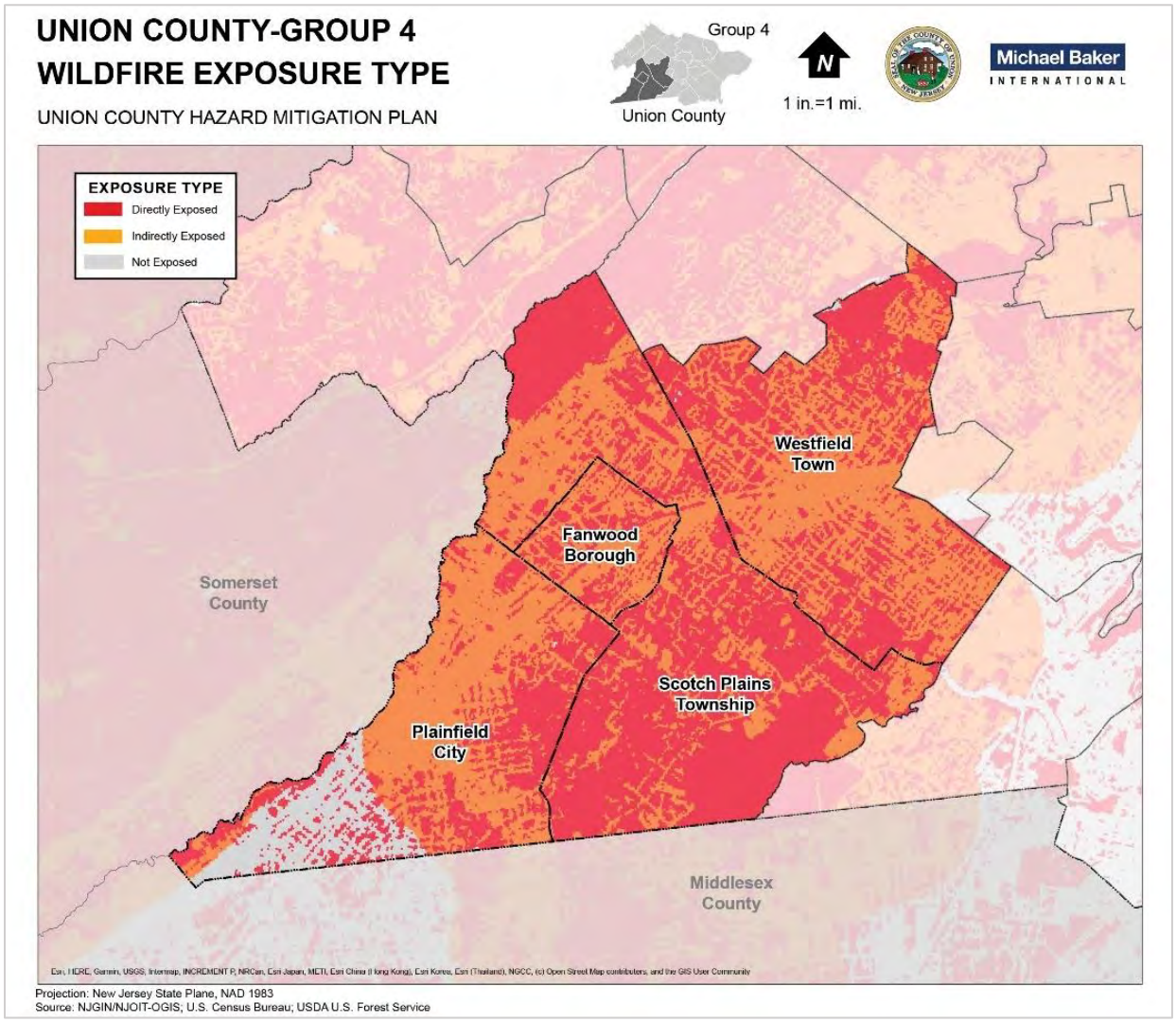


FIGURE 7.19-7 WILDFIRE EXPOSURE TYPE-GROUP 4



As noted, only a few areas in the County are vulnerable to wildfires, and even these are at very low risk because of the nature of the landscape, weather, and the effectiveness of detection and suppression capabilities. This hazard was prioritized by the Steering Committee as low because there is negligible history of occurrences and losses, and very little exposure. Potential impacts are very limited and generally not life-threatening. Some structures in the County are vulnerable to fires, but there is no practical way to determine relative risk because this depends on factors such as fuel availability, structure type and proximity to fire-prone areas.

Table 7.19-3 Total Number and Percentage of Critical Facilities with Wildfire Risk and **Table 7.19-4 Total Number and Percentage of Critical Infrastructure with Wildfire Risk** show the total number and percentage of critical facilities and critical infrastructure with wildfire risk by municipality.

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TABLE 7.19-3 TOTAL NUMBER AND PERCENTAGE OF CRITICAL FACILITIES WITH WILDFIRE RISK

Jurisdiction	Number of Critical Facilities in Wildfire Hazard Areas			Percentage of Critical Facilities in Wildfire Hazard Areas		
	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas
Berkeley Heights Township	2	2	0	8%	8%	0%
Clark Township	0	0	0	0%	0%	0%
Cranford Township	3	3	0	8%	8%	0%
Elizabeth City	6	6	0	5%	5%	0%
Fanwood Borough	0	0	0	0%	0%	0%
Garwood Borough	0	0	0	0%	0%	0%
Hillside Township	0	0	0	0%	0%	0%
Kenilworth Borough	0	0	0	0%	0%	0%
Linden City	7	7	0	11%	11%	0%
Mountainside Borough	0	0	0	0%	0%	0%
New Providence Borough	1	1	0	4%	4%	0%
Plainfield City	2	2	0	3%	3%	0%
Rahway City	0	0	0	0%	0%	0%
Roselle Borough	0	0	0	0%	0%	0%
Roselle Park Borough	0	0	0	0%	0%	0%
Scotch Plains Township	7	7	0	13%	13%	0%
Springfield Township	0	0	0	0%	0%	0%
Summit City	1	1	0	2%	2%	0%
Union Township	1	1	0	2%	2%	0%
Westfield Town	0	0	0	0%	0%	0%
Winfield Township	1	1	0	17%	17%	0%
Union County Total	31	31	0	4%	4%	0%

Source: DEP, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

TABLE 7.19-4 TOTAL NUMBER AND PERCENTAGE OF CRITICAL INFRASTRUCTURE WITH WILDFIRE RISK

Jurisdiction	Number of Critical Infrastructure in Wildfire Hazard Areas			Percentage of Critical Infrastructure in Wildfire Hazard Areas		
	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas
Berkeley Heights Township	2	2	0	12%	12%	0%
Clark Township	0	0	0	0%	0%	0%
Cranford Township	3	3	0	43%	43%	0%
Elizabeth City	5	4	1	29%	24%	6%
Fanwood Borough	0	0	0	0%	0%	0%
Garwood Borough	0	0	0	0%	0%	0%
Hillside Township	0	0	0	0%	0%	0%
Kenilworth Borough	1	1	0	33%	33%	0%
Linden City	3	2	1	12%	8%	4%
Mountainside Borough	1	1	0	33%	33%	0%
New Providence Borough	2	2	0	100%	100%	0%
Plainfield City	0	0	0	0%	0%	0%
Rahway City	4	3	1	50%	38%	13%
Roselle Borough	0	0	0	0%	0%	0%
Roselle Park Borough	0	0	0	0%	0%	0%
Scotch Plains Township	5	5	0	56%	56%	0%
Springfield Township	4	4	0	57%	57%	0%
Summit City	2	2	0	33%	33%	0%
Union Township	3	3	0	33%	33%	0%
Westfield Town	0	0	0	0%	0%	0%
Winfield Township	0	0	0	0%	0%	0%
Union County Total	35	32	3	30%	27%	3%

Source: DEP, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

Table 7.19-5 Total RCV for Critical Facilities with Wildfire Risk and **Table 7.19-6 Total RCV for Critical Infrastructure with Wildfire Risk** show the estimated replacement cost value (RCV) of critical facilities with wildfire risk. RCV was calculated by approximating the market value of the improvements on each of the parcels in the State using MOD-IV and taxation rates from 2020 provided by the NJ Office of Information Technology, Office of GIS (NJOGIS) and NJ Division of Taxation.

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TABLE 7.19-5 TOTAL RCV FOR CRITICAL FACILITIES WITH WILDFIRE RISK

Jurisdiction	RCV of Critical Facilities in Wildfire Hazard Areas		
	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas
Berkeley Heights Township	$993,808.27	$993,808.27	$0.00
Clark Township	$0.00	$0.00	$0.00
Cranford Township	$7,491,740.23	$7,491,740.23	$0.00
Elizabeth City	$3,887,403.80	$3,887,403.80	$0.00
Fanwood Borough	$0.00	$0.00	$0.00
Garwood Borough	$0.00	$0.00	$0.00
Hillside Township	$0.00	$0.00	$0.00
Kenilworth Borough	$0.00	$0.00	$0.00
Linden City	$10,769,168.30	$10,769,168.30	$0.00
Mountainside Borough	$0.00	$0.00	$0.00
New Providence Borough	$3,422,524.50	$3,422,524.50	$0.00
Plainfield City	$5,174,289.92	$5,174,289.92	$0.00
Rahway City	$0.00	$0.00	$0.00
Roselle Borough	$0.00	$0.00	$0.00
Roselle Park Borough	$0.00	$0.00	$0.00
Scotch Plains Township	$2,505,373.80	$2,505,373.80	$0.00
Springfield Township	$0.00	$0.00	$0.00
Summit City	$0.00	$0.00	$0.00
Union Township	$587,129.17	$587,129.17	$0.00
Westfield Town	$0.00	$0.00	$0.00
Winfield Township	$362,776.54	$362,776.54	$0.00
Union County Total	$35,194,214.53	$35,194,214.53	$0.00

Source: DEP, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

TABLE 7.19-6 TOTAL RCV FOR CRITICAL INFRASTRUCTURE WITH WILDFIRE RISK

Jurisdiction	RCV of Critical Infrastructure in Wildfire Hazard Areas		
	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas
Berkeley Heights Township	$9,573,628.01	$9,573,628.01	$0.00
Clark Township	$0.00	$0.00	$0.00
Cranford Township	$36,408.06	$36,408.06	$0.00
Elizabeth City	$2,978,768.75	$2,978,768.75	$0.00
Fanwood Borough	$0.00	$0.00	$0.00
Garwood Borough	$0.00	$0.00	$0.00
Hillside Township	$0.00	$0.00	$0.00
Kenilworth Borough	$0.00	$0.00	$0.00

Jurisdiction	RCV of Critical Infrastructure in Wildfire Hazard Areas		
	Overall	Low and Moderate Areas	High, Very High, and Extreme Areas
Linden City	$6.30	$0.00	$6.30
Mountainside Borough	$2,164,337.73	$2,164,337.73	$0.00
New Providence Borough	$0.00	$0.00	$0.00
Plainfield City	$0.00	$0.00	$0.00
Rahway City	$5,496,480.30	$96,506.05	$5,399,974.25
Roselle Borough	$0.00	$0.00	$0.00
Roselle Park Borough	$0.00	$0.00	$0.00
Scotch Plains Township	$387,005.71	$387,005.71	$0.00
Springfield Township	$13,598.42	$13,598.42	$0.00
Summit City	$237,473.26	$237,473.26	$0.00
Union Township	$0.00	$0.00	$0.00
Westfield Town	$0.00	$0.00	$0.00
Winfield Township	$0.00	$0.00	$0.00
Union County Total	$20,887,706.53	$15,487,725.99	$5,399,980.54

Source: DEP, 2019 ORNL NGA HSIP, 2020 ORNL NGA HSIP, 2018 DEP, 2020 DEP, 2018 NJDOT, 2020 NJOGIS, Union County Municipalities

7.20 ANIMAL DISEASE

7.20.1 HAZARD DESCRIPTION

FEMA defines an animal disease outbreak as the introduction of a highly contagious, infectious, or economically devastating animal disease or agent. This definition would encompass the introduction of a new strain of a virus not seen in the animal population, a foreign animal disease introduced accidentally or intentionally on United States soil, or a disease that has been eradicated from the United States being re- introduced.

The United States agricultural exports are on a continual growth pattern with products being exported to foreign countries, leading to the introduction of new diseases in parts of the world never thought to be susceptible (USDA, 2008). Inversely, the United States has increased its imports, which has led to the introduction of novel disease outbreaks on United States soil annually. This global web of trade positions the State of New Jersey for a possible outbreak of an animal disease that has the potential to spread throughout the State's livestock population, domesticated animal population, and even impact the diverse wildlife found within the State.

Any impact from an animal disease outbreak will had adverse animal health issues. Additionally, the threat to public health from an animal-to-person disease transfer increases with the introduction of a new or foreign disease. The impact from response actions such as quarantine, dispatch, disposal, and loss of public confidence in products would all bring about a financial loss to the industry as a whole while impacting the industries that rely on the State's animal production for products, food, or any combination of the two.

In the State of New Jersey, the Department of Agriculture (NJDA), Division of Animal Health, maintains disease control programs to protect the health and well-being of livestock in the State.

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The Division tracks information about emerging diseases around the world that may impact New Jersey, conducts epidemiological investigations of livestock diseases and drug residues, operates an animal health diagnostic laboratory, and supports an aggressive Johne's disease (paratuberculosis in ruminants) control program (NJDA, 2006).

Figure 7.20-1 List of Animal Diseases by Animal Species, reproduced from the State HMP, provides the type of diseases that may affect various animal species found in New Jersey:

FIGURE 7.20-1 LIST OF ANIMAL DISEASES BY ANIMAL SPECIES

Poultry
Avian Influenza
Highly Pathogenic Avian Influenza
Campylobacteriosis
Eastern/Western/Venezuelan Equine Encephalomyelitis
Escherichia Coli (E coli)
Melioidosis
Newcastle Disease
Non-Typhoidal Salmonellosis
Psittacosis
Staphylococcus aureus (MRSA)
Tularemia
West Nile Fever

Equine
Anthrax
Campylobacteriosis
Equine Encephalomyelitis
Eastern/Western/Venezuelan Equine Encephalomyelitis
Glanders
Hendra
Melioidosis
Non-Typhoidal Salmonellosis
Q Fever
Rabies
Staphylococcus aureus (MRSA)
Tularemia
West Nile Fever

Swine
Anthrax
Brucellosis
Porcine and Rangiferine Brucellosis
Campylobacteriosis
Escherichia Coli (E coli)
Melioidosis
Non-Typhoidal Salmonellosis
Q Fever
Staphylococcus aureus (MRSA)
Tularemia

Rodents
Hantavirus (also a disease in Humans)
Staphylococcus aureus (MRSA)

Bovine
Anthrax
Botulism
Brucellosis
BSE
Campylobacteriosis
Cholera
Escherichia Coli (E coli)
Melioidosis
Non-Typhoidal Salmonellosis
Q Fever
Rabies
Schmallenberg Virus
Staphylococcus aureus (MRSA)
Transmissible Spongiform
Tuberculosis
Encephalopathies
Rift Valley Fever

Small Ruminants
Anthrax
Brucellosis
Ovine and Caprine Brucellosis
Ovine Epididymitis
Campylobacteriosis
Escherichia Coli (E coli)
Melioidosis
Non-Typhoidal Salmonellosis
Q Fever
Rift Valley Fever
Schmallenberg Virus
Scrapie
Staphylococcus aureus (MRSA)

Camelids
Glanders
Q Fever
Rabies
Rift Valley Fever
Staphylococcus aureus (MRSA)
West Nile Fever

Dogs
Brucellosis
Canine Brucellosis
Canine Influenza Virus
Cholera
Staphylococcus aureus (MRSA)

Source: State HMP

For a more detailed description of animal diseases in New Jersey, please see the 2019 New Jersey State Hazard Mitigation Plan.

7.20.2 LOCATION

Union County does not have significant agricultural lands and therefore do not have a significant livestock population; that said Union County businesses support the transportation and processing of farm animals.

In addition to the livestock populations, the State estimates that approximately two-thirds of residential households own a pet and 47% of the households own more than one type of pet according to the New Jersey Department of Health as of 2013. This population is evenly spread throughout the State.

7.20.3 EXTENT

Epidemics result in mass mortality of animals, resulting in the devastation of economic impacts on industries and communities. Some animal diseases, such as Salmonella, influenza, and Equine Encephalitis, can also infect humans. Animal disease costs are due to loss of production, loss of animals, human morbidity and mortality, days of lost work, and legal actions (FEMA, 2011).

Disease outbreaks have many adverse impacts and consequences. **Table 7.20-1 Impacts and Consequences for Animal Disease Outbreak** summarizes some of the adverse impacts and consequences that can come from animal disease outbreaks according to FEMA.

TABLE 7.20-1 IMPACTS AND CONSEQUENCES FOR ANIMAL DISEASE OUTBREAK

Impact	Consequence
Rumors about the cause of disease and who is at risk are common in disease outbreaks	Communications are challenged
Movement of vehicles and people may be restricted because of some highly contagious diseases	Infrastructure failure
If large numbers of animals need to be slaughtered on their farm of origin, the slaughter methods may be dangerous	Threat to public and animal safety
To reduce losses, some farmers may opt to slaughter their herd	Need to evacuate people and animals
Quarantine stations may be needed	Displacement of animals
Some animal diseases infect people	Threat to public and animal health
Some diseases are contagious to wildlife	Adverse effects on the natural environment and wildlife
Many animals may die in a disease outbreak	Need for carcass disposal
In some animal disease outbreaks, e.g., Foreign Animal Diseases, policies dictate that healthy animals in farms adjacent to infected ones should be slaughtered	Need for euthanasia
Many diseases cause considerable suffering in animals	Threat to the well-being of animals
Sick and dying animals evoke sympathetic emotions	Public concern

Source: FEMA, 2011

7.20.4 PREVIOUS OCCURRENCES AND LOSSES

Between 1989 and 2017, New Jersey had 7,592 reported animal rabies cases, including raccoons, skunks, foxes, cats, groundhogs, bovines, equines, dogs, ferrets, deer and other domestic and wild animals (New Jersey Department of Health and Human Services, 2017).

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Table 7.20-2 Animal Disease Incidents in New Jersey outlines animal disease events in the State but does not include all incidents.

TABLE 7.20-2 ANIMAL DISEASE INCIDENTS IN NEW JERSEY

Date(s) of Event	Disease Type	Counties Impacted	Description
2/1/2004	Low Pathogenic Avian Influenza (LPAI) A (H7N2)	N/A	An outbreak of LPAI was reported on two chicken farms in Delaware and in four live bird markets in New Jersey supplied by the farms. In March 2004, surveillance samples from a flock of chickens in Maryland tested positive for LPAI H7N2, which was most likely the same strain as the February outbreak.
2007	Epizootic Hemorrhagic Disease (EHD)	N/A	An outbreak of EHD in wild white-tailed deer caused by an RNA virus was transmitted by biting midges. The outbreak began in the last week of August and first week of September 2007 in New Jersey. DEP Division of Fish and Wildlife's Office of Fish and Wildlife Health and Forensics and deer project personnel investigated the outbreak on September 7, 2007, when hunters reported finding 15 deer. The deer were scouting the hunting property, which covered slightly less than 500 acres in Hillsborough Township, north of Amwell Road, west of Millstone in Somerset County.
2011	Canine Parvovirus	N/A	A localized outbreak of Canine Parvovirus was found within shelters in the northeastern region of the State.
2013	WNV	State Total	In 2013, 13 cases of WNV were reported
2014	WNV	State Total	In 2014, 8 cases of WNV were reported
2015	WNV	State Total	In 2015, 26 cases of WNV were reported
2016	WNV	State Total	In 2016, 11 cases of WNV were reported

The Federal Emergency Management Agency (FEMA) has not issued any disaster declarations resulting from animal disease incidents.

7.20.5 PROBABILITY OF FUTURE OCCURRENCES

The likelihood of future occurrences of animal disease outbreak is difficult to predict; however, based on the local outbreaks of disease such as rabies and West Nile combined with an increase in global trade, the likelihood of an animal disease outbreak affecting Union County is possible. Population density across Union County combined with the saturation of pets makes Union County susceptible to outbreaks in diseases in the domesticated animal populations.

7.20.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

Animal disease outbreaks may be impacted by climate change, as many diseases are seasonal, based on transmission methods. Separately, scientists have noted that changes in the environment such as warming of the climate may increase a disease's ability to thrive and transmit from one

person or animal to another. This increase in disease transmission will have a greater impact on the animal populations because unlike humans, animals are unable to adapt in a short timeframe, leaving them positioned to become a carrier and transmitter of diseases (Walsh 2013).

Globally, increases in recorded temperatures may lead to greater outbreaks of diseases. Outbreaks such as bluetongue virus within the animal population in Europe have been linked to increases in temperature (Liverpool 2011).

7.20.7 VULNERABILITY ASSESSMENT

Impacts

Animal disease outbreaks can range in severity from a single animal infected with a disease to a regional or statewide epidemic. Annually, diseases such as West Nile virus and rabies continue to affect both the domesticated and livestock populations throughout the State, supporting the assertion that some animal disease outbreaks are continuous throughout the State.

Unlike smaller annual outbreaks, the introduction of a novel disease within any population of animal within the State could prove to be catastrophic to the State's animal population. In most instances, immunity to new diseases are not present, leading to a high initial morbidity and mortality rate. This introduction can rapidly escalate the status that requires large-scale euthanasia, quarantine, and isolation, or regulations on transportation. Additionally, based on the number of domesticated animals and the wildlife interface with farming communities, the spread from livestock to wildlife and household pets may pose additional threats to public health across the State. According to the Center for Disease Control and Prevention, over 75% of recent emerging diseases impacting the human population originated within the animal population (CDC, 2013).

Animal disease outbreaks, similar to human contagious diseases, provide little warning from the time of initial infection to the onset of clinical symptoms. In many cases, an animal fails to show any outward symptoms of the disease despite being a in a contagious state. While animal monitoring systems are incorporated into the livestock production industry, the time from infection to display of symptoms provides for a great potential for additional transmissions, supporting the difficult nature of ahead-of-time notice for animal disease outbreak.

Animal disease outbreaks have a large number of secondary hazards. Based on the scope of the outbreak impacts, additional hazards may include:

- Human disease transmission
- Wildlife disease transmission
- Domesticated animal disease transmission
- Contamination of land, crop, and water

The extent of the secondary hazards associated with any animal outbreak is based on many factors including the scope of the outbreak, disease transmission method, morbidity and mortality of the disease, the possibility of disease transmission to other populations, and the public perception and response to the outbreak. Any and all of these factors will impact the severity of the secondary hazards, requiring additional support and response from support agencies.

Animal disease could have long term impacts on the fish and wildlife in New Jersey. A serious event can completely deplete a species of its population (NJ HMP 2011). A number of environmental factors, such as water supply, sanitation facilities, food, and climate, can also influence the spread

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of communicable diseases that are prone to cause epidemics (WHO 2013). See Section 7.25 (Pandemic) for additional environmental impacts.

Exposure and Damages

For the purpose of measuring exposure to animal disease outbreaks, the entire population of Union County is considered to be vulnerable, based on the statistic that two-thirds of all residential structures house a domesticated animal. While the threat from domesticated animal exists, the greatest threat lies within the livestock populations. The areas at greatest risk for livestock disease outbreaks are found within the regions containing the greatest concentration of farming locations.

The impact of an animal disease outbreak on the economy within Union County is difficult to estimate, as each disease outbreak would require a different approach to management. While there is not an extensive agricultural community in Union County, the losses associated with an animal disease outbreak would not only directly impact the livestock value, but also the farming, transportation, processing, and animal medical industry.

7.21 CIVIL UNREST

7.21.1 HAZARD DESCRIPTION

Civil disturbance is a broad term that is typically used by law enforcement to describe one or more forms of disturbance caused by a group of people. Civil disturbance is typically a symptom of, and a form of protest against, major socio-political problems. Typically, the severity of the action coincides with the level of public outrage. In addition to a form of protest against major socio-political problems, civil disturbances can also arise out of union protest, institutional population uprising, or from large celebrations that become disorderly.

Civil disturbances can take the form of small gatherings or large groups blocking or impeding access to a building or disrupting normal activities by generating noise and intimidating people. Demonstrations can range from a peaceful sit-in to a full-scale riot, in which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, a group that blocks roadways, sidewalks, or buildings interferes with public order. Often protests intended to be a peaceful demonstration to the public and the government can escalate into general chaos.

There are two types of large gatherings typically associated with civil disturbances: a crowd and a mob. A crowd may be defined as a casual, temporary collection of people without a strong, cohesive relationship. A mob can be defined as a large disorderly crowd or throng. Mobs are usually emotional, loud, tumultuous, violent, and lawless.

In the State of New Jersey, a municipality in which a civil disorder occurs bears the first and primary responsibility to control the disturbance. Civil unrest that remains uncontrolled warrants local mutual aid from neighboring municipal and/or county reSource. If the civil unrest remains beyond the capabilities of local law enforcement agencies alone, limited State Police assistance may be requested. If the restoration of law and order is beyond local, county and state abilities, the Governor may declare a State of Emergency calling on federal support such as the New Jersey National Guard to restore order.

7.21.2 LOCATION

Government facilities, landmarks, prisons, and universities are common sites where crowds and mobs may gather. The concentration of buildings in and density of northeastern New Jersey, and State government buildings in Trenton may be targets of civil disturbance. New Jersey also has correctional facilities, treatment units, and youth development centers, as well as federal prison facilities and local and private facilities throughout the State that may be targets for civil unrest.

7.21.3 EXTENT

The magnitude or severity of a civil unrest situation coincides with the level of public outrage. They can take the form of small gatherings or large groups blocking access to buildings or disrupting normal activities. Civil unrest situations can also be peaceful sit-ins or a full-scale riot.

7.21.4 PREVIOUS OCCURRENCES AND LOSSES

Peaceful protests surrounding nationwide concern regarding police brutality occurred in many municipalities in Union County after the death of George Floyd in Minneapolis, MI. Demonstrations took place in Roselle Park Borough, Elizabeth City, Hillside Township, Westfield Town, Union Township, Summit City, Springfield Township, Roselle Borough, and Cranford Township, according to news outlets like NJ.com, NJfamily.com, and Tapinto.net. These demonstrations were peaceful and did not result in violence in the county. These were smaller protests compared to events around the nation; while there was no violence in Union County, there was some violence and property damage as a result of unrest around the nation at this time.

TABLE 7.21-1 CIVIL UNREST INCIDENTS IN UNION COUNTY

Date(s) of Event	Disturbance Name	Description
August 11-13, 1964	Elizabeth Riots	No description available
July 14-21, 1967	Plainfield Riots	The Plainfield Riots were a series of racially charged violent disturbances that occurred in Plainfield, New Jersey during the summer of 1967, which mirrored the 1967 Newark riots in nearby Newark, New Jersey.

Source: State HMP

7.21.5 PROBABILITY OF FUTURE OCCURRENCES

While the probability of future civil unrest incidents is difficult to predict, given past occurrences and significance of New Jersey and its communities, civil unrest incidents are possible. As discussed in the Location section above, areas that are important to the State, region, and greater United States may be targets for civil unrest. These areas include universities, landmarks, correctional facilities, major industrial facilities, and others similar in nature. It is also worth noting that while the last major civil disturbance in New Jersey occurred in the 1970s, it is still possible for a future event to occur. Societal trends and emerging social issues should be watched closely as these types of issues have led to instances in the past.

7.21.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

While civil unrest is a human-caused hazard, civil unrest may arise in response to changing climate conditions and public policy. Research into the connection between climate change and civil unrest is ongoing: not enough to make a definitive statement on their connection, but not little enough to ignore a possible connection.

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7.21.7 VULNERABILITY ASSESSMENT

Impacts

Civil unrest and civil disturbances can range from minor to significant events that can disrupt the functioning of a community for weeks or months. A worst case-scenario for a civil disturbance would be an incident that takes place in a large urban environment and lasts for an extended period of time. Although an event could be short in duration, the impacts and disruptions to the community can last from a day to several decades depending on social, economic, and cultural factors related to the event.

Civil disturbances often occur with little to no warning; however, certain events may trigger riots. As demonstrated in the Previous Occurrences and Losses section and discussions regarding severity, riots can occur as a result of controversial court rulings, unfair working conditions, or general unrest. Riots can also be triggered as a result of favorable or unfavorable sports outcomes. Thus, generally there will be a certain degree of warning time that a riot may occur; however, achieving certainty that an incident is imminent is not possible.

Civil unrest can result in numerous secondary hazards. Depending on the size and scope of the incident, civil unrest may lead to widespread urban fire, utility failure, transportation interruption, and environmental hazards. The most significant impact of civil unrest is the secondary hazard of interruption of continuity of government, which can also lead to several of the aforementioned secondary hazards. The extent of secondary hazards will vary significantly based on the extent and nature of the civil unrest.

Normally, instance of civil unrest will have a minimum impact on the environment. However, if petroleum or other chemical facilities were a target for vandalism or large-scale fires occurred, the impact on the environment could be significant.

Exposure and Damages

For the purposes of measuring exposure, the entire population of Union County is exposed to the civil unrest hazard. Those that live in densely populated areas, those living near colleges/universities, correctional facilities, landmarks, and other areas of significance may have a higher exposure and are thus more vulnerable to the effects of civil unrest.

Measuring the economic impact of civil unrest in Union County is difficult. Elements that contribute to this are the volatility of the nature of civil disturbances, and the uncertainty of the duration of an incident. The local and State economies may be affected by a civil disturbance, as was the case during the Asbury Park Riots, which targeted the business sector in the community during the peak of tourist season. For the purposes of this assessment, the entire Union County economy is considered exposed to the effects of civil disturbances. Should a large-scale civil unrest incident occur, the economy of Union County will be affected and is therefore vulnerable. For example, a prolonged strike will affect production and tax revenues. Also, if a widespread riot occurred it would interrupt daily commerce, thus affecting the economy.

The limited number of instances of civil unrests within the State has only shown one clear and consistent similarity, which is that each instance occurred in large, densely populated cities. However as indicated above, the causes of civil unrest are too dynamic and too inconsistent to quantify in a meaningful manner.

Critical facilities may be targets for civil unrest disturbances. Disruptions to critical facilities may have cascading secondary effects such as power outages and utility failure. Because these facilities are vulnerable to civil unrest and may be a focal point during a protest, these facilities will need to be protected during incidents. It is difficult to quantify the potential losses to critical facilities because of the unpredictability of civil disturbances and their duration. The replacement cost value for critical facilities provides a total risk exposure.

7.22 CYBER ATTACK

7.22.1 HAZARD DESCRIPTION

Cyber terrorism is the use of existing computers and information, particularly over the Internet, to cause physical or financial harm or a severe disruption of infrastructure service. Transportation, public safety, and utility services are all critical, and are highly dependent on information technology. The motive behind such disruptions can be driven by religious, political, or other objectives.

7.22.2 LOCATION

Cyber threats to critical infrastructures can be posed by anyone with the capability, technology, opportunity, and intent to do harm. Potential threats can be foreign or domestic, internal or external, State-sponsored or a single rogue element. Terrorists, insiders, disgruntled employees, and hackers are included in this profile. The fact that most of the nation's vital services are delivered by private companies creates a significant challenge in assigning the responsibility for protecting our critical infrastructures from cyber-attacks. Across New Jersey, countless systems rely on computers for day-to-day operations including but not limited to traffic signals, power plants, HVAC systems, as well as systems responsible for ensuing New Jersey's State government can operate. While these are just a few examples of critical systems vulnerable to cyber-attacks, it should be noted that an attack could cripple not only the operations of New Jersey's systems but also the economy.

7.22.3 EXTENT

The magnitude of extent of an incident will vary greatly based on the extent and duration of the impact. Additionally, the extent will vary based upon which specific system is affected by an attack, the warning time, and ability to preempt an attack. Attacks can be carried out by single individuals, domestic or foreign terror organizations, or even nation-states. Cyber-attacks can also vary in regard to their geographic extent; all levels of government from municipal to national are at risk.

The New Jersey Cybersecurity and Communications Integration Cell (NJCCIC) profiles different threats to various systems that can be impacted by an attack, providing some context of the extent an attack could have. **Table 7.22-1 Threat of Malware to Different Systems** describes the malware that can impact different systems.

TABLE 7.22-1 THREAT OF MALWARE TO DIFFERENT SYSTEMS

Threat	Description of Malware
Android	Malicious software designed to exploit the Android operating systems (OS) running on smartphones, tablets, and other devices. Some variants of Android malware have the capability of disabling the device, allowing a malicious actor to remotely control the device, track the user's activity, lock the device, or encrypt or steal personal information transmitted from or stored on the device. As users

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Threat	Description of Malware
	are increasingly turning to mobile devices for both business and personal use, cyber threat actors are devoting their efforts to developing malware designed to compromise the device software.
Botnets	A group of internet-connected computers and devices that have been infected by malware that allows a malicious actor to control them remotely. The malicious actor then uses the botnet for nefarious purposes such as sending spam email, stealing data, spreading additional malware infections to other devices, generating illicit advertising revenue through click-fraud, mining cryptocurrencies, or conducting distributed denial-of-service (DDoS) attacks. In the cases where botnets are used to conduct DDoS attacks, these infected devices are used to generate an excessive amount of network traffic designed to overwhelm a website, server, or online service to the point that legitimate users cannot access it.
Exploit Kits	Toolkits that automate the exploitation of vulnerabilities in popular software applications to maximize successful infections and serve as a platform to deliver malicious payloads such as Trojans, spyware, ransomware, and other malicious software. Most users will encounter EKs from visiting seemingly legitimate, high-traffic websites that either contain links to EKs embedded within malicious advertising (malvertising) or have malicious code hidden directly within the website itself. Malicious URLs linking to EKs are commonly distributed through spam email and spear-phishing campaigns.
ICS	A collective term for several types of control systems and other equipment used to operate and/or automate industrial processes and includes supervisory control and data acquisition (SCADA) systems – often incorrectly used interchangeably with ICS – and distributed control systems (DCS).
IOS	Malicious software designed to exploit Apple's iOS operating system running on smartphones, tablets, and other devices. Some variants of iOS malware have the capability of disabling the device, allowing a malicious actor to remotely control the device, track the user's activity, lock the device, or encrypt or steal personal information transmitted from or stored on the device. As users are increasingly turning to mobile devices for both business and personal use, cyber threat actors are increasingly devoting their efforts to developing malware designed to compromise mobile devices, including operating systems, like iOS, and applications, like those available in the App Store. Android devices have historically seen more malware threats than iOS largely due to the open-source operating system; however, malware specifically targeting iOS has increased in the last two years.
MACOS	Though the majority of known malware targeting operating systems are made to exploit Microsoft Windows, devices running macOS are vulnerable as well. Furthermore, as macOS has become increasingly popular, more malware has been created to target macOS. More macOS malware was discovered in the second quarter of 2017 than in all of 2016.
Point of Sale (PoS)	Malicious software designed to steal credit and debit card data from payment processing systems, known as point-of-sale (PoS) terminals.
Ransomware	Malicious software (malware) that attempts to extort money from victims by restricting access to a computer system or files. The most prevalent form of this profit-motivated malware is crypto-ransomware, which encrypts files into encoded messages that can only be decrypted (decoded) with a key held by the malicious actor.
Trojans	A type of malware that, unlike viruses and worms, does not self-replicate. Named after the mythological wooden horse used to sneak Greek warriors through the gates of Troy, trojans are often disguised as legitimate software to avoid detection or trick users into installing the trojan onto their system. Users can be exposed to trojans through numerous vectors, such as clicking on links or opening attachments in phishing emails, other forms of social engineering, malicious advertising (malvertisting), or by visiting compromised websites, known as drive-by downloads. Once a trojan executes, it often downloads other malware onto the system or provides an attacker with a backdoor to gain access and conduct further malicious activity, such as stealing, deleting, or modifying data.

Source: NJCCIC, 2017

7.22.4 PREVIOUS OCCURRENCES AND LOSSES

Cyber terrorism is an emerging hazard that can impact the county's computer infrastructure and the systems and services that are provided to the public. Across the United States, concerns over cyber terrorism are growing; former FBI director Louis Freeh warns that cyber-terrorism could have a crippling effect in the United States (ANI, 2013).

In 2016, New Jersey released the annual statistics on cyber breaches for the first time. The information released details breaches that involve the unauthorized access to personal information, such as a name, social security number, driver's license number, bank account, etc. The state police had 676 data breaches reported to them in 2016, affecting over 116,000 New Jersey account holders (Department of Law and Public Safety, Office of the Attorney General, 2016). In 2017, 958 data breaches were reported to the New Jersey State Police. This is a 41% increase in security breaches from 2016 (Department of Law and Public Safety, Office of the Attorney General, 2018).

From November 2014 to September 2016, a resident of Fanwood Borough attacked the central authentication system at Rutgers University and at times succeeded in taking the system offline. According to the U.S. Department of Justice, he was ordered to pay $8.6 million in restitution and sentenced to six months home incarceration.

In November 2019, Union County government computer systems were victims of cyberattack, according to NJ.com. No personal information was compromised and there was no disruption to the provision of essential services due to the attack. It is unknown how the attack was resolved or if any ransom was paid.

7.22.5 PROBABILITY OF FUTURE OCCURRENCES

Security experts describe the threat of cyber terrorism as eminent and highly likely to occur in any given year in New Jersey. As illustrated by the Freeh comments, cyber terrorism is expected to have a significant impact on the United States and New Jersey. The level of success of an attack and the subsequent damage it can create will vary greatly. Intrusion detection systems log thousands of attempts in a single month.

Although number of attempts are increasing, municipalities have also been investing in capabilities to reduce the vulnerability to cyber-attack.

7.22.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

This plan does not recognize the link between cyber-attack and climate change.

7.22.7 VULNERABILITY ASSESSMENT

Impacts

A cyber-attack can have potentially severe consequences. The following are potential impacts.

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TABLE 7.22-2 CYBER ATTACK IMPACT SUMMARY

Consideration	Description
General Public	No direct loss of life is expected from an attack. Indirect injuries or deaths may result from secondary effects to critical life-sustaining reSource such as energy and water.
Response Personnel	No direct affects to the health and safety of response personnel are expected; however, critical response systems may be affected.
Property, Facilities and Infrastructure	Effects can range from annoyance to complete shutdown of critical infrastructures caused by infiltration of supervisory control and data acquisition (SCADA) systems. Secondary effects could disturb public welfare and property by denying services or providing false readings.
Economic	Because of the heavy reliance on the electronic transfer of economic and commercial information, the economy could be affected by communication difficulties.
Environment	Generally, cyber terrorism has no direct effect on the environment; however, the environment may be affected should a release of a hazardous material occur because of critical infrastructure failure.
Continuity of Operations	Severe effects to continuity of operations could result if a cyber-attack reached critical operational systems or systems that were needed to carry out the operation.
Reputation of the Entity	If exposed vulnerabilities were known and not reduced or eliminated before the attack, the entity would suffer major damage to their reputation for not taking action before the incident.
Delivery of Services	Cyber-attacks may affect delivery of services if the system was infiltrated and directed to malfunction by self-destructing or overloading.
Regulatory and Contractual Operations	Cyber-attacks would have no significant effect on regulatory or contractual obligations, other than the possible elimination of electronic records, which would affect both.

A cyber terrorism attack can occur with relatively little or no warning. The New Jersey Office of Homeland and Preparedness is charged with gathering intelligence and monitoring cyber-terrorism threats affecting the State. At the federal level, numerous agencies (such as FBI and CIA) are working collaboratively to thwart cyber-terrorism attacks. The warning time depends upon the ability of these agencies to recognize that a threat exists and their ability to stop the attack. Even with these agencies on task to monitor cyber threats, a cyberattack can occur with no warning.

Because virtually all critical systems are reliant upon computer systems, the secondary hazards that could result from a cyber-terrorism attack could be devastating. For example, many of New Jersey's roadway systems rely on sophisticated traffic control systems that prevent gridlock and accidents daily. Without these systems, the risk of not only auto accidents increases, but also hazardous materials in-transit incidents. Additionally, a cyber-attack on a nuclear power plant could have devastating consequences should the plant suffer an intentional catastrophic failure. A cyber-attack could also completely incapacitate the communications infrastructure not only in New Jersey but across the United States, leading to disturbing secondary consequences and hazards. Because the power grid is also largely controlled by computer systems, a widespread power outage is also a possibility. A failure of the power grid would impact individuals reliant on power such as those with medical needs. The number of critical systems reliant on computer systems are numerous, thus disruption of one or more of the systems would cause severe secondary-cascading hazards.

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Exposure and Damages

For the purposes of this Plan, the entire population of New Jersey is considered exposed to the effects of a cyber-terrorism attack. Because it is difficult to predict the particular target of cyber terrorism, assessing vulnerability to the hazard is also difficult. All populations who directly use a computer or those receiving services from automated systems are vulnerable to cyber terrorism. Although all individuals in New Jersey are vulnerable to an attack, certain types of attacks would impact specific segments of the population.

- If the cyber-attack targeted the State's power or utility grid, individuals with medical needs would be impacted the greatest. These populations are most vulnerable because many of the life-saving systems they rely on require power. Also, if an attack occurred during months of extreme hot or cold weather, New Jersey's elderly population (those 65 years of age and older) would be vulnerable to the effects of the lack of climate control. These individuals would require shelter or admission to a hospital. Other populations vulnerable to the secondary effects of cyber terrorism are young children.
- If a cyber-attack targeted a facility storing or manufacturing hazardous materials, individuals living adjacent to these facilities would be vulnerable to the secondary effects, should the attack successfully cause a critical failure at that facility. Individuals living within 10 miles of a nuclear power plant would be vulnerable should an attack occur at that caused a failure at a facility.

While these examples illustrate the vulnerability of specific populations to cyber-attacks, it is important to reiterate that because of the reliance on computerized systems, the entire population of New Jersey is vulnerable to cyber terrorism.

A significant portion of New Jersey's economy is exposed to the effects of cyber-terrorist attacks. Cyber-crimes against banks and other financial institutions can cost many hundreds of millions of dollars every year. Cyber theft of intellectual property and business-confidential information can cost developed economies billions of dollars—how many billions is an open question. These losses could be considered simply the cost of doing business, or they could be a major new risk for companies and nations as these illicit acquisitions damage global economic competitiveness and undermine technological advantage (McAfee, 2013).

The cost of malicious cyber activity involves more than the loss of financial assets or intellectual property. Cyber-crimes can cause damage to a company's brand and reputation, consumer losses from fraud, the opportunity costs of service disruption and "cleaning up" after cyber incidents, and the cost of increased spending on cybersecurity (McAfee, 2013). In the United States, the costs of cyber terrorism is estimated somewhere between $24 billion and $120 billion annually. These costs represent approximately 0.2% to 0.8% of the total GDP in the United States (McAfee, 2013).

Given the proliferation of electronic commerce and the reliance on electronics, virtually all elements of New Jersey's economy are vulnerable to cyber-attacks. The secondary impacts of a significant attack would be devastating to the economy. For example, an attack that caused the loss of power to hundreds of thousands of businesses during peak holiday shopping months could potentially cost the State millions of dollars in tax revenue if these businesses were closed. Additionally, a disruption in New Jersey's manufacturing, agricultural, or tourism sectors would have devastating impacts on the economy. While it is difficult to quantitatively measure the

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economic impact of a cyber-terrorism attack, it is safe to say that the impact would be great, thus the economy is vulnerable to cyber-terrorism attacks.

Critical facilities are vulnerable to cyber-terrorism attacks based on the significance of the facilities, and the potential to interrupt critical systems in the State. As previously mentioned, many critical facilities are reliant upon computer networks to monitor and control critical functions. An example is nuclear power plants, which rely on sophisticated networks to prevent catastrophic failure. A cyber-terrorist attack could result in catastrophic failure of one of these facilities. Likewise, the power grid is reliant upon computer systems to distribute power to the State. An attack could disrupt power to millions of New Jersey residents. These are just two examples of how critical facilities are vulnerable to cyber-terrorism attacks. Given the importance of critical facilities to daily living activities, these facilities are highly vulnerable to cyber-terrorism attacks.

It is difficult to quantify the potential losses to state facilities caused by a cyber-attack. As noted in the vulnerability assessment above, the physical facilities would not be damaged, other than the value of computer equipment damaged. The more significant loss would be to the functions of the facilities targeted and their value to the population of New Jersey during the period of malfunction.

7.23 ECONOMIC COLLAPSE

7.23.1 HAZARD DESCRIPTION

Economic Collapse is a breakdown in normal commerce facilitated by actions such as the destabilization of currency and/or hyperinflation, which results in social chaos or civil unrest. The term describes a variety of economic conditions from severe depressions with high unemployment and bankruptcy such as the Depression of the 1930s in the United States, to breakdowns of normal economic conditions such as hyperinflation or the effects of a sharp decline in population that causes an economic downturn.

7.23.2 LOCATION

An economic Collapse may impact some or all of Union County, depending on the size and scope of the crisis. A major economic Collapse would likely extend beyond Union County and affect the entire State of New Jersey if not the nation. While social chaos and civil unrest could occur in specific locations, the effects of a severe and long-term event would eventually extend to all segments of the population.

7.23.3 EXTENT

Economic Collapse is often accompanied by social chaos and civil unrest. See Section 7.21 Civil Unrest for extent information regarding civil unrest.

7.23.4 PREVIOUS OCCURRENCES AND LOSSES

Two previous occurrences of a major economic Collapse in New Jersey include the Great Recession of 2007, and the Great Depression of the 1930s. Both examples are described in the sections below.

The Great Depression

The Great Depression began when the stock market crashed on October 29, 1929, which marked the official beginning of the depression. Following the stock market crash, there was a run on the banks, forcing many thousands of banks to close. Businesses and segments of industry were also affected. Having lost much of their own capital in either the Stock Market Crash or the bank

closures, many businesses started cutting back their workers' hours or wages. In turn, consumers began to curb their spending, refraining from purchasing such things as luxury goods. This lack of consumer spending caused additional businesses to cut back wages or, more drastically, to lay off some of their workers. Even with these cuts, many businesses could not stay open and soon closed their doors, leaving all their workers unemployed (Rosenberg, 2017).

The Great Depression continued through the 1930s until the bombing of Pearl Harbor and the entrance of the United States into World War II. Once the United States was involved in the war, both the United States people and industry became essential to the war effort. Weapons, artillery, ships, and airplanes were needed quickly. Men were trained to become soldiers and the women were kept on the home-front to keep the factories going. Food needed to be grown to feed the national population and to send overseas (Rosenberg, 2017).

In the United States, 13 million people were unemployed, and in 1932, 34 million people belonged to a family with no regular full-time wage earner. Industrial production fell nearly 45% and homebuilding dropped by 80% between 1929 and 1932. Unemployment rates soared across the country, peaking at 80% in Toledo, Ohio. Finally, from 1929 through 1933 the stock market lost approximately 90% of its value.

Before the Depression, New Jersey was experiencing the prosperity felt throughout the country in the 1920s. Developments such as the Camden-Philadelphia Bridge and Bell Laboratories brought many people a sense of hope for the future. The Wright Aeronautical Company opened in Paterson, New Jersey, and the Newark Airport opened in 1928. However, this progress came crashing down with the onset of the Great Depression. New Jersey was severely hit when thousands of workers were laid off and had to rely on relief checks to survive. The impacted factories could not sell what they produced. The State attempted to aid the unemployed by establishing the Emergency Relief Administration, which gave $10 million to bankrupt areas. Franklin D. Roosevelt's Works Progress Administration (WPA) was a significant program in the New Deal that helped New Jersey succeed in establishing a strong workforce. WPA workers helped to improve roads, buildings, and other facilities and work from writers and artists aided in preserving the history of the time period (Kiefer, 2005).

Great Recession 2007

The Great Recession of 2007 affected the global economy and is the most recent example of a financial crisis affecting New Jersey. The official time period of the recession occurred from December 2007 through June 2009. However, the effects of the recession continue to linger to the present. While the specific triggers of the recession have been debated, a combination of bursting of the United States housing bubble and subsequent foreclosures, subprime lending, mortgage fraud, predatory lending, high private debt limits, and mortgage underwriting are all cited as triggers that contributed to the financial crisis.

In the United States, the effects of the Great Recession were severe and far-reaching. The gross domestic product (GDP) contracted nearly $850 billion or 5.5% below its potential level, from 2008 through 2010 (FRED, 2013). The unemployment rate rose from its pre-recession level of 5% to over 10% at its peak late in 2009 (FRED, 2013). The number of unemployed individuals in the United States rose to 15 million at its peak in 2009, up from 7 million at the pre-crisis level (FRED, 2013). The housing market was particularly hard hit as housing prices fell approximately 30% from their peak in mid-2006 (FRED, 2013). Additionally, the stock market was affected as the Standard &

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Poor's (S&P) 500 index fell 57% from the October 2007 peak of 1,565, to a low of 676 in March 2009. Stock prices rose to pre-recession peak levels in April 2013.

New Jersey's recession began in January 2008, one month after it started nationally, and lasted through July 2009. The State lost 161,300 jobs, or 4% of its employment base. During the recession's first year, the State and national job bases declined at the same rate, but in 2009, the Garden State had shed jobs at a slower pace: 1.8% compared to the 2.9% national rate. With the deepening recession, New Jersey's unemployment rate increased sharply, from 4.5% in December 2007 to 6.8% 1 year later, and to 9.8% in September 2009. At the same time, growth in personal income fell, from 5.7% in 2007 to 3.2% in 2008 (Manas, 2009). The Great Recession also led to a significant tightening of the State budget. In fact, in 2009 New Jersey had a budget gap of $9 billion, or roughly 25% of the State's budget (Deitz et al. 2010). It is forecasted that it will take until 2019 for New Jersey to fully recover from the recession (Manas, 2009). Although this recession has adversely affected the State, its effects pale in comparison to the Great Depression of the 1930s.

Although the Great Recession and the Great Depression were significant economic Collapses, they still do not represent true economic collapses. The effects of a true economic Collapse on society would be much more severe than the effects experienced during these past occurrences.

Economic Impact of COVID-19 Pandemic

Economic recession has been a secondary impact of the coronavirus pandemic. To control the spread of the disease, businesses were forced to close and, eventually, to reopen on a phased plan that emphasized curbside pickup. In April 2020, New Jersey lost over 750,000 jobs, with nearly a million jobs lost in March and April 2020 combined. By August 29, 2020, over 1.5 million unemployment insurance claims were filed in New Jersey, which is almost 40% of New Jersey's workforce. Over the summer of 2020, there was a rebound in employment as coronavirus-related restrictions lifted, and more than 40% of the jobs lost were recovered. These statistics are current as of September 2020, as reported by the *New Jersey Department of Labor and Workforce Development's Economic Brief: New Jersey's Changing Economy and the Recent Impact of the COVID-19 Pandemic*. As of the writing of the 2021 HMP update (November 2020), there is still uncertainty about the statewide control of the pandemic and the extent of additional restrictions on business through the end of 2020 and beginning of 2021.

7.23.5 PROBABILITY OF FUTURE OCCURRENCES

When the State HMP was published in 2019, the probability of an economic collapse was low, especially in New Jersey and in the United States as a whole. Although it was the closest the United States has come to a complete economic Collapse, the Great Depression of the 1930s was not an economic Collapse in the true sense of the definition. As of the writing of this HMP Update (November 2020), there is still uncertainty about the economic implications of the COVID-19 pandemic in the future.

7.23.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

Sea level rise influenced by climate change will force affected property values lower. This is going to have an impact on revenue and local and state debt. Unlike prior housing downturns, there will not be a recovery to these property values.

7.23.7 VULNERABILITY ASSESSMENT

Impacts

Events that include characteristics of economic Collapse can range in severity from severe recessions (2007) and depressions (1930s) to complete economic failure. A complete economic Collapse is characterized by hyperinflation, high unemployment rates, and societal breakdown. As mentioned, a complete economic Collapse has never occurred in the United States.

Economic Collapses can occur quickly with relatively little warning (such as Black Tuesday). However, many experts believe they are able to recognize and warn against the signs of an economic Collapse. Social Collapse such as coups and wars can trigger an economic Collapse to quickly follow.

Civil unrest is one of the primary secondary effects of economic Collapse. During periods of economic instability, societal conditions may deteriorate, leading to civil unrest. Additionally, during or near economic Collapses workers may go on strike, as did the ditch diggers who went on strike in New Jersey during the Great Depression.

Another secondary hazard during economic Collapse is pandemic. Because many families are unable to meet basic hygiene needs, diseases historically spread quickly through communities. During the Great Depression, the spread of tuberculosis significantly impacted large segments of the population.

Exposure and Damages

Because an economic Collapse would affect all segments of the population, all Union County residents are vulnerable to the impact of this hazard. Although all of the population would be affected, the very young and elderly would be more vulnerable to the secondary hazard of pandemic than the rest of the population. Also, very young and elderly residents are vulnerable to the effects of malnutrition, which often results during these incidents. Aside from the health effects during economic Collapse, lower-income individuals who struggle to cover average costs of living during thriving financial times would be greatly affected by economic Collapse and would therefore be more vulnerable.

The entire Union County economy is exposed to the effects of economic Collapse. In today's global economy, Union County's economy is vulnerable to Collapse, and the effects of financial Collapses of governments around the world. The Great Recession demonstrated how economic conditions in one nation affect others around the world, demonstrating that counties and sub-national governments are vulnerable to the effects of economic Collapse. The Great Recession also illustrated the ways in which state governments are vulnerable. During the most recent recession, New Jersey experienced a $9 million budget shortfall. Also, it is apparent the economic recovery can take years, even decades; as of 2013, the United States is still recovering from the Great Recession.

Critical facilities are also exposed to the effects of economic Collapse. Maintaining these facilities and infrastructure systems will be particular challenging when agencies managing these facilities lose operating capital, and thus cannot maintain the facilities. This may lead to critical infrastructure failure. Whether they are privately or publicly owned, all critical facilities will be vulnerable to economic Collapse.

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7.24 NUCLEAR HAZARDS

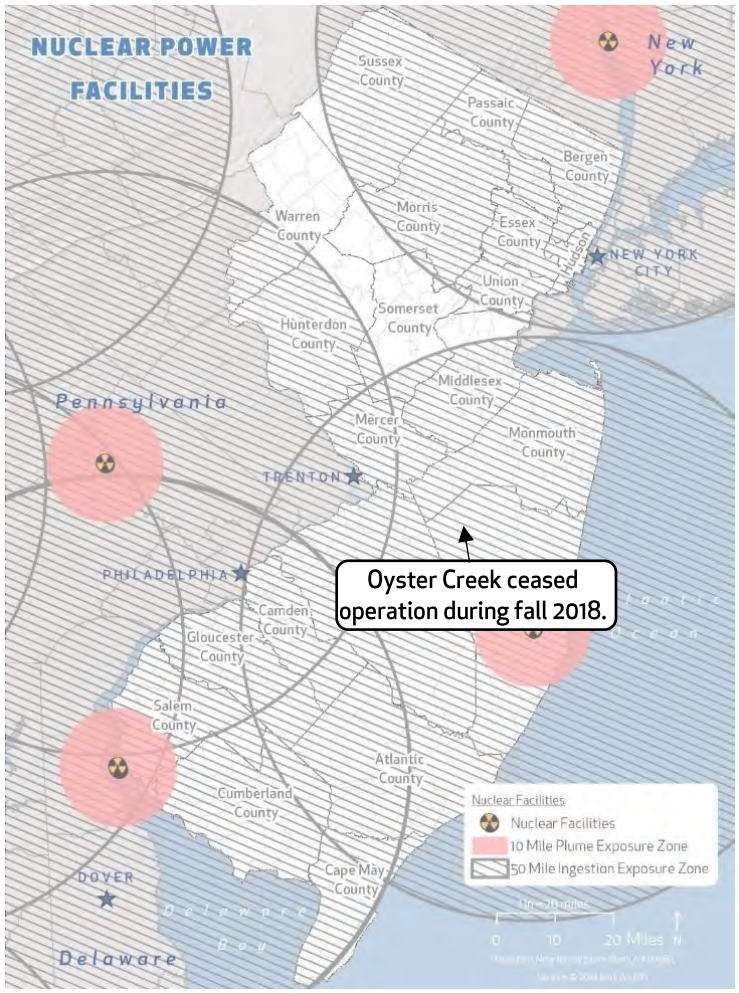
7.24.1 HAZARD DESCRIPTION

Nuclear hazards and incidents generally refer to incidents involving (1) the release of significant levels of radioactive materials or (2) exposure of workers or the general public to radiation. The primary concerns following a nuclear incident or accident is the public health impact from direct exposure to a radioactive plume, inhalation of radioactive materials, ingestion of contaminated food, water and milk, and long term exposure to deposited radioactive materials in the environment that may lead to either acute (radiation sickness or death) or chronic (cancer) health effects.

7.24.2 LOCATION

New Jersey has three operating nuclear power plants located within the State. These facilities include the Salem Nuclear Generating Station Unit 1 and Unit 2, and Hope Creek Nuclear Generating Station. Oyster Creek Nuclear Generating Station stopped generation in fall 2018. Most of Union County is within the 50-mile ingestion pathway zone of the Indian Point Energy Center in Buchanan, New York as shown in **Figure 7.24-1 Nuclear Power Plants Impacting New Jersey**.

FIGURE 7.24-1 NUCLEAR POWER PLANTS IMPACTING NEW JERSEY



Source: State HMP

7.24.3 EXTENT

The U.S. NRC encourages the use of Probabilistic Risk Assessments (PRA) to estimate quantitatively the potential risk to public health and safety considering the design, operations, and maintenance practices at nuclear power plants. PRAs typically focus on accidents that can severely damage the core and that may challenge containment.

The New Jersey Office of Emergency Management (NJOEM) and the DEP have developed a State Radiological Emergency Response Plan with consultation from other state agencies and according to all relevant guidelines established by the Federal Emergency Management Agency (FEMA) as required by the Radiation Accident Response Act (N.J.S.A. 26:2D-37 et seq. effective October 27, 1981). The Plan includes a 10-Mile Emergency Planning Zone (EPZ) defined as the area with a radius of approximately 10 miles around a nuclear power generating station. The 10 Mile EPZ considers potential adverse public health impacts for the Plume Exposure Pathway based on the potential for acute health effects due to radiation exposure from a catastrophic accident at a nuclear power generating station. The Plan also includes provisions for the 50 Mile Ingestion Pathway Emergency Planning Zone where additional public health impacts must be considered for long term or chronic health effects that could result from the direct exposure to deposited radioactive materials or from consumption of contaminated food, water and milk. The exact size and configuration of the 10 mile and 50 mile EPZ may vary in relation to local emergency response capabilities, topography, road networks and political boundaries (Baldauf [DEP], 2013).

The nuclear industry has adopted pre-determined, site-specific Emergency Action Levels (EAL). The EALs provide the framework and guidance to observe, address, and classify the severity of site-specific incidents and conditions that are communicated to off-site emergency response organizations (Nuclear Regulatory Commission, 2008). Additional EALs specifically deal with issues of security, such as threats of airborne attack, hostile action within the facility, or facility attack. These EALs ensure that appropriate notifications for the security threat are made in a timely manner.

Each facility is also equipped with a public alerting system, which includes a number of sirens to alert the public located in the Plume Ingestion Pathway EPZ. This alerting system is activated by the counties of each specific EPZ. Emergency notifications and instructions are communicated to the public via the Emergency Alert System as activated by the NJOEM Emergency Operations Center. State officials also have the capability to send emergency messages as text messages to mobile devices.

7.24.4 PREVIOUS OCCURRENCES AND LOSSES

No major nuclear incidents have occurred in New Jersey. In the past 20 years, there have been two alerts at Oyster Creek and one alert at Salem/Hope Creek site (Christiansen [NJEOM] 2013).

7.24.5 PROBABILITY OF FUTURE OCCURRENCES

Three major nuclear reactor accidents have occurred in the history of civil nuclear power: Three Mile Island, Chernobyl, and Fukushima. Since the Three Mile Island accident, nuclear power has become heavily regulated; however, as with any industrial activity, it is not entirely risk-free. Incidents and accidents may happen that will lead to continued improvements in safety (Word Nuclear Association, 2013).

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7.24.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

Power plants located along the shore may be vulnerable to the impacts of Climate Change and Sea Level Rise. Specifically, Salem Nuclear Power Plant is the nation's second-largest nuclear generating complex located on the eastern shore of the Delaware River, known as Artificial Island. According to John Vidal, "flooding can be catastrophic to a nuclear power plant because it can knock out its electrical systems, disabling its cooling mechanisms and leading to overheating and possible meltdown and a dangerous release of radioactivity" (Vidal, Hakai Magazine, 2018).

7.24.7 VULNERABILITY ASSESSMENT

Impacts

The potential public health impacts are greatest at locations nearest to the point of release from the nuclear power generating station. For planning purposes, a 10 Mile Emergency Planning Zone has been established as the area where the population has the potential to receive acute radiation doses from major releases of radiation from a catastrophic accident. The exposure pathways that are considered for the Early Phase of a nuclear accident are from direct radiation exposure to gamma radiation in the radioactive plume, inhalation of radioactive particles while submersed in a radioactive plume and from exposure to deposited radioactive materials on the ground. The Early Phase of an emergency may last anywhere from hours to days (Baldauf [DEP], 2013).

Consideration of the impact of deposited radiation in the environment begins with the Intermediate Phase. During this time, the public exposure pathways assessed are from prolonged exposure to deposited radioactive materials and from the ingestion of food, water, and milk that has become contaminated from deposited radioactive materials. Consideration is given to potential chronic health effects of long-term exposure to and ingestion of radioactive materials. For planning purposes, a 50 Mile Ingestion Planning Zone is established for this phase of the accident. The Intermediate phase of an accident may last from weeks, to months or years depending on the severity of the accident and the extent of the dispersion of radioactive materials in the environment (Baldauf [DEP], 2013).

There is often warning that a nuclear accident has occurred or has the potential to occur. Nuclear facilities must notify the appropriate authorities in the incident of an accident. The Nuclear Regulatory Commission uses four classification levels for nuclear incidents (Nuclear Regulatory Commission, 2008):

- Unusual Event: Under this category, incidents are in process or have occurred that indicate potential degradation in the level of safety of the plant. No release of radioactive material requiring off-site response or monitoring is expected unless further degradation occurs.
- Alert: If an alert is declared, incidents are in process or have occurred which involve an actual or potential substantial degradation in the level of safety of the plant. Any releases of radioactive material from the plant are expected to be limited to a small fraction of the United States Environmental Protection Agency (USEPA) Protective Action Guides (PAG).
- Site Area Emergency: A site area emergency involves incidents in process or which have occurred that result in actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material are not expected to exceed the USEPA PAGs except near the site boundary.
- General Emergency: A general emergency involves actual or imminent substantial core damage or melting of reactor fuel with the potential for loss of containment integrity.

Radioactive releases during a general emergency can reasonably be expected to exceed the USEPA PAGs for more than the immediate site area.

Communities across the United States use outdoor warning sirens for many purposes. Sirens are used to warn the public of many hazards including fires, flooding, and other events that warrant public notifications. For the Oyster Creek EPZ, when activated, sirens will emit a three-minute steady sound. If sirens are heard, residents should tune to one of the Emergency Alert System (EAS) stations. The siren network is tested annually with a full activation. A monthly test is also conducted which operates the sirens individually or collectively for less than a minute (Exelon Generation, 2013). For the Salem and Hope Creek EPZ, when activated, sirens will emit a three- to five-minute siren. If sirens are heard, residents should tune to one of the Emergency Alert System (EAS) stations (PSEG Nuclear LLC 2013).

The impact on the environment that a radiological event will have depends on where the event is located and the extent of irradiation. The animals, plants and other wildlife surrounding the radiological event will certainly be impacted. Underground water and soil can become contaminated when exposed to radiological material.

Exposure and Damages

To understand risk, the assets exposed within the hazard area are identified. For the nuclear hazard, power plant data compiled by the U.S. Energy Information Administration and associated 10- and 50-mile buffers were used as the hazard areas to assess risk. Please note these hazard areas are considered approximate and should be treated as such.

As discussed earlier, the release of dangerous levels of radiation could impact the health and safety of the population located near the nuclear power plant. Populations that reside within the 10-mile EPZ as well as the 50-mile ingestion pathway zone are considered vulnerable. Union County is not within the 10 miles of any nuclear facility. The total approximate population in Union County in the 50-mile ingestion zone is approximately 503,400 people. Evacuations are a protective action within the ingestion pathway. **Table 7.24-1 Union County Population With 50 Mile Radius** outlines the estimated population within Union County located within each zone by municipality.

TABLE 7.24-1 UNION COUNTY POPULATION WITHIN 50 MILE RADIUS

Jurisdiction	2018 Population Estimate	2018 Population in 50-mile Zone
Berkeley Heights Township	13,417	13,417
Clark Township	15,614	13,972
Cranford Township	23,882	23,882
Elizabeth City	128,153	128,153
Fanwood Borough	7,602	7,602
Garwood Borough	4,334	4,334
Hillside Township	21,895	21,895
Kenilworth Borough	8,160	8,160
Linden City	42,033	42,033
Mountainside Borough	6,820	6,820

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Jurisdiction	2018 Population Estimate	2018 Population in 50-mile Zone
New Providence Borough	12,808	12,808
Plainfield City	50,508	5,786
Rahway City	29,370	29,370
Roselle Borough	21,582	21,582
Roselle Park Borough	13,568	13,568
Scotch Plains Township	24,183	20,881
Springfield Township	17,398	17,398
Summit City	21,921	21,921
Union Township	58,158	58,158
Westfield Town	30,086	30,086
Winfield Township	1,574	1,574
Union County	553,066	503,400

Source: U.S. Census Bureau. American Community Survey (ACS) 2014-2018 5-Year Estimates.

Individuals living within 10 miles of a nuclear power are the most vulnerable to the effects of nuclear hazards and may be directly exposed to radiation during a nuclear incident. Individuals located within 50 miles of a nuclear power plant are also vulnerable to the effects of a release involving the contamination of water supplies, crops, and livestock by radioactive materials. Individuals with pre-existing medical conditions, access and functional needs, the elderly, and those without transportation may require evacuation assistance if an incident should occur.

Housing may become uninhabitable because of continued exposure from deposited radiation in the environment, depending on the extent of irradiation of particulate matter or other materials during the incident. Property may become unusable for agricultural purposes because of contaminated soil or water Source used for irrigation. A total risk exposure would be equal to the full replacement of each building and property (Baldauf [DEP], 2013). **Table 7.24-2 Union County Housing Units Within 50-Mile Radius** outlines the estimated number of housing units within Union County located within each zone by municipality.

TABLE 7.24-2 UNION COUNTY HOUSING UNITS WITHIN 50 MILE RADIUS

Jurisdiction	2018 Housing Units Estimate	2018 Housing Units in 50-mile Zone
Berkeley Heights Township	4,609	4,609
Clark Township	5,908	5,366
Cranford Township	9,057	9,057
Elizabeth City	44,428	44,428
Fanwood Borough	2,607	2,607
Garwood Borough	1,835	1,835
Hillside Township	7,714	7,714
Kenilworth Borough	2,989	2,989
Linden City	15,678	15,678
Mountainside Borough	2,464	2,464

Jurisdiction	2018 Housing Units Estimate	2018 Housing Units in 50-mile Zone
New Providence Borough	4,592	4,592
Plainfield City	16,625	2,218
Rahway City	12,120	12,120
Roselle Borough	8,345	8,345
Roselle Park Borough	5,285	5,285
Scotch Plains Township	9,110	8,033
Springfield Township	7,336	7,336
Summit City	8,038	8,038
Union Township	21,535	21,535
Westfield Town	10,906	10,906
Winfield Township	735	735
Union County	4,609	185,890

Source: U.S. Census Bureau. American Community Survey (ACS) 2014-2018 5-Year Estimates.

Critical facilities are important in ensuring the day-to-day function of society. These facilities include utilities, hospitals, and schools, among others similar in nature. According to the analysis, 793 facilities are located in the greater 50-mile ingestion zone. Critical facilities need to ensure continuity of operation during a disaster**. Table 7.24-3 Union County Critical Facilities Within 50 Mile Radius** outlines the number of critical facilities that are located in the 10- and 50- mile zones.

Public and private infrastructure may be lost due to contamination from a nuclear incident. The type of infrastructure impacted would depend on the nature of the event and the extent of its effects.

TABLE 7.24-3 UNION COUNTY CRITICAL FACILITIES WITHIN 50 MILE RADIUS

Jurisdiction	Number of Critical Facilities in 50-mile Zone	Number of Critical Infrastructure in 50-mile Zone
Berkeley Heights Township	25	17
Clark Township	20	3
Cranford Township	37	7
Elizabeth City	114	17
Fanwood Borough	8	0
Garwood Borough	7	0
Hillside Township	22	0
Kenilworth Borough	10	3
Linden City	64	25
Mountainside Borough	19	3
New Providence Borough	25	2
Plainfield City	6	0
Rahway City	30	8

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Jurisdiction	Number of Critical Facilities in 50-mile Zone	Number of Critical Infrastructure in 50-mile Zone
Roselle Borough	23	0
Roselle Park Borough	20	0
Scotch Plains Township	52	8
Springfield Township	24	7
Summit City	58	6
Union Township	49	9
Westfield Town	58	1
Winfield Township	6	0
Union County	677	116

Source: U.S. Census Bureau. American Community Survey (ACS) 2014-2018 5-Year Estimates.

7.25 PANDEMIC

7.25.1 HAZARD DESCRIPTION

A pandemic is a global outbreak of disease. Pandemics happen when a new virus emerges to infect people and can spread between people sustainably. Because there is little to no pre-existing immunity against the new virus, it spreads worldwide. Conversely, an epidemic is much more limited in effect and impact and is usually restricted to one locale (CDC, 2020).

In New Jersey, a municipality in which a pandemic occurs bears the first and primary responsibility to control the epidemic. Pandemics that remain uncontrolled warrant local mutual aid from neighboring municipal and/or county and state resource. If the epidemic remains beyond the capabilities of local law enforcement agencies alone, limited state police assistance may be requested. If the restoration of public health is beyond local, county, and state abilities, the Governor may declare a State of Emergency calling on Federal and worldwide support.

This section discusses some of the most severe global disease outbreaks that affected New Jersey within the last 100 years.

Foodborne Disease Outbreaks

Food-borne illness is caused by consuming contaminated foods or beverages. Many different disease-causing microbes or pathogens can contaminate foods, so there are many different types of food-borne illnesses. Food-borne illness, caused by a variety of bacteria, viruses, and parasites, can be caused by consuming improperly prepared food items, poor hygiene among food handlers, or contamination in food processing facilities or farms. (NJDOH, 2020).

Mumps

Mumps is a contagious disease that is caused by a virus. It typically starts with a few days of fever, headache, muscle aches, tiredness, and loss of appetite (CDC, 2020).

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Norovirus
Norovirus is a very contagious virus that spreads easily and causes vomiting and diarrhea in people. People with norovirus illness can shed billions of norovirus particles however only a few virus particles can make other people sick. The norovirus is not related to Influenza. (CDC, 2020).

Influenza
Influenza, known as the flu, comes in four type of viruses: A, B, C and D. Human influenza A and B viruses cause seasonal epidemics of disease (known as the flu season) almost every winter in the United States. Influenza A viruses are the only influenza viruses known to cause flu pandemics. Pandemics happen when new (novel) influenza A viruses emerge which are able to infect people easily and spread from person to person in an efficient and sustained way (CDC, 2020).

West Nile Virus
West Nile Virus is the leading cause of mosquito-borne disease in the continental United States. There are no vaccines to prevent or medications to treat the virus in people. Fortunately, most people infected do not feel sick. About 1 in 5 people who are infected develop a fever and other symptoms. About 1 out of 150 infected people develop a serious, sometimes fatal, illness (CDC, 2020).

Zika Virus
Zika Virus disease is caused by the Zika virus, which is spread to people primarily through the bite of an infected mosquito. The illness is usually mild with symptoms lasting up to a week, and many people do not have symptoms or will have only mild symptoms. However, Zika virus infection during pregnancy can cause a serious birth defect called microcephaly and other severe brain defects (CDC, 2020).

Coronavirus
Three versions of the coronavirus have affected New Jersey in the last two decades; Severe Acute Respiratory Syndrome (SARS-CoV), Middle East Respiratory Syndrome (MERS-CoV), and "SARS-CoV-2" also named Coronavirus Disease 2019 (COVID-19). Coronaviruses are a large family of viruses that are common in people and many different species of animals, including camels, cattle, cats, and bats. Animal coronaviruses can infect people and then spread between people, which is how SARS, MERS, and COVID-19 originated (CDC, 2020).

- SARS was first reported in Asia in February 2003 and spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. SARS causes mild to moderate upper respiratory tract illness in humans, including the common cold. No single medicine can effectively treat SARS. Different types of treatment regimens have been used for people who are severely ill and hospitalized including antibiotics, antivirals and steroids. Currently, there is no known SARS transmission anywhere in the world (CDC, 2020).
- MERS was first reported in Saudi Arabia in September 2012, however after further investigation, the first known cases of MERS occurred in Jordan in April 2012. Most MERS patients developed severe respiratory illness with symptoms of fever, cough and shortness of breath. About 3 or 4 out of every 10 patients reported with MERS have died (CDC, 2020).

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- COVID-19 was first detected in Wuhan, Hubei Province, China and which has now been detected in more than 150 locations internationally, including in the United States. The complete clinical picture with regard to COVID-19 is not fully known. Reported illnesses have ranged from very mild (including some with no reported symptoms) to severe, including illness resulting in death. While information so far suggests that most COVID-19 illness is mild, a report out of China suggests serious illness occurs in 16% of cases. Older people and people of all ages with severe chronic medical conditions, such as heart disease, lung disease, and diabetes, seem to be at higher risk of developing serious COVID-19 illness. On March 11, 2020, the COVID-19 outbreak was characterized as a pandemic by the World Health Organization. (CDC, 2020).

7.25.2 LOCATION

This section covers common ways diseases are transmitted over a wide geographic area.

Foodborne Disease Outbreaks

Many outbreaks are local in nature. They are recognized when a group of people realize that they all became ill after a common meal. However, outbreaks are increasingly being recognized that are more widespread, that affect persons in many different places, and that are spread out over several weeks (NJDOH, 2020).

Mumps

Although the Measles, Mumps, and Rubella (MMR) vaccine helps limit the size, duration, and spread of mumps outbreaks, they can still occur in communities of people who previously had one or two doses of the MMR vaccine. This is particularly common in close-contact settings including households, schools, universities, athletics teams and facilities, church groups, workplaces, and large parties and events (CDC, 2020).

Norovirus

Anyone can get infected and sick with norovirus. The virus is spread by accidently getting tiny particles of feces or vomit from an infected person by direct contact with an infected person, consuming contaminated food or water, and/or touching contaminated surfaces then putting your unwashed hands in your mouth (CDC, 2020).

Influenza

In terms of pandemic influenza, all counties may experience pandemic influenza outbreak caused by factors such as population density and the nature of public meeting areas. Densely populated areas will spread diseases quicker than less densely populated areas.

West Nile Virus

West Nile Virus is most commonly spread to people by the bite of an infected mosquito. Cases of West Nile Virus occur during mosquito season, which starts in the summer and continues through fall.

Zika Virus

Zika is spread mostly by the bite of an infected Aedes species mosquito. These mosquitoes bite during the day and night. Zika can be passed from a pregnant woman to her fetus. Infection during pregnancy can cause certain birth defects. The virus is also spread through sex and blood transfusions, although blood transfusion transmittal has not been confirmed (CDC, 2020). New

Jersey is particularly vulnerable to travel-related cases because there is a significant segment of residents who travel back and forth to Puerto Rico, where a National Emergency was declared in 2016 due to the virus.

Coronavirus

- Transmission of SARS-CoV is primarily from person to person. It appears to have occurred mainly during the second week of illness, which corresponds to the peak of virus excretion in respiratory secretions and stool, and when cases with severe disease start to deteriorate clinically. Most cases of human-to-human transmission occurred in the health care setting, in the absence of adequate infection control precautions. Implementation of appropriate infection control practices brought the global outbreak to an end (WHO, 2020).
- MERS-CoV has spread from ill people to others through close contact, such as caring for or living with an infected person (CDC, 2020).
- The COVID-19 virus is thought to spread mainly from person-to-person. The virus can spread by people who are in close contact with one another (within about 6 feet) or through respiratory droplets produced when an infected person coughs or sneezes (CDC, 2020).

7.25.3 EXTENT

The exact size and extent of an infected population depends on how easily the illness is spread, the mode of transmission, and the amount of contact between infected and uninfected individuals. The transmission rates of pandemic illnesses are often higher in more densely populated areas. The transmission rate of infectious diseases will depend on the mode of transmission of a given illness.

The magnitude of a pandemic may be exacerbated by the fact that an influenza pandemic will cause outbreaks across the United States, limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventative and therapeutic measures, including vaccines and other medications, will likely be in short supply or will not be available.

During a pandemic wave in a community, during a six to eight-week outbreak, between 25% and 30% of persons will become ill. Among working-aged adults, illness attack rates will be lower than in the community as a whole. A CDC model suggests that at the peak of pandemic disease, about 10% of the workforce will be absent because of illness or caring for an ill family member. Impacts will likely vary between communities and work sites and may be greater if significant absenteeism occurs because persons stay home for fear of becoming infected (Global Security, 2011).

In 1999, the WHO Secretariat published guidance for pandemic influenza and defined the six phases of a pandemic. Updated guidance was published in 2009 to redefine these phases. This schema is designed to provide guidance to the international community and to national governments on preparedness and response for pandemic threats and pandemic disease.

In New Jersey, health and supporting agency responses to a pandemic are defined by the WHO phases and federal pandemic influenza stages, and further defined by New Jersey pandemic situations. The State's situations are similar, but not identical to the United States Department of Homeland Security federal government response stages. Refer to the State HMP Table 5.21-2 for the Federal and New Jersey Pandemic Phases and Situations in detail.

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Vaccination Rates in Union County

In Union County, approximately 93.6% of children in Pre-K, Kindergarten, First Grade, Sixth Grade, and Transfers were immunized during the 2019-2020 school year, down from 95.2% during the 2018-2019 school year according to the New Jersey Department of Health Communicable Disease Service *Annual Immunization Status Reports*. Of the approximately 6.4% of non-immunized children, approximately 3.1% were granted Provisional Admittance, 2.1% claimed a Religious Exemption, 1.2% were deemed Out of Compliance and 0.1% of enrolled children claimed a Medical Exemption. There was some inconsistency in reporting due to the COVID-19 pandemic.

7.25.4 PREVIOUS OCCURRENCES AND LOSSES

Table 7.25-1 Previous Pandemic Occurrences provides details on pandemic events that have impacted New Jersey.

TABLE 7.25-1 PREVIOUS PANDEMIC OCCURRENCES

Date(s) of Event	Event Type	Area Affected	Description
1918-1919	1918 "Spanish" Influenza Pandemic	Statewide	The influenza pandemic of 1918-1919 caused between 20 and 40 million deaths, more than World War I. This pandemic has been cited as the most devastating pandemic in recorded history. More people died of influenza in a single year than in the four years of the Black Death Bubonic Plague from 1347 to 1351. By September 27, 1918, the State health officer announced that the disease "was unusually prevalent" throughout New Jersey. The State was reporting that 2,000 cases had been reported in the preceding three days. On October 10, State officials formally banned all public gatherings. By October 15, officials had reported 88,256 cases of influenza. By the October 22, State authorities estimated that there were at least 149,540 cases, with 4,398 deaths being officially reported. On October 22, the pandemic peaked in New Jersey. On that day, there were 7,449 new cases and 366 deaths. The situation slowly improved after the third week of October.
1999-2002	West Nile Virus Outbreak	Statewide	WNV was identified in New York City in 1999, and spread rapidly across the United States, with human disease documented in 39 states and the District of Columbia. In 2002, WNV spread westward and activity was reported in all but six states (Arizona, Utah, Nevada, Oregon, Alaska, and Hawaii) and triggered the largest human arboviral encephalitis epidemic in U.S. history. From June 10 to December 31, 2002, there were 4,156 cases of WNV (including 284 deaths) reported in 39 states and the District of Columbia.
2002-2003	SARS coronavirus (SARS-CoV)	Statewide	SARS coronavirus (SARS-CoV) – virus identified in 2003. SARS-CoV is thought to be an animal virus from an as-yet-uncertain animal reservoir, perhaps bats, that spread to other animals (civet cats) and first infected humans in the Guangdong province of southern China in 2002. SARS affected 26 countries and resulted in more than 8,000 cases in 2003. Since then, a small number of cases have occurred as a result of laboratory accidents or, possibly, through animal-to-human transmission (WHO, 2020)
04/15/2009	Global H1N1 Pandemic	Statewide	The first novel H1N1 patient in the United States was confirmed April 15, 2009. The second patient was confirmed on April 17, 2009. On April 22, the CDC activated its Emergency Operations Center to better coordinate the public health response. On April 26, 2009, the U.S. government declared a public health emergency and began actively and aggressively implementing the country's pandemic response plan. By June 19, 2009, all 50 states

Date(s) of Event	Event Type	Area Affected	Description
			in the United States reported novel H1N1 infection. On June 11, 2009, the WHO signaled that a global pandemic of H1N1 was underway by raising the worldwide pandemic alert level to Phase 6. At the time, more than 70 countries had reported cases of novel influenza A (H1N1) infection. In total there were 18,306 lab-confirmed deaths as a result of H1N1 worldwide. In the United States between April 2009 and August 2009 there were 9,079 cases that required hospitalization and 593 deaths. In New Jersey, cases were widespread in July 2009, with 1,414 confirmed cases and 15 deaths.
January – 2/1/2011	Escherichia coli O157:H7	N/A	Between January 10 and February 15, 2011, a total of 14 persons were infected with the outbreak strain of Escherichia coli O157:H7 were reported in five states, including two reports in New Jersey. Three of the 14 were hospitalized; no deaths occurred. The outbreak was associated with Lebanon bologna.
February – September 2011	Salmonella Heidelberg	N/A	Between February 27 and September 13, 2011, a total of 136 persons infected with the outbreak strain of Salmonella Heidelberg were reported from 34 states, including one report in New Jersey. Ill persons ranged in age from less than one year old to 90years old. Thirty-seven people were hospitalized; one death was reported.
April – November 2011	Salmonella Heidelberg	N/A	Between April 1 and November 17, 2011, a total of 190 illnesses occurred due to Salmonella Heidelberg that was linked to kosher broiled chicken livers. Sixty-two of those illnesses were reported in New Jersey. Ill person's ages ranged from less than 1 year old to 97 years old. Thirty of the infected people were hospitalized.
8/1/2011	Salmonella Enteritidis	N/A	A total of 43 individuals infected with the outbreak strain of Salmonella Enteritidis were reported from five states, including two cases in New Jersey. Ill persons ranged in age from less than one year old to 94 years old. Two patients were hospitalized; no deaths occurred. The outbreak was linked to Turkish pine nuts purchased from bulk bins at Wegmans grocery stores.
January – June 2012	Salmonella Infantis	N/A	Between January 4 and June 26, 2012, a total of 49 individuals (human) were infected with the outbreak strain of Salmonella Infantis linked to multiple brands of dry dog food produced by Diamond Pet Foods produced at a facility in Gaston, South Carolina. Ten people were hospitalized; there were no deaths. Twenty states reported an outbreak, including two cases in New Jersey. Ill persons ranged in age from less than 1 year old to 82 years old.
January – July 2012	Salmonella Bareilly and Salmonella Nchanga	N/A	Between January 1 and July 7, 2012, a total of 425 individuals were infected with the outbreak strain of Salmonella Bareillyand Salmonella Nchanga. Twenty-eight states reported outbreaks, included 46 cases in New Jersey. The outbreaks were associated with an imported frozen raw yellowfin tuna product, known as Nakaochi Scrape, from Moon Marine USA Corporation. Ill persons ages ranged from less than 1 year old to 86 years old.
March-September 2012	Salmonella Infantis, *Salmonella* Newport, and *Salmonella* Lille	N/A	Between March 1, 2012 and September 24, 2012, a total of 195 individuals were infected with the outbreak strain of Salmonella Infantis, Salmonella Newport, and Salmonella Lille. Twenty-seven states reported an outbreak, including five cases in New Jersey. The outbreak was linked to chicks, ducklings, and other live poultry from Mt. Healthy Hatchery in Ohio. Ill persons ranged in age from less than 1 year old to 100 years old.

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Date(s) of Event	Event Type	Area Affected	Description
March-October 2012	Listeria monocytogenes Outbreak	N/A	Between March 28, and October 6, 2012, a total of 22 individuals were infected with the outbreak strain of Listeria monocytogenes. Ricotta salata cheese was the likely source of this outbreak. Thirteen states reported an outbreak, including three cases in New Jersey. Twenty of the persons infected were hospitalized, nine were related to pregnancy, and three were diagnosed in newborns. The others ranged from 30 years old to 87 years old.
June-September 2012	Salmonella Bredeney	N/A	Between June 14 and September 21, 2012, a total of 42 individuals were infected with the outbreak strain of Salmonella Bredeney. The outbreak was linked to Trader Joe's Valencia Peanut Butter. Twenty states reported an outbreak, including two cases in New Jersey. Ill persons ranged in age from less than 1 year old to 79 years old, with a median age of 7 years old.
July-September 2012	Salmonella Braenderup, *Salmonella* Typhimurium and Newport	N/A	Between July 3and September 1, 2012, a total of 127 individuals were infected with the outbreak of Salmonella Braenderup linked to mangoes originating from Agricola Daniella of Sinaloa, Mexico. Fifteen states reported an outbreak, including one case in New Jersey. Ill persons ranged in age from less than 1 year old to 86 years old. Between July 6 and September 16, 2012, a total of 261 individuals were infected with the outbreak of Salmonella Typhimurium and Newport linked to cantaloupe originating from Chamberlain Farms Produce in Owensville, Indiana. Twenty-four states reported an outbreak, including two cases in New Jersey. Ill persons ranged from less than one year old to 100 years old.
2012	West Nile Virus Outbreak	Statewide	During the summer-fall months of 2012, the worst WNV outbreak in the United States occurred. As of December 11, 2012, 48 states reported WNV infections in people, birds, or mosquitoes. A total of 5,387 cases of WNV in people, including 243 deaths, have been reported to CDC. Of these, 2,734 (51%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 2,653 (49%) were classified as non-neuroinvasive disease. In New Jersey, there were 46 positive test results.
2012	Middle East Respiratory Syndrome (MERS)	Statewide	Health officials first reported the disease in Saudi Arabia in September 2012. Through retrospective (backward-looking) investigations, they later identified that the first known cases of MERS occurred in Jordan in April 2012. So far, all cases of MERS have been linked through travel to, or residence in, countries in and near the Arabian Peninsula. The largest known outbreak of MERS outside the Arabian Peninsula occurred in the Republic of Korea in 2015. The outbreak was associated with a traveler returning from the Arabian Peninsula (CDC, 2020).
July-October 2016	Zika Outbreak	Statewide	In August 2016 the number of Zika cases reported in New Jersey reached over 100. Two counties - Bergen and Passaic - accounted for more than a third of the cases statewide.

Date(s) of Event	Event Type	Area Affected	Description
2019 Measles Outbreak	2019 Pacific Northwest measles outbreak	Statewide	The New Jersey Department of Health (NJDOH) and local health officials identified 33 cases of measles (30 confirmed cases in Ocean County and 3 connected cases in a Passaic County household) in an outbreak investigation lasting from October 2018 to January 2019. NJDOH and local officials then identified 12 cases of measles in Ocean and Monmouth counties in an investigation lasting from March 2019 to May 2019. Eight cases were confirmed in Ocean County and four cases were confirmed in one household in Monmouth County connected to the Ocean cases. All individuals involved in the more recent outbreak were unvaccinated or had no documentation of vaccination against measles. There were no measles cases identified in Union County.
2019-2021	Coronavirus Disease 2019 (COVID-19)	Statewide	The disease was first identified in 2019 in Wuhan, China, and has since spread globally, resulting in the 2019–21 coronavirus pandemic. As of November 9, 2020, the CDC reported 22,054 cases of COVID-19 in Union County (8.7% of statewide cases). Union County currently has the 6th highest number of cases of COVID-19 in New Jersey by county, with neighboring Essex County with the highest number of cases. As of November 9, 2020, COVID-19 has caused 1,378 deaths in Union County.

Source: Billings 1997; DHHS 2013; CDC 2008; CDC 2009; WHO 2010; CDC 2011; Laday, 2012; Jaslow, 2012; Rochabrun, 2012; Rochabrun, Nj.com, 2016; 2012; CDC, 2018

COVID-19 Pandemic

As of February 8, 2021, the New Jersey Department of Health (NJDOH) reported 45,771 lab-confirmed cases (PCR) of COVID-19 (8,531 positive cases per 100,000) in Union County. At this time, Union County was 8th in the state for total number of confirmed cases. Unfortunately, there have been 1,509 confirmed COVID-19 deaths in Union County (281 deaths per 100,000). Union County was 6th in the state for total number of confirmed COVID-19 deaths.

Figure 7.25-1 Lab Confirmed Cases (PCR) in Union County, as of 2/8/2021 shows that the pandemic came in waves, with the first spike from March to May 2020, and other spikes from late September 2020 to December 2020 and from late December 2020 to February 2021. These waves align with the pattern seen in the 1918 Influenza Pandemic. According to the CDC, the 1918 Influenza Pandemic was first detected in March 1918 in the U.S. It subsided during the summer months but surged in Fall 1918, which was a deadlier wave than the first. The third and final wave of the 1918 Influenza Pandemic occurred during the winter and spring of 1919. As of February 2021, it is yet to be seen when the pandemic will subside, but the U.S. has started to inoculate the population. NJDOH reports that, in Union County, 53,437 doses have been administered as of February 9, 2021.

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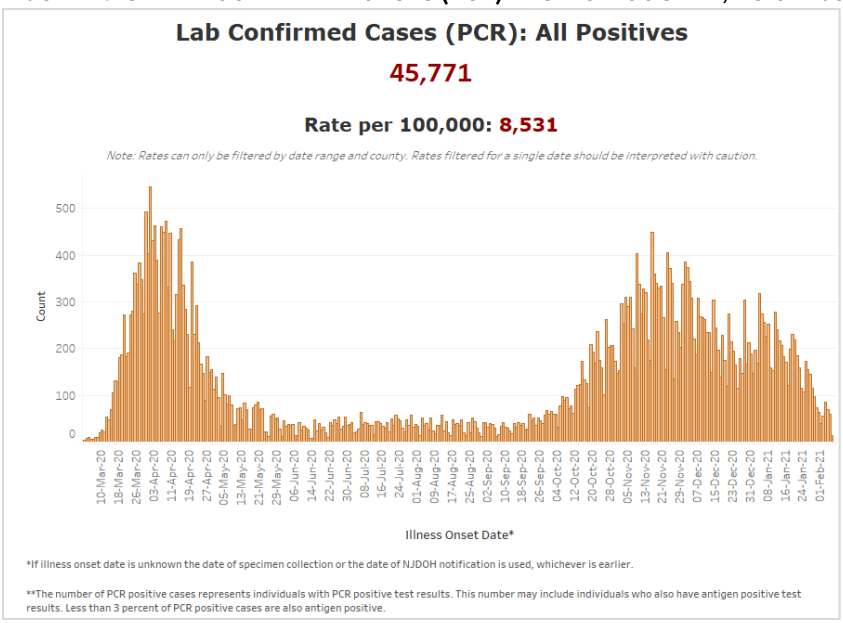
FIGURE 7.25-1 LAB CONFIRMED CASES (PCR) IN UNION COUNTY, AS OF 2/8/2021



Source: NJDOH. February 8, 2021. New Jersey Statistics: COVID-19.

NJDOH reports cases of COVID-19 by municipality and zip code for populations over 20,000. **Table 7.25-2 Union County COVID-19 Cases and Mortality Rate by Zip Code, as of 12/10/2020** depicts the number of cases and death rate per 100,000 residents for Union County zip codes with populations over 20,000. Please note that Zip Codes 07201, 07202, and 07206 in the Elizabeth City have higher positive case rates than Union County. Zip Codes 07201 and 07202 in Elizabeth and Zip Code 07060 in the Plainfield City also have higher confirmed COVID-19 death rates than Union County.

TABLE 7.25-2 UNION COUNTY COVID-19 CASES AND MORTALITY RATE BY ZIP CODE, AS OF 12/10/2020

Jurisdiction	Cases (per 100,000 residents)	Deaths (per 100,000 residents)
Cranford Township	3,337	438
Elizabeth City Zip Code 07201 Zip Code 07208 ZIP Code 07202 ZIP Code 07206	9,096 8,275 9,271 9,479	291 200 313 254
Hillside Township	5,692	174
Linden City and Winfield Township Zip Code 07036	5,810	265
Plainfield City Zip Code 07060*	6,745	293
Rahway City	5,556	249
Roselle Borough	6,118	210
Scotch Plains Township	2,639	147
Summit City	2,501	96
Union Township Zip Code 07083*	5,080	197
Westfield Town	2,274	147

Source: NJDOH NJ. 2021. New Jersey Statistics: COVID-19.
*Note: There are 4 zip codes in the Plainfield City. Zip Codes 07062, 07063, and 08812 were not included as they had populations under 20,000. Zip Code 07060, which was reported, includes a majority of the Plainfield City as well as some of neighboring municipalities in Somerset County.
**Note: Zip Code 07088 (Vauxhall) not reported.

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7.25.5 PROBABILITY OF FUTURE OCCURRENCES

It is difficult to predict when the next pandemic will occur and how severe it will be because viruses are always changing. The United States and other countries are constantly preparing to respond to pandemic. The Department of Health and Human Services and others are developing supplies of vaccines and medicines. In addition, the United States has been working with the WHO and other countries to strengthen detection of disease and response to outbreaks. Preparedness efforts are ongoing at the national, state, and local level (Barry-Eaton District Health Department, 2013).

In New Jersey, the probability for a future pandemic event is dependent on several factors. One factor that influences the spread of disease is population density. Populations that live close to one another are more likely to spread diseases. As population density increases in the State, so too will the probability of a pandemic event occurring. As seen in the COVID-19 pandemic, the State advised people to practice social distancing of at least six feet from other people to minimize the spread of the virus.

7.25.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

Climate change has the potential to increase the probability of pandemic occurring. While the relationship between climate change and increase in virus susceptibility is difficult to predict with certainty, there are scientific linkages between the two. As warm habitats that host insects such as mosquitoes increase, more of the population becomes exposed to potential virus threats (The Washington Post, 2017). The notion that rising temperatures will increase the number of mosquitoes that can transmit diseases such as West Nile Virus and Zika among humans (rather than just shift their range) has been the subject of debate over the past decade. Milder winters can also lead to increasing tick populations and increase in risk of contracting Lyme disease. Some believe that climate change may affect the spread of disease, while others are not convinced. However, many researchers point out that climate is not the only force at work in increasing the spread of infectious diseases into the future.

7.25.7 VULNERABILITY ASSESSMENT

Impacts

The severity of a pandemic or infectious disease threat in New Jersey will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemics around the nation have the potential to affect New Jersey's populated areas.

The CDC and Prevention Community Strategy for Pandemic Influenza Mitigation guidance introduced a Pandemic Severity Index (PSI), which uses the case fatality ratio as the critical driver for categorizing the severity of a pandemic. The index is designed to estimate the severity of a pandemic on a population to allow better forecasting of the impact of a pandemic, and to enable recommendations on the use of mitigation interventions that are matched to the severity of influenza pandemic.

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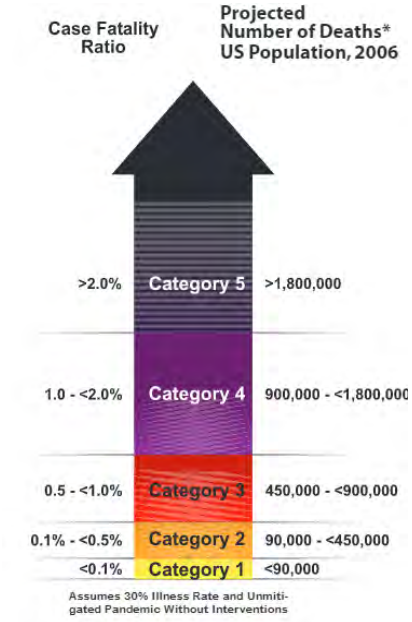
The severity and length of the next pandemic cannot be predicted; however, experts expect that its effect on the United States could be severe. Based on previous pandemics and without medications or vaccines available, it is estimated that a severe pandemic could cause almost 2 million deaths in the United States, more than nine million hospitalizations, and more than 90 million people ill (NJDOH, 2012). Pandemics are assigned to one of five discrete categories of increasing severity (Category 1 to Category 5) (NJDOH, 2017). **Figure 7.25– 2 Pandemic Severity Index** illustrates the five categories of the PSI.

FIGURE 7.25-2 PANDEMIC SEVERITY INDEX



Source: NJDOH 2012

The H1N1 outbreak of 2009 is one case where the severity of a virus outbreak can easily be measured. The severity of illness from the 2009 H1N1 influenza flu virus has varied, with the gravest cases occurring mainly among those populations considered be at highest risk including children, the elderly, pregnant women, and patients with chronic diseases and reduced immune system capacity. While most people infected with H1N1 in 2009 have recovered without needing medical treatment, the virus resulted in some deaths. According to the CDC, about 70% of those who have been hospitalized with the 2009 H1N1 flu virus in the United States belonged to a high-risk population group (CDC, 2009).

Severity of the threat of pandemic is likely to increase. Factors, such as expanded rapid travel and evolution of resistance to medical treatments, are already changing the ways pathogens infect people, plants, and animals. Climate change accelerates may likely to work synergistically with many of these factors, especially in populations increasingly subject to massive migration and malnutrition (Harmon, 2010).

Pandemics are inevitable and arrive with very little warning. Air travel could hasten the spread of a new virus and decrease the time available for implementing interventions. Outbreaks are expected to occur simultaneously throughout much of the United States, preventing shifts in human and material reSource. Warning time for any pandemic will depend the origin of the virus and the amount of time needed to identify the virus.

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Exposure and Damages

The entire county's population is vulnerable to the effects of a pandemic. Areas with higher population density are more prone to being exposed to a virus. Additionally, vulnerable populations such as the young and elderly are considered at higher risk. The most significant impact on critical facilities would be the increase in hospitalization and emergency room visits that would take place as a result of the outbreak. This would create a greater demand on these critical facilities, their staff, and reSource. CDC's model estimates an increase of more than 25% in the demand for hospitalization and intensive care unit services, even in a 'moderate pandemic' (United States Department of Health and Human Services, 2005). In addition to higher demand of critical facility use, it could be anticipated that there would be less employees available to run facilities. Employees who are unable to come to work would result in a loss of service, impacting the function of critical facilities.

As the COVID-19 pandemic continues to affect Union County, local impacts are significantly disrupting everyday activities. In attempt to slow down the spread of the virus, the State and local governments closed their offices or require their staff work from home, as did private companies. The State closed malls, amusement parks, restaurants and bars, churches, parks, doctor offices, and schools. Large events were cancelled, or postponed, and national sporting leagues were suspended. These restrictions began to lift in May 2020, as outdoor recreational activities and limited outdoor gatherings were able to resume. The State stay-at-home order was lifted on June 9, 2020. As of February 9, 2021, the State of New Jersey is at Stage Two of its re-opening, in which moderate-risk activities can restart but many workers are still advised to work from home.
The State of New Jersey issued a travel advisory that all individuals entering the State from other states with a significant spread of COVID-19 should quarantine for 10 days after leaving that state. As of February 9, 2021, all U.S. states and territories outside the immediate region of New York, Connecticut, Pennsylvania and Delaware were subject to the travel advisory.

On March 9, 2020, the stock market dropped the most since the crash of 1987. For more information on the economic impacts of the COVID-19 pandemic, please see Section 7.23 Economic Collapse in this Risk Assessment.

7.26 POWER FAILURE

7.26.1 HAZARD DESCRIPTION

Power failure is defined as any interruption or loss of electrical service caused by disruption of power transmission caused by accident, sabotage, natural hazards, or equipment failure (also referred to as a loss of power or power outage). A significant power failure is defined as any incident of a long duration which would require the involvement of the local and/or State emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter.

7.26.2 LOCATION

Power failures in New Jersey are usually localized and are usually the result of a natural hazard event involving high winds or ice storms. New Jersey's power systems are overseen by the State of New Jersey Board of Public Utilities. Under New Jersey law, consumers can shop for electric suppliers through a variety of third-party vendors. While the supply portion of energy is open to competition, the delivery of electricity is limited geographically to the following service providers:

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Atlantic City Electric, Jersey Central Power and Light (JCP&L), Rockland Electric Company, and Public Service Electric and Gas (PSE&G).

Most of the Union County communities are supplied by PSE&G electric utility, while the others (Berkeley Heights, New Providence and Summit) are serviced by Jersey Central Power & Light. Two communities (Mountainside and Springfield) are equally serviced by both utilities.

Power systems across the State are supported by a vast network of delivery systems, which bridge the gap between supplier and customer.

Power failure is particularly problematic for homes that are heated with electricity. Widespread power outages during the winter months can directly impact vulnerable populations such as the elderly and medically frail. According to the 2013 – 2018 American Community Survey (ACS), 14, 863 occupied housing units across Union County are heated with electricity. This represents 7.9% of the total occupied housing units in the county.

Aside from the importance of power to heat homes, power is vital to maintain out-of-hospital lifesaving systems for patients such as oxygen concentrators and ventilation machines. Without power, these individuals will require shelter at a medical-needs shelter or admission to a hospital.

7.26.3 EXTENT

Power failures can range in duration and also in the extent of impacts, from minor loss of communication systems at a facility to catastrophic loss of lifelines such as water and electricity. Utility interruptions usually occur because of, or in combination with, other emergency or disaster incidents, such as severe weather and flooding, and can exacerbate such emergencies.

Power failures often result from damage to or electrical hazards within an electric power system. System components include power generation plants, substations, circuits, switches, transformers, power lines, and power poles. Due to the varied nature of power outage causes ranging from vehicle accidents to severe weather, utility interruptions can happen at any time.

Power disruption can lead to significant consequences, including service disruption, disruption to infrastructure operations, and loss of heat or cooling that can cause further disturbance or injury.

7.26.4 PREVIOUS OCCURRENCES AND LOSSES

Union County has experienced several widespread power outage incidents. These incidents have been caused by both natural and non-natural hazards. Recent and significant power outages are summarized in **Table 7.26-1 Historical Power Loss Events**. It is worth noting that power failure incidents occur frequently, often on smaller scales associated with high winds, ice storms, and power grid issues. Data were not readily available on the frequency of smaller power outages across the State.

TABLE 7.26-1 HISTORICAL POWER LOSS EVENTS

Date(s) of Event	Event Type	Description
11/9/1965	Northeast Blackout of 1965	The Northeast Blackout of 1965 was a significant disruption in the supply of electricity, affecting parts of Ontario in Canada and Connecticut, Massachusetts, New Hampshire, Rhode Island, Vermont, New York, and New Jersey in the United States. Over 30 million people and 80,000 square miles (207,000 square kilometers) were left without electricity for up to 12 hours. The cause of the failure was human error that happened days before the blackout.
7/14/1977	New York City Blackout 1977	On July 14, 1977, lightning hit two Con Edison transmission lines north of New York City, tripping relays that soon shut down power plants in the New York metropolitan area. Parts of the City were dark for more than 25 hours, and there was widespread looting.
December 10-12, 1992	Nor'easter	The December 1992 Nor'easter produced record-high tides and snowfall across the northeastern United States. Throughout New Jersey, the Nor'easter damaged about 3,200 homes and caused an estimated $750 million in damage. Additionally, the storm left 102,000 customers of Jersey Central Power and Light without power.
8/14/2003	Northeast	The Northeast Blackout of 2003 was a widespread power outage that occurred throughout parts of the northeastern and midwestern United States and Canada. The blackout's primary cause was a software bug in the alarm system at a control room of the FirstEnergy Corporation in Ohio. Affected areas in New Jersey included most of Hudson, Morris, Essex, Union, Passaic, and Bergen Counties, including the major cities of Paterson and Newark, although some sections of Newark and East Orange still had power, as well as small sections of Essex and Hudson Counties.
3/14/2010	Severe Windstorm	A severe windstorm knocked out power to hundreds of thousands of customers primarily in southwestern Connecticut as well as parts of Westchester County and Long Island, in New York State, and New Jersey. The outage lasted as long as six days for some customers in the hardest-hit communities.
August 27-28, 2011	Hurricane Irene	Hurricane Irene caused a power outage to over five million customers throughout the mid-Atlantic and northeast regions of the United States. Approximately 1.9 million New Jersey residents were without power as a result of this storm.
October 28 - 30, 2011	2011 Halloween Nor'easter	The 2011 Halloween Nor'easter started as a large low-pressure area that produced unusually early snowfall across the northeastern United States. Snow fell on trees that were often still in leaf, adding extra weight. Trees and branches that collapsed under the weight of the snow caused considerable damage, particularly to power lines. In New Jersey, 700,000 customers were without power as a result of the storm.
October 28-30, 2012	Superstorm Sandy	Superstorm Sandy brought high winds and coastal flooding to a large portion of the eastern United States, leaving an estimated 8 million customers without power. In New Jersey, 2.7 million customers were without power for a period of several days and weeks.
11/7/2012	Winter Storm Athena	A winter storm left thousands across the east coast of the United States without power, adding to the blackouts after Superstorm Sandy. An estimated 60,000 people lost electricity as the Nor'easter moved through New Jersey, New York, and Connecticut.
February 8-9, 2013	Winter Weather	scattered power outages were reported, mainly in the northern portion of the state, with service restored by Saturday afternoon.

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Date(s) of Event	Event Type	Description
2/5/2014	Winter Weather	A major winter storm brought heavy snow and sleet to northwest New Jersey and a wintry mix which included a significant accumulation of ice to the central third of New Jersey. Snowfall reached one foot in Sussex County and ice accumulations were as high as half an inch. The snow that was still on the trees from the just concluded winter storm was a major contributing factor to the power outages. The weight of the snow, then sleet and freezing rain on limbs all collaborated to cause more tree damage then would have occurred if trees were bare at the start of the event. It was the worst ice related outages in the Public Service Electric and Gas's service area since 1999. Public Service Electric and Gas reported about 110,000 of its customers lost power with Mercer, Burlington and Middlesex Counties most affected. Power was fully restored late in the day on the 7th. Jersey Central Power and Light reported about 44,000 of its customers lost power with Middlesex and Monmouth Counties most affected. Power was fully restored on the afternoon of the 6th. One of the hardest hit municipalities with outages was Lambertville as 40 percent of the city lost power. Atlantic City Electric reported about 2,000 of its customers lost power.
July 8-10, 2014	Thunderstorm Wind	A hot and humid air mass and a lee side trough helped trigger a squall line of strong to severe thunderstorms that moved through New Jersey during the evening of the 8th. The worst wind damage occurred across the central third of the state. About 80,000 homes and businesses lost power in the state. Hardest hit counties were Burlington, Gloucester and Monmouth. About 15,200 homes and businesses were without power on the morning of the 9th and 5,500 overnight on the 9th. Power was fully restored on the 10th.
2/2/2015	Strong Wind	Strong, gusty northwest winds occurred in the wake of a departing and intensifying low pressure system during the late afternoon into the middle of the evening on the 2nd in New Jersey. Peak wind gusts average around 50 mph and knocked down weak trees, tree limbs and wires. Scattered power outages occurred.
3/20/2015	Winter Weather	The heaviest snow fell in the central third of the state. It was a heavy, wet snow and the snow did knock down some weak trees and tree limbs and caused isolated power outages in central New Jersey, primarily in Burlington County. About 100 homes and businesses were still without power on the morning of the 21st.
October 2-3, 2015	High Wind	In Pennsville (Salem County), a large falling tree limb was the cause of a major power outage that left more than 3,300 Atlantic City Electric customers in the dark for a couple of hours the evening of the 2nd. Other scattered power outages also occurred across portions of southern to central New Jersey during the height of the storm on the 2nd and 3rd.
3/14/2017	Blizzard	Heavy snow and sleet along with strong winds occurred across the rest of Northeast New Jersey. Large trees fell onto homes in Bergen county and approximately 4,500 power outages resulted from the strong winds and heavy snow.
8/4/2020	Tropical Storm Isaias	According to a press release by FirstEnergy Corp., the owners of Jersey Central Power & Light (JCP&L) which provides electricity to all Union County residents, 788,000 JCP&L customers were impacted by Tropical Storm Isaias. The press release, dated August 7, 2020, indicated that 221,000 JCP&L customers, including 155,000 customers in Morris, Monmouth, and Union counties, were still without power three days after Isaias impacted the region. The press release also noted that a majority of customers were expected to receive power by the evening of August 11, 2020, a week after the storm impacted the region. In a September 28, 2020 statement, Governor Murphy

Date(s) of Event	Event Type	Description
		reported that Isaias led to approximately power failure for 1.4 million State residents that lasted multiple days in many cases. Mass transit was disrupted, and roads were closed due to downed power lines and trees. Further, water systems were forced to move to alternative power.

Source: State HMP, First Energy (August 7, 2020) Media Advisory - Tropical Storm Isaias Update, State of New Jersey Office of Governor Phil Murphy Transcript: September 28th, 2020 Coronavirus Briefing Media

Power Losses Induced y Straight-Line Winds

In addition to inducing structural damage to the buildings, straight line winds also cause considerable losses by knocking out electrical power grids. A preliminary analysis of wind-induced power losses was conducted, using historical power loss records and FEMA BCA V. 4.8 software.

Based on the availability of records and geographic distribution, power losses were projected on a basis of records provided by PSE&G, assuming that other utility's data are in correlation. Full or partial records were made available on a jurisdictional level for several recent historic events: March 2010 Nor'easter, September 2011 Hurricane Irene, October 2011 storm and October 2012 Hurricane Sandy.

Hazards were estimated by assigning return interval to the historic events.

TABLE 7.26-2 RETURN INTERVAL CALCULATION UNION COUNTY, NJ

Event	Nor'easter 2010	Hurricane Irene 2011	Storm 2011	Hurricane Sandy 2012
Estimated Average Outage [days]	1	1	1	2
Estimated Maximum Outage [days]	6	7	8	15
Estimated Return Interval [yrs]	5	10	5	25

Estimates of affected population, where needed, were done using population proportion approach. Table below depicts estimates of power loss using data for four major recent events.

TABLE 7.26-3 ESTIMATED CUSTOMER IMPACTED BY POWER OUTAGES IN UNION COUNTY

	Population	Nor'easter 2010	Irene 2011	Storm 2011	Sandy 2012
Berkeley Heights Township	13,183	847	2,633	1,129	5,348
Clark Township	14,756	785	2,219	1,046	5,180
Cranford Township	22,625	1,765	8,060	2,353	8,581
Elizabeth	124,969	7,269	17,774	9,692	50,757
Fanwood Borough	7,318	418	1,052	557	2,879
Garwood Borough	4,226	364	1,471	486	1,962
Hillside Township	21,404	1,074	1,523	1,432	8,601
Kenilworth Borough	7,914	692	2,794	922	3,728
Linden City	40,499	2,073	1,304	2,764	18,239
Mountainside Borough	6,685	512	2,026	683	2,701

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	Population	Nor'easter 2010	Irene 2011	Storm 2011	Sandy 2012
New Providence Borough	12,171	782	2,431	1,042	4,938
Plainfield City	49,808	3,627	15,483	4,836	18,711
Rahway City	27,346	2,333	9,846	3,111	12,151
Roselle Borough	21,085	1,471	4,973	1,962	8,897
Roselle Park Borough	13,297	1,286	7,633	1,715	4,495
Scotch Plains Township	23,510	1,460	3,906	1,946	9,856
Springfield Township	15,817	1,016	3,159	1,354	6,417
Summit City	21,457	1,378	4,286	1,837	8,705
Union Township	56,642	2,789	3,582	3,718	22,709
Westfield Town	30,316	2,443	10,967	3,257	12,066
Winfield Township	1,471	152	715	203	717
Total Union County	467,186	30,000	93,312	40,000	189,529
All customers affected		34,534	107,947	46,045	217,637
PSE&G customers affected		30,000	93,312	40,000	189,529

SOURCE: PSEG, JCP&L, FALL 2014

Further analysis entailed FEMA BCA v. 4.8, DFA (Damage-Frequency Assessment) Module for electric utility, with the economic losses of $131/capita/day referenced from FEMA BCAR Standard Economics Values Methodology (V. 5, August 2011).

Final risk estimates per jurisdictions are depicted in a table below. The table presents annual risk estimates, with power loss projections over 50-year and 100-year horizons.

TABLE 7.26-4 RISK ESTIMATES FOR 50-YEAR AND 100-YEAR HORIZONS

	Population	Annual Risk	50-year horizon	100-year horizon
Berkeley Heights Township	13,183	$121,133	$1,671,726	$1,728,477
Clark Township	14,756	$124,859	$1,723,147	$1,781,644
Cranford Township	22,625	$254,718	$3,515,298	$3,634,635
Elizabeth	124,969	$965,402	$13,323,268	$13,775,563
Fanwood Borough	7,318	$56,533	$780,198	$806,684
Garwood Borough	4,226	$46,779	$645,585	$667,501
Hillside Township	21,404	$165,348	$2,281,926	$2,359,392
Kenilworth Borough	7,914	$95,379	$1,316,301	$1,360,987
Linden City	40,499	$339,544	$4,685,961	$4,845,038
Mountainside Borough	6,685	$68,932	$951,313	$983,608
New Providence Borough	12,171	$111,835	$1,543,406	$1,595,802
Plainfield City	49,808	$513,600	$7,088,063	$7,328,687
Rahway City	27,346	$329,574	$4,548,367	$4,702,774
Roselle Borough	21,085	$193,742	$2,673,784	$2,764,553

	Population	Annual Risk	50-year horizon	100-year horizon
Roselle Park Borough	13,297	$159,174	$2,196,720	$2,271,294
Scotch Plains Township	23,510	$216,024	$2,981,292	$3,082,501
Springfield Township	15,817	$145,337	$2,005,759	$2,073,850
Summit City	21,457	$197,161	$2,720,969	$2,813,340
Union Township	56,642	$437,567	$6,038,751	$6,243,753
Westfield Town	30,316	$341,306	$4,710,278	$4,870,181
Winfield Township	1,471	$20,193	$278,678	$288,139
Total Union County	467,186	$4,904,140	$67,680,790	$69,978,403

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7.26.5 PROBABILITY OF FUTURE OCCURRENCES

While the probability of future power failure incidents in Union County is difficult to predict, the historic record indicates that significant power failures have occurred as a result of high winds, lightning, winter weather, and technological failures. As shown in Table 7.26-1, it can be anticipated that multiple power outage events caused by natural hazards can happen in a year. It is more difficult to predict the probability of power outages caused by technical error. The potential for another major power failure that disrupts power for millions of New Jersey residents is always possible yet are expected to occur less frequently than smaller incidents. In addition, future changes in climate may also impact the frequency and probability of future power failure occurrences.

7.26.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

Future changes in climate may also impact the frequency and probability of future power failure occurrences. Extreme temperatures, which are becoming more common occurrences due to climate change, place a burden on existing conveyance systems as electrical usage increases during more extreme hot weather events. An increase in the frequency of tropical storms, thunderstorms, and tornadoes may also result in an increase in power failure events due to downed trees and wires from powerful winds. Please refer to sections 7.13 High Wind-Straight-Line Winds and High Wind-Tornado for more information on the effects of climate change on these hazards.

7.26.7 VULNERABILITY ASSESSMENT

Impacts

Regional or widespread power outages are the most severe type of power failures. The severity of power failures can be linked to severe weather events, such as winter storms and hurricanes. Power failures lead to the inability to use electric-powered equipment, such as: lighting; heating, ventilation, and air conditioning (HVAC) and necessary equipment; communication equipment (telephones, computers, etc.); fire and security systems; small appliances such as refrigerators, sterilizers, etc.; and life dependent medical equipment. This all can lead to food spoilage, loss of heating and cooling, basement flooding due to sump pump failure, and loss of water due to well pump failure.

Widespread power outages can occur without warning or as a result of a natural disaster. Generally warning times will be short in the case of technological failure, such as a fire at a sub-station, traffic accident, human error or terrorist attack. In cases where a power failure is caused by natural hazards, greater warning time is possible. For example, high wind events such as tornados and

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hurricanes often cause widespread power failure and are often forecasted before they affect a community. Additionally, severe winter weather conditions such as ice storms, blizzards, and snowstorms often cause power failure. Incidents such as these often have plenty of warning time, thus power response crews can stage reSource to prepare for power failure.

Power failures can cause secondary hazards and have an effect on the health of residents. One potential secondary hazard is chemical accidents that occur after power is restored to industrial facilities. Power interruptions at chemical handling plants are of particular concern because of the potential for a chemical spill during restart (EPA, 2001). Chemical spills in turn can have significant health and environmental impacts.

Another secondary hazard that can result from power failure is a loss of communications capability by first responders, which may in turn have negative impacts on public safety. Backup systems such as amateur radio operators may be required during disaster to augment communications capabilities. Power outages can also lead to instances of civil disturbance, including looting.
Wastewater and potable water utility interruption may occur as a result of a power failure. These critical utilities are essential to community continuity and recovery. Their interruption of service may have cascading economic and environmental impacts.

Because of a lack of power, retail and wholesale gas suppliers cannot access gas in underground tanks or have the electricity to pump it into the tanker trucks for delivery. According to the American Automobile Association, on November 2, 2012, about 60% of the gas stations in New Jersey were closed post Superstorm Sandy due to both power failure and lack of fuel supply (United States Energy Information Administration, 2012). Currently, all 22 gas stations located on the Garden State Parkway, the New Jersey Turnpike, and the Atlantic City Expressway are equipped with back-up power in the case of an outage.

Power failure can have vast secondary impacts on the health of the community. During periods of extreme heat or extreme cold, vulnerable populations such as the elderly and medically frail can be affected and are susceptible to hypothermia or heat stroke. Additionally, power failure can lead to food spoilage, which has negative impacts on public health.

Individuals powering their homes with generators are subjected to carbon monoxide poisoning if proper ventilation procedures are not followed. Improperly connected portable generators are capable of ‘back feeding’ power lines which may cause injury or death to utility works attempting to restore power and may damage house wiring and/or generators (New Jersey Department of Community Affairs, 2012).

Power failure may also lead to an increase in traffic accidents. Traffic accidents may increase because of the lack of traffic control devices such as stoplights and railroad crossing advisory signals. Power outages lasting a long duration will force law enforcement officials to man traffic control points to prevent accidents.

Power failures are particularly critical at locations where the environment and public safety are at risk. Facilities such as hospitals, sewage treatment plans, mines, etc. typically have backup power; however, even backup power can fail due to equipment malfunction or lack of fuel supply. Distributed generation and cogeneration plants are additional backup power options with the capability to ‘island’ and generate energy off the power grid. There are environmental benefits to

distributed generation such as reduction in greenhouse gas emissions and reduced carbon footprint. Typically, power failure events are not generally threating to the environment, unless there are major secondary incidents such as a hazardous substance release.

Exposure and Damages

Overall, all of Union County is vulnerable to the power failure hazard. Loss of power can have serious impacts on the health and welfare of residents, continuity of business, and the ability of public safety agencies to respond to emergencies.

Individuals with medical needs are vulnerable to power failures, because medical equipment such as oxygen concentrators requires electricity to operate. The elderly are also vulnerable to the effects of power failure, as power failure has the potential to expose them to extreme heat or extreme cold.

During power failure events, water purification systems may not be functioning. Further, populations on private wells will not have access to potable water. Many power outage events are caused by storm events that can lead to flooding. Without electricity, residents would be unable to pump water from their basements potentially causing structural and content damage to their homes. Section 7.9 Flood includes a more detailed discussion on Union County's vulnerability to the flood hazard.

As discussed, power interruptions can cause economic impacts stemming from lost income, spoiled food and other goods, costs to the owners/operators of the utility facilities, and costs to government and community service groups. FEMA's benefit-cost analysis methodology measures the loss of electrical service on a per- person-per-day-of-lost-service basis for the service area affected. For the electrical utility, the standard value is $131 per person per day (BCA module version 5.2.1).

Deaths caused by carbon monoxide poisoning are a concern during extended power outages. According to the New Jersey Department of Health website, there were five deaths in New Jersey caused by carbon monoxide poisoning from the improper use of generators after Superstorm Sandy. In the 2 weeks following Superstorm Sandy, 398 people were treated for carbon monoxide exposure in hospital emergency rooms. In addition, power outages can also create an increased risk of fire because of the use of alternative light and fuel Source such as candles, wood, and kerosene.

A prolonged power failure in Union County could impact the county's economy. New Jersey hosts the busiest commuter rail network in the country, which operates primarily on electricity. Disruption in the rail network would mean that thousands of workers would not be able to travel to their jobs. For example, the 2003 Northeast Blackout cost states in the northeast an estimated $4 to $10 billion in losses collectively. A widespread power failure in New Jersey could have a similar effect on the State. Other factors include New Jersey's chemical industry and pharmaceutical industry, which rely heavily on power for manufacturing purposes.

All critical facilities and infrastructure without backup power systems or islanding capabilities with distributed generation are exposed to power failure events. It is imperative that facilities that protect life and property and support emergency response, government, sheltering functions and recovery efforts remain operational during times of need. Examples of critical infrastructure

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includes sewer and stormwater pump stations, water treatment plants, traffic signals, and communication towers.

Critical facilities rely on power to conduct daily activities that support Union County residents. Of particular concern are those facilities that rely on power to conduct life-saving operations, such as fire, police, and emergency medical services, which may be unable to respond to calls if their stations are not operational. Also important are 9-1-1 communications systems that rely on power to transmit emergency calls to first responders. Without a consistent power source, responders may be unable to charge equipment or operate critical systems, such as computer networks or communications devices. Response efforts could be hampered by the traffic delays caused by inoperable signals. Although many of these facilities typically have backup power, a prolonged power failure would pose challenges related to refueling backup systems. Also, backup power systems may malfunction if they are not regularly maintained, forcing the closure of the facility.
In the event of a power outage, transformers and substations can be damaged. A power failure in one area can cause a cascading effect, damaging components in other parts of the electrical grid. Other utilities may also be impacted as a result of a power failure including potable water and wastewater plants.

All critical facilities and infrastructure are exposed and vulnerable to a power failure event. Union County may potentially experience losses because of an interruption of critical services. Further increased costs such as providing shelters, and costs related to cooling and heating centers may be incurred. Extended power outages will require officials to shelter victims who require heat and power for activities of daily living. This hazard is difficult to quantify in terms of loss of government services.

7.27 TERRORISM

7.27.1 HAZARD DESCRIPTION

Terrorism is the use of force or violence against persons or property with the intent to intimidate or coerce. Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and explosive attacks; cyber-attacks (computer-based attacks); and the use of chemical, biological, nuclear, and radiological weapons (FEMA, 2009). Various types of terrorism are discussed in the sections below.

Armed Attacks and Assassinations

Armed attacks include raids and ambushes. Assassinations are the killing of a selected victim, usually by bombings or small arms. Drive-by shootings is a common technique employed by unsophisticated or loosely organized terrorist groups. Historically, terrorists have assassinated specific individuals for psychological effect.

Arson and Firebombing

Incendiary devices are inexpensive and easy to hide. Arson and firebombings are easily conducted by terrorist groups that may not be as well organized, equipped, or trained as a major terrorist organization. An act of arson or firebombing against a utility, hotel, government building, or industrial center portrays an image to the public that the ruling government is incapable of maintaining order.

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Bioterrorism

Bioterrorism refers to the intentional release of toxic biological agents to harm and terrorize civilians, in the name of a political or other cause. The United States Centers for Disease Control and Prevention (CDC) has classified the viruses, bacteria, and toxins that could be used in an attack. Category A Biological Diseases are those most likely to do the most damage. They include:

- Anthrax (Bacillus anthracis)
- Botulism (Clostridium botulinum toxin)
- The Plague (Yersinia pestis)
- Smallpox (Variola major)
- Tularemia (Francisella tularensis)
- Hemorrahagic fever, due to Ebola Virus or Marburg Virus

Explosive Attacks

Explosive Attack can be defined as an attack in which a bomb and or destructive device is used to destroy, incapacitate, harass, or distract. These devises are used by criminals, vandals, terrorists, suicide bombers and insurgents. Explosive devices used in an explosive attack can come in many forms ranging from a pipe bomb to a sophisticated device capable of causing massive damage and loss of life (The National Academies and Homeland Security). Bombings are the most common type of terrorist act. Typically, improvised explosive devices are inexpensive and easy to make. Modern devices are smaller and harder to detect and contain very destructive capabilities.

Cyber Terrorism

Cyber terrorists use information technology to attack civilians and draw attention to the terrorists' cause. This may mean that they use information technology, such as computer systems or telecommunications, as a tool to orchestrate a traditional attack. More often, cyber terrorism refers to an attack on information technology itself in a way that would radically disrupt networked services. For example, cyber terrorists could disable networked emergency systems or hack into networks housing critical financial information. A full discussion of cyber terrorism is presented in Section 7.22 Cyber Attack.

Domestic Terrorism

Domestic terrorism encompasses criminal acts dangerous to people or property, with the intent of inflicting malice. This manner of terrorism may include coercion, intimidation, kidnapping, assassination, or mass destruction, as defined by the Patriot Act. The most common form of domestic terrorism is the targeting of public masses, which often seeks to harm specific educational, religious, ethnic, or racial groups. Infrastructure, such as public spaces or utilities, may also be subject to domestic terrorism, as it causes an interruption in the function of a community. In response to this threat, Union County municipalities are implementing measures such as security screening or infrastructure (e.g., bollards, surveillance cameras, checkpoints), and those that have not have listed them as mitigation action to implement in the future.

Ecoterrorism

Ecoterrorism is a recently coined term describing violence in the interests of environmentalism. In general, environmental extremists sabotage property to inflict economic damage on industries, businesses, or persons perceived as harming animals or the natural environment. Targets of ecoterrorist attacks have included fur companies, logging companies, and animal research laboratories.

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Hijackings and Skyjackings
Hijacking is the seizure by force of a surface vehicle, its passengers, and/or its cargo. Skyjacking is the taking of an aircraft, which creates a mobile, hostage barricade situation; provides terrorists with hostages from many nations; and draws heavy media attention. Skyjacking also provides mobility for the terrorists to relocate the aircraft to a country that supports their cause and provides them with a human shield, making retaliation difficult.

Kidnappings and Hostage-Takings
Terrorists use kidnapping and hostage-taking to establish a bargaining position and to elicit publicity. Kidnapping is one of the most difficult acts for a terrorist group to accomplish, but, if a kidnapping is successful, it can gain terrorists money, release of jailed comrades, and publicity for an extended period. Hostage-taking involves the seizure of a facility or location and the taking of hostages present in that facility. Unlike a kidnapping, hostage-taking provokes a confrontation with authorities. It forces authorities to either make dramatic decisions or to comply with the terrorist's demands. It is overt and designed to attract and hold media attention. The terrorists' intended target is the audience affected by the hostage's confinement, not the hostage.

Nuclear Terrorism
Nuclear terrorism refers to a number of different ways nuclear materials might be exploited as a terrorist tactic. These include attacking nuclear facilities, purchasing nuclear weapons, or building nuclear weapons or otherwise finding ways to disperse radioactive materials.
Nuclear attack can be defined as an attack in which nuclear weaponry is used to inflict crippling damage on a place and the people living there. Nuclear weapons are weapons of mass destruction, which means they can produce far ranging destruction in very short time-frame, while also having lasting impacts (Birks and Sherry, 1986).

7.27.2 LOCATION
Terrorist attacks can occur anywhere. However, the Union County is a particularly attractive target of a potential terrorist activity because of its dense population and location relative to major urban areas. A busy commuter rail and the presence of major corporations in economically vital sectors also makes the County a target.

Additional targets in Union County include critical infrastructure such as utilities, roadways, bridges, tunnels, hospitals, schools, civic centers, and other high-profile venues. The link between New Jersey Transit and New York City also makes this transportation system a target for terrorists. Locations with a high population density will be attractive targets for terror attacks.

7.27.3 EXTENT
Any acts of terrorism can occur anywhere at any time of day. The National Terrorism Advisory System (NTAS) communicates information about terrorist threats by providing detailed information to the public, government agencies, first responders, airports and other transportation hubs, and the private sector. When there is a threat, an NTAS Alert will be announced by the Secretary of Homeland Security and will be shared with the public. It may include specific information about the nature of the threat, including the geographic region, mode of transportation, or critical infrastructure potentially affected, as well as steps that individuals and communities can take to protect themselves and help prevent, mitigate or respond to the threat. The alert indicates whether the threat is elevated or imminent. Elevated threats are when there is no specific information about the timing or location. Imminent threats are when it is believed the threat is impending or very soon.

The alerts will be posted online and released to the news media for distribution. The United States Department of Homeland Security (USDHS) will also distribute alerts through its social media channels (USDHS, 2013).

In New Jersey, the NJOEM, New Jersey Office of Homeland Security and Preparedness (OHSP), and the Regional Operations Intelligence Center (ROIC) have introduced NJ Alert, a mass text and email emergency notification system. During an emergency, NJ Alert assists these agencies in delivering emergency messages to the public through their handheld devices or computers, in addition to the Emergency Alert Systems and Amber Alert (NJEOM, 2009).

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7.27.4 PREVIOUS OCCURRENCES AND LOSSES

Now known as 9-11, the most significant terrorist incident to occur in the United States occurred on September 11, 2001 adjacent to New Jersey in Lower Manhattan, New York, when an extreme terrorist group hijacked two commercial airplanes and flew them into the Towers 1 and 2 of the World Trade Center. Additionally, a simultaneous attack occurred in the Washington D.C. area where a plane was crashed into the Pentagon. New Jersey was directly affected as many of the victims and evacuees were ferried across the Hudson River to New Jersey. The incident required a joint response between regional entities, and affected New Jersey significantly. Seven days after 9-11, anonymous letters laced with deadly anthrax spores began arriving at media companies and congressional offices resulting in four deaths and 17 others infected.

The State HMP reports one terrorism event (a bombing) in Union County. On September 18, 2016, multiples bombs were discovered at the train station in Elizabeth, New Jersey. One of these bombs detonated early the next day. This event coincided with bombings in Seaside Park, NJ and Manhattan, New York City a day earlier. The bombings left 31 people wounded, but no fatalities or life-threatening injuries were reported.

On July 28, 2019, authorities arrested a man from Plainfield City for posting online death threats to New Jersey Rep. Chris Smith. This incident was deemed an event of anti-government extremism by the New Jersey Office of Homeland Security and Preparedness in their 2019 Terrorism Threat Assessment.

7.27.5 PROBABILITY OF FUTURE OCCURRENCES

While the potential for future terrorism incidents in New Jersey is difficult to predict, the combination of past incidents and potential terrorist targets make a terrorism incident possible. Efforts from local, state, and federal officials must be coordinated to prevent future terrorist incidents from occurring. However, despite the best efforts of these entities, the reality is that a terrorist attack may occur in Union County or the surrounding areas.

Figure 7.27-1 New Jersey's Assessed Threat Level in 2020 is taken from the New Jersey Office of Homeland Security and Preparedness' 2020 Terrorism Threat Assessment, which visualizes the Assessed Threat Level of various terrorist organizations and extremists in New Jersey.

7.27.6 POTENTIAL EFFECTS OF CLIMATE CHANGE

This plan does not recognize a link between climate change and terrorism.

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7.27.7 VULNERABILITY ASSESSMENT

Impacts

The effect of a terrorism event can vary depending on the type of attack and the magnitude of the event or events. A terrorism event can cause public fear regarding the use of mass transportation or leaving their homes in the event of a biological or nuclear attack. Communication systems, both public and private, can fail because of an overwhelming amount of usage or damage to its infrastructure. Healthcare facilities can become quickly inundated and must be prepared to triage injured patients, handle mass casualties, and conduct decontamination operations.

There is often very little if any warning time that a terrorist attack is about to occur. It is possible, however, to thwart terrorist attacks through aggressive intelligence monitoring and monitoring of individuals who exhibit radical tendencies. Some terrorist attacks may show warning signs that an incident may occur, such as a suspicious package left unattended. Local, state, and federal officials as well as the general public are responsible for recognizing the warning signs of terrorism incidents and for taking appropriate actions to mitigate against possible attacks. In New Jersey, the coordination, direction, and control of all law enforcement personnel and reSource fall under the purview of the Attorney General. Additionally, the New Jersey OHS administers, coordinates, leads, and supervises New Jersey's counter-terrorism efforts.

The secondary hazards resulting from a terrorist attack depend on the size and scope of the incident. Some possible secondary hazards include widespread health effects such as epidemics or pandemics, flooding (if a dam was destroyed), and environmental contamination.

Depending on the type and location of an act of terrorism, it can impact the environment and result in loss of life for humans and animals. A radiological device or an improvised nuclear device would have a long-term impact that could cost billions of dollars to remediate. Additionally, an attack on waste treatment, natural gas, petroleum, or chemical facilities could also have long term environmental impacts.

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FIGURE 7.27-1 NEW JERSEY'S ASSESSED THREAT LEVEL IN 2020

2020 Assessed Threat Level

High	Homegrown Violent Extremists
	White Supremacist Extremists
Moderate	Anarchist Extremists
	Anti-Government Extremists
	Black Separatist Extremists
	Militia Extremists
	Sovereign Citizen Extremists
Low	Al-Qa'ida (core)
	Al-Qa'ida in the Arabian Peninsula
	Al-Qa'ida in the Indian Subcontinent
	Al-Qa'ida in the Islamic Maghreb
	Al-Shabaab
	Animal Rights Extremists
	Anti-Abortion Extremists
	Boko Haram
	Environmental Extremists
	HAMAS
	Hizballah
	Hurras al-Din
	ISIS
	Lashkar-e-Tayyiba
	Tehrik-e-Taliban Pakistan

Changes from 2019

White Supremacist Extremists: The threat from white supremacist extremists increased from moderate to high in 2020 due to the number of threats, plots, and attacks conducted in 2019, including the El Paso attack where Patrick Crusius killed 22 people and injured 24.

Black Separatist Extremists: This threat category moved from low to moderate after two individuals associated with this ideology targeted law enforcement and the Jewish community in Jersey City (Hudson County), killing four and injuring three.

ISIS: The threat from ISIS decreased from moderate to low in 2019. ISIS continues to focus on establishing its worldwide presence, but the group has not conducted an attack in the United States. ISIS's inspiration of supporters in the United States makes homegrown violent extremists a consistently high threat.

Anti-Government Extremists: This threat category was added after examining the actions of individuals who do not necessarily question the legitimacy of government but express their opposition to specific policies, entities, officials, and political parties through threats or acts of violence.

Hurras al-Din: Recognized as al-Qa'ida's official presence in Syria, this group was added after the US State Department declared it a foreign terrorist organization in September. Open source reporting suggests the group plotted against US interests.

Source: NJOHSP 2020

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Exposure and Damages

The entire population of Union County is exposed to the effects of terrorism and terrorist incidents. However, because terrorists typically prefer to impact the greatest number of individuals in a given location, it can be inferred that individuals living in highly populated areas will have a greater exposure to terrorist incidents than those living in less populated areas.

Because terrorist attacks are designed to take victims by surprise, predicting the location and nature of potential attacks is extremely difficult, as is assessing the population's vulnerability. Aside from population density, other indicators of vulnerable populations may be commuters using public transportation on a regular basis (as mass transit systems have been the targets of past terrorist attacks outside New Jersey), locations in and around military bases or government facilities (as was planned for Fort Dix in New Jersey in 2007), as well as high-profile gatherings of a large number of people (such as the attacks that occurred at the Boston Marathon in 2013).

Measuring the economic impact of a terrorist attack on Union County is a difficult task. The initial impact can be measured in immediate costs such as costs related to responding to the event, and those associated with the immediate loss of productivity due to closed businesses. The fuller economic impact includes long-term costs such as terrorism mitigation activities.

The direct cost of the attacks on September 11, 2001 has been estimated at somewhat over $20 billion. Paul Krugman cites a property loss estimate by the Comptroller of the City of New York of $21.8 billion, which he has said is about 0.2 % of the GDP for one year (Krugman, 2004). Similarly, the Organization for Economic Cooperation and Development (OECD) estimated that the attack cost the private sector $14 billion and the federal government $0.7 billion, while clean-up was estimated at $11 billion. According to R. Barry Johnston and Oana M. Nedelscu, these numbers are equal to about one- quarter of one percent of the United States annual GDP—approximately the same result arrived at by Krugman (Johnston and Nedelscu, 2004).

In New Jersey, the impact of a large-scale terrorist attack would be significant. Of particular concern would be the State's top industries.

Critical facilities are exposed to terrorist attacks, particularly because of the impact that an attack has on these types of facilities. Dams, power stations, and tunnels are all examples of critical infrastructure and facilities that are vulnerable. Additionally, communications systems, first-responder stations, and emergency operations centers are all vulnerable to terrorist attacks. Disrupting one of these facilities or destroying critical infrastructure would have devastating, cascading impacts on Union County. The potential losses to critical facilities are difficult to quantify because of the unpredictability of terrorist events. The replacement cost value for critical facilities provides a total risk exposure quantity.

8.0 PLAN ADOPTION

Elizabeth, NJ

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8.0 PLAN ADOPTION

2021 HMP Update Changes:

- This is from Section 6, Approval and Adoption, of the 2016 plan.
- Revised narrative for Plan Adoption.

8.1 PLAN ADOPTION

The Plan was submitted to the New Jersey State Hazard Mitigation Officer on July 1, 2021. It was forwarded to FEMA for final review and approval-pending-adoption on October 4, 2021. FEMA granted approval-pending-adoption on November 17, 2021.

Final Plan approval from FEMA was received on [insert date].

Appendix Volume II – G Plan Adoption Resolutions includes the local resolutions passed by Union County and each of the 21 municipalities. A completed Local Mitigation Plan Review Tool can be found in Appendix Volume II – D Plan Review Tool.

9.0 PLAN MAINTENANCE

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9.0 PLAN MAINTENANCE

2021 HMP Update Changes:

- This is from Section 7, Plan Monitoring and Maintenance, of the 2016 plan.
- Revised 7.1 Method for Monitoring the Plan and 7.2 Schedule for Monitoring the Plan and moved to Section 9.3 Monitoring the Plan
- Revised 7.3 Method and Schedule for Evaluating and Updating the Plan moved to 9.4 Evaluating the Plan
- Revised 7.4 Circumstances that will Initiate Plan Review and Updates and moved to 9.5 Updating the Plan
- Moved 7.5 Other Local Planning Mechanisms to 9.2 Plan Maintenance and Integration
- Revised 7.6 Continued Public Involvement and renamed section to 9.6 Public Participation in Plan Maintenance

9.1 OVERVIEW

This section describes the schedule and procedures for ensuring that the Union County HMP update stays current. The section identifies when the Plan must be updated, who is responsible for monitoring the Plan, and ensuring that the update procedures are implemented. This section provides a combination of cyclical dates (oriented toward FEMA requirements) and triggering events that will initiate amendments and updates to the 2016 Plan. The Union County Division of Emergency Services is responsible for monitoring the Plan and initiating the cyclical update process. Contact information for the Union County official submitting this Plan update is:

Mr. William Kane
Deputy OEM Coordinator
Union County Division of Emergency Services
300 North Avenue East
Westfield, NJ 07090
(908) 654-9881

9.2 PLAN MAINTENANCE AND INTEGRATION

It should be noted that Union County has limited land use planning and zoning authority, so the County has few opportunities to incorporate this Plan into other local mechanisms, such as zoning and subdivision ordinances, or comprehensive land use plans. This Plan will be incorporated, to the extent possible, into the Union County Farmland Preservation, Open Space, Parks and Recreation Trust Fund Plan and the Union County Capital Improvement Program. In addition, Union County Division of Emergency Services will work with individual municipalities to incorporate the recommendations of the Plan into local comprehensive planning and capital improvement programs.

Participating municipalities in this Plan update will work to incorporate the goals of this Plan into the next update of relevant plans and regulations, including comprehensive plans, zoning codes, and capital improvement plans. It should be noted that counties and municipalities are not empowered to make alterations or improvements to the state's building code, the Uniform Construction Code. Details about how municipalities will integrate hazard mitigation their existing

plans are detailed in Section 5.6.3 Local Integration Activities and in the municipal appendices, in Appendices Vol. I – Jurisdictional Information.

9.3 MONITORING THE PLAN

An important step in any mitigation planning process is to document the method by which the Core Planning Group will monitor the plan's implementation throughout the five-year period of record. The lead entity in each jurisdiction coordinates with other departments/agencies responsible for implementing hazard mitigation actions identified in the plan in order to maximize the opportunities to implement actions, track progress of actions, identify and address any barriers to implementation of the actions, and to take advantage of grant funding opportunities. Monitoring the plan, therefore, becomes part of the regular function of the office and position to which it is assigned.

Annual Work Progress Monitoring Reports shall be prepared for each participating jurisdiction and submitted on an annual basis to both Union County and their local governing body at this same time to demonstrate local progress or changes to- date, beginning one year from the date of FEMA's approval of the Final plan. Union County Division of Emergency Services will maintain a central repository of responses. A blank Annual Work Progress Monitoring Report is included in Appendices Volume II – Annual Progress Monitoring Tools. The Annual Progress Monitoring Reports provide an overview of the hazard mitigation action(s), responsible and supporting agencies/entities responsible for implementation, a delineation of the various project milestones, the current status of the project, any issues that may hinder implementation; and next steps.

Annual Work Progress Monitoring Reports are to be completed by each municipality once per year for each project in their mitigation strategy, beginning one year from the date of FEMA's approval of the Final plan.

TABLE 9.3-1 ANNUAL WORK PROGRESS MONITORING REPORT

Annual Work Progress Monitoring Report					
Municipality:		**Progress Report Period:**		**Date Prepared:**	
Mitigation Action Project Title:					
Brief Project Description:					
Risk Addressed:					
Who is responsible for implementing the action?		**Contact Person** *(include name, title, department, phone, email)*:			
Has the project been initiated (check one): __yes ___no *If yes, when?* *If no, why not?*		**List Supporting Agencies and Contacts** *(if any)*:			
Status (check one): __on schedule __completed __delayed* * *If delayed subsequent to initiation, explain here:*		**Original target date for completion:**		**Current estimated target date for completion:**	
Original cost estimate:	**Cost Status (check one): __ unchanged __overrun _underrun** *If overrun/underrun, explain here:*		**Anticipated overrun amount:**		**Anticipated underrun amount:**
Description of the Project *(fill in table with a description of each phase, if applicable, and the time frame for completing each phase):*					
Project Milestones *(e.g. grant application, approval, design, permitting, construction, etc.)*			**Complete? (y/n)**		**Projected Completion Date**

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9.4 EVALUATING THE PLAN

After a mitigation plan is formally approved by FEMA and adopted by participating jurisdictions, it should be evaluated on a regular basis in order to assess the effectiveness of the plan at achieving its stated purpose and goals.

Municipal representatives will convene once per year for an Annual Plan Evaluation Meeting during a one of the Municipal Coordinator Meetings. Annual Plan Evaluation Meetings will be led by Union County Division of Emergency Services and will be conducted within three months after each annual batch of Annual Work Progress Monitoring Reports are due (see "Monitoring", above). At each meeting, the Core Planning Group will review the Annual Work Progress Monitoring Reports, and use the following criteria as points for group discussion to evaluate the effectiveness of the plan at achieving its stated purpose and goals:

- Do the goals and objectives address current and expected conditions?
- Has the nature and magnitude of risks changed?
- Are the current resources appropriate for implementing the plan?
- Are there any implementation problems (such as technical, political and/or legal), or coordination issues with the other agencies and/or Committee members?
- Have the outcomes occurred as expected?
- Have the agencies and other Committee partners participated as proposed?
- Where shortcomings are identified, what can be done to bring things back on track?
- What is the current progress with regard to plan integration?
- Have any comments been received on the plan from municipalities/public/stakeholders?

Following each Annual Plan Evaluation Meeting, the Union County Division of Emergency Services will prepare meeting minutes that will document, at a minimum, the Group's consensus responses to the topics above. Union County Division of Emergency Services will distribute meeting minutes to all Core Planning Group members via email and will post meeting minutes on the web site.

9.5 UPDATING THE PLAN

As part of the process to maintain FEMA mitigation funding eligibility, a plan update must always be submitted to NJOEM/FEMA for their review. This must occur within five years of the plan's approval by FEMA (and during subsequent five-year cycles thereafter).

The Union County HMP was first approved by FEMA in 2010. This plan update represents the third required update of the document. Union County Division of Emergency Services has taken the lead on Plan development and updates and will continue to do so in the future. Union County Division of Emergency Services shall be responsible for ensuring that the plan is maintained in accordance with all applicable guidance and regulations. Future plan updates will account for any new hazard vulnerabilities, special circumstances, or new information that becomes available. During the five-year review process, the following questions will be considered as criteria for assessing the effectiveness the Union County HMP.

- An updated planning process must be undertaken.
- An updated plan document must be prepared.
- The updated document must be resubmitted to FEMA (through NJOEM).
- The updated plan must be reviewed by FEMA, who will provide formal comments indicating both required and recommended revisions.
- At a minimum, all required revisions must be addressed.

- The revised document needs to be routed back to FEMA, who will review to ensure that all required revisions have been satisfactorily addressed. If so, they will deem the plan "approvable pending adoption."
- The plan must then be adopted by participating jurisdictions.

Allowing one year for the update process, and one year for the review/approval/adoption process has historically been observed. It is recommended that the County initiate each requisite plan update no later than three years after the plan's approval date. If grant funding is sought, applications should be submitted at the first opportunity following the plan's approval date (and no later than two years after the plan is approved).

The plan update involves a comprehensive review and evaluation of each section of the plan, and also discusses the results of evaluation and monitoring activities detailed in the Plan Maintenance section of the previously approved plan. Plan updates may validate the information in the previously approved plan or may involve a major plan rewrite. A plan update cannot be an annex referring to the previously approved plan; it must stand on its own as a complete and current plan. Plans are required to be updated to reflect changes in development, progress in local mitigation actions, and changes in priorities. Other criteria considered during the update included:

- if changing situations have modified goals/objectives/actions and/or hazards;
- if additional information is available to perform more accurate vulnerability assessments;
- if it is determined that participating jurisdictions wish to be added to and/or removed from the Plan; or
- if it is determined that the Plan no longer addresses current and expected future conditions.

At the time of each update, Union County Division of Emergency Services shall consult with NJOEM and FEMA for the latest Guidance in place regarding plan updates to ensure that the latest criteria are addressed in the update process. Plan updates will be posted on the County web site and made available in hard copy at the Union County Division of Emergency Services offices.

9.6 PUBLIC PARTICIPATION IN PLAN MAINTENANCE

The public and other stakeholders must be given opportunities to become involved during the Plan's regular maintenance and implementation. The public will have access to an electronic copy of the current HMP through the www.UnionHMP.com website. Information on upcoming events related to the HMP or solicitation for comments will be announced via newsletters, newspapers, mailings, or on the website.

It is important to understand perceptions of the plan's effectiveness and degree of success to help maintain support for the plan and provide accountability for those responsible for its maintenance and implementation.

The following array of activities was selected by the Steering Committee during the October 21, 2020 meeting. These activities were reviewed as part of the 2016 Plan Update and selected again for the 2021 to 2026 planning cycle:

- Union County Division of Emergency Services will continue to maintain the mitigation planning website.

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- Each participating jurisdiction will maintain a link on their jurisdiction's web page to the County mitigation planning website, if they have not already done so.
- Union County Division of Emergency Services will prepare an annual fact sheet on the plan. This fact sheet will be submitted via email to Core Planning Group members for posting on community notice boards, at a minimum, and preferably supplemented with distribution at meetings as applicable. Union County Division of Emergency Services will post the fact sheet on the County mitigation plan web site.
- Participating jurisdictions will conduct annual interviews and/or smaller meetings with civic groups, the public and other stakeholders. This will be accomplished through incorporating discussion of the mitigation plan into other regularly attended meetings.
- Participating jurisdictions will consider annual flyers, newsletters, newspaper advertisements, and Radio/TV announcements to supplement annual interviews/meetings and will implement some or all of these at the discretion of the jurisdiction. At a minimum, the County will issue an annual press release.

Participating jurisdictions are responsible for keeping track of any comments they receive on the plan and bringing this forward for discussion at the Annual Plan Evaluation Meetings.

APPENDICIES VOL I – 1 TOWNSHIP OF BERKELEY HEIGHTS

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Anthony Padovano, OEM Coordinator

COMMUNITY PROFILE

The Township of Berkeley Heights has a total area of 6.26 square miles and is located in the western edge of Union County, New Jersey. It is situated in the Watchung Mountains in the Passaic River Valley. As of 2018, the population was estimated at 13,417. This is a 1.29 percent increase in population since the last plan's population estimate of 13,246 (est. 2013). The Township of Berkeley Heights was created from New Providence Township, which was part of the original townships in Union County. The original name was New Providence Borough, but it was changed to Berkeley Heights by referendum on November 6, 1951. Early businesses included a paper factory and industries that optimized the riverine resources: grist mills, sugar mills and cider mills. Brickmaking and pottery were also economically important, and as the Township grew it also became a retreat location with hotel amenities. In 1888 a railroad station was built in Plainfield Avenue, helping advance the growth of the Township. Technological industries arrived in the 20th century with Bell Labs and the development of the transistors at the Murray Hill site.

The significant areas in the Special Flood Hazard Area (SFHA), including the tributaries to the Passaic River, including the Chaucer Drive Brook, Snyder Avenue Brook, Robin Avenue Brook, the Branch of Green Brook, and the Branch of Blue Brook. Berkeley Heights is subject to flooding from overbank from the three flood sources noted above, but primarily from the four northern streams being severely backed up by the Passaic River flood waters. There are significant concentrations of NFIP insurance claims, including properties classified as repetitive loss along the banks of the Passaic River. Flood impacts in the Township of Berkeley Heights are not significant compared to other jurisdictions in Union County. Usually these impacts are limited to flooding of structures (especially basements) and roads. The Township of Berkeley Heights was once in the National Flood Insurance Program's (NFIP) Community Rating System (CRS), however has rescinded their participation. As part of this plan update, the Township created a mitigation action to rejoin the CRS program.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Berkeley Heights	
Number of Policies In-Force:	190
Total Losses:	86
Total Payments:	$329,256.55
Number of RL Properties:	2
Number of Mitigated RL Properties:	0
RL – Total Losses:	6
RL – Total Paid:	$45,509
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	4

Berkeley Heights	
SRL – Total Paid:	$62,547

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021

HAZARD IDENTIFICATION

Since the last Union County HMP, Berkeley Heights has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
July 1, 2013	Thunderstorm Wind	N/A	N/A	A microburst occurred along a line approximately 1/4 to 1/2 mile to the right of, and approximately one minute before, the tornado which tracked from near Garfield Road in Berkley Heights to near Evergreen Road in Summit New Jersey. Dozens of trees and power lines were downed along the path of this microburst, including some onto cars and houses. At its widest point, the microburst was about 500 yards wide, and lasted for just under 5 miles.
July 1, 2013	Tornado	N/A	N/A	The National Weather Service in New York NY has confirmed a tornado from Berkeley Heights to Summit in Union County New Jersey. The tornado touched down in Berkeley Heights near the Passaic River just west of Garfield Street. It passed northeast through New Providence and lifted in Summit New Jersey near Evergreen Road. Extensive tree damage was observed along the tornado path with the greatest damage occurring at the sewage treatment plant near Snyder Avenue in Berkeley Heights. Some of the downed trees were upon cars and houses. The National Weather Service also interviewed eyewitnesses of the tornado for additional confirmation.
September 12, 2013	Thunderstorm Wind	N/A	N/A	Multiple wires reported down along Greenbriar Drive.
August 19, 2015	Flash Flood	N/A	N/A	All lanes were closed on US-22 between Bonnie Burn Road and Mountain Avenue in Scotch Plains due to flash flooding.
August 4, 2018	Flash Flood	N/A	N/A	Flooding closed all westbound lanes of US Route 22 in Scotch Plains at the intersection with Bonnie Burn Road and Park Avenue.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
High Wind – Straight-line Winds	High

Hazard	Priority
Flood	High
Severe Storm – Winter (Includes Ice Storms)	High
High Wind – Straight-Line Winds	High
Power Failure	High
Erosion – Hurricane/Nor'easter/Coastal Storm	High
Extreme Temperature – Cold	Med
Hazmat Release – Fixed Site	Med
Hazmat Release – Transportation	Med
High Wind – Tornado	Med
Wildfire	Med
Dam Failure	Low
Drought	Low
Earthquake/Geological	Low
Erosion	Low
Extreme Temperature- Heat	Low
Hail	Low
Severe Storm – Lightning	Low
Landslide (Non-Seismic)	Low
Storm Surge –Hurricane/Nor'easter/Tropical Storm	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to

classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	2.96	2.96	0.00%
Barren Land	7.61	17.90	135.21%
Forest	1,064.35	1,061.67	-0.25%
Urban	2,740.33	2,732.72	-0.28%
Water	26.81	26.81	0.00%
Wetlands	161.69	161.69	0.00%

Source: NJDEP Land Use/Land Cover, 2019

The Township may want to look into mitigation planting locations along the Passaic River and within the channel in order to support riparian habit and stabilize banks at risk of eroding as well as wetland restoration.

NEW AND FUTURE DEVELOPMENT

Berkeley Heights Township has the following list of properties have been recently developed or are set for development soon.

1. Connell Corporate Park
Connell Drive
328 Rental Units
Adjacent to the SFHA

2. Woodcrest Project
100 Locust Avenue
55 & Older Community
196 Rental Units
Partially in the SFHA

3. Sttatton House (former Kings complex)
434 Springfield Avenue
211 Rental Units
Outside the SFHA

4. The Terrance at Berkeley Heights Project (formally the Movie Theater)
450 Springfield Avenue
Mixed Occupancy (Residential over Commercial)
20 Units.
Outside the SFHA

5. Elite Properties Project (Vito Mondelli site)
182 Plainfield Avenue
10 Units.
Outside the SFHA

6. Berkeley Crossing Project (Berkeley Florist)
663 & 665 Springfield Avenue
45 Rental Units.
Outside the SFHA

7. Millcreek "Spatz" Lone Pine Drive Complex
91 Lone Pine Dr.
170 Units.
Partially in the SFHA

8. Toll Brothers Luxury Townhomes Project at the Little Flower Church site/Hamilton Avenue School Redevelopment Area
110 Roosevelt Avenue

This Redevelopment Area was formerly the site of a school affiliated with the Church of the Little Flower. The property was previously developed with a school building, a gymnasium, and a parish center. The property is approximately 15.38 acres, with frontages on both Roosevelt Avenue and Hamilton Avenue. The adopted Redevelopment Plan allows for an inclusionary project with a maximum of 100 units, of which at least 20 units (20%) must be set aside as affordable for very low, low, and moderate-income households. As the western portion of the property is located within a flood hazard area with wetlands, the Plan also requires the preservation of the woodland buffer and natural features in these environmentally constrained areas (Berkeley Heights Master Plan, 2020).

9. Municipal Complex
29 Park Avenue
Police Station, Townhall, Library, and Recreation Center.
Outside the SFHA

CRITICAL FACILITIES

The Township of Berkeley Heights has 38 (42 if each wastewater pump station is counted separately) critical facilities, with two facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 01-03: Acquisition of homes at Robin's Avenue and Springfield intersection
- 01-04: Flood proofing of Town Hall Building which houses Police Department/Data Storage
- 01-06: Stormwater management system upgrade and improvement for the Berkeley Hall Nursing Home
- 01-10: Municipal Facility Relocation. Relocation of Police Department, Town Hall, DPW and Library

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Berkeley Heights has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Master Plan discusses redevelopment in flood hazard areas and recommends to consider updating bulk standards in affected zoning districts, such as establishing building height regulations based on the design flood elevation or requiring a minimum floor-to-floor height above the design flood elevation.
- Community Wildfire Protection Plan
- Streambank Buffer Protection Program
- Watershed Management Plan
- Floodplain Management Plan
- Post-Disaster Recovery Plan
- Land Acquisition for Open Space and Public Recreation Uses
- Growth Management Ordinance
- Natural Hazard Ordinance
- The Township of Berkeley Heights is also certified by Sustainable Jersey and has a Mitigation Planning Committee.

The complete Mitigation Strategy and Capability Assessment for the Township of Berkeley Heights is part of this appendix.

Berkeley Heights, Township of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
01-01	Flood-proof Homes Along 400 and 600 River Road.	Flood-proof homes along 400 and 600 River Road.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	High	Berkeley Heights Engineer	FEMA HMA	$150,000.00	1 year	Carried Forward
01-02	Upgrade and Improve the Stormwater Management System Along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue.	Upgrade and improve the stormwater management system along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue to control flooding in repetitive loss areas.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Berkeley Heights Engineer	FEMA HMA	$300,000.00	3 years	Carried Forward
01-03	Acquire Homes at Robin's Avenue and Springfield Intersection.	Acquire homes at Robin's Avenue and Springfield intersection.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm		Berkeley Heights OEM		$1,000,000.00		Completed
01-04	Flood-proof Town Hall Building Which Houses Police Department/Data Storage.	Flood-proof Town Hall Building which houses Police Department/Data Storage.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm		Berkeley Heights Engineer	Municipal Budget	$200,000.00		Completed
01-05	Flood-proof the Department of Public Works (DPW).	Flood-proof the DPW.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Berkeley Heights DPW	FEMA HMA	$0.00	3 - 4 years	Carried Forward
01-06	Upgrade and Improve the Stormwater Management System for the Berkeley Hall Nursing Home.	Upgrade and improve the stormwater management system for the Berkeley Hall Nursing Home.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, High Wind–Straight-Line Winds		Berkeley Heights Engineer& Facility Administrator		$0.00		Completed
01-07	Upgrade and Improve the Stormwater Management System for 35 Cottage Street/Autumn Lake Healthcare.	Upgrade and improve the stormwater management system for 35 Cottage Street/Autumn Lake Healthcare.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Berkeley Heights OEM, DPW	Capital Improvement Plan	$150,000.00	2 years	Carried Forward
01-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	1 year	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
01-09	De-Snag Streams and Rivers in the Township to Prevent Debris Build-Up.	Conduct de-snagging effort to prevent debris build-up along streams and rivers in the Township that may contribute to flooding.	Maintenance/Response/Recovery	Natural Systems Protection	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning	Medium	Engineering/DPW	NJDEP Grant, Municipal Budget	$400,000.00	5 + years	Ongoing
01-10	Relocate Municipal Facilities Outside of Flood-prone Areas.	Relocate municipal facilities outside of flood-prone areas. Facilities in need of relocation include the Police Department, Town Hall, DPW, and Library.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township Administrator	Capital funds	$5,000,000.00	2 years	Ongoing
01-11	Remove Hazardous Trees in the Township.	Remove hazardous trees in the Township to prevent power failure, injury, and property damage from fallen trees and tree limbs during storm events.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	Medium	DPW	Municipal Budget	$500,000.00	5 + years	Ongoing
01-12	Acquire Properties in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire structures that are listed as RL/SRL properties. Berkeley Heights Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	OEM/Administration, Affected homeowners	FEMA HMA	$0.00	Ongoing	Carried Forward
01-13	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Rejoin NFIP CRS Program to reduce flood insurance premiums for homeowners.	Administrative	Local Plans and Regulations	Flood	Low	Township OEM	Municipal Budget	$0.00	1 - 2 years	New
01-14	Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire, elevate, or relocate structures that are listed as RL/SRL properties. Berkeley Heights Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	New
01-15	Create Riparian Habitat Along the Passaic River and Within the Channel.	Plant vegetation along the Passaic River and within the channel in order to support riparian habit and stabilize banks at risk of eroding. Consider wetland restoration where applicable.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	Township	FEMA HMA	$0.00	1 year	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
01-16	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 01-01 Berkeley Heights, Township of

Describing the Action

Action Name:	**Flood-proof Homes Along 400 and 600 River Road.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Flood-proof homes along 400 and 600 River Road.**
Hazard(s) Addressed:	**Flood, Erosion–Hurricane/Nor'easter/Coastal Storm**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**Floods due to heavy rain overwhelms the catch basins with debris and increases the risk of flooding.**
Life Safety:	**This action will protect lives and prevent injuries by reducing exposure to flooding.**
Property Protection:	**This action will reduce future flood damage to homes along 400 and 600 River Road.**
Cost Effectiveness:	**The costs to implement this initiative are commensurate with the benefits achieved.**
Technical:	**This action is both technically feasible and a long-term solution.**
Political:	**There is political will in favor of this action.**
Legal:	**The Township has the authority to work with interested homeowners on mitigating their properties.**
Environmental:	**There are no known adverse environmental impacts. Environmental regulations will be followed.**
Social:	**This action is not known to adversely affect any particular social group.**
Administrative:	**The Township has the personnel and administrative capabilities to implement this action.**
Local Champion:	**Affected homeowners, OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**10**

Implementing the Action

Cost Estimate:	**$150,000.00**
Priority:	**High**
Local Planning Mechanism:	**Hazard Mitigation Plan**
Responsible Party:	**Berkeley Heights Engineer**
Likely Funding Source(s):	**FEMA HMA**
Target State Date:	
Timeline:	**1 year**
Action Status:	**Carried Forward**
Notes:	**Ongoing action from 2010 and 2016. This action is carried forward due to lack of funds. Cost Estimate is $150,000 per unit.**

Union County Mitigation Action Worksheets

Community Action Number: 01-02 Berkeley Heights, Township of

Describing the Action

Action Name:	**Upgrade and Improve the Stormwater Management System Along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue.**
Action Category:	**Mitigation - Continuity of Functional Use**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Upgrade and improve the stormwater management system along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue to control flooding in repetitive loss areas.**
Hazard(s) Addressed:	**Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**Flood-prone areas are along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Roosevelt Avenue are at risk of future destruction and property loss due to repetitive flooding.**
Life Safety:	**This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.**
Property Protection:	**This action will retrofit and upgrade stormwater systems, thereby preventing future damage by repetitive flooding.**
Cost Effectiveness:	**The costs to implement this initiative are commensurate with the benefits achieved.**
Technical:	**This action is both technically feasible and a long-term solution.**
Political:	**There is political will in favor of this action.**
Legal:	**The Township has the authority to work on this action.**
Environmental:	**There are no known adverse environmental impacts.**
Social:	**This action is not known to adversely affect any particular social group.**
Administrative:	**The Township has the personnel and administrative capabilities to implement this action.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**10**

Implementing the Action

Cost Estimate:	**$300,000.00**
Priority:	**High**
Local Planning Mechanism:	**Capital Improvement Plan**
Responsible Party:	**Berkeley Heights Engineer**
Likely Funding Source(s):	**FEMA HMA**
Target State Date:	
Timeline:	**3 years**
Action Status:	**Carried Forward**
Notes:	**Ongoing action from 2010 and 2016. This action is carried forward due to lack of funds.**

Union County Mitigation Action Worksheets

Community Action Number: 01-03 Berkeley Heights, Township of

Describing the Action

Action Name:	Acquire Homes at Robin's Avenue and Springfield Intersection.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire homes at Robin's Avenue and Springfield intersection.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	

Evaluating the Action

Risk Reduction:	Flood-prone areas are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement Plan
Responsible Party:	Berkeley Heights OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	Completed. Homes have been mitigated/elevated near the western portion near Morris and Somerset County.

Union County Mitigation Action Worksheets

Community Action Number: 01-04 Berkeley Heights, Township of

Describing the Action

Action Name:	**Flood-proof Town Hall Building Which Houses Police Department/Data Storage.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Flood-proof Town Hall Building which houses Police Department/Data Storage.**
Hazard(s) Addressed:	**Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm**
Goals:	

Evaluating the Action

Risk Reduction:	**Flood-prone areas are at risk of future destruction and property loss due to repetitive flooding.**
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	**Public infrastructure is a community asset**
STAPLEE Evaluation:	**8**

Implementing the Action

Cost Estimate:	**$200,000.00**
Priority:	
Local Planning Mechanism:	**Capital Improvement Plan**
Responsible Party:	
Likely Funding Source(s):	**Municipal Budget**
Target State Date:	
Timeline:	
Action Status:	**Completed**
Notes:	**Completed. Emergency power was installed. Pumps were also install in the basement. This project was funded through the Berkeley Heights municipal budget.**

Union County Mitigation Action Worksheets

Community Action Number: 01-05 Berkeley Heights, Township of

Describing the Action

Action Name:	**Flood-proof the Department of Public Works (DPW).**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Flood-proof the DPW.**
Hazard(s) Addressed:	**Flood**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**The DPW building is vulnerable to flooding due to its proximity to the Passaic River.**
Life Safety:	**This action will protect lives and prevent injuries by protecting the DPW against flooding.**
Property Protection:	**This action will prevent future flood damage to the DPW building.**
Cost Effectiveness:	**The costs to implement this initiative are commensurate with the benefits achieved.**
Technical:	**This action is both technically feasible and a long-term solution.**
Political:	**There is political will in favor of this action.**
Legal:	**The Township has the authority to implement this action.**
Environmental:	**There are no known adverse environmental impacts. Environmental regulations will be followed.**
Social:	**This action is not known to adversely affect any particular social group.**
Administrative:	**The Township has the personnel and administrative capabilities to implement this action.**
Local Champion:	**DPW**
Other Community Objectives:	
STAPLEE Evaluation:	**10**

Implementing the Action

Cost Estimate:	**$0.00**
Priority:	**High**
Local Planning Mechanism:	**Hazard Mitigation Plan**
Responsible Party:	**Berkeley Heights DPW**
Likely Funding Source(s):	**FEMA HMA**
Target State Date:	
Timeline:	**3 - 4 years**
Action Status:	**Carried Forward**
Notes:	**Ongoing action from 2010 and 2016. This action is carried forward due to lack of funds.**

Union County Mitigation Action Worksheets

Community Action Number: 01-06 Berkeley Heights, Township of

Describing the Action

Action Name:	**Upgrade and Improve the Stormwater Management System for the Berkeley Hall Nursing Home.**
Action Category:	**Mitigation - Continuity of Functional Use**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Upgrade and improve the stormwater management system for the Berkeley Hall Nursing Home.**
Hazard(s) Addressed:	**Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, High Wind–Straight-Line Winds**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$0.00**
Priority:	
Local Planning Mechanism:	**Capital Improvement Plan**
Responsible Party:	**Berkeley Heights Engineer& Facility Administrator**
Likely Funding Source(s):	
Target State Date:	**2013**
Timeline:	
Action Status:	**Completed**
Notes:	**Completed. The Nursing Home has since been demolished/shut down.**

Union County Mitigation Action Worksheets

Community Action Number: 01-07 Berkeley Heights, Township of

Describing the Action

Action Name:	Upgrade and Improve the Stormwater Management System for 35 Cottage Street/Autumn Lake Healthcare.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and improve the stormwater management system for 35 Cottage Street/Autumn Lake Healthcare.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	35 Cottage Street/Autumn Lake Healthcare is at risk of flooding. The stream behind the building flows into the Passaic River. The DPW currently clears the trees from this river.
Life Safety:	This action will protect lives and prevent injuries by upgrading the stormwater system which reduces risk of future flooding and improves safety.
Property Protection:	This action will eliminate future damage to 35 Cottage Street/Autumn Lake Healthcare by reducing the risk of flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work on this with the DPW.
Environmental:	There are no known adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	DPW
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$150,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement Plan
Responsible Party:	Berkeley Heights OEM, DPW
Likely Funding Source(s):	Capital Improvement Plan
Target State Date:	
Timeline:	2 years
Action Status:	Carried Forward
Notes:	Ongoing from 2010. This action has been carried forward.

Union County Mitigation Action Worksheets

Community Action Number: 01-08 Berkeley Heights, Township of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of these natural hazards and mitigation possibilities could be improved. The Township's high priority hazards are Flood, Severe Storm-Winter Storm (Including Ice Storm), and High Winds-Straight Line Winds. The community's overall level of disaster resilience better understood these hazards.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing from 2010. Cost estimate: Staff Time Since the 2016 HMP, the Township has conducted outreach through posts on social media and handouts about upcoming hazards and events.

Union County Mitigation Action Worksheets

Community Action Number: 01-09 Berkeley Heights, Township of

Describing the Action

Action Name:	**De-Snag Streams and Rivers in the Township to Prevent Debris Build-Up.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Natural Systems Protection**
HMA Eligible:	**No**
Action Description:	**Conduct de-snagging effort to prevent debris build-up along streams and rivers in the Township that may contribute to flooding.**
Hazard(s) Addressed:	**Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm), Severe Stor**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**Debris build-up along the streams and rivers in the Township may contribute to flooding.**
Life Safety:	**This action will protect lives and prevent injuries by removing debris that would exacerbate flooding.**
Property Protection:	**This action will eliminate or reduce damage to structures and infrastructure by removing debris that would exacerbate flooding.**
Cost Effectiveness:	**The costs to implement this initiative are commensurate with the benefits achieved.**
Technical:	**This action is both technically feasible and an ongoing initiative.**
Political:	**There is political will in favor of this action.**
Legal:	**The Township has the authority to implement this action.**
Environmental:	**There are no known adverse environmental impacts. Environmental regulations will be followed.**
Social:	**This action is not known to adversely affect any particular social group.**
Administrative:	**The Township has the personnel and administrative capabilities to implement this action.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**10**

Implementing the Action

Cost Estimate:	**$400,000.00**
Priority:	**Medium**
Local Planning Mechanism:	**Hazard Mitigation Plan**
Responsible Party:	**Engineering/DPW**
Likely Funding Source(s):	**NJDEP Grant, Municipal Budget**
Target State Date:	**2013**
Timeline:	**5 + years**
Action Status:	**Ongoing**
Notes:	**Ongoing from 2016. The Township currently operates a boat owned by the Fire Department that cleans the rivers and streams.**

Union County Mitigation Action Worksheets

Community Action Number: 01-10 Berkeley Heights, Township of

Describing the Action

Action Name:	Relocate Municipal Facilities Outside of Flood-prone Areas.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Relocate municipal facilities outside of flood-prone areas. Facilities in need of relocation include the Police Department, Town Hall, DPW, and Library.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Important Township facilities are at risk of future flood damage because they are located in flood-prone areas.
Life Safety:	This action will protect lives and prevent injuries by relocating important Township facilities outside flood-prone areas.
Property Protection:	This action will eliminate or reduce damage to the Police Department, Town Hall, DPW, and Library.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$5,000,000.00
Priority:	High
Local Planning Mechanism:	CIP
Responsible Party:	Township Administrator
Likely Funding Source(s):	Capital funds
Target State Date:	2015
Timeline:	2 years
Action Status:	Ongoing
Notes:	Completed except for the DPW building. All other facilities have been relocated to higher elevation. A new Town Hall has been built in a new location which currently houses the police department, library, and recreation department. This funding came from Capital funds.

Union County Mitigation Action Worksheets

Community Action Number: 01-11 Berkeley Heights, Township of

Describing the Action

Action Name:	Remove Hazardous Trees in the Township.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Remove hazardous trees in the Township to prevent power failure, injury, and property damage from fallen trees and tree limbs during storm events.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds
Goals:	3

Evaluating the Action

Risk Reduction:	The limbs of trees and/or the trees themselves may fall during storm events, potentially knocking down above-ground power and communication lines. Fallen trees and tree limbs may potentially cause injury and property damage. Fallen trees and tree limbs may also create hazardous driving conditions through debris on the roadway.
Life Safety:	This action will protect lives and prevent injuries by removing hazardous trees that could fall and cause injuries during storm events.
Property Protection:	This action will prevent structure and infrastructure damage as a result of fallen trees and tree limbs during storm events. It will also lessen the likelihood of power failure due to fallen trees and tree limbs.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action on Township property and within Township rights-of-way.
Environmental:	There are no known adverse environmental impacts beyond tree removal. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Medium
Local Planning Mechanism:	Public Works
Responsible Party:	DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	2013
Timeline:	5 + years
Action Status:	Ongoing
Notes:	Ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 01-12 Berkeley Heights, Township of

Describing the Action

Action Name:	Acquire Properties in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire structures that are listed as RL/SRL properties. Berkeley Heights Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the northern and southern boundaries of the Township near Green Brook, Blue Brook, Robbins Avenue Brook, Snyder Avenue Brook, Forest Avenue Brook, Passaic River and its tributaries are at risk of future destruction and property loss due to repetitive flooding. A cluster of RL properties with a number of losses exist in the 1% and 0.2% annual chance FEMA flood zone extending from the Passaic River and its tributaries.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will acquire flood prone properties, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on acquiring their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Grants
Responsible Party:	OEM/Administration, Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	Cost varies. This action has been carried forward from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 01-13 Berkeley Heights, Township of

Describing the Action

Action Name:	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Rejoin NFIP CRS Program to reduce flood insurance premiums for homeowners.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Berkeley Heights Township's participation status in the CRS program has been rescinded. The Township is still vulnerable to flooding, and rejoining the CRS program would incentivize flood risk reduction in the community.
Life Safety:	This action will indirectly protect lives and prevent injuries by encouraging flood mitigation actions throughout the Township.
Property Protection:	This action will indirectly protect structures and infrastructure from future flood damage by encouraging flood mitigation actions throughout the Township.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action. It will likely also have public support because it lowers flood insurance premiums for homeowners.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group. This action would be especially beneficial for flood insurance policyholders.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	TBD
Timeline:	1 - 2 years
Action Status:	New
Notes:	Estimated Cost: Staff Time and Resources

Union County Mitigation Action Worksheets

Community Action Number: 01-14 Berkeley Heights, Township of

Describing the Action

Action Name:	Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Northern and Southern Boundaries of the Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire, elevate, or relocate structures that are listed as RL/SRL properties. Berkeley Heights Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the northern and southern boundaries of the Township near Green Brook, Blue Brook, Robbins Avenue Brook, Snyder Avenue Brook, Forest Avenue Brook, Passaic River and its tributaries are at risk of future destruction and property loss due to repetitive flooding. A cluster of RL properties with a number of losses exist in the 1% and 0.2% annual chance FEMA flood zone extending from the Passaic River and its tributaries.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has sufficient capacity and experience to administer this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 01-15 Berkeley Heights, Township of

Describing the Action

Action Name:	Create Riparian Habitat Along the Passaic River and Within the Channel.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Plant vegetation along the Passaic River and within the channel in order to support riparian habit and stabilize banks at risk of eroding. Consider wetland restoration where applicable.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Extensive floodplains surround the Passaic River and its Tributaries in the Township. A cluster of repetitive loss (RL) properties with a number of losses exist in the 1% and 0.2% annual chance FEMA flood zone extending from these waterbodies.
Life Safety:	This action will protect lives and prevent injuries by mitigating flooding from the Passaic River to nearby RL properties.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by mitigating flooding from the Passaic River to nearby RL properties.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action will improve habitat along the Passaic River. Environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	FEMA HMA
Target State Date:	
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 01-16 Berkeley Heights, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	12

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: __Berkeley Heights_____

Name: ____Anthony Padovano_____ Title: __OEM Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	Yes
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	Yes
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	Yes
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	Yes
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Yes	Yes

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Yes	Yes
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Yes	Due for review soon.
Site Plan Review Requirements: Review of new development applications	Yes	Yes
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Yes	Yes
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Yes	Yes
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Yes	Yes
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Yes	Yes

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Yes	Yes
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	No	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	Yes	Yes
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Yes	Yes
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Yes	Yes
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Yes	Yes
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Yes	Yes
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	No	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	Yes	Yes
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	Yes	Yes
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Yes	Yes
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	No	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Yes	Yes
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Yes	Yes
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Yes	Yes
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	No	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	No	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Yes	Yes
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	No	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Yes	Yes
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	Yes	Yes
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Yes	Yes
Economic Development Commission: Provides recommendations on economic development policies and issues	Yes	Yes
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Yes	Yes

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Yes	PT
Engineer: a New Jersey licensed Professional Engineer	Yes	PT
Code Enforcement: Evaluates private properties and public grounds against local codes	Yes	FT
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Yes	FT
Floodplain Manager: a Certified Floodplain Manager	No	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Yes	PT
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Yes	PT

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Yes	Yes
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Yes	Yes
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Yes	Yes
Impact fees for new development: Fees paid by a developer to the municipality	Yes	Yes
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Yes	Yes

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	No	

What capability would you like your community to gain in the next five to ten years?

Joining Firewise Program, Fire ISO upgrade, Climate Adaptation Plan, Post- Disaster Recovery Plan, StormReady Certification

BERKELEY HEIGHTS TOWNSHIP FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,650 3,300 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Morris County

New Providence Borough

Murray Hill Station

Summit City

Springfield Township

Berkeley Heights Station

Mountainside Borough

Scotch Plains Township

Westfield Town

Fanwood Borough

Somerset County

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 2 TOWNSHIP OF CLARK

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Mike Nenortas, Deputy OEM Coordinator

COMMUNITY PROFILE

The Township of Clark has a total area of 4.49 square miles and is located in southern Union County, New Jersey. The Township is crossed by the Rahway River and contains the 150-acre Clark Reservoir on the Johnson's Branch of the Rahway River. The Clark Reservoir is part of the Union County Parks System. As of 2018, the population was estimated at 15,614. This is a 4.92 percent increase in population since the last plan's population estimate of 14,882 (est. 2013). Clark Township occupies land that was once used as hunting grounds for the Lenape Tribe. Clark was primarily a farming community, however over time larger farms subdivided into smaller farms. Development following WWII resulted in conversion of farmland into housing and commercial areas.

Clark Township has three significant areas in the Special Flood Hazard Area (SFHA), including the Rahway River, Robinsons Branch, and Pumpkin Patch Brook. The Robinsons Branch can be divided into two segments: the lower and the upper reach. The lower reach is the Middlesex reservoir, controlled by the dam and spillway on its southeastern end at the jurisdictional boundary. The upper reach of Robinsons Branch flows along Township's southwestern boundary and exhibits very wide floodplain that Clark shares with neighboring Scotch Plains Township. The Robinson's Branch Reservoir Dam is classified as High-potential Hazard Dam by the NJDEP Bureau of Dam Safety and Flood Control. Most of the Township's repetitive flood losses appear be along the Pumpkin Patch Brook, with some near the Valley Road bridge area of Robinsons Branch and few along the Rahway River. There are several reported flood losses that are probably caused by the poor interior drainage and backing up of streams.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Clark	
Number of Policies In-Force:	83
Total Losses:	90
Total Payments:	$831,315.47
Number of RL Properties:	11
Number of Mitigated RL Properties:	0
RL – Total Losses:	31
RL – Total Paid:	$568,242
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	10
SRL – Total Paid:	$69,513

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Clark has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
April 30, 2014	Flood	N/A	N/A	The intersection of Massachusetts St. and Boynton Ave. in Westfield was closed due to flooding.
February 24, 2016	Flash Flood	N/A	N/A	A vehicle was stalled in flood water on Massachusetts Street in Westfield.
July 3, 2018	Flash Flood	N/A	N/A	Water rescues were being conducted at the intersection of Carolina Street and Clark Street in Cranford.
June 29, 2019	Thunderstorm Winds	N/A	N/A	Large tree uprooted and blow down in street.
July 18, 2019	Flash Flood	N/A	N/A	There were multiple reports of people rescued from vehicles in Clark due to high water. In addition, a car was reported stranded by high water on Gibson Boulevard.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Hazardous Materials Release – Fixed Site	Med
Hazardous Materials Release– Transportation	Med
Severe Storm – Lightning	Med
Severe Storm – Winter Weather (Includes Ice Storms)	Med
High Wind – Straight-Line Winds	Med
Dam Failure	Low
Drought	Low
Earthquake / Geological	Low
Erosion – Hurricane/Nor'easter/Coastal Storm	Low
Extreme Temperature – Cold	Low
Extreme Temperature –Heat	Low
Hail	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Storm Surge –Hurricane/Nor'easter/Tropical Storm	Low

Hazard	Priority
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	6.65	2.96	-55.53%
Barren Land	4.63	19.09	311.96%
Forest	229.37	222.80	-2.86%
Urban	2,297.77	2,293.58	-0.18%
Water	135.37	135.37	0.00%
Wetlands	176.57	176.57	0.00%

Source: NJDEP Land Use/Land Cover, 2019

Most of the Township's flood zones are in parkland, which reduces risk to residents and structures. The Township may want to look into increasing floodwater storage through wetland restoration or establishment and building floodplains and stormwater lots.

NEW AND FUTURE DEVELOPMENT

The Township of Clark has four areas of new and future construction, listed below. At the time of this plan update, **all areas of future development are located outside the SFHA.**

- Constructed – Woodcrest at Clark, a 55+ Active Adult Community (1500 Westfield Ave)
- Future Development – Brookside Manor, a 42-unit complex (Westfield Ave. and Raritan Rd.)
- Future Development – a 195- Unit Complex (35 Walnut Ave)
- Future Development – to be determined the complex (Westfield Ave.)

CRITICAL FACILITIES

The Township of Clark has 23 critical facilities, with five facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 02-01: Purchase generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building located at 430 Westfield Avenue.

SUCCESSFUL IN MUNICIPAL CAPABILITIES

- The Township of Clark has a Watershed Management Plan and a Floodplain Management Plan as required by NJDEP, and a Real Estate Disclosure Requirement as required by State laws.
- The Township's Master Plan specifically addresses minimizing flood risk

The complete Mitigation Strategy and Capability Assessment for Clark Township is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
02-01	Purchase Generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building Located at 430 Westfield Avenue.	Purchase generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building located at 430 Westfield Avenue.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards				$1,500,000.00		Completed
02-02	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Township	Grants/Capital Funds	$1,200,000.00	Ongoing	Ongoing
02-03	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a Shelter for a Warming/Cooling Center and Charging Station Area.	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a warming center/charging station area.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Township	Grants/Capital Funds	$400,000.00	Ongoing	Carried Forward
02-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Maintenance/Response/Recovery	Education and Awareness Programs	All Hazards	Low	Township	Municipal Budget	$0.00	Ongoing	Ongoing
02-05	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Pumpkin Patch Brook and Robinsons Branch Near the Scotch Plains Border and Along the Rahway River Near the Winfield Township Border, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire structures that are listed as RL/SRL properties. Clark Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township	FEMA HMA	$0.00	Ongoing	Carried Forward
02-06	Repair, Remove, or Rehabilitate the Robinson's Branch Reservoir Dam.	Repair, remove, or rehabilitate Robinson's Branch Reservoir Dam, a High-Hazard Potential Dam, located along Robinson's Branch.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Dam Failure	High	Union County	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	$0.00	2 years	New
02-07	Conduct a Study of Pumpkin Patch Brook to Identify New Actions to Improve Flood Control in the Area.	Conduct a study of Pumpkin Patch Brook to identify new actions to improve flood control in the area.	Administrative	Natural Systems Protection	Flood	Low	Clark OEM	Municipal Budget	$0.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
02-08	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 02-01 Clark, Township of

Describing the Action

Action Name:	Purchase Generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building Located at 430 Westfield Avenue.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Purchase generator for the Emergency Operation Center (EOC), Senior Center, and Municipal Building located at 430 Westfield Avenue.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,500,000.00
Priority:	
Local Planning Mechanism:	Grants/Capital Funds
Responsible Party:	
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Completed in 2018.

Union County Mitigation Action Worksheets

Community Action Number: 02-02 Clark, Township of

Describing the Action

Action Name:	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Purchase and Install Generators for Police Station and Fire Station Headquarters and Fire Station #2.
Hazard(s) Addressed:	All Hazards
Goals:	2,3,4

Evaluating the Action

Risk Reduction:	Reduce risk of power loss to critical facilities during storm events.
Life Safety:	Action will protect lives and prevent injuries.
Property Protection:	Reduce damage to structures by providing backup power to critical facilities.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no adverse environmental impacts of the action
Social:	The proposed action will not adversely affect one segment of the population. It will help reduce risk to the entire population.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$1,200,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	Grants/Capital Funds
Target State Date:	Target Completion Date Mid 2021
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing from 2016. Fire HQ completed in 2019. PD in progress with New building construction. Target completion date Mid 2021. Fire station #2 still in review, building has minimal back up power at this time.

Union County Mitigation Action Worksheets

Community Action Number: 02-03 Clark, Township of

Describing the Action

Action Name:	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a Shelter for a Warming/Cooling Center and Charging Station Area.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Purchase and Install Generator for the Clark Public Library to Utilize the Building as a warming center/charging station area.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Reduce risk of power loss to critical facilities during storm events.
Life Safety:	Action will protect lives and prevent injuries.
Property Protection:	Reduce damage to structures by providing backup power to critical facilities.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no adverse environmental impacts of the action
Social:	The proposed action will not adversely affect one segment of the population. It will help reduce risk to the entire population.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$400,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	Grants/Capital Funds
Target State Date:	Pending, still in review
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 02-04 Clark, Township of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Maintenance/Response/Recovery
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1,2,3

Evaluating the Action

Risk Reduction:	Reduce risk in community by improving hazard event outreach and engagement efforts.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness.
Property Protection:	This action will reduce damage to structures.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no adverse environmental impacts of the action
Social:	This action will reduce stress and improve education in all segments of the population.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Estimated Cost: Staff time Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 02-05 Clark, Township of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Pumpkin Patch Brook and Robinsons Branch Near the Scotch Plains Border and Along the Rahway River Near the Winfield Township Border, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire structures that are listed as RL/SRL properties. Clark Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along Pumpkin Patch Brook and Robinsons Branch near the border of Scotch Plains and across the center of the Township, as well as along the Rahway River bordering Winfield Township are at risk of future destruction and property loss due to repetitive flooding. The Township's most significant losses from flood events occur along Pumpkin Patch Brook.
Life Safety:	The action will protect lives and prevent injuries.
Property Protection:	The action provides significant reduction in damage to structures.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no adverse environmental impacts of the action.
Social:	The proposed action will benefit all segments of the population by reducing flood risk.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	Cost varies Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 02-06 Clark, Township of

Describing the Action

Action Name:	Repair, Remove, or Rehabilitate the Robinson's Branch Reservoir Dam.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Repair, remove, or rehabilitate Robinson's Branch Reservoir Dam, a High-Hazard Potential Dam, located along Robinson's Branch.
Hazard(s) Addressed:	Dam Failure
Goals:	5

Evaluating the Action

Risk Reduction:	NJDEP classifies Robinson's Branch Reservoir Dam to be a High-Hazard Potential, meaning failure of the dam may result in probable loss of life and/or extensive property damage.
Life Safety:	This action will protect lives and prevent injuries by mitigating a high-hazard potential dam, which, if it failed, would result in probable loss of life.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by mitigating a high-hazard potential dam, which, if it failed, would result in extensive property damage.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	This action may require coordination with NJDEP.
Environmental:	This action may have minor affects to the environment; however, dam removal may also be environmentally beneficial by restoring a river's natural flow, according to American Rivers.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County
Likely Funding Source(s):	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA
Target State Date:	TBD
Timeline:	2 years
Action Status:	New
Notes:	FEMA has a National Dam Safety Program with funding available to High-Hazard Potential Dams.

Union County Mitigation Action Worksheets

Community Action Number: 02-07 Clark, Township of

Describing the Action

Action Name:	Conduct a Study of Pumpkin Patch Brook to Identify New Actions to Improve Flood Control in the Area.
Action Category:	Administrative
Action Type:	Natural Systems Protection
HMA Eligible:	No
Action Description:	Conduct a study of Pumpkin Patch Brook to identify new actions to improve flood control in the area.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	The Township's most significant losses from flood events occur along Pumpkin Patch Brook, in an area of the floodplain not surrounded by parkland.
Life Safety:	This action will protect lives and prevent injuries by improving flood control along Pumpkin Patch Brook.
Property Protection:	This action will future damage to structures by improving flood control along Pumpkin Patch Brook.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Clark OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Clark OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 02-08 Clark, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: _____Township of Clark_____

Name: ___Michael Nenortas_____ Title: ____Dep. EM Coordinator_____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	Specifically looks to minimize flood impact
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	Annex's include all hazards that may impact the township of Clark
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	No
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	No
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Yes	No

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Yes	EOP have incident control management protocols
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	4	No
Site Plan Review Requirements: Review of new development applications	Yes	Storm water control, Emergency Response capability, waste management. Applicants must fill out an Environmental Impact Preliminary Statement addressing development in the flood zone.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Yes	Storm water control, Emergency Response capability, waste management
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Yes	Storm water control, Emergency Response capability, waste management
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	No	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Yes	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	No	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N/A	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N/A	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	No	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Yes	Follow NJDEP requires as dictated
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Yes	Township Engineer , Follow NJDEP requires as dictated
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	No	
Transfer of Development Rights: Designating high-risk or preservation areas as “sending areas,” from which the potential to develop land is transferred to low-risk or growth areas called “receiving areas” for compensation	No	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	No	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	No	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	No	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	No	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	Yes	As required by State laws

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Yes	Local CERT organizations, Scouting
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	N/A	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Yes	Education and preparedness for hazards and disasters
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	No	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	No	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	No	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	No	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Yes	Yes Primarily Flooding
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	No	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Yes	Focused primarily on Trees and environmental clean ups
Economic Development Commission: Provides recommendations on economic development policies and issues	Yes	No
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Yes	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Yes	
Engineer: a New Jersey licensed Professional Engineer	Yes	Township Engineer and Contractor
Code Enforcement: Evaluates private properties and public grounds against local codes	Yes	Full time Building, Fire and Health
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Yes	Full Time
Floodplain Manager: a Certified Floodplain Manager	Yes	Township engineer

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	No	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	No	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Yes	Yes
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Yes	Yes
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Yes	Yes
Impact fees for new development: Fees paid by a developer to the municipality	Yes	Yes
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Yes	Yes

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	yes	Yes

What capability would you like your community to gain in the next five to ten years?

CLARK TOWNSHIP
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,200 2,400 Feet

N

Source: FEMA; NJDEP; NJDOT;
NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Garwood Borough

Roselle Borough

Cranford Township

Westfield Town

Winfield Township

Linden City

Scotch Plains Township

Rahway City

Rahway Station

Middlesex County

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 3 TOWNSHIP OF CRANFORD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Contact:

Matthew Lubin, Emergency Management Coordinator / Fire Official

COMMUNITY PROFILE

The Township of Cranford has a total area of 4.87 square miles and is located in central Union County, New Jersey. Major transportation routes passing through Cranford include Route 28 and the Garden State Parkway, as well as a NJ Transit Rail Line, including a commuter station. As of 2018, the population was estimated at 23,882. This is a 4.53 percent increase in population since the last plan's population estimate of 22,846 (est. 2013). The location of Cranford was once part of the Minnisink Trail long the Rahway River that was used by Indian tribes to hunt and trade. As the area was settled, mills were established along the river, providing grain to soldiers in the Revolutionary War. Over time, the farms were replaced with development and Cranford has retained its role as a transportation hub. Today Cranford is characterized as a residential community with a large commuter base.

The areas within Cranford that are located in the Special Flood Hazard Area (SFHA) are concentrated around Rahway River, which joins with Nomahegan Brook at the northern boundary of the jurisdiction and then slowly meanders in the general southeastern directions. Most of the flooding around Rahway River occurs in its northern reach, with the low-lying terrain and very wide 100-year and 500-year floodplains. The flooding is further exacerbated on Rahway River's western bank by College Branch. There are several Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties in the northern reach of the Rahway River. In the middle reach, Rahway is joined by two tributaries: Gallows Hill Road Branch and Garwood Brook, whose confluences also widen the Rahway floodplain and cause additional flooding. Garwood Brook carries the floodwater eastwardly from the Garwood Township, but also causes substantial flooding in Cranford jurisdiction, due to a conveyance constriction under the Conrail Railroad tracks. In its lower reach, Rahway River's floodplain is not as wide, but the additional flooding comes to individual properties as a result of drainage problems along smaller, unnamed streams and drainage channels. The Township is in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) at a Classification of 7.

There are no high-hazard or significant hazard dams within the Township or immediately upstream in adjacent towns, but the Township is concerned about dam failure due to previous history of overtopping of impoundments on the Rahway within Cranford. Specifically, the Township is concerned about the existing earthen levee/dike between Nomahegan Park and Springfield Ave. Due to land use and topography within the Township, any additional overflow from the Rahway results in dangerous and often destructive flooding.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Cranford	
Number of Policies In-Force:	761
Total Losses:	1323
Total Payments:	$40,547,728.02
Number of RL Properties:	258
Number of Mitigated RL Properties:	9

Cranford	
RL – Total Losses:	725
RL – Total Paid:	$25,204,781
Number of SRL Properties:	30
Number of Mitigated SRL Properties:	7
SRL – Total Losses:	132
SRL – Total Paid:	$5,638,980

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Cranford has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
May 1, 2014	Flood	N/A	N/A	Voluntary evacuations continued from April 30 in Cranford due to flooding on the Rahway River.
July 8 2014	Thunderstorm Wind	N/A	N/A	A large tree limb was down and blocking Kenilworth Boulevard.
July 23, 2014	Thunderstorm Wind	N/A	N/A	Power lines were reported down due to multiple branches falling on the lines.
July 14, 2016	Thunderstorm Wind	N/A	N/A	A tree fell onto a power line and into a house on Berkeley Place, with some structural damage to the house between Garwood and Kenilworth.
July 18, 2016	Thunderstorm Wind	N/A	N/A	Multiple trees were downed throughout Cranford, including one large tree. Some trees fell on cars, light poles and brought down power lines.
July 25, 2016	Thunderstorm Wind	N/A	N/A	A tree was split in half near the intersection of Arlington Road and North Avenue between Garwood and Roselle Park
October 30, 2016	Hail	N/A	N/A	Penny size hail of 3/4-inch in diameter was reported just north of Cranford.
May, 15, 2018	Thunderstorm Wind	N/A	N/A	Tree limbs fell and injured a 14 year old boy in Nomahegan Park. Large tree and wires down across the road at the intersection of Birchwood Avenue and Bloomingdale Avenue.
July 3, 2018	Lightning	N/A	N/A	House struck by lightning causing a fire.
July 3, 2018	Flash Flooding Severe Thunderstorm	N/A	N/A	Severe flash flooding in township. Multiple vehicles stuck at South Ave and High Street, resulting in rescues.
August 3, 2018	Thunderstorm Wind	N/A	N/A	Large tree branches reported down.
June 29, 2019	Thunderstorm Wind	N/A	N/A	Numerous trees and wires down throughout Cranford with time estimated by radar.
July 18, 2019	Flash Flood	N/A	N/A	The Cranford Police Department reported numerous water rescues of people who drove into flood waters around town.
July 22, 2020	Thunderstorm Wind	N/A	N/A	Numerous trees down on Orange Avenue. Time estimated by radar. Tree down across the driveway of a house on Maple Place between Central Avenue and Orange Avenue.

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
August 4, 2020	Hurricane Isaias	N/A	N/A	Numerous trees and limbs down throughout the Township. Extensive power outages lasting several days.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Dam Failure	High
Erosion – Hurricane/Nor'easter/Coastal Storm	High
Flood	High
Extreme Temperature – Cold	Med
Extreme Temperature – Heat	Med
Severe Storm – Winter Weather (includes Ice Storms)	Med
Drought	Low
Earthquake / Geological	Low
Hail	Low
Hazardous Materials Release – Fixed Site	Low
Hazardous Materials Release – Transportation	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Severe Storm – Lightning	Low
Storm Surge –Hurricane/Nor'easter/Tropical Storm	Low
High Wind -- Straight-Line Winds	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low

Hazard	Priority
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	6.27	6.27	0.00%
Barren Land	12.55	9.18	-26.87%
Forest	264.51	263.16	-0.51%
Urban	2,607.23	2,611.95	0.18%
Water	56.82	56.82	0.00%
Wetlands	169.81	169.81	0.00%

Source: NJDEP Land Use/Land Cover, 2019

Cranford currently has a patchwork of open space, forests, and wetlands along the Rahway River running through the center of the Township. The Township may want to look into expanding protected areas around the floodplain by building floodplains and stormwater lots and/or smaller green infrastructure solutions like stormwater detention ponds to safely detain and release stormwater runoff.

NEW AND FUTURE DEVELOPMENT

Cranford Township has the following list of properties recently developed or areas of interest for development. One future development is located in the SFHA. A map of new and future development is located on the next page.

Located inside the SFHA:

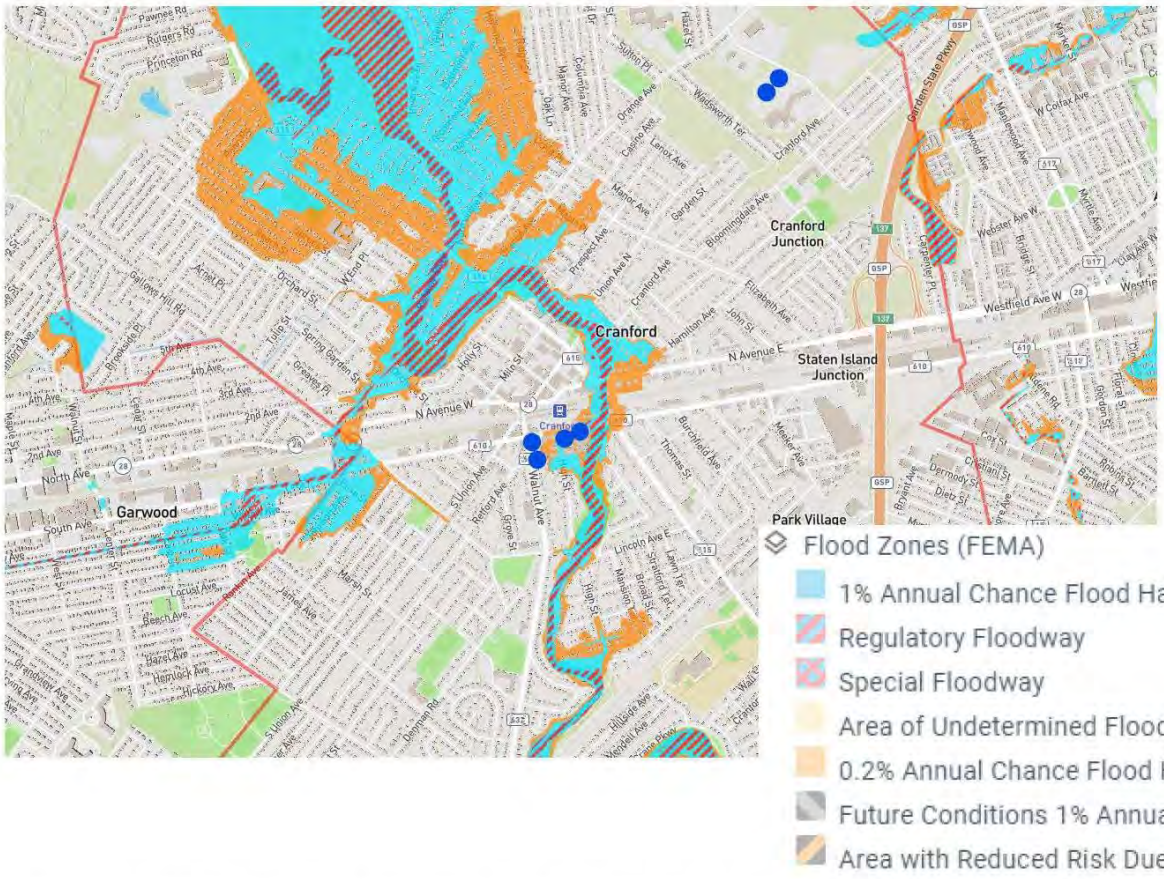
- High Street bet. South and Chestnut – Parcels owned by developer.

Located outside the SFHA:

- 109 Walnut Avenue – Albero Development (Multifamily/Commercial)
- 200-220 South Avenue East – Riverfront Development (Multifamily/Commercial)
- 215-235 Birchwood Avenue – Birchwood Square Development (Multifamily)
- Chestnut & Walnut Aves – Parcel owned by developer.

Cranford Township – Hazard Mitigation Plan Update
Recent and Potential Future Development Near Flood Zones

November 13, 2020



List of Properties Developed or Areas of Interest for Development

109 Walnut Avenue – Albero Development (Multifamily/Commercial)
200-220 South Avenue East – Riverfront Development (Multifamily/Commercial)
215-235 Birchwood Avenue – Birchwood Square Development (Mulifamily)

Chestnut & Walnut Aves – Parcel owned by developer.
High Street bet. South and Chestnut – Parcels owned by developer.

Cranford Township also tracked building permits between June 2020 – June 2021 that are located within the SFHA. Most building permits were for minor renovations, however there were some permits issued for a new single-family dwelling and additions to existing houses. Concentrations of new building permits within the Township are located on Riverside Dr. and Brookdale Rd.

2020 – 2021 Building Permits Located Inside the SFHA					
Location Address	Permit Number	Work Description	Work Type	Permit Issue Date	Close Date
107 Riverside Dr	20-0884	Central A/C Unit	Alteration	10/15/2020	11/6/2020
12-18 Riverside Dr	20-0543	Kitchen & Bath Renovation	Alteration	7/20/2020	11/6/2020
12-18 Riverside Dr	20-0463	Kitchen & Bath Renovation	Alteration	6/29/2020	8/19/2020
12-18 Riverside Dr	20-0430	Kitchen & Bath Renovation	Alteration	6/15/2020	
614 Riverside Dr	21-0489	Generator Transfer Switch	Alteration	5/12/2021	
618 Riverside Dr	21-0431	Basement Renovation Bath Renovation	Alteration	4/23/2021	
622 Riverside Dr	21-0008	Deck	Alteration	1/6/2021	
41 Brookdale Rd	21-0572	Deck	Alteration	5/28/2021	
42 Brookdale Pl	21-0592	Generator	Alteration	6/3/2021	
16 Brookdale Rd	20-0526	Solar Panels	Alteration	7/16/2020	8/19/2020
39 Brookdale Rd	20-0515	Deck	Alteration	7/14/2020	11/23/2020
32 Johnson Ave	21-0413	Addition/NJAC 5:23 6.32	Addition/Alteration	4/21/2021	
1 Johnson Ave	20-0640	Deck	Alteration	8/18/2020	11/23/2020
52 Johnson Ave	21-0365	Water Heater	Alteration	4/9/2021	
50 Balmiere Pkwy	20-0846	HVAC	Alteration	10/7/2020	10/21/2020
32 Balmiere Pkwy	21-0517	Generator	Alteration	5/19/2021	
32 Balmiere Pkwy	21-0493	Bath Renovation	Alteration	5/13/2021	
220 South Ave E	20-0653	Sign Installation	Alteration	8/19/2020	
220 South Ave E	20-0585	Sign Installation	Alteration	7/31/2020	
37 Richmond Ave	21-0227	Deck	Alteration	3/16/2021	
39 Richmond Ave	21-0426	Deck	Alteration	4/22/2021	
301 Edgar Ave	21-0206	HVAC	Alteration	3/10/2021	3/24/2021
302 Edgar Ave	21-0193	Heat Pump Mini Split System	Alteration	3/8/2021	5/26/2021
5 Franklin Ave	20-0597	Addition/NJAC 5:23 6.32	Addition/Alteration	8/3/2020	2/22/2021
5 Franklin Ave	20-0597+A	None	Alteration	8/3/2020	2/22/2021
86 Belmont Ave	21-0373	HVAC	Alteration	4/12/2021	4/26/2021
92 Belmont Ave	21-0286	Above Ground Pool	Alteration	3/29/2021	
1 Venetia Ave	20-1141	Interior Alteration(S)	Alteration	12/18/2020	4/21/2021
1 Venetia Ave	20-1141+A	HVAC	Alteration	12/18/2020	4/21/2021

2020 – 2021 Building Permits Located Inside the SFHA					
Location Address	Permit Number	Work Description	Work Type	Permit Issue Date	Close Date
60 Normandie Pl	20-0965	New Single-Family Dwelling/2015 IRC	New	10/27/2020	
40 Normandie Pl	21-0314	Water Service Connection	Alteration	3/31/2021	
18 Elise St	20-0849	New Single-Family Dwelling/2015 IRC	New	10/7/2020	
201 County Park Dr	21-0364	None	Alteration	4/9/2021	4/15/2021
204 Orange Ave	21-0494	HVAC	Alteration	5/13/2021	
215 Orchard St	21-0428	French Drain	Alteration	4/22/2021	4/29/2021
27 Hampton Rd	21-0300	Central A/C Unit	Alteration	3/30/2021	
30 Central Ave	20-0895	Deck Porch	Alteration	10/16/2020	3/16/2021
31 Blake Ave	21-0083+C	Addition & Interior Alterations/NJAC 5:23 6.32 & 6.6	Alteration	4/23/2021	
5 Bluff St	20-0671	Generator	Alteration	8/25/2020	
56 Spruce St	20-0573	Mini Split System	Alteration	7/27/2020	10/1/2020
7 Clinton Pl	20-0476	Addition & Interior Alterations/NJAC 5:23 6.32 & 6.6	Addition/Alteration	7/1/2020	1/29/2021
719 Willow St	20-0803	Addition & Interior Alterations/NJAC 5:23 6.32 & 6.6	Addition/Alteration	9/29/2020	
826 Springfield Ave	21-0563	Addition & Interior Alterations/NJAC 5:23 6.32 & 6.6	Addition/Alteration	5/27/2021	
111 Glenwood Rd.	06-1623+A	None	Alteration	3/12/2021	3/17/2021
104 Park Dr	20-0419	Above Ground Pool	Alteration	6/10/2020	

Note: The permit data provided includes all work, which is beyond what is required as part of the 5-year recertification of the CRS program.

CRITICAL FACILITIES

The Township of Cranford has 44 critical facilities, with four facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 03-04: Upgrade and Improve the Stormwater Management System for the Municipal Building which houses the Police Department.
- 03-05: Purchase and Install Backup Generator for Fire Department.
- 03-08: Upgrading Gate System at Hansel's Dam.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Cranford has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- The Township's Master Plan (2009) includes a Conservation Element including sections on Stormwater Management and Floodplains / Flood Hazard Areas. The Floodplain Overlay District (Zoning) provides clear, defined limits on development in the floodplain. The Reexamination of the Master Plan (2019) includes goals such as maintaining / improving the Townships Class Rating in the CRS.
- Cranford Township's Site Plan Review and Subdivision requirements are reviewed against stringent stormwater requirements to minimize flow off-site and are subject to recommendations from the Board to implement resiliency related improvements.
- Redevelopment Plan/Study
- Levee (Dike) Stability and Seepage Analysis
- Real Estate Disclosure Requirement

The complete Mitigation Strategy and Capability Assessment for Cranford Township is part of this appendix.

Cranford, Township of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
03-01	Construct New Local Storm Sewer, Pump Station, and Bypass Storm Systems to Mitigate Flooding in the Township.	Construct local storm sewer, pump station and bypass storm system for Springfield Avenue, Park Avenue, Balmiere Parkway, and Hamptons Street, Hearning Street, Glenwood Road, Edgewood Road, Brookside Street and Willow Street. Improve stormwater management systems at High Street and Chestnut Street.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	Cranford Municipality Engineer	FEMA HMA	$8,000,000.00	4 years	Ongoing
03-02	Upgrade and Improve Stormwater Management System For Various Local Streets to Reduce Flooding in Homes and on Roadways.	Storm-water management system upgrade and improvement for various local streets (Casino Brook, Orchard Brook, Parts of South Union Avenue, Elm Avenue, Burnside Avenue, and James Street).	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood	High	Cranford Municipality Engineer	FEMA HMA	$1,000,000.00	1 - 2 years	Ongoing
03-03	Flood-proof First Aid Squad.	Flood-proof First Aid Squad.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Cranford Municipality Engineer or Fire Chief				Withdrawn
03-04	Upgrade and Improve the Stormwater Management System for the Municipal Building Which Houses the Police Department.	Storm-water management system upgrade and improvement for the Municipal Building which houses the Police Department.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Cranford Municipality Engineer or Administrator	Municipal Insurance money and FEMA funding after Irene.	$200,000.00		Completed
03-05	Purchase and Install Backup Generator for Fire Department.	Purchase and Install Backup Generator for Fire Department.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning		Cranford Municipality OEM	HMGP grant 100k, also included money for portable generators for traffic lights and light towers	$85,000.00		Completed
03-06	Armor and Improve Riverside Dike and Belmere Dike Along the Rahway River to Reduce Flooding.	Armor Riverside Dike and Belmere Dike along the Rahway River.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Dam Failure	High	Cranford Municipality Engineer	FEMA HMA	$1,500,000.00	2 years	Carried Forward
03-07	Flood-proof the Property Adjacent to Orchard Brook.	Coordinate with property owner regarding flood proofing of property adjacent to Orchard Brook.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Cranford OEM		$180,000.00		Withdrawn
03-08	Upgrade Gate System at Hansel's Dam.	Upgrade gate system at Hansel's Dam.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood		Cranford OEM		$1,200,000.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
03-09	Replace Manual Gauge with Automatic Gauge to Automate the Municipal Flood Warming System Along Rahway River.	Replace the manual gauge at the footbridge between Balmiere and Riverside Dr. along Rahway River with an automatic gauge. While the municipal flood warning system for evacuations is currently a manual gauge, an automatic gage is desired.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Medium	Cranford OEM	Municipal Budget	$120,000.00	1 year	Carried Forward
03-10	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Desired outreach programs include: Social media and local outreach by OEM, an outreach program for RL/SRL properties specific to home elevations. Targeted outreach to communities surrounding Nomahegan Park, County Park and Lenape Park is desired.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	1 year	Ongoing
03-11	Improve the Stormwater Management System at Localized Flooding Areas to Reduce Impacts from Flooding.	Install an improved stormwater management system at localized flooding areas (High and Chestnut), Willow and Brookside, S. Union and James) to reduce impact from flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Cranford Township Engineering Department		$15,000,000.00		Withdrawn
03-12	Modify the Sluice Gate Control at the Stormwater Pump Station on Riverside Drive.	Sluice Gate Control Modification at Stormwater Pump Station.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Low	Cranford DPW	Municipal Budget	$50,000.00	1 year	Carried Forward
03-13	Implement United States Army Corps of Engineers (USACE) Proposed Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.	Implement USACE Proposed improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Medium	USACE	Federal	$0.00	5 + years	Carried Forward
03-14	Acquire and Demolish or Relocate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire structures that are listed as RL/SRL properties. Cranford Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	USACE	FEMA HMA	$0.00	5 + years	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
03-15	Elevate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Elevate structures that are listed as RL/SRL properties. Cranford Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	USACE	FEMA HMA	$85,000.00	5 + years	Ongoing
03-16	Replace the Staff Gauge at Balmiere Parkway/Riverside Drive and Footbridge with an Automated Gauge.	Replace the staff gauge at Balmiere Parkway/Riverside Drive and Footbridge with an automated gauge. While the municipal flood warning system for evacuations is currently a staff gauge, an automatic gauge is desired.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Medium	DPW		$50,000.00	1 year	Ongoing
03-17	Design and Implement an Off-Site or Cloud-Based IT Backup and Disaster Recovery Plan.	Designing a backup to the Township's server and IT systems, including critical data, and implementing a backup program to ensure data is security backed up off site in the event of a cyber or physical emergency affecting the physical IT infrastructure at the Municipal Building.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Township Administrator and IT Provider	Capital and/or Homeland Security Grants	$0.00	1 year	New
03-18	Stabilize Stream Banks and Widen Culvert of Orchard Brook on West Holly Street.	Stabilize stream banks and widen culvert of Orchard Brook on West Holly Street to alleviate flooding near an apartment complex and adjacent homes.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Erosion–Hurricane/Nor'easter/Coastal Storm	High	Engineering	Federal/TBD	$4,000,000.00	5 + years	New
03-19	Expand Protected Areas Around the Floodplain by Creating Floodplain and Stormwater Lots and/or Smaller Green Infrastructure Solutions Along the Rahway River and in Nomahegan Park.	Expand protected areas around the floodplain by creating floodplain and stormwater lots and/or smaller green infrastructure solutions along the Rahway River, and in Nomahegan Park. Green infrastructure solutions, like stormwater detention ponds, safely detain and release stormwater runoff.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	Township	FEMA HMA	$0.00	1 - 5 years	New
03-20	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 03-01 Cranford, Township of

Describing the Action

Action Name:	Construct New Local Storm Sewer, Pump Station, and Bypass Storm Systems to Mitigate Flooding in the Township.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Construct local storm sewer, pump station and bypass storm system for Springfield Avenue, Park Avenue, Balmiere Parkway, and Hamptons Street, Hearning Street, Glenwood Road, Edgewood Road, Brookside Street and Willow Street. Improve stormwater management systems at High Street and Chestnut Street.
Hazard(s) Addressed:	Flood
Goals:	3,4

Evaluating the Action

Risk Reduction:	During high flood events, stormwater needs to pumped back into river to prevent flooding from occurring.
Life Safety:	The action will protect lives and prevent injuries by reducing flooding.
Property Protection:	The action will reduce damage to structures and infrastructure by reducing flooding.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts of the action.
Social:	The proposed action will benefit all segments of the population by reducing flood risk.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$8,000,000.00
Priority:	High
Local Planning Mechanism:	Cranford Five Phase Stormwater Management Project
Responsible Party:	Cranford Municipality Engineer
Likely Funding Source(s):	FEMA HMA
Target State Date:	See Notes.
Timeline:	4 years
Action Status:	Ongoing
Notes:	$4 million for Phase 2B was funded by loans through FEMA $8 million for Phase 5 (not started) Ongoing action from 2010 and 2016; Pump station and express sewers were installed in Phase 1 and Phase 2A with funding from loans through FEMA. As of the 2021 HMP update, Phase 2B has been completed, with construction on Riverside Drive and Claremont Place impacting Venetia Avenue, Edgar Avenue, and Kensington Avenue.

Union County Mitigation Action Worksheets

Community Action Number: 03-02 Cranford, Township of

Describing the Action

Action Name:	Upgrade and Improve Stormwater Management System For Various Local Streets to Reduce Flooding in Homes and on Roadways.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Storm-water management system upgrade and improvement for various local streets (Casino Brook, Orchard Brook, Parts of South Union Avenue, Elm Avenue, Burnside Avenue, and James Street).
Hazard(s) Addressed:	Flood
Goals:	3,4

Evaluating the Action

Risk Reduction:	Homes and roadways on Casino Brook experience flooding during 1% annual chance storm events.
Life Safety:	The action will protect lives and prevent injuries by reducing flooding.
Property Protection:	The action will reduce damage to structures and property.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible. This is a long-term solution.
Political:	There is public support for this action and political will to support it.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts of the action and the project will comply with environmental regulations.
Social:	The proposed action will benefit all segments of the population by reducing flood risk.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Cranford Municipality Engineer
Likely Funding Source(s):	FEMA HMA
Target State Date:	See Notes.
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	Ongoing from 2010 and 2016. Orchard Brook drainage study underway. Construction cost for improvements TBD. As of the 2021 HMP update, upgrades and improvements along South Union Avenue have been completed. Upgrades and improvements for Burnside Ave, James St and Elm Ave have yet to be designed.

Union County Mitigation Action Worksheets

Community Action Number: 03-03 Cranford, Township of

Describing the Action

Action Name:	Flood-proof First Aid Squad.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Flood-proof First Aid Squad.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Cranford Municipality Engineer or Fire Chief
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This project was withdrawn. In consultation with Township Professionals (engineering, land use, construction) this project has substantial regulatory issues which would preclude administrative approval. Further, building is substantially damaged due to flooding which would hinder any further improvements.

Union County Mitigation Action Worksheets

Community Action Number: 03-04 Cranford, Township of

Describing the Action

Action Name:	Upgrade and Improve the Stormwater Management System for the Municipal Building Which Houses the Police Department.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Storm-water management system upgrade and improvement for the Municipal Building which houses the Police Department.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$200,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Cranford Municipality Engineer or Administrator
Likely Funding Source(s):	Municipal Insurance money and FEMA funding after Irene.
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This project was completed in 2016 with funding from municipal insurance money and FEMA PA funding after Hurricane Irene (4021). The total federal award for the Township for that declaration was $1,928,334.07.

Union County Mitigation Action Worksheets

Community Action Number: 03-05 Cranford, Township of

Describing the Action

Action Name:	Purchase and Install Backup Generator for Fire Department.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Purchase and Install Backup Generator for Fire Department.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$85,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Cranford Municipality OEM
Likely Funding Source(s):	HMGP grant 100k, also included money for portable generators for traffic lights and light towers.
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This project was completed and has been closed out in 2018. This project was funded by a $100,000 HMGP grant after Hurricane Sandy (4086), which also included funding for portable generators for traffic lights and light towers. Approximately $30,000 was used to fund the Fire Department generator.

Union County Mitigation Action Worksheets

Community Action Number: 03-06 Cranford, Township of

Describing the Action

Action Name:	Armor and Improve Riverside Dike and Belmere Dike Along the Rahway River to Reduce Flooding.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Armor Riverside Dike and Belmere Dike along the Rahway River.
Hazard(s) Addressed:	Flood, Dam Failure
Goals:	4,5

Evaluating the Action

Risk Reduction:	Riverside Dike and Belmere Dike along the Rahway River are sources of flooding.
Life Safety:	The action will protect lives and prevent injuries by improving the infrastructure to reduce flooding.
Property Protection:	The action will be an improvement to the dams, and reduce damage to structures and infrastructure.
Cost Effectiveness:	The costs to implement the project are commensurate with the proposed benefits.
Technical:	This action is technically feasible and it is a long-term action.
Political:	There are public support and political will for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts of the action and the project will comply with all environmental regulations, including state permitting.
Social:	All segments of the population will benefit from the action.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$1,500,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Cranford Municipality Engineer
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	2 years
Action Status:	Carried Forward
Notes:	This action has been carried forward from 2010 and 2016 as it has not been funded yet. This project is part of Phase 5 of the Cranford Five Phase Stormwater Management Project (see Action 03-01).

Union County Mitigation Action Worksheets

Community Action Number: 03-07 Cranford, Township of

Describing the Action

Action Name:	Flood-proof the Property Adjacent to Orchard Brook.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Coordinate with property owner regarding flood proofing of property adjacent to Orchard Brook.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$180,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Cranford OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Not completed -- Not a township project. This action has been withdrawn and replaced with Action 03-18.

Union County Mitigation Action Worksheets

Community Action Number: 03-08 Cranford, Township of

Describing the Action

Action Name:	Upgrade Gate System at Hansel's Dam.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Upgrade gate system at Hansel's Dam.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,200,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Cranford OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action was completed between 2019-2020. Upgrades were also completed at Droesher's Dam. These projects were locally funded.

Union County Mitigation Action Worksheets

Community Action Number: 03-09 Cranford, Township of

Describing the Action

Action Name:	Replace Manual Gauge with Automatic Gauge to Automate the Municipal Flood Warming System Along Rahway River.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Replace the manual gauge at the footbridge between Balmiere and Riverside Dr. along Rahway River with an automatic gauge. While the municipal flood warning system for evacuations is currently a manual gauge, an automatic gage is desired.
Hazard(s) Addressed:	Flood
Goals:	3, 4

Evaluating the Action

Risk Reduction:	An automatic gauge will help notify town if pumps need to be deployed to Balmiere Parkway.
Life Safety:	The action will protect lives and prevent injuries by improving the municipality's flood warning system for evacuations.
Property Protection:	The action will reduce damage to structures by helping to notify town if pumps need to be deployed to Balmiere Parkway.
Cost Effectiveness:	The costs to implement the project are commensurate with the proposed benefits.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support for this action as well as political will.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts from this action.
Social:	The proposed action will not adversely impact one segment of the population.
Administrative:	The municipality has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$120,000.00
Priority:	Medium
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Cranford OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	Carried Forward
Notes:	This action was carried over from 2010 and 2016 as it is not completed and awaiting funding. The Township will pursue this action to add points to CRS.

Union County Mitigation Action Worksheets

Community Action Number: 03-10 Cranford, Township of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Desired outreach programs include: Social media and local outreach by OEM, an outreach program for RL/SRL properties specific to home elevations. Targeted outreach to communities surrounding Nomahegan Park, County Park and Lenape Park is desired.
Hazard(s) Addressed:	All Hazards
Goals:	1,2,3

Evaluating the Action

Risk Reduction:	Education and outreach programs reduce risk by increasing awareness of local hazards and how to mitigate and prepare for them.
Life Safety:	This action will improve residents' quality of life and protect lives by increasing hazard event outreach and education.
Property Protection:	This action will reduce damage to structures.
Cost Effectiveness:	The costs to implement the project are commensurate with the proposed benefits.
Technical:	This action is technically feasible and is a continuous solution.
Political:	There is public support and political will for this action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts from this action.
Social:	The proposed action will not adversely impact one segment of the population.
Administrative:	The Township has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing action from 2010 and 2016. Not completed due to lack of funding. Estimated cost: staff time

Union County Mitigation Action Worksheets

Community Action Number: 03-11 Cranford, Township of

Describing the Action

Action Name:	Improve the Stormwater Management System at Localized Flooding Areas to Reduce Impacts from Flooding.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Install an improved stormwater management system at localized flooding areas (High and Chestnut), Willow and Brookside, S. Union and James) to reduce impact from flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$15,000,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Cranford Township Engineering Department
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Improvements to the South Union system were completed in 2020. Improvements to the James Street system are anticipated to be done in 2021. Improvements to the Brookside systems are in the design phase and ongoing. Improvements to the stormwater systems at High Street and Chestnut Street have not been started, pending funding; they have been combined with action 03-01.

Union County Mitigation Action Worksheets

Community Action Number: 03-12 Cranford, Township of

Describing the Action

Action Name:	Modify the Sluice Gate Control at the Stormwater Pump Station on Riverside Drive.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Sluice Gate Control Modification at Stormwater Pump Station.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The performance of the pump station needs to be optimized to prevent debris from entering the pump station during flood events.
Life Safety:	This action will protect lives and reduce injuries by optimizing the performance of the pump station, thereby reducing flood risk.
Property Protection:	The action will reduce damage to properties by improving gate control.
Cost Effectiveness:	The costs to implement the project are commensurate with the proposed benefits.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support for this action. The action is also politically feasible.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts from this action.
Social:	The proposed action will not adversely impact one segment of the population.
Administrative:	The municipality has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	Low
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Cranford DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	Carried Forward
Notes:	This action has been carried over from 2016 due to lack of funds.

Union County Mitigation Action Worksheets

Community Action Number: 03-13 Cranford, Township of

Describing the Action

Action Name:	Implement United States Army Corps of Engineers (USACE) Proposed Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Implement USACE Proposed improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford.
Hazard(s) Addressed:	Flood
Goals:	3,4

Evaluating the Action

Risk Reduction:	Channel improvements along the Rahway River will reduce flooding.
Life Safety:	This action will protect lives and reduce injuries by controlling flooding along the Rahway River.
Property Protection:	The action will reduce damage to property and protect infrastructure by controlling flooding along the Rahway River.
Cost Effectiveness:	Buyouts were determined to be more cost effective than flood control measures according to the benefit-cost analysi
Technical:	This action is technically feasible and is a long-term action.
Political:	There is public support for this action. Political will is needed not only in Cranford Township but also in neighboring upstream and downstream communities.
Legal:	The USACE has the authority to implement the action.
Environmental:	Adverse environmental impacts from this action will be addressed and mitigated by the USACE.
Social:	The proposed action will not adversely impact one segment of the population.
Administrative:	Coordination is necessary with upstream communities in another county (West Orange, Orange, South Orange, Maplewood, Millburn in Essex County) as well as upstream (Springfield) and downstream communities (Clark, Rahway) in Union County.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvements
Responsible Party:	USACE
Likely Funding Source(s):	Federal
Target State Date:	TBD-requires extensive coordination with neighboring jurisdictions.
Timeline:	5 + years
Action Status:	Carried Forward
Notes:	2021 Update: Project requires coordination with various upstream local governments and federal government. Project has not been funded.

Union County Mitigation Action Worksheets

Community Action Number: 03-14 Cranford, Township of

Describing the Action

Action Name:	Acquire and Demolish or Relocate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire structures that are listed as RL/SRL properties. Cranford Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas in the Northwest and Northeast quadrants of the Township and along Orchard Brook are at risk of future destruction and property loss due to repetitive flooding. Currently, RL and SRL properties are concentrated in the northern portion of the Township along the Rahway River, just outside of Nomahegan Park.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	Home values have gone up in the Township since Hurricane Irene and have increased the costs of acquisition.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is overall public support and political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, demolition and conversion of the lot to open space would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group and may be perceived by the public to be a good thing because of repetitive nature of flooding in the project area.
Administrative:	The Township has sufficient capacity and experience to administer this action with the support of the State.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Capital Improvements
Responsible Party:	USACE
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	5 + years
Action Status:	Ongoing
Notes:	Cost TBD. Ongoing action from 2016. One property purchased by Union County in 2020 has the potential for a pump station in Phase 5 (see Action 03-01). Buyouts remain a mitigation priority but funding for further buyouts has not been obtained. There has only been one buyout so far by Union County.

Union County Mitigation Action Worksheets

Community Action Number: 03-15 Cranford, Township of

Describing the Action

Action Name:	Elevate Buildings and Infrastructure in Flood-prone Areas in the Northwest and Northeast Quadrants of the Township as well as Along Orchard Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Elevate structures that are listed as RL/SRL properties. Cranford Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas in the Northwest and Northeast quadrants of the Township and along Orchard Brook are at risk of future destruction and property loss due to repetitive flooding. Currently, RL and SRL properties are concentrated in the northern portion of the Township along the Rahway River, just outside of Nomahegan Park.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	Structure elevations are cost effective.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is overall public support and political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties
Environmental:	There are no known adverse environmental impacts. In fact, decreasing the impervious surface cover of the lot would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group and is perceived by the public to be a good thing because of repetitive nature of flooding in the project area.
Administrative:	The Township has sufficient capacity and experience to administer this action with the support of the State.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$85,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvements
Responsible Party:	USACE
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	5 + years
Action Status:	Ongoing
Notes:	Ongoing action from 2016. Cranford received further funding for elevations in 2019 and a number of homes were elevated using this funding.

Union County Mitigation Action Worksheets

Community Action Number: 03-16 Cranford, Township of

Describing the Action

Action Name:	Replace the Staff Gauge at Balmiere Parkway/Riverside Drive and Footbridge with an Automated Gauge.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Replace the staff gauge at Balmiere Parkway/Riverside Drive and Footbridge with an automated gauge. While the municipal flood warning system for evacuations is currently a staff gauge, an automatic gauge is desired.
Hazard(s) Addressed:	Flood
Goals:	3, 4

Evaluating the Action

Risk Reduction:	An automatic gauge would improve the flood warning system.
Life Safety:	The action will protect lives and prevent injuries by improving the municipality's flood warning system for evacuations.
Property Protection:	The action will reduce damage to structures by helping to notify town of flooding.
Cost Effectiveness:	The costs to implement the project are commensurate with the proposed benefits.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support for this action as well as political will.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no known adverse environmental impacts from this action.
Social:	The proposed action will not adversely impact one segment of the population.
Administrative:	The municipality has the administrative capabilities to implement the action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing Action – Engineering will look int an automated gauge to replace staff gauge at Balmiere Parkway/Riverside Drive and Footbridge.

Union County Mitigation Action Worksheets

Community Action Number: 03-17 Cranford, Township of

Describing the Action

Action Name:	Design and Implement an Off-Site or Cloud-Based IT Backup and Disaster Recovery Plan.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Designing a backup to the Township's server and IT systems, including critical data, and implementing a backup program to ensure data is security backed up off site in the event of a cyber or physical emergency affecting the physical IT infrastructure at the Municipal Building.
Hazard(s) Addressed:	All Hazards
Goals:	2, 3

Evaluating the Action

Risk Reduction:	This action will allow critical Township operations to continue in an efficient manner by providing a viable backup for critical data at IT infrastructure in a cloud-based or off-site fashion.
Life Safety:	This will impact life safety as the Township emergency services departments rely on IT infrastructure in their daily operations.
Property Protection:	This action will reduce risk from cyber incidents or data loss due to flooding and physical incidents.
Cost Effectiveness:	An IT backup could potentially avoid costly data recovery due to cyber or physical data loss.
Technical:	This mitigation is a viable long-term solution to the risk of data loss due to cyber or physical loss.
Political:	There is clear political will to support this mitigation measure.
Legal:	The Township does have the authority to implement this action.
Environmental:	There are no impacts to environmental impacts or regulations by implementing this measure.
Social:	The action will have no social disruptions or changes to neighborhoods.
Administrative:	The Township would rely on its contract IT staff to implement the action.
Local Champion:	Township IT support is generally overseen by the Administration Office
Other Community Objectives:	This action also supports Continuity of Government (COG) as well as supports the Township Emergency Operations Plan.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township Administrator and IT Provider
Likely Funding Source(s):	Capital and/or Homeland Security Grants
Target State Date:	As funding becomes available
Timeline:	1 year
Action Status:	New
Notes:	Cost Estimate: TBD – Further analysis and assessment needed to form a price estimate.

Union County Mitigation Action Worksheets

Community Action Number: 03-18 Cranford, Township of

Describing the Action

Action Name:	Stabilize Stream Banks and Widen Culvert of Orchard Brook on West Holly Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Stabilize stream banks and widen culvert of Orchard Brook on West Holly Street to alleviate flooding near an apartment complex and adjacent homes.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Orchard Brook is a source of flooding for an apartment complex and adjacent homes on West Holly Street.
Life Safety:	Flooding at this location presents a substantial life safety risk particularly to motorists.
Property Protection:	This will provide risk reduction to an apartment building and adjacent properties.
Cost Effectiveness:	The cost effectiveness of this action is to be determined and formally analyzed.
Technical:	This action is technically feasible and is a long-term action.
Political:	There is political will to support this action as well as local resident support.
Legal:	The Township has the authority to implement this action with requisite approvals.
Environmental:	Any adverse impacts on the environment are to be determined. Permits from NJDEP may be necessary.
Social:	This action will not adversely affect the population.
Administrative:	The action will rely on contract capabilities and support.
Local Champion:	Township Committee and Engineering
Other Community Objectives:	Supports risk reduction and capital improvement programs.
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$4,000,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Engineering
Likely Funding Source(s):	Federal/TBD
Target State Date:	TBD
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 03-19 Cranford, Township of

Describing the Action

Action Name:	Expand Protected Areas Around the Floodplain by Creating Floodplain and Stormwater Lots and/or Smaller Green Infrastructure Solutions Along the Rahway River and in Nomahegan Park.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Expand protected areas around the floodplain by creating floodplain and stormwater lots and/or smaller green infrastructure solutions along the Rahway River, and in Nomahegan Park. Green infrastructure solutions, like stormwater detention ponds, safely detain and release stormwater runoff.
Hazard(s) Addressed:	Flood
Goals:	3, 4

Evaluating the Action

Risk Reduction:	Cranford currently has a patchwork of open space, forests, and wetlands along the Rahway River running through the center of the Township. RL and SRL properties are concentrated in the northern portion of the Township along the Rahway River, just outside of Nomahegan Park.
Life Safety:	This action will protect lives and prevent injuries by detaining and releasing more stormwater along the Rahway River and around Nomahegan Park.
Property Protection:	This action will future damage to structures by detaining and releasing more stormwater along the Rahway River and around Nomahegan Park.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. Green infrastructure solutions are generally environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	Please note that there are 72 lots of open space already in the Township: 3 in Nomahegan Park and 16 on the Rahway River Parkway.

Union County Mitigation Action Worksheets

Community Action Number: 03-20 Cranford, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: **Township of Cranford**

Name: **Matthew Lubin** Title: **Emergency Management Coordinator**

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	**YES**	The Township's Master Plan (2009) includes a Conservation Element including sections on Stormwater Management and Floodplains / Flood Hazard Areas. The Floodplain Overlay District (Zoning) provides clear, defined limits on development in the floodplain. The Reexamination of the Master Plan (2019) includes goals such as maintaining / improving the Townships Class Rating in the CRS
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	**YES**	This plan identifies key risks and threats which can form the basis for mitigation and resilience strategies.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	**NO**	Capital improvements are addressed annually with Maser Consulting, the Township's Consulting Engineer, however there is no formal capital improvement plan.
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an	**YES**	Portions of this are included in the Township Emergency Operations Plan and Portions are included in separate plans.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
element within the EOP		
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	**YES**	
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	**YES**	
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	**YES**	
Site Plan Review Requirements: Review of new development applications	**YES**	Yes. Both projects subject to administrative review and approval and Board review and approval are subject to stringent stormwater requirements to minimize flow off-site and are subject to recommendations from the Board to implement resiliency related improvements.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	**YES**	
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	**YES**	
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	**YES**	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	**YES**	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	**YES**	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	**NO**	Not Applicable to Cranford

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	**NO**	Not Applicable
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	**NO**	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	**NO**	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	**NO**	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	**NO**	Although the Township doesn't have a Floodplain Management Plan, there was a Levee (Dike) Stability and Seepage Analysis completed in 2011
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	**NO**	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	**NO Unless specified in a redevelopment plan**	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	**NO**	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	**NO**	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	**NO**	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	**NO**	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	**YES**	

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	**YES**	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	**YES**	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	**YES**	
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	**NO**	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	**NO**	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	**NO**	

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	**NO**	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	**YES**	
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	**NO**	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	**YES**	
Economic Development Commission: Provides recommendations on economic development policies and issues	**YES**	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	**YES**	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	**YES**	Via Contract Firm
Engineer: a New Jersey licensed Professional Engineer	**YES**	Via Contract Firm

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Code Enforcement: Evaluates private properties and public grounds against local codes	**YES**	
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	**YES**	
Floodplain Manager: a Certified Floodplain Manager	**YES**	Via Contract Firm
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	**YES**	Via Contract Firm
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	**NO**	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	**NO**	**NO**
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	**NO**	**NO**
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	**YES**	**NO**

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Impact fees for new development: Fees paid by a developer to the municipality	**NO**	**NO**
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	**NO**	**NO**
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	**NO**	**NO**

What capability would you like your community to gain in the next five to ten years?

* Further planning for mitigation related to the flood threat.

* An automated river gauge to allow for remote monitoring of the river level within the Township

* A flood warning system to alert residents of the flood zone.

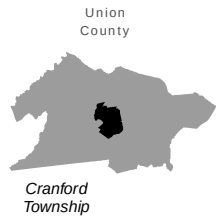
* Further capabilities consistent with an improvement with the CRS rating system.

CRANFORD TOWNSHIP
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space



Union Township
Springfield Township
Mountainside Borough
Kenilworth Borough
Union Township
Westfield Town
Roselle Park Borough
Cranford Station
Garwood Station
Garwood Borough
Roselle Borough
Linden City
Winfield Township
Clark Township
Scotch Plains Township

509 615 610 59 632 607

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Michael Baker INTERNATIONAL

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 1,200 2,400 Feet

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 4 CITY OF ELIZABETH

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Contact:
Daniel Loomis, City Engineer
John F. Papetti, Jr., Public Works Director

Note: This section includes information from the Final Draft 2020 City of Elizabeth Pre-Disaster Hazard Mitigation Plan and is supplemented with information from the City of Elizabeth's participation with Union County Hazard Mitigation Plan. The Final Draft 2020 City of Elizabeth Pre-Disaster Hazard Mitigation Plan is located in Appendices Vol. II – H. Elizabeth Final Draft 2020 HMP.

COMMUNITY PROFILE

The City of Elizabeth has a total area of 12.32 square miles and is located in eastern Union County, New Jersey. Major transportation routes passing through Elizabeth include the New Jersey Turnpike, US Route 1, and NJ State Routes 81, 27, 28, and 439. NJ Transit's Northeast Corridor and New Jersey Coast Rail Lines run through the City and serve the community through two commuter stations (North Elizabeth and Elizabeth). Newark Liberty International Airport and the Port Elizabeth/Newark Marine Terminals, two major international transportation facilities, are also in Elizabeth. As of 2019, the population was estimated at 129,216. This is a 3.4 percent increase in population since 2010 (U.S. Census Bureau 2020). Elizabeth is largely urbanized and predominately residential. The majority of the open space in the City surrounds the Elizabeth River and Arthur Kill. Wetlands are concentrated along the tributaries to Newark Bay and the Elizabeth Channel (NJDEP 2019, NJDEP 2020). While historically home to a mix of residential and commercial/industrial uses, land use trends show an increase in residential parcels and a decrease in commercial and industrial parcels.

The Special Flood Hazard Area (SFHA) in Elizabeth is extensive, covering the majority of the northeastern quadrant of the City, emanating from the Elizabeth Channel along the City's northern border with Essex County as well as from Newark Bay and Arthur Kill along the City's eastern border with Hudson County and Staten Island (New York). The SFHA also emanates from the Elizabeth River, which enters the City at its northwestern border with Hillside and empties into the Arthur Kill near the City's southern corner. The City experiences both coastal flooding from its tidal waterways in addition to riverine and urban flooding. There are several Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties scattered throughout the western half of the City.

There are no high-hazard or significant hazard dams within the City but there is a low-hazard dam, Ursino Dam, and a four-segment levee system within the Elizabeth River constructed by the U.S. Army Corps of Engineers. The levee system is supported by approximately 10 man-made detention ponds.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Elizabeth	
Number of Policies In-Force:	113
Total Losses:	297
Total Payments:	$4,764,914.69
Number of RL Properties:	21

Elizabeth	
Number of Mitigated RL Properties:	1
RL – Total Losses:	47
RL – Total Paid:	$1,484,558
Number of SRL Properties:	2
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	13
SRL – Total Paid:	$344,411

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Elizabeth has experienced the following hazards. Please note that this is not a comprehensive list of all hazards faced by the City, but only includes specific natural hazard events in the City recorded by the NOAA as well as terrorist activity reported by the New Jersey Office of Homeland Security and Preparedness (NJOHSP):

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
6/2/2013	Flash Flood	N/A	N/A	The local fire department rescued a vehicle stuck in flood waters at Route 1 and Maple Ave.
8/28/2013	Flash Flood	N/A	N/A	Grove St. was closed due to flooding. The Elizabeth River at Ursino Lake exceeded its flood stage of 20.0 ft at 1:00pm, crested at 20.92 ft. at 2:30pm, and fell back within its banks at 3:30 pm.
1/26/2015	Nor'easter	N/A	N/A	Trained spotters and the public reported snowfall of 6 inches. North winds gusted up to 33 mph at nearby Newark Liberty Airport, with blowing and drifting of snow.
7/18/2016	Thunderstorm Wind	N/A	N/A	A passing cold front triggered a couple of severe thunderstorms over Union County. A gust of 65 mph was measured at the Newark-Liberty International Airport.
9/18/2016	Terrorism	N/A	N/A	On September 18, 2016, multiples bombs were discovered at the train station in Elizabeth. One of these bombs detonated early the next day. This event coincided with bombings in Seaside Park, NJ and Manhattan, New York City a day earlier. The bombings left 31 people wounded, but no fatalities or life-threatening injuries were reported.
3/14/2017	Winter Storm	N/A	N/A	A trained spotter reported 9.2 inches of snow and sleet in Elizabeth.
6/19/2017	Thunderstorm Wind	N/A	N/A	A 63-mph wind gust was measured at Newark-Liberty International Airport.
1/4/2018	Winter Storm	N/A	N/A	The FAA Contract Observer at Newark-Liberty International Airport reported 8.4 inches of snow. A trained spotter in Elizabeth reported 8.5 inches of snow. Winds gusted to 44 mph at 4:36 PM at Newark-Liberty International Airport.

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
7/31/2019	Flash Flood	N/A	N/A	Numerous roads closed around Elizabeth due to flooding. Newark Airport reported reporting 1.60 inches of rainfall.
7/10/2020	Tropical Storm Fey	N/A	N/A	An observed 1.71 inches of rain fell between 2pm and 4pm for a total of 2.78 at Newark-Liberty International Airport.
8/4/2020	Tropical Storm Isaias	4574	No	Sustained winds of 47 mph and a gust of 68 mph were measured at Newark Liberty International Airport.
2020-present (Ongoing)	COVID-19 Pandemic	4488	Yes	As of October 22, 2020, Union County had 19,328 cases and 1,367 deaths related to the pandemic.

Source: NOAA NCEI 2020; NOAA NCEI 2020-2021; NOAA NWS New York, NY 2020; NJOHSP 2020; FEMA 2021

In addition to these hazards, the City of Elizabeth has experienced 71 incidents related to Hazardous Materials Release from January 2013 to October 29, 2020 according to the USDOT PHMSA database. These incidents have resulted in no fatalities and $47,291 in damages (USDOT 2020). There is are 239 NJDEP Known Contaminated Sites and one Superfund Site in Elizabeth (NJDEP 2020, USEPA 2020).

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the City's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Erosion – Hurricane/Nor'easter/Coastal Storm	High
Extreme Temperature – Heat	High
Flood	High
High Wind -- Straight-Line Winds	High
Severe Storm – Winter Weather (includes Ice Storms)	High
Storm Surge –Hurricane/Nor'easter/Tropical Storm	High
Drought	Medium
Earthquake / Geological	Medium
Extreme Temperature – Cold	Medium
Hail	Medium
Hazardous Materials Release – Fixed Site	Medium
Hazardous Materials Release – Transportation	Medium
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Wildfire	Low

Hazard	Priority
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Dam Failure	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Severe Storm – Lightning	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	155.66	193.86	24.53%
Forest	169.03	150.33	-11.06%
Urban	7,411.75	7,398.61	-0.18%
Water	1,049.59	1,048.27	-0.13%
Wetlands	118.03	113.01	-4.25%

Source: NJDEP Land Use/Land Cover, 2019

Elizabeth is largely urbanized. The majority of parkland is along Elizabeth River and Arthur Kill. Wetlands are concentrated along the tributaries to Newark Bay and the Elizabeth Channel. The City may want to create a regional stormwater detention network, utilizing existing wetlands as well as creating green stormwater elements along roadways such as bioretention planters and/or swales, and permeable pavement in addition to traditional grey infrastructure stormwater solutions.

NEW AND FUTURE DEVELOPMENT

Elizabeth is fully developed, and therefore redevelopment rather than new development is the way that the city continues to grow. Elizabeth, an Urban Center, participates in the Urban Enterprise Zone (UEZ) Program, which supports urban revitalization and economic development through public and private investment. Areas where development and use changes have occurred include the Interchange 13A area and the E-port neighborhood along the Arthur Kill River.

Redevelopment has occurred in Midtown and in commercial areas located in and around the UEZ. Designated Areas of Redevelopment include the Kapkowski Road area, the largest and most high-profile redevelopment area in the City. Other smaller redevelopment areas include the Waterfront Redevelopment Area in E-port. While some redevelopment areas have been almost entirely redeveloped, others are still in different phases of implementation. All redevelopment areas must be built in accordance with the 2020 Reexamination Report for the City of Elizabeth Master Plan. Further, redevelopment areas must follow updated current building codes that have the potential to decrease the City's vulnerability.

Elizabeth also participates in an NJDEP pilot program called the Brownfields Development Area (BDA) Initiative, in which NJDEP, the City, all stakeholders, and other State agencies work together to remediate and redevelop multiple brownfield sites in the City. The Elizabeth BDA program contains eight (8) designated BDA sites that are all currently in the redevelopment process. The properties at the 8 BDA sites are as follows:

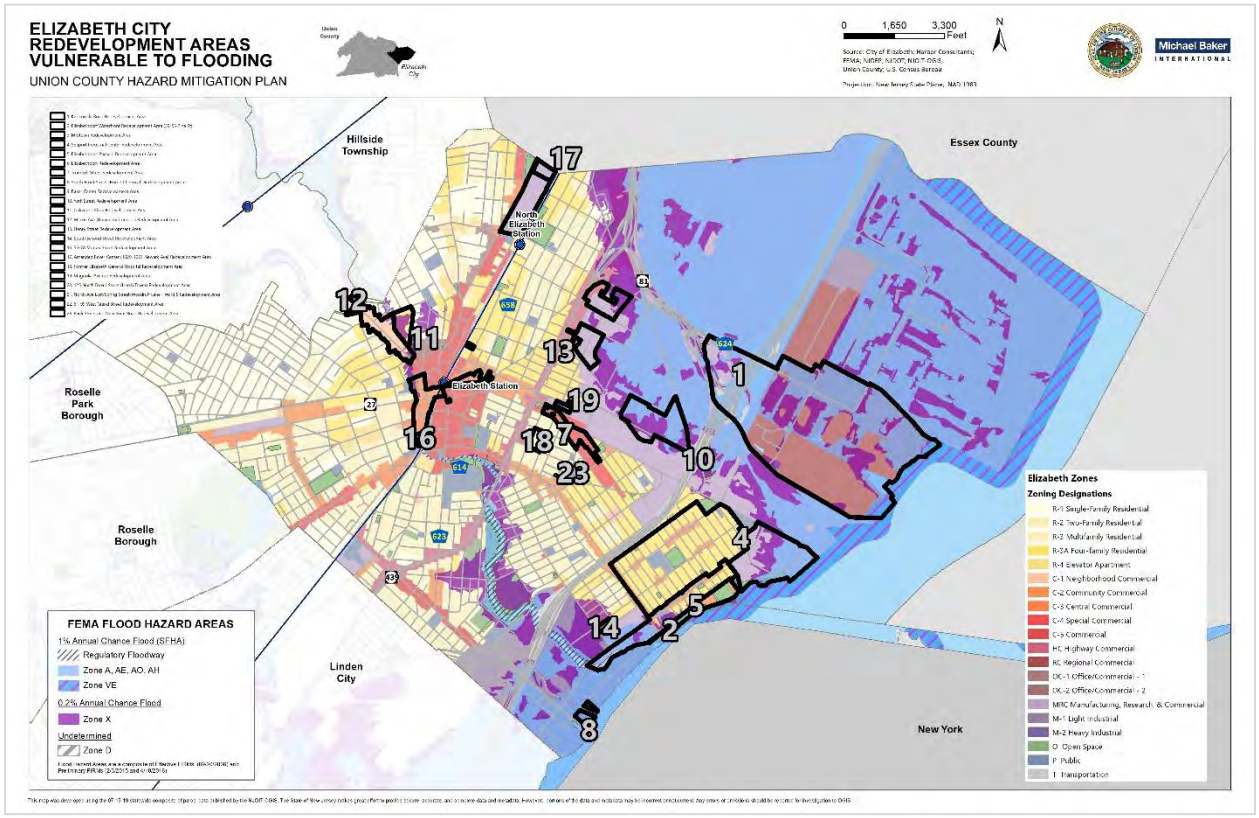
1. **Harborfront Villas (former American Chrome Site - Block 2, Lot 480)**
   Recently restarted construction.
2. **Apple Tree Village, 237-247 First Street (Block 1, Lots 115A, 116)**
   Residential two-family homes have been completed.
3. **Bethlehem Steel Site (Block 2, Lot 461)**
   School No. 28 completed on site.
4. **Borne Chemical Site (Block 4, Lot 1452)**
   Project will include a Waste Management Intermodal Facility. Redevelopment has been completed on the larger parcel; the smaller parcel remains undeveloped.
5. **Old Allied Signal (Block 1, Lot 1314/1315)**
   A distribution center has been completed.
6. **Former Exact Anodizing Company (Block 2, Lot 655)**
   Recently obtained Planning Board approval.
7. **Former Supermarket Property, (Block 2, Lot 604)**
   Recently obtained Planning Board approval.
8. **Kull Property (Block 1, Lot 351)**
   Site to become a parking lot and is expected to be completed in Spring 2021.

Of the 23 redevelopment areas in the City, the following redevelopment areas are at least partially in the SFHA:

- 1. Kapkowski Road Redevelopment Area
- 2. Elizabethport Waterfront Redevelopment Area (39-55 Pine St)
- 3. Midtown Redevelopment Area
- 4. Seaport Industrial Center Redevelopment Area
- 5. Elizabethport Phase II Redevelopment Area
- 6. Elizabethport Redevelopment Area
- 8. South Front Street (Borne Chemical) Redevelopment Area
- 10. York Street Redevelopment Area
- 11. Oakwood Plaza Redevelopment Area
- 12. Morris Ave (University Corridor) Redevelopment Area
- 16. 56-78 Murray Street Redevelopment Area

Please note that all development must comply with City Code Chapter 17.44 – Flood Damage Prevention, which will mitigate flooding in these redevelopment areas.

The Redevelopment Areas in the City of Elizabeth, overlaid with FEMA Flood Zones, is displayed below.



CRITICAL FACILITIES

The City of Elizabeth has 131 critical facilities, with 13 facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

The following have been partially completed:

- 04-07: Separate the Sewers, Upgrade the Pump Station, and Install a Generator at the Intersection of Cherry Street and West Jersey Avenue.
- 04-16: Upgrade, Repair and/or Maintain the Pump Station at 2nd South Street.
- 04-23: Install Pump Station Upgrades and New Generator at Mattano Park.

The following actions identified in the 2015 City of Elizabeth Hazard Mitigation Plan-Natural Hazards have been completed:

- Waterfront Reconstruction (Post Sandy) - Veterans Memorial Park, Municipal Marina, Recreation Pier Bikeway - 2015 - Hurricane Mitigation
- South Second Street Pump Station Improvements - New Pumps and Drives - 2018 – Flood Mitigation

- Progress Street Stormwater Control Project - 2020 - Flood Mitigation
- Salt Storage Facility - 2017 - Winter Storm Mitigation (City Wide Use)
- Kapkowski Road Pump Station Sluice Gate installation - 2019 - Flood Mitigation
- Kapkowski Road Pump Station Generator installation - 2020 - Flood Mitigation
- Kapkowski Road Pump Station Grinder installation - 2015 - Flood Mitigation
- Mattano Park Flood Mitigation (Post Sandy) – 2015 - Flood Mitigation
- Erxleben Recreation Center Renovation - Generator Installation - 2020 - Storm Mitigation
- Levee/Floodwall Rehabilitation - On-going Since 2014 - Flood Mitigation
- Mickey Walker Recreation Center Renovations - Generator Installation - 2016 - Storm Mitigation
- Sampson Senior Center Generator Installation - 2017 - Storm Mitigation
- Police Headquarters Emergency Generator Installation - 2018 (HMP Grant) - Storm Mitigation
- Jackson Avenue and Anna Street Traffic Signal Improvements (Generator Hook-up) - 2017 - Storm Mitigation
- North Avenue and Madison Avenue Traffic Signal Improvements (Generator Hook-up) - 2020 - Storm Mitigation
- West Grand Street and Cherry Street Traffic Signal Improvements (By Others) (Generator Hookup) - 2017 - Storm Mitigation
- West Jersey Street Storm Sewer Installation - 2018 - Flood Mitigation
- West Jersey Street Lift Station Grinder Installation - 2020 - Flood Mitigation
- Peterstown Community Center Generator Installation - 2017 - Storm Mitigation
- East Jersey Street and Madison Avenue Traffic Signal Improvements (Generator Hook-up) - 2017 - Storm Mitigation
- Elizabeth Avenue and Jefferson Avenue Traffic Signal Improvements (Generator Hook-up) - 2015 - Storm Mitigation
- Elizabeth Avenue and Bridge Street Traffic Signal Improvements (Generator Hook-up) - 2015 - Storm Mitigation
- Elizabeth Avenue and South Street Traffic Signal Improvements (Generator Hook-up) - 2019 - Storm Mitigation
- Elizabeth Avenue and High Street Traffic Signal Improvements (Generator Hook-up) - 2019 - Storm Mitigation

The following is a list of other completed projects that were not identified in the in the 2015 City of Elizabeth Hazard Mitigation Plan-Natural Hazards:

- Third Avenue Sewer - Phase 1 - 2014 - Flood Mitigation
- Third Avenue Sewer - Phase 2 - CSO 035 Modification - 2016 - Flood Mitigation
- Summer Street CSO Flood Relief - 2011 - Flood Mitigation
- South Street Flood Control (Underpass) - 2013 - Flood Mitigation
- Trenton Avenue Flood Mitigation (Post Sandy) – 2015 - Flood Mitigation
- Verona Avenue/Gebhardt Avenue Storm Sewer Improvement Project - 2011 - Flood Mitigation
- Westfield Avenue/Elmora Avenue Sewer Modification Project - 2012 - Flood Mitigation
- Galloping Hill Road and Magie Avenue Traffic Signal Improvements (By Others) (Battery Backup) - 2015 - Storm Mitigation

- Summit Road and Magie Avenue Traffic Signal Improvements (By Others) (Battery Backup) - 2015 - Storm Mitigation
- Midtown Elizabeth Redevelopment Area Infrastructure Improvements - 2016 - Flood Mitigation
- Morris Avenue and Julian Place Traffic Signal Improvements (Battery Backup) - 2017 - Storm Mitigation
- Trotters Lane Sidewalk Improvements - 2019 - Winter Storm Mitigation
- North Avenue Flood Control Project - 2013 - Flood Mitigation
- Fairmount Ave Storm Sewer Installation -2014 - Flood Mitigation
- North Avenue East Storm Sewer Installation - 2020 - Flood Mitigation
- Replaced Firehouse - Engine Company 6 - 2016 - All Hazard Mitigation
- West Grand Street and Union Street Traffic Signal Improvements (Battery Backup) - 2017 - Storm Mitigation
- Midtown Elizabeth Redevelopment Area Infrastructure Improvements - 2016 - Flood Mitigation
- Engine Company No. 1 Garage Floor Reinforcing - 2018 - All Hazard Mitigation
- North Avenue and Monroe Avenue Traffic Signal Improvements (Generator Hook-up) - 2021 - Storm Mitigation
- North Avenue and Adams Avenue Traffic Signal Improvements (Generator Hook-up) - 2021 - Storm Mitigation

SUCCESSES IN MUNICIPAL CAPABILITIES

- The City's CIP includes many hazard mitigations projects.
- All site plans and subdivisions within the City of Elizabeth are reviewed by professional experts with training in evaluating hazards such as, waste disposal, flooding, evacuation, sight distances, buffers, underground contamination, etc.
- The City's Redevelopment Plans/Studies requires development to comply with adopted floodplain management regulations and building codes.
- The City of Elizabeth has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:
    - **Redevelopment Plan/Study**: Requires development to comply with adopted floodplain management regulations and building codes.
    - **Climate Adaptation Plan**: The City of Elizabeth's Master Plan and new ordinance reflect the concept of conservation of water and avoidance of heat sinks. Natural buffers, promotion of renewal resources, LED outdoor lighting, promotion of hydrogen use in industrial uses, are all things promoted.
    - **Streambank Buffer Protection Program:** The City has acquired easements along the almost the entire length of the Elizabeth River within its corporate boundary to maintain the Flood Control Project constructed by the Army Corp of Engineers in the 1980s and prevent encroachments. This area is also regulated by NJDEP.
    - **Watershed Management Plan:** Stormwater Pollution Prevention Plan (2018, with annual review)
    - **Floodplain Management Plan:** Elizabeth River Flood Control Project
    - **Post-Disaster Recovery Plan:** The City of Elizabeth has in the case of Superstorm Sandy worked nights and weekends to move applications along to promote diligent reviews. The Planning Office utilizes outside consultants who are on-call at least 55

hours per week. This assists applicants and residents quick and correct answers to their questions.
    - **Land Acquisition for Open Space and Public Recreation Uses:** Historically the City has purchased waterfront property for open space and public access.
    - **Growth Management Ordinance:** The City as a vast array of tools that it uses to promote the inclusion of open space in all future developments. This open space includes indoor and outdoor uses by residents. As an urban City the Planning Office has enhanced many Brownfields sites which includes hundreds of acres.
- The City of Elizabeth is part of the Coastal Zone Management Program regulated by New Jersey's Department of Environmental Protection and utilizes model Federal and State Natural Hazard Ordinances.
- Local citizen groups or non-profit organizations in the City that engage in hazard mitigation activities include Future City, Inc., Groundwork Elizabeth, and Elizabeth Conservancy.
- The City of Elizabeth is certified by Sustainable Jersey. The City's Sustainable Jersey activities include teaching the community about sustainable stormwater management and using green infrastructure demonstration projects at a local library.

The complete Mitigation Strategy and Capability Assessment for Elizabeth City is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
04-01	Reduce or Eliminate Local Flooding via the Dowd Avenue Pump Station.	Reduce or eliminate local flooding via the Dowd Avenue Pump Station.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$25,000,000.00	Ongoing	Ongoing
04-02	Upgrade, Repair, and Maintain Sewers and Drainage Along Trumbull Street to Manage Stormwater (Trumbull Street Regional Stormwater Management Project).	Upgrade, repair and maintain the sewers and drainage along Trumbull Street to manage stormwater.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$30,000,000.00	Ongoing	Ongoing
04-03	Upgrade, Repair, and/or Maintain Storm Sewers and Drainage Along Monmouth Road to Control Flooding (JMEUC Issues).	Upgrade, repair and/or maintain storm sewers and drainage along Monmouth Road to control flooding.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer, DPW and Joint Meeting of Essex and Union Counties	FEMA HMA	$3,000,000.00	Ongoing	Ongoing
04-04	Upgrade, Repair, and/or Maintain Storm Drains and Sewers Along Park Avenue and Summit Road.	Upgrade, repair and/or maintain storm drains and sewers along Park Avenue and Summit Road to control flooding.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$8,600,000.00	Ongoing	Ongoing
04-05	Reduce or Eliminate Local Flooding Along Maple Avenue/Routes 1&9.	Reduce or eliminate local flooding along Maple Avenue/Routes 1&9.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$3,000,000.00	Ongoing	Ongoing
04-06	Upgrade, Repair and/or Maintain Storm Drains and Sewers Where Routes 1&9 and Railroad Crossings Intersect.	Upgrade, repair and/or maintain storm drains and sewers where Routes 1&9 and Railroad Crossings intersect to control flooding.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$3,000,000.00	Ongoing	Ongoing
04-07	Separate the Sewers, Upgrade the Pump Station, and Install a Generator at the Intersection of Cherry Street and West Jersey Street.	Separate the sewers, upgrade the pump station, and install a generator at the intersection of Cherry Street and West Jersey Street to ensure continuity of operations during power failure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, developer off-site contribution	$4,000,000.00	Ongoing	Ongoing
04-08	Upgrade and/or Repair Ursino Dam.	Upgrade and/or repairs of the local dam.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Dam Failure	High	City Engineer and DPW	FEMA HMA, Municipal Budget	$1,000,000.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
04-09	Purchase and Install Portable Generators at Key City Traffic Locations.	Purchase and install portable generators and transfer switches at key traffic signals to increase the longevity of traffic signal lights and reduce vehicle accidents.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer, DPW and Police Department	FEMA HMA, Municipal Budget	$500,000.00	Ongoing	Ongoing
04-10	Purchase and Install New Miscellaneous Generators and Electrical Upgrades at Critical Facilities, Especially Existing Flood Control Pump Stations and Critical Care Facilities that Provide Continuity of Service.	Purchase and Install new generators and electrical upgrades at critical facilities to ensure continuity of operations during power failure due to storms.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Low	City Engineer and DPW	FEMA HMA, Municipal Budget	$6,000,000.00	Ongoing	Ongoing
04-11	Minimize Extreme Heat Casualties and Deaths through Public Awareness and Outreach.	Minimize extreme heat casualties and deaths through public awareness and outreach.	Administrative	Education and Awareness Programs	Extreme Temperature	Low	Health Officer and Emergency Operations Coordinator	Municipal Budget	$100,000.00	Ongoing	Ongoing
04-12	Conduct a Public Communication Campaign Around Earthquake Awareness, Response, and Recovery.	Conduct a public communication campaign around earthquake awareness, response, and recovery. Provide residents with information on shelter locations.	Administrative	Education and Awareness Programs	Earthquake/Geological	Low	Emergency Operations Coordinator	Municipal Budget	$100,000.00	Ongoing	Ongoing
04-13	Reduce or Eliminate Flooding Around Third Avenue and Atlantic Street.	Reduce or eliminate flooding around Third Avenue and Atlantic Street.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$8,200,000.00	Ongoing	Ongoing
04-14	Upgrade the South Second Street Pump Station, Install a New Generator and Improve Local Storm Sewers.	Upgrade the South Second Street Pump Station, install a new generator and improve local storm sewers to get more flow to the station to control flooding and provide for continuity of service at the pump station during power failure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$2,600,000.00	Ongoing	Ongoing
04-15	Construct Atlanta Plaza Floodwall.	Construct Atlanta Plaza Floodwall.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$30,000,000.00	Ongoing	Ongoing
04-16	Upgrade, Repair and/or Maintain the Pump Station at South Street; Purchase and Install Generator	Upgrade, repair and/or maintain the pump station at South Street to continue to control flooding there.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	Funding obtained through NJEIT loan.	$6,000,000.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
04-17	Upgrade, Repair, and Separate Combined Sewers in the Bayway Area.	Upgrade, repair, and separate combined sewers in the Bayway Area.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$6,000,000.00	Ongoing	Ongoing
04-18	Elizabeth River and Arthur Kill Shoreline Stabilization	Elizabeth River and Arthur Kill Shoreline Stabilization	Mitigation - Continuity of Fuctional Use	Natural Systems Protection	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm		City Engineer, DPW and Joint Meeting Group		$20,000,000.00		Completed
04-19	Flood-proof Firehouse Engine #1 on Broad Street.	Flood-proof Firehouse Engine #1 on Broad Street.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Fire Director and DPW	FEMA HMA	$7,000,000.00	Ongoing	Ongoing
04-20	Upgrade and Repair the Pump Station and Install a New Generator at Kapkowski Road.	Upgrade and repair the pump station and install a new generator at Kapkowski Road to control flooding and ensure continuity of service during power failure.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, Municipal Budget	$2,000,000.00	Ongoing	Ongoing
04-21	Install a New Wet Weather Pump Station and Ancillary Infrastructures on Trenton Avenue.	Install a new wet weather pump station and ancillary infrastructures on Trenton Avenue to control flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$10,000,000.00	Ongoing	Ongoing
04-22	Install a New Generator at Trenton Avenue.	Install new generator at Trenton Avenue to ensure continuity of operations during power failure.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Low	City Engineer and DPW	FEMA HMA, Municipal Budget	$750,000.00	Ongoing	Ongoing
04-23	Install Pump Station Upgrades and Generator at Mattano Park.	Install pump station upgrades and a generator at Mattano Park to mitigate flooding and ensure continuity of operations during power failure.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW; possibly Union County	FEMA HMA, FEMA PA, Municipal Budget	$750,000.00	Ongoing	Ongoing
04-24	Upgrade and Repair Storm Drains and Sewers along Decker Ave.	Upgrade and repair of storm drains and sewers along Decker Ave. to eliminate backups.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm		City Engineer and DPW	FEMA HMA, Municipal Budget	$2,000,000.00		Withdrawn
04-25	Reduce or Eliminate Local Flooding on Pennington Street.	Reduce or eliminate local flooding on Pennington Street.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, Municipal Budget	$2,000,000.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
04-26	Purchase and Install a Generator at the Municipal Marina.	Purchase and install a generator at the municipal marina to fuel public emergency watercrafts.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Low	City Engineer and DPW	FEMA HMA, Municipal Budget	$500,000.00	Ongoing	Ongoing
04-27	Upgrade and Repair the Elizabeth River Flood Control Project.	Upgrade and repair the Elizabeth River Flood Control Project.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Dam Failure	High	City Engineer and DPW	FEMA HMA, Municipal Budget	$1,000,000.00	Ongoing	Ongoing
04-28	Purchase and Install Emergency Overhead Signage for Emergency Communication.	Purchase and install emergency overhead signage for immediate public notifications of hazards and/or locations of muster points when required.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Emergency Operations Coordinator and City Engineer	FEMA HMA, Municipal Budget	$500,000.00	Ongoing	Ongoing
04-29	Purchase and Install Solar Power Disconnects.	Purchase and install solar power disconnects for emergency disconnection of solar powered equipment during a hazard.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		Fire Director and Emergency Coordinator	Municipal Budget	$500,000.00		Withdrawn
04-30	Provide for Infectious Disease Control Through Emergency Communication and Temporary Vaccination Stations.	Provide for infectious disease control through public notifications of disease. Provide locations for temporary vaccination stations if needed.	Administrative	Education and Awareness Programs	Pandemic	Low	Health Officer and Emergency Operations Coordinator	Municipal Budget	$500,000.00	Ongoing	Ongoing
04-31	Design and Construct a New Firehouse Outside of the Flood Zone.	Design and construct a new firehouse outside of flood zone.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Fire Director and DPW	Municipal Budget	$6,000,000.00	Ongoing	Ongoing
04-32	Upgrade the Storm Drains and Sewers in the Lincoln Avenue Area.	Upgrade the storm drains and sewers along Lincoln Avenue to control stormwater.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$2,800,000.00	Ongoing	Ongoing
04-33	Conduct a Public Communication, Education, and Outreach Campaign About Severe Winter Storms and Extreme Cold Events.	Conduct a public communication, education, and outreach campaign about severe winter storms and extreme cold events with posted web information.	Administrative	Education and Awareness Programs	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature	Low	Department of Health & Human Services and Emergency Operations	Municipal Budget	$100,000.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
04-34	Progress Street Flood Control	The local drainage that connected to the outfall will be connected to an existing storm sewer on Dowd Avenue. Additional protection against high water levels in the great ditch will be provided by using box culverts in the Progress Street right-of-way to provide storage for excess runoff low areas.			Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning		Department of Public Works/City Engineering		$5,500,000.00		Completed
04-35	Salt and Storage Facilities Upgrades	Salt and Storage Facilities Upgrades			Severe Storm–Winter Weather (Ice Storm)		Department of Public Works/City Engineering		$500,000.00		Completed
04-36	Trumbull Street Flood Control (at 6th Street)	Inlets will be installed at the intersection allowing the drainage system to function during smaller storms. When the capacity of the existing storm inlets is exceeded, the excess stormwater will flow into the new inlets.	Mitigation - Risk Reduction		Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning		Department of Public Works/City Engineering		$6,500,000.00		Completed
04-37	Upgrade, Repair and Maintain Brick Sewers and Watermains.	Upgrade, repair and maintain brick sewers and watermains to control flooding and prevent wain main breaks.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$12,000,000.00	1 - 5 years	New
04-38	Conduct a Citywide Public Communication Campaign to Increase COVID-19 Awareness.	Conduct a citywide public communication campaign to increase COVID-19 awareness. Provide links from the Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA) and links regarding vaccinations to reduce illness and death.	Administrative	Education and Awareness Programs	Pandemic	Low	Health Officer	Municipal Budget	$100,000.00	Ongoing	New
04-39	Evaluate Possible Earthquake Shelters and Muster Areas Citywide.	Evaluate possible earthquake shelters and muster areas as part of the public communication process and Emergency Operations Plan planning effort. Develop communication and broadcasting materials about temporary shelters and muster areas after major earthquakes.	Administrative	Local Plans and Regulations	Earthquake/Geological	Low	Emergency Operations Coordinator	Municipal Budget	$100,000.00	1 - 5 years	New
04-40	Construct an Emergency Response Ambulance Canopy.	Construct an emergency response ambulance canopy to provide overhead protection for emergency vehicles during severe winter weather events.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature	Medium	Fire Director and DPW	Municipal Budget	$600,000.00	1 - 5 years	New
04-41	Ensure Continuity of Operations at the Liberty Square Senior Center by Purchasing and Installing a Generator.	Ensure continuity of operations at the Liberty Square Senior Center by purchasing and installing a generator.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	Municipal Budget	$350,000.00	1 - 5 years	New
04-42	Upgrade, Repair and/or Maintain Storm Drains and Sewers at North Avenue and Van Buren.	Upgrade, repair and/or maintain storm drains and sewers at North Avenue and Van Buren to reduce or eliminate local flooding.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$3,000,000.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
04-43	Construct a Police Drone Control Tower.	Construct a police drone control tower for emergency search and rescue missions as well as monitoring and preventive measures.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Police and Emergency Operations Coordinator	Homeland Security grants	$500,000.00	1 - 5 years	New
04-44	Upgrade, Repair and/or Maintain the Storm Drains and Sewers at Summer and South Broad Street.	Upgrade, repair and/or maintain storm drains and sewers at Summer and South Broad Street to reduce or eliminate local flooding.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$5,000,000.00	1 - 5 years	New
04-45	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	OEM	FEMA HMA	$0.00	Ongoing	New
04-46	Continue to Revise Municipal Stormwater Control Ordinances as New State Regulations are Adopted.	The City updated their stormwater ordinances based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020. As new sample ordinances come out, the City should continue to update their stormwater ordinances.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 - 2 years	New
04-47	Develop and Assess Citywide Shelters' Preparedness for Extreme Heat and Extreme Cold Events.	Develop and continue assessment of shelters preparedness for extreme temperature events. Equip shelters, currently in Recreation Centers, with food, water and clothing as needed. Conduct a public communication/outreach program during extreme weather to make sure all those that require shelter, food and safely will have a City place to stay during extreme weather conditions.	Administrative	Education and Awareness Programs	Extreme Temperature	Low	Department of Health & Human Services	Municipal Budget	$100,000.00	Ongoing	New

Union County Mitigation Action Worksheets

Community Action Number: 04-01 Elizabeth, City of

Describing the Action

Action Name:	Reduce or Eliminate Local Flooding via the Dowd Avenue Pump Station.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Reduce or eliminate local flooding via the Dowd Avenue Pump Station.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding around Dowd Avenue may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by reducing or eliminating flooding around Dowd Avenue.
Property Protection:	This action will reduce property damage and protect the buildings around Dowd Avenue.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public support and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts related to the pump station.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$25,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-02 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair, and Maintain Sewers and Drainage Along Trumbull Street to Manage Stormwater (Trumbull Street Regional Stormwater Management Project)
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and maintain the sewers and drainage along Trumbull Street to manage stormwater.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding along Trumbull Street may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by managing stormwater along Trumbull Street.
Property Protection:	This action will reduce property damage and protect the buildings along Trumbull Street.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts related to this project. This project should mainly take place in existing right of way.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis and DPW
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$30,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-03 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair, and/or Maintain Storm Sewers and Drainage Along Monmouth Road to Control Flooding (JMEUC Issues).
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and/or maintain storm sewers and drainage along Monmouth Road to control flooding.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding along Monmouth Road may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding along Monmouth Road.
Property Protection:	This action will reduce property damage and protect the buildings along Monmouth Road.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City will need to coordinate with the Joint Meeting of Essex and Union Counties.
Environmental:	There may be adverse environmental impacts related to this flood control project.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis and DPW
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer, DPW and Joint Meeting of Essex and Union Counties
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-04 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair, and/or Maintain Storm Drains and Sewers Along Park Avenue and Summit Road.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and/or maintain storm drains and sewers along Park Avenue and Summit Road to control flooding.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding along Park Avenue and Summit Road may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding along Park Avenue and Summit Road.
Property Protection:	This action will reduce property damage and protect the buildings along Park Avenue and Summit Road.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	Technical feasibility is being reviewed at this time. Project is currently in design phase.
Political:	Public opinion and political will are favorable toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts related to this flood control project. This project should all take place in existing right of way.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$8,600,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, NJIB
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-05 Elizabeth, City of

Describing the Action

Action Name:	Reduce or Eliminate Local Flooding Along Maple Avenue/Routes 1&9.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Reduce or eliminate local flooding along Maple Avenue/Routes 1&9.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding along Maple Avenue/Routes 1&9 may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by reducing or eliminating flooding along Maple Avenue/Routes 1&9.
Property Protection:	This action will reduce property damage and protect the buildings along Maple Avenue/Routes 1&9.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City will need to collaborate with NJDOT.
Environmental:	There probably no adverse environmental impacts related to this flood control project.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-06 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair and/or Maintain Storm Drains and Sewers Where Routes 1&9 and Railroad Crossings Intersect.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and/or maintain storm drains and sewers where Routes 1&9 and Railroad Crossings intersect to control flooding.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding at the intersections of the railroad and Routes 1&9 may cause property damage and power outages.
Life Safety:	This action is not related to protecting lives and preventing injuries.
Property Protection:	This action will reduce property damage and protect the buildings at the intersections of the railroad and Routes 1&9.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	The technical feasibility is unknown at this time.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City will need to collaborate with NJDOT.
Environmental:	There may be adverse environmental impacts related to this flood control project.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-07 Elizabeth, City of

Describing the Action

Action Name:	Separate the Sewers, Upgrade the Pump Station, and Install a Generator at the Intersection of Cherry Street and West Jersey Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Separate the sewers, upgrade the pump station, and install a generator at the intersection of Cherry Street and West Jersey Street to ensure continuity of operations during power failure.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding in the area of Cherry Street and West Jersey Street may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by reducing or eliminating flooding in the area of Cherry Street and West Jersey Street.
Property Protection:	This action will reduce property damage and protect the buildings around Cherry Street and West Jersey Street.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City will require NJDOT permits.
Environmental:	There are no known adverse environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$4,000,000.00
Priority:	High
Local Planning Mechanism:	Flooding, Stormwater and Wastewater Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, developer off-site contribution
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Partial sewer separation paid for by a developer as an off-site contribution. A pump station grinder was installed using City funds but completed but still needs an overhaul and generator.

Union County Mitigation Action Worksheets

Community Action Number: 04-08 Elizabeth, City of

Describing the Action

Action Name:	Upgrade and/or Repair Ursino Dam.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and/or repairs of the local dam.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Dam Failure
Goals:	4

Evaluating the Action

Risk Reduction:	Integrity of Ursino Dam may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by improving Ursino Dam.
Property Protection:	This action will reduce property damage downstream of Ursino Dam.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Plans for maintenance and repairs will go out to bid February 2021.

Union County Mitigation Action Worksheets

Community Action Number: 04-09 Elizabeth, City of

Describing the Action

Action Name:	Purchase and Install Portable Generators at Key City Traffic Locations.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install portable generators and transfer switches at key traffic signals to increase the longevity of traffic signal lights and reduce vehicle accidents.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Power failure of traffic signals during storms cause dangerous conditions that lead to an increase in vehicle accidents.
Life Safety:	This action will protect lives and prevent injuries by eliminating the dangerous conditions caused by power failure.
Property Protection:	This action will eliminate the dangerous conditions caused by power failure and thus decrease accidents.
Cost Effectiveness:	The costs to implement this initiative are expected to be commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be minimal adverse environmental impacts caused by this action.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Lt. Richard Shaughnessy
Other Community Objectives:	Reduce loss of traffic signals and vehicular accidents
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Medium
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control
Responsible Party:	City Engineer, DPW and Police Department
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing-continually installing generator connections on all new signals.

Union County Mitigation Action Worksheets

Community Action Number: 04-10 Elizabeth, City of

Describing the Action

Action Name:	Purchase and Install New Miscellaneous Generators and Electrical Upgrades at Critical Facilities, Especially Existing Flood Control Pump Stations and Critical Care Facilities that Provide Continuity of Service.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and Install new generators and electrical upgrades at critical facilities to ensure continuity of operations during power failure due to storms.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Storms cause power failure at critical facilities and disrupt essential City operations.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at critical facilities.
Property Protection:	This action will reduce damage to structure and infrastructure by ensuring continuity of operations at critical facilities.
Cost Effectiveness:	The costs to implement this initiative are expected to be commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be minimal adverse environmental impacts.
Social:	This action benefits the entire population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$6,000,000.00
Priority:	Low
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control (Stormwater and Wastewater Policies)
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing individual projects - Replaced generator at Police HQs with funding from an HMGP grant. Installed generators at 4 community recreation centers. More generators needed with electrical upgrades.

Union County Mitigation Action Worksheets

Community Action Number: 04-11 Elizabeth, City of

Describing the Action

Action Name:	Minimize Extreme Heat Casualties and Deaths through Public Awareness and Outreach.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Minimize extreme heat casualties and deaths through public awareness and outreach.
Hazard(s) Addressed:	Extreme Temperature
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of extreme heat risk and mitigation could be improved.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for extreme heat events.
Property Protection:	This action does not relate to structure and infrastructure protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action benefits the entire population.
Administrative:	The City may or may not have the personnel and administrative capabilities to implement this action.
Local Champion:	Erica R. Carter-Wood - Department of Health & Human Services
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Safety
Responsible Party:	Health Officer and Emergency Operations Coordinator
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-12 Elizabeth, City of

Describing the Action

Action Name:	Conduct a Public Communication Campaign Around Earthquake Awareness, Response, and Recovery.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct a public communication campaign around earthquake awareness, response, and recovery. Provide residents with information on shelter locations.
Hazard(s) Addressed:	Earthquake/Geological
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of earthquakes awareness, response, and recovery could be improved.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for earthquakes.
Property Protection:	This action does not relate to structure and infrastructure protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action benefits the entire population.
Administrative:	The City may or may not have the personnel and administrative capabilities to implement this action.
Local Champion:	Timothy Stapfer - Emergency Operations Coordinator
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Safety
Responsible Party:	Emergency Operations Coordinator
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-13 Elizabeth, City of

Describing the Action

Action Name:	Reduce or Eliminate Flooding Around Third Avenue and Atlantic Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Reduce or eliminate flooding around Third Avenue and Atlantic Street.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding around Third Avenue and Atlantic Street may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by reducing or eliminating flooding around Third Avenue and Atlantic Street.
Property Protection:	This action will reduce property damage and protect the buildings around Third Avenue and Atlantic Street.
Cost Effectiveness:	The costs to implement this initiative are expected to be commensurate with the benefits achieved. New project to
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is expected to be environmentally beneficial as it will reduce flooding and reduce combined sewer overflow.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$8,200,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Wastewater/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, NJIB
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Project is in design phase.

Union County Mitigation Action Worksheets

Community Action Number: 04-14 Elizabeth, City of

Describing the Action

Action Name:	Upgrade the South Second Street Pump Station, Install a New Generator and Improve Local Storm Sewers.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade the South Second Street Pump Station, install a new generator and improve local storm sewers to get more flow to the station to control flooding and provide for continuity of service at the pump station during power failure.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding around the South Second Street Pump Station may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding around the South Second Street Pump Station.
Property Protection:	This action will reduce property damage and protect the buildings around the South Second Street Pump Station.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and, overall, a long-term solution.
Political:	Public opinion and political will are favorable toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$2,600,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, NJIB
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Project ongoing with many tasks - Existing Station is now operational, other upgrades and generator in design phase.

Union County Mitigation Action Worksheets

Community Action Number: 04-15 Elizabeth, City of

Describing the Action

Action Name:	Construct Atlanta Plaza Floodwall.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct Atlanta Plaza Floodwall.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	The Atlanta Plaza Floodwall would protect the area from storm surge which may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by ensuring the function use of the floodwall.
Property Protection:	This action will reduce damage to structure and infrastructure by ensuring the functional use of the floodwall.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	The feasibility of this action is unknown at this time.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$30,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-16 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair and/or Maintain the Pump Station at South Street; Purchase and Install Generator
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and/or maintain the pump station at South Street to continue to control flooding there.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding around the South Street Pump Station may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding around the South Street Pump Station.
Property Protection:	This action will reduce property damage and protect the buildings around the South Street Pump Station.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$6,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	Funding obtained through NJEIT loan.
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	In closeout. The repairs were paid for by the City. Additional improvements and generator are in final design and will be funded through an NJEIT loan.

Union County Mitigation Action Worksheets

Community Action Number: 04-17 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair, and Separate Combined Sewers in the Bayway Area.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair, and separate combined sewers in the Bayway Area.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding in the Bayway Area may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by managing sanitary and stormwater in the Bayway Area.
Property Protection:	This action will reduce property damage and protect the buildings in the Bayway Area.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action. Construction will occur in existing right of ways.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	Project is included in CSO Long Term Control Plan.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$6,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, NJIB
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-18 Elizabeth, City of

Describing the Action

Action Name:	Elizabeth River and Arthur Kill Shoreline Stabilization
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Elizabeth River and Arthur Kill Shoreline Stabilization
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$20,000,000.00
Priority:	
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer, DPW and Joint Meeting Group
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Funded by NJIB

Union County Mitigation Action Worksheets

Community Action Number: 04-19 Elizabeth, City of

Describing the Action

Action Name:	Flood-proof Firehouse Engine #1 on Broad Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Flood-proof Firehouse Engine #1 on Broad Street.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Firehouse Engine #1 experiences flooding that disrupts fire response.
Life Safety:	This action will protect lives and prevent injuries by preventing the interruption of fire response by flooding.
Property Protection:	This action will reduce damage to structure and infrastructure by preventing the interruption of fire response by flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	It is unlikely that there would be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Fire Director - Patrick Byrnes
Other Community Objectives:	Firefighting Resiliency
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$7,000,000.00
Priority:	High
Local Planning Mechanism:	Flood Prevention
Responsible Party:	Fire Director and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-20 Elizabeth, City of

Describing the Action

Action Name:	Upgrade and Repair the Pump Station and Install a New Generator at Kapkowski Road.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and repair the pump station and install a new generator at Kapkowski Road to control flooding and ensure continuity of service during power failure.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding around the Kapkowski Road Pump Station may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding around the Kapkowski Road Pump Station and providing for continuity of service during power failure.
Property Protection:	This action will reduce property damage and protect the buildings around the Kapkowski Road Pump Station. It will also prevent power outages caused by floods and ensure continuity of services if floods due occur.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no adverse known environmental impacts of this action. Upgrades and repairs will take place within the existing station.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$2,000,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	As of the 2021 HMP update, the new generator at Kapkowski Road has been installed.

Union County Mitigation Action Worksheets

Community Action Number: 04-21 Elizabeth, City of

Describing the Action

Action Name:	Install a New Wet Weather Pump Station and Ancillary Infrastructures on Trenton Avenue.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install a new wet weather pump station and ancillary infrastructures on Trenton Avenue to control flooding.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Reduce flooding and Combined Sewer Overflows city-wide.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and combined sewer overflows city-wide.
Property Protection:	This action will reduce property damage and protect the buildings city-wide.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$10,000,000.00
Priority:	High
Local Planning Mechanism:	Flooding, Stormwater and Wastewater Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-22 Elizabeth, City of

Describing the Action

Action Name:	Install a New Generator at Trenton Avenue.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install new generator at Trenton Avenue to ensure continuity of operations during power failure.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Loss of power at the Trenton Ave Pump Station will cause major sewer backups. This is the City's main sewage pump station, loss of function for an extended period of time would be catastrophic.
Life Safety:	This action will protect lives and prevent injuries by providing continuity of operations during power failure.
Property Protection:	This action will reduce damage to structure and infrastructure by providing continuity of operations during power failure.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be minimal adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$750,000.00
Priority:	Low
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Existing underground fuel tank recently replaced with an above-ground fuel tank.

Union County Mitigation Action Worksheets

Community Action Number: 04-23 Elizabeth, City of

Describing the Action

Action Name:	Install Pump Station Upgrades and Generator at Mattano Park.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install pump station upgrades and a generator at Mattano Park to mitigate flooding and ensure continuity of operations during power failure.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding around Mattano Park may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by mitigating flooding and providing continuity of operations during power failure.
Property Protection:	This action will reduce damage to structure and infrastructure by mitigating flooding and providing continuity of operations during power failure.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, a generator is not a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action as the improvements will be located on easements on the County Park.
Environmental:	There may be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$750,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW; possibly Union County
Likely Funding Source(s):	FEMA HMA, FEMA PA, Municipal Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Electric system replaced after Sandy and flood proofing completed. Pump Station Repairs and Flood Mitigation paid for through FEMA Public Assistance Program. PW#4569 total $237,332.10 of which $67,198 was 406 HM. We still need to install a generator.

Union County Mitigation Action Worksheets

Community Action Number: 04-24 Elizabeth, City of

Describing the Action

Action Name:	Upgrade and Repair Storm Drains and Sewers along Decker Ave.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and repair of storm drains and sewers along Decker Ave. to eliminate backups.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Storm drains and sewers along Decker Ave back up and may cause property damage and power outages.
Life Safety:	This action is not related to protecting lives and preventing injuries by preventing storm drain and sewer backups.
Property Protection:	This action will reduce damage to structure and infrastructure by preventing storm drain and sewer backups.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action may be technically feasible, but may not be a long-term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$2,000,000.00
Priority:	
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	
Action Status:	Withdrawn
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-25 Elizabeth, City of

Describing the Action

Action Name:	Reduce or Eliminate Local Flooding on Pennington Street.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Reduce or eliminate local flooding on Pennington Street.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	The undersized sewer causes local flooding that may damage property and cause power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding around Pennington Street.
Property Protection:	This action will reduce property damage and protect the buildings around Pennington Street.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$2,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	On-going repairs and minor improvements have been made to lessen impacts of flooding in the area.

Union County Mitigation Action Worksheets

Community Action Number: 04-26 Elizabeth, City of

Describing the Action

Action Name:	Purchase and Install a Generator at the Municipal Marina.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator at the municipal marina to fuel public emergency watercrafts.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Emergency fuel for public response watercrafts is necessary to respond and save lives without delays during a natural hazard.
Life Safety:	This action will protect lives and prevent injuries by allowing emergency response watercrafts to operate without delay.
Property Protection:	This action will reduce damage to structure and infrastructure by allowing emergency response watercrafts to operate without delay.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Low
Local Planning Mechanism:	Emergency Response/Management
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-27 Elizabeth, City of

Describing the Action

Action Name:	Upgrade and Repair the Elizabeth River Flood Control Project.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and repair the Elizabeth River Flood Control Project.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Dam Failure
Goals:	4

Evaluating the Action

Risk Reduction:	The Elizabeth River Flood Control Project is in constant need of maintenance and improvement.
Life Safety:	This action will protect lives and prevent injuries by eliminating loss of life due to levee failure or lack of flood control.
Property Protection:	This action will reduce property damage by eliminating property damage due to levee failure or lack of flood control.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial.
Social:	This action provides benefits to the entire population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$20,000,000.00
Priority:	High
Local Planning Mechanism:	Flood control (USACE)
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	The Elizabeth River Flood Control Project is in constant need of maintenance and improvement to provide reliable flood protection.

Union County Mitigation Action Worksheets

Community Action Number: 04-28 Elizabeth, City of

Describing the Action

Action Name:	Purchase and Install Emergency Overhead Signage for Emergency Communication.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install emergency overhead signage for immediate public notifications of hazards and/or locations of muster points when required.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The City needs to immediately notify the public of hazards and/or locations of muster points when required.
Life Safety:	This action will protect lives and prevent injuries by providing immediate notification to the public.
Property Protection:	This action will reduce damage to structure and infrastructure by providing immediate notification to the public.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will improve emergency communications to better protect all segments of the population.
Administrative:	The City may have the personnel and administrative capabilities to implement this action.
Local Champion:	Timothy Stapfer - Emergency Operations Coordinator
Other Community Objectives:	Can be used for all types of emergency communications with the public.
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Communication and Emergency Management
Responsible Party:	Emergency Operations Coordinator and City Engineer
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Timeline to be determined – but continuing to add signage

Union County Mitigation Action Worksheets

Community Action Number: 04-29 Elizabeth, City of

Describing the Action

Action Name:	Purchase and Install Solar Power Disconnects.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Purchase and install solar power disconnects for emergency disconnection of solar powered equipment during a hazard.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Solar power disconnects prevent accidental electrocution and fires from solar powered equipment.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	
Local Planning Mechanism:	Fire Hazards and Public Safety
Responsible Party:	Fire Director and Emergency Coordinator
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	
Action Status:	Withdrawn
Notes:	Withdrawn. All solar facilities already have solar disconnects.

Union County Mitigation Action Worksheets

Community Action Number: 04-30 Elizabeth, City of

Describing the Action

Action Name:	Provide for Infectious Disease Control Through Emergency Communication and Temporary Vaccination Stations.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Provide for infectious disease control through public notifications of disease. Provide locations for temporary vaccination stations if needed.
Hazard(s) Addressed:	Pandemic
Goals:	1

Evaluating the Action

Risk Reduction:	Proper infectious disease control preparation and public notification is necessary to save lives during a disease outbreak.
Life Safety:	This action will protect lives and prevent injuries by preparing for a disease outbreak and notifying the public.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City may have the personnel and administrative capabilities to implement this action.
Local Champion:	Mark Colicchio – Health Officer
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Safety
Responsible Party:	Health Officer and Emergency Operations Coordinator
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-31 Elizabeth, City of

Describing the Action

Action Name:	Design and Construct a New Firehouse Outside of the Flood Zone.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Design and construct a new firehouse outside of flood zone.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding at the firehouse disrupts fire response.
Life Safety:	This action will protect lives and prevent injuries by providing for uninterrupted fire response.
Property Protection:	This action will reduce damage to structure and infrastructure by providing for uninterrupted fire response.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long term solution.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts.
Social:	This action will benefit all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Fire Director - Patrick Byrnes
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$6,000,000.00
Priority:	High
Local Planning Mechanism:	Flood Control
Responsible Party:	Fire Director and DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-32 Elizabeth, City of

Describing the Action

Action Name:	Upgrade the Storm Drains and Sewers in the Lincoln Avenue Area.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade the storm drains and sewers along Lincoln Avenue to control stormwater.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding in the Lincoln Avenue area may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling stormwater in the Lincoln Avenue area.
Property Protection:	This action will reduce damage to structure and infrastructure by controlling stormwater in the Lincoln Avenue area.
Cost Effectiveness:	Costs are expected to be commensurate with the benefits achieved. New project to be evaluated.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts but the project will comply with environmental regulations.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$2,800,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, NJIB
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	In design phase of work.

Union County Mitigation Action Worksheets

Community Action Number: 04-33 Elizabeth, City of

Describing the Action

Action Name:	Conduct a Public Communication, Education, and Outreach Campaign About Severe Winter Storms and Extreme Cold Events.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct a public communication, education, and outreach campaign about severe winter storms and extreme cold events with posted web information.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature
Goals:	1

Evaluating the Action

Risk Reduction:	Public awareness and knowledge of severe winter storms and extreme cold events can be improved. Public awareness surrounding emergency response and warming shelters can also be improved.
Life Safety:	This action will protect lives and prevent injuries by increasing preparedness for and response to severe weather.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are expected to be commensurate with the benefits achieved.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will provide benefits to the entire population.
Administrative:	The City may have the personnel and administrative capabilities to implement this action.
Local Champion:	Erica R. Carter- Wood - Department of Health & Human Services
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Health & Safety
Responsible Party:	Department of Health & Human Services and Emergency Operations Coordinator
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-34 Elizabeth, City of

Describing the Action

Action Name:	Progress Street Flood Control
Action Category:	
Action Type:	
HMA Eligible:	
Action Description:	The local drainage that connected to the outfall will be connected to an existing storm sewer on Dowd Avenue. Additional protection against high water levels in the great ditch will be provided by using box culverts in the Progress Street right-of-way to provide storage for excess runoff low areas.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm), Severe Stor
Goals:	

Evaluating the Action

Risk Reduction:	This action greatly reduces the frequency of flooding matching the temporary condition that allowed for reasonable operation of the local businesses
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$5,500,000.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Department of Public Works/City Engineering
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Funded by NJIB

Union County Mitigation Action Worksheets

Community Action Number: 04-35 Elizabeth, City of

Describing the Action

Action Name:	Salt and Storage Facilities Upgrades
Action Category:	
Action Type:	
HMA Eligible:	
Action Description:	Salt and Storage Facilities Upgrades
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm)
Goals:	

Evaluating the Action

Risk Reduction:	Severe winter storms ranks high among hazards in the City of Elizabeth.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Department of Public Works/City Engineering
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-36 Elizabeth, City of

Describing the Action

Action Name:	Trumbull Street Flood Control (at 6th Street)
Action Category:	Mitigation - Risk Reduction
Action Type:	
HMA Eligible:	
Action Description:	Inlets will be installed at the intersection allowing the drainage system to function during smaller storms. When the capacity of the existing storm inlets is exceeded, the excess stormwater will flow into the new inlets.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm), Severe Stor
Goals:	

Evaluating the Action

Risk Reduction:	The proposed repairs for the intersection of Trumbull Street and Sixth Street are intended to limit roadway flooding and to maintain passable travel lanes. Inlets
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$6,500,000.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Department of Public Works/City Engineering
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	In Closeout, NJIB

Union County Mitigation Action Worksheets

Community Action Number: 04-37 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair and Maintain Brick Sewers and Watermains.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and maintain brick sewers and watermains to control flooding and prevent wain main breaks.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Current brick sewers and watermains are aging and require renewal.
Life Safety:	This action will protect lives and prevent injuries by improving water and sewer infrastructure.
Property Protection:	This action will reduce damage to structure and infrastructure by improving water and sewer infrastructure.
Cost Effectiveness:	Costs are expected to be commensurate with the benefits achieved. New project to be evaluated.
Technical:	This action may be technically feasible.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$12,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management and Water Supply
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA, NJIB
Target State Date:	Evaluation in 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	New Priority to be evaluated in 2021. Timeline to be determined based on funding.

Union County Mitigation Action Worksheets

Community Action Number: 04-38 Elizabeth, City of

Describing the Action

Action Name:	Conduct a Citywide Public Communication Campaign to Increase COVID-19 Awareness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct a citywide public communication campaign to increase COVID-19 awareness. Provide links from the Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA) and links regarding vaccinations to reduce illness and death.
Hazard(s) Addressed:	Pandemic
Goals:	1

Evaluating the Action

Risk Reduction:	Citywide public knowledge about COVID-19 and vaccinations can be improved.
Life Safety:	This action will save lives and prevent illness due to COVID-19 by providing the public with vital public health information.
Property Protection:	This action is not related to structure and infrastructure protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Mark Colicchio, Health Officer
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Safety
Responsible Party:	Health Officer
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	Ongoing
Action Status:	New
Notes:	Ongoing until COVID-19 no longer impacts the City.

Union County Mitigation Action Worksheets

Community Action Number: 04-39 Elizabeth, City of

Describing the Action

Action Name:	Evaluate Possible Earthquake Shelters and Muster Areas Citywide.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Evaluate possible earthquake shelters and muster areas as part of the public communication process and Emergency Operations Plan planning effort. Develop communication and broadcasting materials about temporary shelters and muster areas after major earthquakes.
Hazard(s) Addressed:	Earthquake/Geological
Goals:	1

Evaluating the Action

Risk Reduction:	Citywide earthquake response preparations can be improved.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for earthquakes.
Property Protection:	This action is not related to structure and infrastructure protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Timothy Stapfer - Emergency Operations Coordinator
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Safety
Responsible Party:	Emergency Operations Coordinator
Likely Funding Source(s):	Municipal Budget
Target State Date:	Spring of 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-40 Elizabeth, City of

Describing the Action

Action Name:	Construct an Emergency Response Ambulance Canopy.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Construct an emergency response ambulance canopy to provide overhead protection for emergency vehicles during severe winter weather events.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature
Goals:	4

Evaluating the Action

Risk Reduction:	Snow and ice on emergency vehicles cause delays in emergency response during severe winter storms and extreme cold events.
Life Safety:	This action will protect lives and prevent injuries by minimizing snow and ice accumulation on emergency vehicles.
Property Protection:	This action will minimize snow and ice accumulation on emergency vehicles.
Cost Effectiveness:	While benefits are mostly felt during the winter months, the canopy may also be of use during severe rain events in
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action.
Social:	There are no known adverse social impacts of this action.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Fire Director – Patrick Brynes
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$600,000.00
Priority:	Medium
Local Planning Mechanism:	Emergency Response
Responsible Party:	Fire Director and DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	Construction in 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	New Priority to be evaluated in 2021. Project will be bid in 2021.

Union County Mitigation Action Worksheets

Community Action Number: 04-41 Elizabeth, City of

Describing the Action

Action Name:	Ensure Continuity of Operations at the Liberty Square Senior Center by Purchasing and Installing a Generator.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Ensure continuity of operations at the Liberty Square Senior Center by purchasing and installing a generator.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	The Liberty Square Senior Center is an essential City facility and requires power during emergencies.
Life Safety:	This action will protect lives and prevent injuries by providing for continuity of operations at the Liberty Square Senior Center.
Property Protection:	This action reduces property damage and ensures the longevity of operations by reducing the impacts of a power outage.
Cost Effectiveness:	Costs are expected to be commensurate with the benefits achieved. New project to be evaluated.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be minimal adverse environmental impacts of this action.
Social:	This action will greatly benefit those at the Liberty Square Senior Center.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$350,000.00
Priority:	Medium
Local Planning Mechanism:	Stormwater management and longevity of operation (resiliency of structure).
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	Evaluation in 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	New Priority to be evaluated in 2021. Timeline to be determined based on funding.

Union County Mitigation Action Worksheets

Community Action Number: 04-42 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair and/or Maintain Storm Drains and Sewers at North Avenue and Van Buren.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and/or maintain storm drains and sewers at North Avenue and Van Buren to reduce or eliminate local flooding.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding along North Avenue and Van Buren may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling stormwater at North Avenue and Van Buren.
Property Protection:	This action will reduce property damage and protect the buildings around North Avenue and Van Buren.
Cost Effectiveness:	Costs are expected to be commensurate with the benefits achieved. New project to be evaluated.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There may be adverse environmental impacts of this action.
Social:	There are no known adverse social impacts of this action.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Evaluation in 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	New Priority to be evaluated in 2021. Timeline to be determined based on funding. Cost estimate not formally determined.

Union County Mitigation Action Worksheets

Community Action Number: 04-43 Elizabeth, City of

Describing the Action

Action Name:	Construct a Police Drone Control Tower.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Construct a police drone control tower for emergency search and rescue missions as well as monitoring and preventive measures.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	A police drone control tower is expected to result in reduced loss of life and property damage with fast deployment of drones to visually inspect or monitor storm impacts or ground conditions.
Life Safety:	This action will protect lives and prevent injuries by improving the efficacy of emergency search and rescue.
Property Protection:	This action reduces property damage by using drones to monitor storm impacts or ground conditions.
Cost Effectiveness:	The costs to implement this initiative are expected to be commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action.
Social:	There are no known adverse social impacts of this action.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Police Chief - Giacomo Sacca
Other Community Objectives:	Reduce and monitor unlawful activities
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Medium
Local Planning Mechanism:	Emergency Operations, Monitoring and Land/Damage Surveys
Responsible Party:	Police and Emergency Operations Coordinator
Likely Funding Source(s):	Homeland Security grants
Target State Date:	Evaluation in 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	New Priority to be evaluated in 2021. Timeline to be determined based on funding. Cost estimate not formally determined.

Union County Mitigation Action Worksheets

Community Action Number: 04-44 Elizabeth, City of

Describing the Action

Action Name:	Upgrade, Repair and/or Maintain the Storm Drains and Sewers at Summer and South Broad Street.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, repair and/or maintain storm drains and sewers at Summer and South Broad Street to reduce or eliminate local flooding.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Flooding along Summer and South Broad Street may cause property damage and power outages.
Life Safety:	This action will protect lives and prevent injuries by controlling stormwater at Summer and South Broad Street.
Property Protection:	This action will reduce property damage and protect the buildings around Summer and South Broad Street.
Cost Effectiveness:	Costs are expected to be commensurate with the benefits achieved. New project to be evaluated.
Technical:	This action is technically feasible.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action.
Social:	There are no known adverse social impacts of this action.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Dan Loomis
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$5,000,000.00
Priority:	High
Local Planning Mechanism:	Stormwater Management/Flood Control
Responsible Party:	City Engineer and DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Evaluation in 2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	New Priority to be evaluated in 2021. Timeline to be determined based on funding. Cost estimate not formally determined.

Union County Mitigation Action Worksheets

Community Action Number: 04-45 Elizabeth, City of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The 1% annual chance flood zone in the City is extensive. RL and SRL losses are not concentrated in the floodplain, but rather are scattered throughout the western half of the City (while the majority of the floodplain is in the eastern portion).
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Public opinion and political will are neutral towards this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-46 Elizabeth, City of

Describing the Action

Action Name:	Revise Municipal Stormwater Control Ordinances.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Revise municipal stormwater control ordinances to reflect amendments to the Stormwater Management Rules at N.J.A.C. 7:8, adopted March 2, 2020.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	12

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	City Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 04-47 Elizabeth, City of

Describing the Action

Action Name:	Develop and Assess Citywide Shelters' Preparedness for Extreme Heat and Extreme Cold Events.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Develop and continue assessment of shelters preparedness for extreme temperature events. Equip shelters, currently in Recreation Centers, with food, water and clothing as needed. Conduct a public communication/outreach program during extreme weather to make sure all those that require shelter, food and safely will have a City place to stay during extreme weather conditions.
Hazard(s) Addressed:	Extreme Temperature
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of warming/cooling center availability could be improved.
Life Safety:	This action will protect lives and prevent injuries by ensuring shelters are prepared for extreme temperature events.
Property Protection:	This action does not relate to structure and infrastructure protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	Public opinion and political will are neutral toward this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action benefits the entire population.
Administrative:	The City may or may not have the personnel and administrative capabilities to implement this action.
Local Champion:	Erica R. Carter-Wood - Department of Health & Human Services
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Emergency Management and Public Health & Safety
Responsible Party:	Department of Health & Human Services
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	Ongoing as needed

Local Capability Assessment Worksheet

Jurisdiction: City of Elizabeth

Name: Dan J. Loomis Title: City Engineer

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	City of Elizabeth Master Plan (2016, with 10-year update)
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	Just recertified by NJSP 2020
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	Yes, includes many hazard mitigation projects.
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	Addressed in City's Emergency Operations Plan.
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	Municipal Stormwater Management Plan (2018, with annual review); Stormwater Pollution Prevention Plan (2018, with annual review); Sewer System Operations and Maintenance Manual (2019, with annual review);

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
		Combined Sewer Overflow Long Term Control Plan (2020, with 5-year update)
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	Addressed in City's Emergency Operations Plan.
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	Iso Rating "02"
Site Plan Review Requirements: Review of new development applications	Y	All site plans within the City are reviewed by professional experts with training in evaluating hazards.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	All subdivisions within the City of Elizabeth are reviewed by professional experts with training in evaluating hazards such as, waste disposal, flooding, evacuation, sight distances, buffers, underground contamination, etc.
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	Yes, the City of Elizabeth experts work alongside, Federal, State and County experts to craft ordinances which protect the general public and meet State and Federal guidelines.
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	Requires development to comply with adopted floodplain management regulations.
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	Union County Fire Mutual Aid

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	Requires development to comply with adopted floodplain management regulations and building codes.
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	Regulated by NJDEP
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	Y	The City of Elizabeth's Master Plan and new ordinance reflect the concept of conservation of water and avoidance of heat sinks. Natural buffers, promotion of renewal resources, LED outdoor lighting, promotion of hydrogen use in industrial uses, are all things promoted.
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Y	The City has acquired easements along the almost the entire length of the Elizabeth River within its corporate boundary to maintain the Flood Control Project constructed by the Army Corp of Engineers in the 1980s and prevent encroachments. This area is also regulated by NJDEP.
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Y	Stormwater Pollution Prevention Plan (2018, with annual review)
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	Elizabeth River Flood Control Project
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Y	The City of Elizabeth has in the case of Superstorm Sandy worked nights and weekends to move applications along to promote diligent reviews. The Planning Office utilizes outside consultants whom are on-call at least 55 hours per week. This assists applicants and residents quick and correct answers to their questions.
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	Y	Historically the City has purchased waterfront property for open space and public access.
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	Y	The City as a vast array of tools that it uses to promote the inclusion of open space in all future developments. This open space includes indoor and outdoor uses by residents. As an urban City the Planning Office has enhanced many Brownfields sites which includes hundreds of acres.
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	N	The City of Elizabeth utilizes Federal and State Hazard ordinances. NJ Hazardous ordinances are some of the most strict in the USA.
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	N	I do not believe that the City of Elizabeth's Planning Department has the jurisdiction to implement such an ordinance. This would have to be a State of NJ requirement.

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	Future City, Inc.; Groundwork Elizabeth, Elizabeth Conservancy
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	City Health Department and Police Department use Facebook, Twitter and Instagram to promote Code Blue for cold emergencies, parking locations for snow emergencies, shelter and charging stations for severe weather emergencies, etc.
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	Fire Safety Program, Shelter in Place, Lock Down Drills, Emergency Evacuation, Digital Citizenship (Cybersecurity)
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Y	Teaching the community about sustainable stormwater management using green infrastructure demonstration projects at a local library.
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	N	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	The City of Elizabeth has a development review committee comprised of City professionals.
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	Y	Committee was involved in development of current and prior Hazard Mitigation Plans
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	N	
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	Elizabeth Development Company
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	On-going sewer maintenance, flood control project maintenance, tree trimming…..

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	Part-time
Engineer: a New Jersey licensed Professional Engineer	Y	Full-time
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	Full-time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	Full-time
Floodplain Manager: a Certified Floodplain Manager	Y	Full-time

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	In-house
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Y	Contracted Staff

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Yes	Yes
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Yes	Yes
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	No	Yes
Impact fees for new development: Fees paid by a developer to the municipality	No	Such fees have been deemed illegal in the State of NJ. Additional fees over and above municipal taxes or fair share improvements have been declared illegal in New Jersey.

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Yes	Yes
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	Yes	Yes

What capability would you like your community to gain in the next five to ten years?

APPENDICES VOL I – 5 BOROUGH OF FANWOOD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping
- Meeting Materials

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
John Piccola, Foreman, Public Works

COMMUNITY PROFILE

The Borough of Fanwood is 1.3 square miles and is situated in the western half of Union County. Route 28 and the NJ Transit Raritan Valley commuter rail line pass through the Borough. As of 2018, the population was estimated at 7700 people. This is a 2.87 percent increase in population since the last plan's population estimate of 7,390 (est. 2013). The original inhabitants of Fanwood were of the Lenape Tribe. The area was settled by Scottish immigrants as a farming community, as well as hosting travelers along a stagecoach route. Following the Revolutionary War, population grew, and Fanwood eventually separated from Fanwood Borough, now called Scotch Plains. The Borough of Fanwood was formally incorporated on November 2, 1895, as a train station hub. The train station remains an important part of the Borough to this day, serving commuters along the Raritan Valley Line.

Flooding in Fanwood Borough most often occurs during extreme rain events. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes nor'easters. The only area of the borough within the Special Flood Hazard Area (SFHA) is in the southwestern and southeastern corners, where there is a slight overlap with 100-year and 500-year floodplains of Cedar Brook and Branch 22 of Robinsons Branch, respectively.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Fanwood	
Number of Policies In-Force:	27
Total Losses:	11
Total Payments:	$23,966.03
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	$0
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	$0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Fanwood has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
July 18, 2016	Thunderstorm Wind	N/A	N/A	Trees and power lines were down at the intersection of Midway and Hunter Avenues just northwest of Fanwood. One of the wires fell on a vehicle. The occupant of the vehicle got out of the vehicle and was electrocuted, resulting in a fatality.
August 11, 2018	Flash Flood	N/A	N/A	Widespread flooding reported across the town of Fanwood, including two water rescues from vehicles.
June 29, 2019	Thunderstorm Wind	N/A	N/A	Trees down and branches down throughout the Borough. No major damage.
July 22, 2020	Thunderstorm Wind and heavy rain	N/A	N/A	Flash Flooding in common flooding areas

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Severe Storm – Winter Weather (Includes Ice Storms)	High
Straight-Line Winds	High
Flood	Med
Hail	Med
Hazmat Release – Transportation	Med
High Wind – Tornado	Med
Severe Storm – Lightning	Med
Dam Failure	Low
Drought	Low
Earthquake / Geological	Low
Erosion	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hazmat Release – Fixed Site	Low
Landslide (Non-Seismic)	Low

Hazard	Priority
Storm Surge	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	1.27	0.00	-100.00%
Forest	22.11	22.11	0.00%
Urban	832.27	833.54	0.15%
Water	0.00	0.00	0.00%
Wetlands	1.69	1.69	0.00%

Source: NJDEP Land Use/Land Cover, 2019

The majority of the Borough is urbanized with some small patches of open space and forestland throughout the Borough. There are no significant waterbodies in the Borough, except for a portion of an uncoded tributary surrounded by open space. Green stormwater infrastructure such as bioretention planters and swales, and permeable pavement could be integrated along Midway Ave (CR 610) to reduce flooding along the border with Plainfield City.

NEW AND FUTURE DEVELOPMENT

The only new development is infill development and it is located outside the SFHA.

CRITICAL FACILITIES

The Borough of Fanwood has eight critical facilities, none located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 05-02: Purchase and Install a Generator for the Borough Hall, Police Headquarters, and Fire Headquarters.
- 05-03: Portable Generator
- 05-05: 3 Portable Generators and Transfer Switches for 3 Traffic Signals on Martine Avenue.
- 05-08: Generator for Forest Road Park (Warming station)

SUCCESSES IN MUNICIPAL CAPABILITIES

The Borough of Fanwood has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- The Borough's redevelopment plan integrates hazard mitigation by improving a site to prevent blight and promote smart growth
- The Borough has development a Stormwater Pollution Plan (which is stricter than DEP's BMP) and a Floodplain Management Plan

The complete Mitigation Strategy for Fanwood Borough and their Capability Assessment is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
05-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	High	OEM Coordinator, in coordination with County	Borough funds	$0.00	1 year	Ongoing
05-02	Purchase and Install a Generator for the Borough Hall, Police Headquarters, and Fire Headquarters.	The Borough seeks to provide temporary power via a generator for Borough Hall, the Police Headquarters, and Fire Headquarters.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		Borough		$110,000.00		Completed
05-03	Purchase a Portable Generator.	Purchase a portable generator.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		Borough		$25,000.00		Completed
05-04	Purchase a Variable Message Board.	Purchase a variable message board.	Administrative	Local Plans and Regulations	All Hazards		Borough		$12,000.00		Completed
05-05	Purchase 3 Portable Generators and Transfer Switches for 3 Traffic Signals on Martine Avenue.	Purchase 3 portable generators and transfer switches for 3 traffic signals on Martine Avenue.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		Borough		$18,000.00		Completed
05-06	Purchase and Install 6 Portable Light Towers.	Purchase and install 6 portable light towers for rescues at night or during a power outage.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Borough	Municipal Budget	$72,000.00	Ongoing	Carried Forward
05-07	Purchase and Install a Generator for LaGrande Park (Warming Station).	The Borough seeks to provide temporary power via a generator for the LaGrande Park building, which serves as a warming station.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Extreme Temperature	High	Borough	Municipal Budget	$75,000.00	Ongoing	Carried Forward
05-08	Purchase a Generator for Forest Road Park (Warming Station).	Purchase a generator for Forest Road Park (warming station).	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		Borough		$75,000.00		Completed
05-09	Purchase a Generator for Public Works Gas Pumps.	Purchase a generator for Public Works gas pumps.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		Borough		$75,000.00		Withdrawn

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
05-10	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas in the Western and Southern Portions of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	There are currently no RL or SRL properties in the Borough; however, the Borough realizes the floodplain changes over time and the risk is always present. If in the next five years properties become RL/SRL, the Borough will coordinate with residents to mitigate properties through structure elevation, demolition to open space, or another type of mitigation.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Borough and Property Owners	FEMA HMA	$0.00	Ongoing	New
05-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 05-01 Fanwood, Borough of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness and mitigation of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County
Likely Funding Source(s):	Borough funds
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated Cost: Staff Time Ongoing from 2010 and 2016. Currently, the Borough conducts education and outreach activities through the Environmental Commission and disaster safety is taught in schools.

Union County Mitigation Action Worksheets

Community Action Number: 05-02 Fanwood, Borough of

Describing the Action

Action Name:	**Purchase and Install a Generator for the Borough Hall, Police Headquarters, and Fire Headquarters.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**The Borough seeks to provide temporary power via a generator for Borough Hall, the Police Headquarters, and Fire Headquarters.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$110,000.00**
Priority:	
Local Planning Mechanism:	**Grants/Capital Funds**
Responsible Party:	**Borough**
Likely Funding Source(s):	
Target State Date:	**5/1/15**
Timeline:	
Action Status:	**Completed**
Notes:	**Completed in 2016 with funding from FEMA Reimbursement.**

Union County Mitigation Action Worksheets

Community Action Number: 05-03 Fanwood, Borough of

Describing the Action

Action Name:	**Purchase a Portable Generator.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Purchase a portable generator.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$25,000.00**
Priority:	
Local Planning Mechanism:	**Grants/Capital funds**
Responsible Party:	**Borough**
Likely Funding Source(s):	
Target State Date:	**Funding dependent**
Timeline:	
Action Status:	**Completed**
Notes:	**This action was completed in 2016.**

Union County Mitigation Action Worksheets

Community Action Number: 05-04 Fanwood, Borough of

Describing the Action

Action Name:	**Purchase a Variable Message Board.**
Action Category:	**Administrative**
Action Type:	**Local Plans and Regulations**
HMA Eligible:	
Action Description:	**Purchase a variable message board.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$12,000.00**
Priority:	
Local Planning Mechanism:	**Grants/Capital funds**
Responsible Party:	**Borough**
Likely Funding Source(s):	
Target State Date:	**Funding dependent**
Timeline:	
Action Status:	**Completed**
Notes:	**Completed in 2015.**

Union County Mitigation Action Worksheets

Community Action Number: 05-05 Fanwood, Borough of

Describing the Action

Action Name:	**Purchase 3 Portable Generators and Transfer Switches for 3 Traffic Signals on Martine Avenue.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Purchase 3 portable generators and transfer switches for 3 traffic signals on Martine Avenue.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$18,000.00**
Priority:	
Local Planning Mechanism:	**Grants/Capital funds**
Responsible Party:	**Borough**
Likely Funding Source(s):	
Target State Date:	**Funding dependent**
Timeline:	
Action Status:	**Completed**
Notes:	**Completed in 2013 with funding from FEMA reimbursement.**

Union County Mitigation Action Worksheets

Community Action Number: 05-06 Fanwood, Borough of

Describing the Action

Action Name:	Purchase and Install 6 Portable Light Towers.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Purchase and install 6 portable light towers for rescues at night or during a power outage.
Hazard(s) Addressed:	All Hazards
Goals:	3, 4

Evaluating the Action

Risk Reduction:	Emergency responders cannot always see when rescuing at night, especially if there is a power outage.
Life Safety:	This action will protect lives and prevent injuries by enhancing the Borough's rescue capabilities.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will enhance rescue capabilities to better protect all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$72,000.00
Priority:	Medium
Local Planning Mechanism:	Grants/Capital funds
Responsible Party:	Borough
Likely Funding Source(s):	Municipal Budget
Target State Date:	Funding dependent
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	This action has been carried forward from 2016 due to funding issues.

Union County Mitigation Action Worksheets

Community Action Number: 05-07 Fanwood, Borough of

Describing the Action

Action Name:	Purchase and Install a Generator for LaGrande Park (Warming Station).
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	The Borough seeks to provide temporary power via a generator for the LaGrande Park building, which serves as a warming station.
Hazard(s) Addressed:	Extreme Temperature
Goals:	3, 4

Evaluating the Action

Risk Reduction:	The LaGrande Park building serves as a warming station during extreme cold events. It is critical that this building maintain emergency power so that it can continue to serve the community during a power outage.
Life Safety:	This action will protect lives and prevent injuries by allowing the LaGrande Park building to continue to serve as a warming station during a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	The LaGrande Park building serves as a warming station for all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$75,000.00
Priority:	High
Local Planning Mechanism:	Grants/Capital funds
Responsible Party:	Borough
Likely Funding Source(s):	Municipal Budget
Target State Date:	Funding dependent
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	This action has been carried forward from 2016 due to funding issues.

Union County Mitigation Action Worksheets

Community Action Number: 05-08 Fanwood, Borough of

Describing the Action

Action Name:	**Purchase a Generator for Forest Road Park (Warming Station).**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Purchase a generator for Forest Road Park (warming station).**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$75,000.00**
Priority:	
Local Planning Mechanism:	**Grants/Capital funds**
Responsible Party:	**Borough**
Likely Funding Source(s):	
Target State Date:	**Funding dependent**
Timeline:	
Action Status:	**Completed**
Notes:	**Completed in 2014 using Borough funding. The Forest Road Park Warming station was wired for a portable generator.**

Union County Mitigation Action Worksheets

Community Action Number: 05-09 Fanwood, Borough of

Describing the Action

Action Name:	**Purchase a Generator for Public Works Gas Pumps.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Purchase a generator for Public Works gas pumps.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$75,000.00**
Priority:	
Local Planning Mechanism:	**Grants/Capital Funds**
Responsible Party:	**Borough**
Likely Funding Source(s):	
Target State Date:	**Funding dependent**
Timeline:	
Action Status:	**Withdrawn**
Notes:	**Withdrawn as tanks have since been removed.**

Union County Mitigation Action Worksheets

Community Action Number: 05-10 Fanwood, Borough of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas in the Western and Southern Portions of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	There are currently no RL or SRL properties in the Borough; however, the Borough realizes the floodplain changes over time and the risk is always present. If in the next five years properties become RL/SRL, the Borough will coordinate with residents to mitigate properties through structure elevation, demolition to open space, or another type of mitigation.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas in the western and southern portions of the Borough are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish, or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has sufficient capacity and experience to administer this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough and Property Owners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 05-11 Fanwood, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: FANWOOD

Name: John Piccola Title: OEM Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	Discussion with FD & DPW
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	Discussion with FD- PD -DPW
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	Borough
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	Addressed mitigation per NJ DEP BMP
Emergency Response Plan: Outlines the		

parties responsible for and the procedures necessary for emergency response	Y	SOP's + SOG's
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	
Site Plan Review Requirements: Review of new development applications	Y	Fire official + FD w Boro + PD
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	SAME AS ABOVE
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	Prevents over Development + Addresses HAZARDS
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	Boro Storm WATER MANG. PLAN - more strict than NJDEP-BMP
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	COUNTY RUN MUTUAL AID

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	Improve Site to Prevent Blight + Promote SMART Growth
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	N	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape	N	

restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway		
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Y	STORMWATER POLLUTION PLAN PREPARED TO PREVENT POLLUTION
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	SAME AS ABIVE
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters		
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation		
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation		
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl		
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas		
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster		
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	Addressed By Environmental Comm.
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction		
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	Taught in Schools
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.		
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community		
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards		
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population		

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board/Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	
Mitigation Planning Committee: Works to		

enhance and promote effective multi-hazard mitigation planning at all levels of government		
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Y	
Economic Development Commission: Provides recommendations on economic development policies and issues		
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems		

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	[illegible]
Planner: a New Jersey licensed Professional Planner	Y	P/T
Engineer: a New Jersey licensed Professional Engineer	Y	P/T
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	P/T
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	P/T
Floodplain Manager: a Certified Floodplain Manager		
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	P/T
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Y	P/T

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan		
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.		
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions		
Impact fees for new development: Fees paid by a developer to the municipality		
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects		
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program		

What capability would you like your community to gain in the next five to ten years?

FANWOOD BOROUGH FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 750 1,500 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

Somerset County

Westfield Town

Plainfield City

Scotch Plains Township

Fanwood Station

Netherwood Station

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 6 BOROUGH OF GARWOOD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Ken Capobianco, OEM Coordinator

COMMUNITY PROFILE

The Borough of Garwood has a total area of 0.664 square miles and is located between Cranford and Westfield in Union County, New Jersey. As of 2018, the population was estimated at 4,334. This is a 4.24 percent increase in population since the last plan's population estimate of 4,239 (est. 2013). John Maxwell, former president of the Central Railway of New Jersey, purchased land that was the "Garwood Land and Improvement Company" in the 1890's. Garwood's history includes the development of local industries, including Hercules Tubeworks, Thatcher Furnace, and the Aeolian, Weber Piano and Pianola Company factory, situated alongside the railroad tracks. Later the factory site became a paper mill, and the railroad service continued on with a station on the NJ Transit Raritan Valley line serving the Borough.

Garwood Borough has one significant Special Flood Hazard Area (SFHA) near the Garwood Brook, a tributary to Rahway River, which crosses the central part of the jurisdiction in a generally west-east direction. The only other, relatively small SFHA is in the extreme north part of the jurisdiction, where floodplain of Gallows Hill Road Branch crosses over the municipal boundary of Westfield and extends the 500-year flood hazard. Both streams are tributaries to Rahway River that flows to the east of the community. There are not very many NFIP insurance claims in Garwood.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Garwood	
Number of Policies In-Force:	63
Total Losses:	35
Total Payments:	$415,680.79
Number of RL Properties:	1
Number of Mitigated RL Properties:	0
RL – Total Losses:	3
RL – Total Paid:	$15,957
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	4
SRL – Total Paid:	$218,543

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

RECENT HAZARDS

Since the last Union County HMP, Garwood has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
April 30, 2014	Flood	N/A	N/A	Flooding on the Rahway River resulted in voluntary evacuations along the river in Cranford.
July 2, 2014	Flash Flood	N/A	N/A	Several cars were stuck in flood waters at the intersection of Lincoln Ave. and North Ave. in Cranford. This resulted in the need for water rescues by the local fire department.
July 14, 2014	Lightning	N/A	N/A	A chimney was struck by lightning on Retford Avenue. The chimney was destroyed at the roof lie and resulted in a crack all the way to the basement.
July 14, 2016	Thunderstorm Wind	N/A	N/A	A tree was reported to be blocking North Avenue between Westfield and Garwood.
July 18, 2016	Thunderstorm Wind	N/A	N/A	Trees were reported down on both South Avenue and East Street in Garwood.
July 25, 2016	Flash Flood	N/A	N/A	The intersection of Elise Street, Johnson Avenue, and South Avenue in Cranford was closed due to flooding.
July 3, 2018	Flash Flood	N/A	N/A	Water rescues were being conducted at the intersection of Chestnut Street and High Street in Cranford.
July 3, 2018	Thunderstorm Wind	N/A	N/A	A downed tree on Carolina Street.
July 27, 2018	Flash Flood	N/A	N/A	South Union Avenue was closed due to flooding between Marsh Street and Lexington Avenue due to flooding.
May 29, 2019	Flash Flood	N/A	N/A	Center Street was closed between North Avenue and South Avenue in Garwood due to flooding.
June 29, 2019	Thunderstorm Wind	N/A	N/A	Large tree limbs and branches reported down with time estimated by radar.
July 22, 2020	Flash Flood	N/A	N/A	Flash flooding occurred in many locations around the town of Cranford. The Fire Department performed water rescues on both High Street and Chestnut Street.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	Med
High Wind – Tornado	Med
Severe Storm – Winter Weather (Includes Ice Storms)	Med
High Wind - Straight-Line Winds	Med
Dam Failure	Low

Hazard	Priority
Drought	Low
Earthquake / Geological	Low
Erosion –Hurricane/Nor'easter/Tropical Storm	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hail	Low
Hazardous Materials Release– Fixed Site	Low
Hazardous Materials Release – Transportation	Low
Landslide (Non-Seismic)	Low
Severe Storm – Lightning	Low
Storm Surge – Hurricane/Nor'easter/Tropical Storm	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	0.00	0.00	0.00%
Forest	12.74	10.82	-15.03%
Urban	403.04	404.95	0.47%
Water	0.00	0.00	0.00%
Wetlands	0.00	0.00	0.00%

Source: NJDEP Land Use/Land Cover, 2019

Garwood Borough does not have any significant forestland or wetlands. The Borough may want to look into creating detention ponds or a floodplain or stormwater lot near James Guerriero Memorial Field to mitigate flooding.

FUTURE DEVELOPMENT

There are current development projects on both North and South Avenue, which include residential and business space. The North Avenue Development at 75 North Avenue is outside the SFHA. A small portion of the South Avenue Development (the Former Petro Plastics and Casale Industries Site) at 450-490 South Avenue and 50 Center Street is within the SFHA. There are no plans for further development in the works at this time.

CRITICAL FACILITIES

The Borough of Garwood has 7 critical facilities, none of which are located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

All of the actions for Garwood are ongoing.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Borough of Garwood has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Redevelopment Plan/Study
- Community Wildfire Protection Plan
- Climate Adaptation Plan
- Post-Disaster Recovery Plan
- Natural Hazard Ordinance
- Post-Disaster Recovery Ordinance: Provided flexibility during the COVID-19 pandemic
- The Borough also has a Streambank Buffer Protection Program, Watershed Management Plan, and Floodplain Management Plan as required by the New Jersey Department of Environmental Protection.
- The Borough is Bronze Certified by Sustainable Jersey, engages in public-private partnership initiatives addressing disaster related issues with NJ American Water and PSE&G, and has a Mitigation Planning Committee.

The complete Mitigation Strategy and Capability Assessment for the Borough of Garwood is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
06-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Continue to conduct all-hazards public education and outreach program for hazard mitigation and preparedness to keep partners and the public informed.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	1 year	Ongoing
06-02	Purchase and Install Generators for Multiple Critical Facilities to Use as Warming/Cooling Stations and Maintain Critical Borough Operations.	The Borough is pursuing generators for multiple critical facilities to use as warming/cooling stations and maintain critical Borough operations.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	High	OEM	FEMA HMA, Municipal Budget	$575,000.00	1 - 2 years	Ongoing
06-03	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Mitigate current and future RL properties in the Borough through elevation or acquisition as funding permits to reduce continued dangers to life and property and insurance claims.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	Ongoing
06-04	Build a Water Retention Basin/Pond.	Build a water retention basin/pond to slow the flow of water into the Garwood Brook.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	OEM/Borough Engineer	Grants	$400,000.00	1 year	New
06-05	Make a Dedicated Emergency Operations Center (EOC) Area.	Make a dedicated EOC room to allow for better communications and allocation of materials as well as a safer place for staff to respond to emergencies.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	OEM	Capital Improvement	$45,000.00	1 year	New
06-06	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 06-01 Garwood, Borough of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Continue to conduct all-hazards public education and outreach program for hazard mitigation and preparedness to keep partners and the public informed.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Edı cation is always a tool in risk reduction. The general public's understanding of natural hazards and mitigation possibilities could be improved.
Life Safety:	This will help save lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	Knowledge will always help in protecting property. This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	Education is very cost effective as the largest cost is often the speaker's time.
Technical:	This is technically feasible and a long term solution.
Political:	This is fully supported politically.
Legal:	There are no legal issues. The Borough has the authority to implement this action.
Environmental:	There are no environmental issues. Environmental regulations do not apply.
Social:	There are no social issues. This action will involve all segments of the population.
Administrative:	There are no administrative issues. The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	The Mayor and Council fully support this program.
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated Cost: Staff time needed for same Ongoing from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 06-02 Garwood, Borough of

Describing the Action

Action Name:	Purchase and Install Generators for Multiple Critical Facilities to Use as Warming/Cooling Stations and Maintain Critical Borough Operations.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	The Borough is pursuing generators for multiple critical facilities to use as warming/cooling stations and maintain critical Borough operations.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Critical facilities provide necessary services to the community during a disaster. It is critical for these facilities to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by allowing for continuity of operations during power failure.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$575,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	TBD
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	Estimated Cost: 200,000-575,000 per unit. Ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 06-03 Garwood, Borough of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Mitigate current and future RL properties in the Borough through elevation or acquisition as funding permits to reduce continued dangers to life and property and insurance claims.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along a Rahway River tributary that cuts through the east-west center of the Borough are at risk of future destruction and property loss due to repetitive flooding. Currently, RL properties are found along this stream on South Ave (CR 610) and Willow Ave near James Guerriero Memorial Field.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The costs to implement this action are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group. It is supported by the community.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Estimated Cost: Varies Ongoing from 2016

Union County Mitigation Action Worksheets

Community Action Number: 06-04 Garwood, Borough of

Describing the Action

Action Name:	Build a Water Retention Basin/Pond.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Build a water retention basin/pond to slow the flow of water into the Garwood Brook.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Garwood Brook is prone to flooding.
Life Safety:	This action will reduce human injury or loss related to flooding from Garwood Brook.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by reducing the chance of internal property flooding from Garwood Brook.
Cost Effectiveness:	There should be a positive cost benefit to this project.
Technical:	This project is technically feasible and a long-term solution.
Political:	There is public support for flood mitigation.
Legal:	Legal issues will be addressed as needed.
Environmental:	Environmental impacts should be minimal through construction. All environmental regulations will be followed.
Social:	There are no social issues. This action does not adversely affect any particular social group.
Administrative:	There are no administrative issues. The Borough has sufficient capacity and experience to administer this action.
Local Champion:	The Mayor and Council will be instrumental in helping to start this project.
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$400,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM/Borough Engineer
Likely Funding Source(s):	Grants
Target State Date:	When Funding is Available
Timeline:	1 year
Action Status:	New
Notes:	Timeline: 6 months

Union County Mitigation Action Worksheets

Community Action Number: 06-05 Garwood, Borough of

Describing the Action

Action Name:	Make a Dedicated Emergency Operations Center (EOC) Area.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Make a dedicated EOC room to allow for better communications and allocation of materials as well as a safer place for staff to respond to emergencies.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	The Borough is in need of an EOC to allow for better communications and allocation of material, as well as a safer place for staff to respond to emergencies.
Life Safety:	This action will protect lives and prevent injuries by providing for a safer place for staff to respond to emergencies.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by improving emergency response.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There may be site-specific environmental concerns related to this action. All applicable environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has sufficient capacity and experience to administer this action. This action will allow for better uses and allocation of staff and material.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$45,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Capital Improvement
Target State Date:	In process
Timeline:	1 year
Action Status:	New
Notes:	Timeline: 4 months

Union County Mitigation Action Worksheets

Community Action Number: 06-06 Garwood, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: ____Borough of Garwood_____

Name: ___Ken Capobianco_____ Title: _OEM Coordinator_____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	BASIC PLAN SECTION III – A&B
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	y	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	BSIC PLAN SECTION V
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	y	YES, FEDERAL AND STATE GUIDELINES FOR STANDARDS
Emergency Response Plan: Outlines the parties	Y	BASIC PLAN SECTION V - A

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
responsible for and the procedures necessary for emergency response		
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	BASIC PLAN SECTION V – A3
Site Plan Review Requirements: Review of new development applications	Y	
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	Y	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	Y	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Y	YES, AS REQUIRED BY NJDEP
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Y	YES, AS REQUIRED BY NJDEP
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	YES, AS REQUIRED BY NJDEP
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Y	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	N	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	N	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Y	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	Y	YES, FLEXIBILITY DURING PANDEMIC
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	N	

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	GREEN TEAM, MAYORS WELLNESS PROGRAM
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	YES, MEDIA POSTINGS & IN-PERSON INFORMATION MEETINGS
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	FIRE DRILLS, TERROR DRILLS, PANDEMIC SAFETY
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Y	BRONZE CERTIFICATION
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Y	NJ AMER WATER AND PSE&G PROGRAMS

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	Y	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Y	
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	
Engineer: a New Jersey licensed Professional Engineer	Y	PART-TIME
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	PART-TIME
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	SHARED SERVICES WITH TWP OF CRANFORD
Floodplain Manager: a Certified Floodplain Manager	Y	
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	PART-TIME
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and	Y	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
community asset data		

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	YES	YES
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	YES	YES
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	YES	NO
Impact fees for new development: Fees paid by a developer to the municipality	YES	YES
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	NO	NO
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	NO	YES

What capability would you like your community to gain in the next five to ten years?

MORE CAPABLE FLOOD MANAGEMENT PROGRAM

GARWOOD BOROUGH FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

Westfield Town

Cranford Township

Garwood Station

LIBERTY CT
UNION ST
CEDAR ST
FOURTH AVE
OAK ST
THIRD AVE
HOLLY ST
ANCHOR PL
WINSLOW PL
MAPLE ST
28
59
610
WILLOW AVE
MYRTLE AVE
SPRUCE ST
CENTER ST
LOCUST AVE
EAST ST
BOYNTON ST
PINE AVE
HAZEL AVE
HEMLOCK AVE
HICKORY AVE

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Michael Baker INTERNATIONAL

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 450 900 Feet

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 7 TOWNSHIP OF HILLSIDE

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Douglas Ferrigno, Fire Department

COMMUNITY PROFILE

The Township of Hillside has a total area of 2.761 square miles and is located along the northern boundary of Union County, New Jersey. Major transportation routes in Hillside include Route 22, Route 78 and the Garden State Parkway. As of 2018, the population was estimated at 21,895. This is a 1.66 percent increase in population since the last plan's population estimate of 21,538 (est. 2013). The Township of Hillside was formally incorporated in April 2013 from portions of Union County as well as Elizabeth and Newark in Essex County. The Woodruff House, owned by the Hillside Historical Society, is one of the oldest properties in the Township as a farmstead dated to the 1600's.3 After WWII, industry grew, and Hillside has been home to both Bristol-Myers Squibb and Lionel Trains.

Flooding in Hillside Township most often occurs during extreme rain events. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes nor'easters. Flood-prone areas include Yale and Harvard Avenues (west side of City) and west/northwest of Central avenue in the area of Baltimore Avenue, etc. The Elizabeth River comprises the western boundary of this jurisdiction, and most of the Special Flood Hazard Area (SFHA) in Hillside is around this flood source, although there is another area of floodplain and a concentration of flood insurance claims on Baker Street, west of Central Avenue and south of Long Avenue.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Hillside	
Number of Policies In-Force:	54
Total Losses:	206
Total Payments:	$1,093,619.39
Number of RL Properties:	32
Number of Mitigated RL Properties:	0
RL – Total Losses:	90
RL – Total Paid:	$606,755
Number of SRL Properties:	2
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	10
SRL – Total Paid:	$122,096

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

According to the NOAA National Centers for Environmental Information Storm Events database and the FEMA Declared Disaster data, Hillside has experienced no hazards since the last plan update in 2016.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Hazardous Materials Release– Fixed Site	High
Hazardous Materials Release– Transportation	High
High Wind – Straight- Line Winds	Med
Severe Storm – Winter Weather (Includes Ice Storms)	Med
Drought	Low
Earthquake / Geological	Low
Erosion - Hurricane/Nor'easter/Tropical Storm	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hail	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Severe Storm – Lightning	Low
Storm Surge - Hurricane/Nor'easter/Tropical Storm	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Dam Failure	None
Wildfire	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following

table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	5.47	0.00	-100.00%
Forest	49.13	49.13	0.00%
Urban	1,655.14	1,660.61	0.33%
Water	12.30	12.30	0.00%
Wetlands	58.24	58.24	0.00%

Source: NJDEP Land Use/Land Cover, 2019

Hillside's wetlands, parkland and FEMA flood zones all surround the Elizabeth River along the Township's border with Union Township. The Township may want to look into mitigation planting locations along the Elizabeth River and within the channel in order to support riparian habit and stabilize banks at risk of eroding as well as wetland restoration.

NEW AND FUTURE DEVELOPMENT

The Township is mostly built-out, however has a small area along N. Broad Street that is targeted for redevelopment. This area is located outside the SFHA.

CRITICAL FACILITIES

The Township of Hillside has 22 critical facilities, none of which are located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 07-03: Retrofit the North Avenue Pump Station that Houses Three Pumps.
- 07-07: Join Union County First Alert System and Develop Telephone Emergency-based System to Notify Residents, including Facebook and Twitter.

The U.S. Army Corps of Engineers completed the Elizabeth River at Hillside Flood Control Project. The following images showcase the improvements implemented as a part of this project.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Hillside has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Post-Disaster Recovery Plan
- Real Estate Disclosure Requirement
- The Township is also a certified StormReady Community.

The complete Mitigation Strategy and Capability Assessment for Hillside Township is part of this appendix.

Hillside, Township of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
07-01	Construct Additional Basins to Protect Town Hall which Houses the Police Department and the Library.	Construct additional basins to protect the Town Hall which houses the Police Department and the community library.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Hillside Municipality	FEMA HMA	$300,000.00	3 - 4 years	Ongoing
07-02	Upgrade Stormwater Management System for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.	Upgrade and improve the stormwater management system for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Hillside Municipal OEM	FEMA HMA	$700,000.00	1 - 2 years	Ongoing
07-03	Retrofit the North Avenue Pump Station that Houses Three Pumps.	Retrofit the North Avenue station that houses three pumps.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Hillside Municipal OEM		$200,000.00		Completed
07-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	Ongoing	Ongoing
07-05	Purchase and Install Emergency Backup Generators at the Community Center and Senior Center.	Purchase and install emergency backup generators at the Community Center and Senior Center.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	Medium	Department of Public Works	FEMA HMA	$109,800.00	1 year	Ongoing
07-06	Conduct Ongoing Tree Maintenance and Survey Along Township Right-of-ways.	Conduct ongoing tree maintenance and survey along Township rights-of-way.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Power Failure, Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	Medium	Department of Public Works	Municipal Budget	$50,000.00	Ongoing	Ongoing
07-07	Join Union County First Alert System and Develop Telephone Emergency-based System to Notify Residents, including Facebook and Twitter.	Join Union County First Alert System and develop telephone emergency based system to notify residents, including Facebook and Twitter.	Maintenance/Response/Recovery	Education and Awareness Programs	All Hazards		Fire Department/OEM		$0.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
07-08	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Elizabeth River and Route 22 Near the Township's Border with Union Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire structures, elevate, or relocate structures that are listed as RL/SRL properties. Hillside Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	New
07-09	Coordinate with the County to Construct a Stormwater Basin at Rutgers Ave., Support Riparian Habitat and Stabilize Banks at Risk of Eroding, and Conduct Wetland Restoration Around Rutgers Avenue Park.	Coordinate with Union County to construct a stormwater basin at Rutgers Ave, support riparian habitat and stabilize banks as risk of eroding, and conduct wetland restoration around Rutgers Avenue Park.	Mitigation - Risk Reduction	Natural Systems Protection	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	High	Township Engineering	FEMA HMA	$0.00	1 - 4 years	New
07-10	Coordinate with US DOT to Retrofit Route 22 to Mitigate Flooding.	Coordinate with US DOT to retrofit Route 22 to mitigate flooding.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood	High	US DOT	FEMA HMA, US DOT	$0.00	4 years	New
07-11	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 07-01 Hillside, Township of

Describing the Action

Action Name:	Construct Additional Basins to Protect Town Hall which Houses the Police Department and the Library.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct additional basins to protect the Town Hall which houses the Police Department and the community library.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Town Hall is subject to flooding due to poor stormwater management.
Life Safety:	This action will protect lives and prevent injuries by protecting the Town Hall from future flooding.
Property Protection:	This action will prevent future flood damage to Town Hall.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement, Engineering Study done at site
Responsible Party:	Hillside Municipality
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	3 - 4 years
Action Status:	Ongoing
Notes:	2021 update: the Township conducts maintenance to the basins however additional basins are still needed to mitigate flooding.

Union County Mitigation Action Worksheets

Community Action Number: 07-02 Hillside, Township of

Describing the Action

Action Name:	**Upgrade Stormwater Management System for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Upgrade and improve the stormwater management system for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.**
Hazard(s) Addressed:	**Flood**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**This area of the Township is subject to repetitive flooding; several RL properties are located around this area.**
Life Safety:	**This action will protect lives and prevent injuries by better controlling stormwater on Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.**
Property Protection:	**This action will better control stormwater and prevent future flood damage to structures, including RL properties, on Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue.**
Cost Effectiveness:	**The costs to implement this initiative are commensurate with the benefits achieved.**
Technical:	**This action is technically feasible and a long-term solution.**
Political:	**There is public support and political will to support this action.**
Legal:	**The Township has the authority to implement this action.**
Environmental:	**There are no known adverse environmental impacts.**
Social:	**This action does not adversely affect any particular social group.**
Administrative:	**The Township has the personnel and administrative capabilities to implement this action.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**10**

Implementing the Action

Cost Estimate:	**$700,000.00**
Priority:	**High**
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Hillside Municipal OEM**
Likely Funding Source(s):	**FEMA HMA**
Target State Date:	**TBD**
Timeline:	**1 - 2 years**
Action Status:	**Ongoing**
Notes:	**2021 update: Guard Street improvements are complete, however Baker St and 2/3 St still need improvements.**

Union County Mitigation Action Worksheets

Community Action Number: 07-03 Hillside, Township of

Describing the Action

Action Name:	**Retrofit the North Avenue Pump Station that Houses Three Pumps.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Retrofit the North Avenue station that houses three pumps.**
Hazard(s) Addressed:	**Flood**
Goals:	**4**

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$200,000.00**
Priority:	
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Hillside Municipal OEM**
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	**Completed**
Notes:	**2021 update: The Township applied for a grant to retrofit the pump station but was not awarded the money, however the Township used municipal budget to retrofit the three pumps.**

Union County Mitigation Action Worksheets

Community Action Number: 07-04 Hillside, Township of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The highest priority hazards in the Township are Flood and Hazardous Materials Release. The community's overall level of disaster resilience would increase if residents better understood these hazards.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for hazards.
Property Protection:	This action will indirectly reduce damage to structures and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	2021 update: there are pre-storm and post storm classes taught with Red Cross; uses social media to communicate information

Union County Mitigation Action Worksheets

Community Action Number: 07-05 Hillside, Township of

Describing the Action

Action Name:	Purchase and Install Emergency Backup Generators at the Community Center and Senior Center.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install emergency backup generators at the Community Center and Senior Center.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The Community Center and Senior Center are valued community facilities that must maintain emergency power during a disaster until the primary power is restored.
Life Safety:	This action will protect lives and prevent injuries by maintaining power to community facilities during a disaster.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$109,800.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Department of Public Works
Likely Funding Source(s):	FEMA HMA
Target State Date:	2015
Timeline:	1 year
Action Status:	Ongoing
Notes:	Community Center generator funded through DCA grant (only coved $75k); Senior Center generator still needs to happen. Cost estimate reflects new cost minus the community center.

Union County Mitigation Action Worksheets

Community Action Number: 07-06 Hillside, Township of

Describing the Action

Action Name:	Conduct Ongoing Tree Maintenance and Survey Along Township Right-of-ways.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Conduct ongoing tree maintenance and survey along Township rights-of-way.
Hazard(s) Addressed:	Power Failure, Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds
Goals:	3

Evaluating the Action

Risk Reduction:	The limbs of trees and/or the trees themselves may fall during storm events, potentially knocking down above-ground power and communication lines. Fallen trees and tree limbs may potentially cause injury and property damage. Fallen trees and tree limbs may also create hazardous driving conditions through debris on the roadway.
Life Safety:	This action will protect lives and prevent injuries by identifying and maintaining potentially hazardous trees that could fall and cause injuries during storm events.
Property Protection:	This action will prevent structure and infrastructure damage as a result of fallen trees and tree limbs during storm events. It will also lessen the likelihood of power failure due to fallen trees and tree limbs.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Department of Public Works
Likely Funding Source(s):	Municipal Budget
Target State Date:	2015
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	2021 update: ongoing action

Union County Mitigation Action Worksheets

Community Action Number: 07-07 Hillside, Township of

Describing the Action

Action Name:	**Join Union County First Alert System and Develop Telephone Emergency-based System to Notify Residents, including Facebook and Twitter.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Education and Awareness Programs**
HMA Eligible:	**No**
Action Description:	**Join Union County First Alert System and develop telephone emergency based system to notify residents, including Facebook and Twitter.**
Hazard(s) Addressed:	**All Hazards**
Goals:	**1**

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$0.00**
Priority:	
Local Planning Mechanism:	**Emergency Management**
Responsible Party:	**Fire Department/OEM**
Likely Funding Source(s):	
Target State Date:	**2015**
Timeline:	
Action Status:	**Completed**
Notes:	**2021 update: reverse alert system and Hillside Fire Dept. Facebook page**

Union County Mitigation Action Worksheets

Community Action Number: 07-08 Hillside, Township of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Elizabeth River and Route 22 Near the Township's Border with Union Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire structures, elevate, or relocate structures that are listed as RL/SRL properties. Hillside Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the Elizabeth River near the Township's border with Union Township are at risk of future destruction and property loss due to repetitive flooding. Hillside Township's RL properties are concentrated just outside the open space boundaries within the FEMA Flood Zones.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	2021 update: A new basin was constructed at Rutgers Ave which mitigates flooding in the area; however, the Township still supports elevating and acquiring these properties.

Union County Mitigation Action Worksheets

Community Action Number: 07-09 Hillside, Township of

Describing the Action

Action Name:	Coordinate with the County to Construct a Stormwater Basin at Rutgers Ave., Support Riparian Habitat and Stabilize Banks at Risk of Eroding, and Conduct Wetland Restoration Around Rutgers Avenue Park.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Coordinate with Union County to construct a stormwater basin at Rutgers Ave, support riparian habitat and stabilize banks as risk of eroding, and conduct wetland restoration around Rutgers Avenue Park.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Hillside's wetlands, parkland and FEMA flood zones all surround the Elizabeth River along the Township's border with Union Township. Hillside Township's repetitive loss (RL) properties are concentrated just outside the open space boundaries within the FEMA flood zones.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and erosion from the Elizabeth River.
Property Protection:	This action will prevent future damage to structures and infrastructure, including repetitive loss properties, near Rutgers Avenue Park.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township will need to coordinate with Union County since the park is under their jurisdiction.
Environmental:	This action will increase environmental benefits in the Township.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of Union County.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township Engineering
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 4 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 07-10 Hillside, Township of

Describing the Action

Action Name:	Coordinate with US DOT to Retrofit Route 22 to Mitigate Flooding.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Coordinate with US DOT to retrofit Route 22 to mitigate flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Du ing rain events, west-bound of Route 22 can experience up to three inches of water an hour, which flows from the north and is blocked by the road barrier.
Life Safety:	This action will protect lives and prevent injuries by preventing dangerous driving conditions due to flooding on Route 22.
Property Protection:	This action will prevent future damage to Route 22 caused by flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township must coordinate with US DOT; it may take a long time since it is a State route.
Environmental:	There are no known adverse environmental impacts. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	US DOT
Likely Funding Source(s):	FEMA HMA, US DOT
Target State Date:	2021
Timeline:	4 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 07-11 Hillside, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Hillside Township

Name: Douglas J. Ferrigno Title: OEM Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	Yes
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	Yes
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	No
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	Yes updated 01—1-2021
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Yes	No

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response		
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	yes	No
Site Plan Review Requirements: Review of new development applications	yes	No
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	yes	No
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Yes	No
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	No	No
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Yes	Fire Mutual Aid state mandated

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	No	No
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	No	No
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	No	No
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	No	No

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	No	No
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	No	No
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	No	No
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Yes	Unknown
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	No	No
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	No	No
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	No	No
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	No	No
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	No	No
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	Yes	No

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	No	No
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Yes	Town wide information lectures given by OEM prior and after weather related incidents
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	No	No
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	Yes	Yes as above
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	No	No
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	No	No
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	No	No

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Yes	Yes follow state codes
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	No	No
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	No	No
Economic Development Commission: Provides recommendations on economic development policies and issues	No	No
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Yes	Yes local DPW protocols

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	No	
Engineer: a New Jersey licensed Professional Engineer	Yes	Full time
Code Enforcement: Evaluates private properties and public grounds against local codes	Yes	Full Time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Yes	Part Time
Floodplain Manager: a Certified Floodplain Manager		

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
	No	
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Yes	Full Time
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	No	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	No	No
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	No	No
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	No	No
Impact fees for new development: Fees paid by a developer to the municipality	N/A	N/A

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	No	No
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	No	No

What capability would you like your community to gain in the next five to ten years?

Flood management to be fully completed.

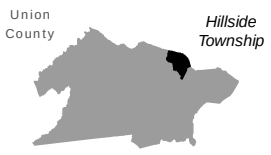
Stormwater progects finalized.

HILLSIDE TOWNSHIP
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space



Essex County

Union Township

Union Station

Elizabeth City

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 800 1,600 Feet

Michael Baker INTERNATIONAL

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 8 BOROUGH OF KENILWORTH

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Michael Scuderi, Deputy Chief/OEM Coordinator

COMMUNITY PROFILE

The Borough of Kenilworth has a total area of 2.161 square miles and is located between Routes 22 and 28 in Union County, New Jersey. As of 2018, the population was estimated at 8,160. This is a 2.29 percent increase in population since the last plan's population estimate of 7,977 (est. 2013). As with many New Jersey communities, Kenilworth began as a farming community. In the late 19th century, the New Orange Industrial Association purchased land from Cranford and Union Townships establishing Kenilworth as a Borough in 1907.

The most significant source of flooding in Kenilworth Borough is overbank flooding from the Rahway River, which runs along the western border of the jurisdiction. Most of the FEMA Special Flood Hazard Area (SFHA) in Kenilworth is related to the Rahway River to the west. Most of the floodplain is found north of Boulevard (Route 509), in the areas around Dorset Drive, Epping Drive, Pembrook Drive, Sherwood Road and Brasser Lane. Flooding here is usually related to intense rainfall from upstream storms, most significantly nor'easters or tropical cyclones. The jurisdiction has one other significant area of floodplain – this is found in southeastern part of the Borough, west of the Garden State Parkway and Michigan Avenue.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Kenilworth	
Number of Policies In-Force:	132
Total Losses:	151
Total Payments:	$1,676,773
Number of RL Properties:	10
Number of Mitigated RL Properties:	0
RL – Total Losses:	24
RL – Total Paid:	$140,990
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	$0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARDS IDENTIFICATION

Since the last Union County HMP, Kenilworth has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
July 1, 2015	Flash Flood	N/A	N/A	East Lincoln Avenue was closed from Walnut Street to Hemlock Street in Roselle Park.
August 21, 2019	Thunderstorm Wind	N/A	N/A	A tree down in Roselle Park.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Hazardous Materials Release– Fixed Site	Medium
Drought	Low
Erosion - Hurricane/Nor'easter/Tropical Storm	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hail	Low
Hazardous Materials Release– Transportation	Low
High Wind – Tornado	Low
Severe Storm – Lightning	Low
Severe Storm – Winter Weather (Includes Ice Storm)	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Dam Failure	None
Earthquake / Geological	None

Hazard	Priority
Storm Surge - Hurricane/Nor'easter/Tropical Storm	None
High Wind – Straight- Line Winds	None
Landslide (Non-Seismic)	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	2.77	0.00	-100.00%
Forest	117.73	109.55	-6.95%
Urban	1,214.43	1,225.38	0.90%
Water	8.24	8.24	0.00%
Wetlands	33.15	33.15	0.00%

Source: NJDEP Land Use/Land Cover 2019

The Borough has some open space concentrated along the border with Union Township at Galloping Hill Golf Course and Black Brook Park. Forestland surrounds the nearby Garden State Parkway and forestland is also present just over the border in Cranford. The Borough may want to consider coordinating with the NJTA and Cranford Township to connect to forestland and other vegetation to create a riparian buffer along the Rahway River tributary to mitigate flood hazards.

FUTURE DEVELOPMENT

While Kenilworth has recently completed a Redevelopment Study, all of the areas for planned for redevelopment or new development are outside the SFHA.

CRITICAL FACILITIES

The Borough has 13 critical facilities, all located outside the SFHA.

SUCCESSFUL PAST MITIGATION ACTIONS

- 08-01: Generator for 3 critical facilities

SUCCESSES IN MUNICIPAL CAPABILITIES

The Borough of Kenilworth has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Redevelopment Plan/Study
- Post-Disaster Recovery Plan
- Kenilworth's Mayor continues to work with the Mayors Council Rahway River Watershed Flood Control.
- Borough is a member of the Rahway Valley Sewage Authority and conducts ongoing coordination on hazard mitigation.

The complete Mitigation Strategy and Capability Assessment for Kenilworth is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
08-01	Purchase and Install Generators at 3 Critical Facilities.	Purchase and install generators at 3 critical facilities.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards		OEM		$650,000.00		Completed
08-02	Elevate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Tributaries, West Branch of the Elizabeth River, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Elevate structures that are listed as RL/SRL properties. Kenilworth Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Code Enforcement	FEMA HMA	$0.00	3 - 5 years	Carried Forward
08-03	Construct a New Building to House OEM Equipment.	Demolish the existing building and construct a prefabricated steel building on site to house OEM equipment.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	High	Borough Engineer	Capital Budget	$380,000.00	1 year	New
08-04	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 08-01 Kenilworth, Borough of

Describing the Action

Action Name:	**Purchase and Install Generators at 3 Critical Facilities.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Purchase and install generators at 3 critical facilities.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$650,000.00**
Priority:	
Local Planning Mechanism:	**Grants**
Responsible Party:	**OEM**
Likely Funding Source(s):	
Target State Date:	**2015**
Timeline:	
Action Status:	**Completed**
Notes:	**Estimated cost: $96,000 - $650,000** **This action was completed in 2020.**

Union County Mitigation Action Worksheets

Community Action Number: 08-02 Kenilworth, Borough of

Describing the Action

Action Name:	Elevate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Tributaries, West Branch of the Elizabeth River, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Elevate structures that are listed as RL/SRL properties. Kenilworth Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas follow the Rahway River tributaries along the Borough's borders with parts of Cranford, Springfield, and Union Township. Flood-prone areas also extend from the Union Township border along the West Branch of the Elizabeth River and Morses Creek near the Roselle Park border. Properties in these areas are at risk of future destruction and property loss due to repetitive flooding. RL losses are concentrated along the Rahway River tributary in the western and southern portions of the Borough near the Cranford border.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Grants
Responsible Party:	Code Enforcement
Likely Funding Source(s):	FEMA HMA
Target State Date:	2016
Timeline:	3 - 5 years
Action Status:	Carried Forward
Notes:	Estimated Cost: varies Ongoing from 2016 This action has not been completed due to lack of funding or public interest.

Union County Mitigation Action Worksheets

Community Action Number: 08-03 Kenilworth, Borough of

Describing the Action

Action Name:	Construct a New Building to House OEM Equipment.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Demolish the existing building and construct a prefabricated steel building on site to house OEM equipment.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	This action will allow Kenilworth to safely house and deploy emergency equipment. It will also give the Borough more room to store new equipment.
Life Safety:	This action will protect lives and prevent injuries by making emergency equipment easier to deploy, store and maintain.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by making emergency equipment easier to deploy, store and maintain. The Borough will be able to provide pumps and generators to reduce flooding during
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. It will comply with environmental regulations.
Social:	The proposed action will not adversely affect one segment of the population, disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people.
Administrative:	A contractor will be needed to implement the action.
Local Champion:	Yes
Other Community Objectives:	Yes
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$380,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough Engineer
Likely Funding Source(s):	Capital Budget
Target State Date:	Fall 2021
Timeline:	1 year
Action Status:	New
Notes:	Timeline: 4 months

Union County Mitigation Action Worksheets

Community Action Number: 08-04 Kenilworth, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Kenilworth

Name: Michael Scuderi Title: OEM Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	N
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	Y Lays out guidelines to help deal with hazards
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	N
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	Y
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	N

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	Y
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	N
Site Plan Review Requirements: Review of new development applications	Y	N
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	N
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	N
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	N
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	Y By getting additional resources and manpower as needed

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	Redevelopment Plan – *Currently under review*
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	N	Address as situations demand in compliance with EPA, DEP standards
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Y	Borough is a member of the RVSA
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	Kenilworth Mayors continue to work with the Mayors Council Rahway River Watershed Flood Control
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Y	Y
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	N	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	N	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	N	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster		
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	N	NJ "common law"

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	N	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	N	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	Borough departments work closely with the board of education in various capacities
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	?	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	N	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	N	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications		Planning Board, Bd. of Adjustment
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	N	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	N	
Economic Development Commission: Provides recommendations on economic development policies and issues	N	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	DPW - Routine scheduled maintenance

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	PT
Engineer: a New Jersey licensed Professional Engineer	Y	Contracted annually
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	PT
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	Shared Service
Floodplain Manager: a Certified Floodplain Manager	N	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	What cannot be completed with in house staff or professionals may be contracted out.
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	N	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Y	Y
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Y	Y
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Y	N
Impact fees for new development: Fees paid by a developer to the municipality		Pending
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	y	N

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	N	Would like more information if eligible.

What capability would you like your community to gain in the next five to ten years?

Migrate to the PSIC Radio network to better interface with surrounding communities.

KENILWORTH BOROUGH FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 750 1,500 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Springfield Township

Union Township

Cranford Township

Roselle Park Borough

Roselle Park Station

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 9 CITY OF LINDEN

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Kathy Colgan, Public Information Officer

COMMUNITY PROFILE

The City of Linden has an area of 11.4 square miles and is located in southeastern Union County, New Jersey and ranges from sea level to an elevation of 60 feet. Major transportation routes passing through Linden include the New Jersey Turnpike and U.S. Routes 1 & 9, which run north and south across the City, and main streets like Wood Avenue and Stiles Street that run east to west. Other major routes include Route 278 and State Route 27 (St. Georges Avenue). Linden lies on the Arthur Kill, a navigable waterway used by shipping traffic to the Port Authority of New York and New Jersey. Linden has two major rail systems with heavy concentration of freight, commuter, and inter-city passenger service crosses which is controlled by ConRail/Norfolk Southern, New Jersey Transit, and Amtrak. Newark International Airport also serves Linden and a substantial amount of air traffic crosses the City's skies. The Linden Airport is a public use airport serving commuter, recreation and business traffic on small aircraft and helicopters.

Linden's population as of 2018 was estimated at 42,033. This is a 3.19 percent increase in population since the last plan's population estimate of 40,732 (est. 2013). Originally settled as farmland on broad marshes, Linden has deep roots in industrial production and chemical works that emerged in the 19th century. The location of Linden on the Arthur Kill as well as on the rail lines helped fuel this industrial development. Although the chemical industry has declined over the years, Linden hosts substantial business and industry, including the Phillips 66 Refinery and Merck & Co.

Linden is subject to both riverine and tidal flooding from the West Brook, Peach Orchard Brook, King's Creek, Marshes Creek, Morses Creek, Piles Creek and Winans Creek, the Arthur Kill, and the Rahway River. As the City is at the lower reach of the watershed, it is heavily impacted by flows along the Rahway River. Heavy storm events can cause overbank flooding from these streams and rivers. Additionally, the City experiences back flooding during tide cycles that coincide with rain events. Overbank flooding and surge have potential to cause several feet of flooding in localized areas during severe events. A majority of the land to the east of Route 1 to the Arthur Kill is in the Special Flood Hazard Area (SFHA). The City is participating the National Flood Insurance Program's (NFIP) Community Rating System (CRS) as a Classification of 8.

City officials noted that the jurisdiction has significant problems with tree roots intruding into sewer lines and impeding flow, resulting in storm drain backups. The City experiences nuisance flooding along Dewitt Terrace, Summit Terrace, Sunnyside Park, and Myles McManus Middle School. Given the City's proximity to the Arthur Kill it is also vulnerable to storm surge and the potential impacts of sea level rise. FEMA Flood Zones cover almost the entire eastern portion of the City. Losses from Repetitive Loss properties are concentrated in the flood zones along Peach Orchard Brook (in northeast Linden), Morses Creek (in center-east Linden), and Marshes Creek (in south-east Linden).

In addition to flooding and storm surge, the City is at high risk of hazardous material releases due to the high concertation of industry along the Arthur Kill. As part of this plan update, the City worked

with the Planning Team to create a mitigation action to develop a new emergency evacuation road to reduce the risk of hazardous material release, flooding, and terrorism.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Linden	
Number of Policies In-Force:	205
Total Losses:	259
Total Payments:	$5,520,811.67
Number of RL Properties:	26
Number of Mitigated RL Properties:	5
RL – Total Losses:	66
RL – Total Paid:	$1,797,276
Number of SRL Properties:	3
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	19
SRL – Total Paid:	$995,426

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Linden has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
April 30, 2014	Flood	N/A	N/A	The Rahway River at Springfield exceeded its flood stage of 5.5 feet at 2:15 pm EST, crested at 8.65 ft. at 10:00 pm EST and fell back within its banks at 10:45 am EST on May 1. The Rahway River at Rahway exceeded its flood stage of 6.0 ft. at 6:30 pm EST, crested at 7.14 ft. at 9:45 pm EST and fell back within its banks at 1:30 pm EST on May 1.
May 1, 2014	Flood	N/A	N/A	The Rahway River at Springfield remained in flood from April 30. Water levels were falling at midnight EST and the river fell back within its banks at 1:30 pm EST on May 1.
July 18, 2016	Thunderstorm Wind	N/A	N/A	A gust of 68 mph was measured at the Linden Airport.
April 19, 2020	Thunderstorm Wind	N/A	N/A	A thunderstorm wind gust of 66 mph was reported at Linden Airport.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Drought	High
Erosion – Hurricane/Nor'easter/Coastal Storm	High
Flood	High
Hazardous Materials Release – Fixed Site	High
Hazardous Materials Release – Transportation	High
High Wind – Straight-line Winds	High
High Wind – Tornado	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
Storm Surge – Hurricane/Nor'easter/Tropical Storm	High
Cyber Attack	High
Pandemic	High
Terrorism	High
Civil Unrest	Medium
Erosion	Medium
Power Failure	Medium
Severe Storm – Lightning	Medium
Wildfire	Medium
Animal Disease	Low
Dam failure	Low
Earthquake/Geological	Low
Economic Collapse	Low
Extreme temperature - Heat	Low
Hail	Low
Landslide (non-seismic)	Low
Nuclear Hazard	Low

Source: City of Linden Emergency Operations Plan, 2019

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	287.58	293.98	2.22%
Forest	268.36	257.39	-4.09%

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Urban	5,695.68	5,706.65	0.19%
Water	263.82	263.82	0.00%
Wetlands	566.61	560.23	-1.13%

Source: NJDEP Land Use/Land Cover 2019

Wetlands, forestland, and open space are concentrated along the many rivers and streams in the City, especially Morses Creek, Piles Creek, Rahway River and their tributaries. FEMA Flood Zones cover almost the entire eastern portion of the City. Ecosystem restoration work along these waterways like vegetated buffers, and wetland restoration, and green infrastructure on nearby streets may reduce flooding.

FUTURE DEVELOPMENT

There are three planned developments to be located in the Special Flood Hazard Area that are known to the Linden City Department of Engineering:

1. **Block 587, Lot 16-Tremley Point Warehouse and Parking Complex (4050 Tremley Point Road)**
   Applicant has proposed developing the currently undeveloped brownfield site with a new impervious 409,159 square foot warehouse building with associated parking areas and access road. The site is bounded by the two tidally-influenced waterways: the Arthur Kill to the east and the Rahway River to the south. To preserve water quality on the site, applicants have proposed disconnecting pavement with and designing flow into five low-impact bioretention systems throughout the development, supplemented by Manufactured Treatment Devices (MTDs) and grass-lined swales in drainage areas that cannot flow into the bioretention systems. In additional to preserving water quality, these systems are expected to also control flooding for the 25-year storm event.
2. **Block 587, Lots 1.0 & 2.01; Block 586, Lots 8, 9, & 11-Tremley Point Warehouses**
   Applicant has proposed developing the currently undeveloped, vacant brownfield site of 361.55 acres with approximately 223.6 acres of warehouse buildings, parking lots, loading areas, access drives, sidewalks and other impervious site amenities. There are two drainage areas on the site: The Piles Creek drainage area and the Arthur Kill drainage area. Runoff in the Piles Creek drainage area will be controlled through wet ponds, and runoff in the Arthur Kill drainage area will be controlled through underground detention basins and manufactured water quality devices.
3. **Block 587, Proposed Lot 8.02-Linden Renewable Energy Facility**
   Applicant has proposed subdividing Lot 8 in Block 587, which is bounded by the Rahway River to the southwest and Arthur Kill to the southwest and west, into Proposed Lot 8.01 (9.687 acres) and Proposed Lot 8.02 (21.469). Proposed Lot 8.02 will be developed with buildings, structures, tanks, and other associated improvements necessary for a new renewable energy facility. Current conditions at the site include former industrial buildings, structures, and associated improvements that are no longer in use; stormwater runoff from the site drains uncontrolled in the Rahway River and Arthur Kill. Applicant proposes constructing two storm sewer systems, one draining to each tidally-influenced river. There will be a net decrease in impervious surface area due to the addition of lawn and landscaped areas.

CRITICAL FACILITIES

The City of Linden has 89 critical facilities, where 26 critical facilities are located within FEMA's SFHA.

SUCCESSFUL PAST MITIGATION ACTIONS

- 09-06: Flood proofing to protect Department Of Public Works
- 09-07: Backup generator and upgrading of facilities for John T. Gregorio Community Center (Primary Care Shelter)
- 09-17: Rutgers put in grant NFWF grant, for restoration and green infrastructure work in Marshes Creek green infrastructure improvements includes: drainage improvements, and bird surveys and restoration of wetlands
- 09-18: Back-up generator for City Hall
- 09-24: Acquisition of Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.

SUCCESSES IN MUNICIPAL CAPABILITIES

The City of Linden has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- **Redevelopment Plan/Study:** The Plan ensures compliance w/current regulations.
- **Land Acquisition for Open Space and Public Recreation Uses:** The City uses the New Jersey Department of Environmental Protection (DEP) Blue Acres Program.
- **Natural Hazard Ordinance**: Zoning Ordinance and FEMA FIRM Maps
- The City of Linden is also part of the DEP Coastal Zone Management Program and follows the NJ State law for seller disclosure.
- The City of Linden is also involved in a public-private partnership initiative, the CAP Program, in which the American Red Cross, Phillips 66, Spectra Energy, NuStar and other businesses have assisted programs with funding and expertise to address disaster related issues.
- The City incorporates hazards into their CIP.
- The City's Site Plan Review and Subdivision regulations are reviewed by various department for compliance with ordinances, flooding issues, and environment regulations.

The complete Mitigation Strategy and Capability Assessment for the City of Linden is part of this appendix.

Linden, City of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
09-01	Upgrade, Maintain, and Improve Sewer Lines to Reduce Infiltration in the Flood Zone.	Upgrade, maintain and improve sewer lines to reduce infiltration in the flood zone.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden DPW	Municipal budget	$265,000.00	Ongoing	Ongoing
09-02	Install Channel Improvements Along West Brook at Clinton Street.	Installation of channel improvements along West Brook at Clinton Street.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Linden Engineer		$600,000.00		Withdrawn
09-03	Control Flooding from West Brook by Constructing Flood Walls from 11th Street to Clinton Street, Installing Channel Improvements at Clinton Street, and Cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.	Control flooding from West Brook by constructing flood walls from 11th Street to Clinton Street, installing channel improvements at Clinton Street, and cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden Engineering	FEMA HMA, Municipal Budget	$3,000,000.00	1 year	Carried Forward
09-04	Upgrade and Improve the Drainage System and Retention Basin along Cantor Avenue, Dalziel Road, and Hurst Street	Upgrade and improve the drainage system and retention basin along Cantor Avenue, Dalziel Road, and Hurst Street to control flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden DPW	FEMA HMA, Municipal Budget	$1,000,000.00	1 year	Carried Forward
09-05	Control flooding from Peach Orchard Creek by Installing Channel Improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, Replacing Bridges, and Upgrading and Improving the Stormwater Management System at the Edward Muraski Towers Senior Center and at the Ann J. Ferguson Towers-Senior Center.	Control flooding from Peach Orchard Creek by installing channel improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, replacing bridges, and upgrading and improving the stormwater management system at Edward Muraski Towers Senior Center and at Ann J. Ferguson Towers- Senior Center.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden Engineering	FEMA HMA, Municipal Budget	$1,000,000.00	2 years	Carried Forward
09-06	Flood-proof Department of Public Works.	Flood-proof Department of Public Works.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Linden DPW		$160,000.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
09-07	Purchase and Install a Backup Generator and Upgrade Facilities for John T. Gregorio Community Center (Primary Care Shelter).	Backup generator and upgrading of facilities for John T. Gregorio Community Center (Primary Care Shelter)	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning		Linden		$575,000.00		Completed
09-08	Purchase and Install a Backup Generator for the Linden Multi-Purpose Center.	Purchase and install a backup generator for the Linden Multi-Purpose Center to provide for continuity of operations during power failure.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Power Failure, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning	Medium	Linden Engineer	FEMA HMA, Municipal budget	$300,000.00	1 year	Carried Forward
09-09	Geolocate Two Dams on Conoco Phillips Refinery.	Geolocate Two Dams on Conoco Phillips Refinery.	Administrative	Structure and Infrastructure Project	Flood		Linden OEM		$0.00		Withdrawn
09-10	Collect Additional Specific Data for Plan Update (Natural Events).	Collection of additional specific data for Plan update (natural events).	Administrative	Local Plans and Regulations	Severe Storm–Winter Weather (Ice Storm)		Linden OEM		$0.00		Withdrawn
09-11	Collect Additional Specific Data for Plan Update (Hazardous Materials).	Collection of additional specific data for Plan update (HazMat).	Administrative	Local Plans and Regulations	Hazardous Materials Release		Linden OEM		$0.00		Withdrawn
09-12	Acquire or Elevate 1 Repetitive Loss Property on Clinton Street.	Acquire or elevate structure on Clinton Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	State	FEMA HMA	$350,000.00	2 - 4 years	Carried Forward
09-13	Acquire or Elevate 1 Repetitive Loss Property on Hussa Street.	Acquire or elevate structure on Hussa Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	State	FEMA HMA	$300,000.00	2 - 4 years	Carried Forward
09-14	Acquire or Elevate 1 Repetitive Loss property on N. Stiles Street.	Acquire or elevate structure on N. Stiles Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	State	FEMA HMA	$400,000.00	2 - 4 years	Carried Forward
09-15	Acquire or Elevate 1 Repetitive Loss property on Sherman Street.	Acquire or elevate structure on Sherman Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	State	FEMA HMA	$300,000.00	2 - 4 years	Carried Forward

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
09-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	1 year	Ongoing
09-17	Restore Wetlands, Conduct Drainage Improvements, and Conduct Bird Surveys Near Marshes Creek.	In coordination with Rutgers University, restore wetlands, conduct drainage improvements, and conduct bird surveys near Marshes Creek.	Mitigation - Risk Reduction	Natural Systems Protection	Flood		Engineering		$2,500,000.00		Completed
09-18	Purchase a Backup Generator for City Hall.	Back-up generator for City Hall.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		OEM		$575,000.00		Completed
09-19	Replace Range Road Bridge.	Replace Range Road Bridge to eliminate flood risk.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden Engineer	FEMA HMA, Municipal budget	$500,000.00	1 year	Ongoing
09-20	Improve the Stormwater and Sewer System in the Rosewood Terrace Area and Along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.	Improve the stormwater and sewer system in the Rosewood Terrace area and along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace to control flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Engineering	FEMA HMA, Municipal Budget	$1,000,000.00	2 years	Ongoing
09-21	Acquire Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire structures that are listed as RL/SRL properties. Linden City will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden Engineering	FEMA HMA	$0.00	Ongoing	Ongoing
09-22	Elevate Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Elevate structures that are listed as RL/SRL properties. Linden City will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden Engineering	FEMA HMA	$0.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
09-23	Expand Outreach to Reach Residents, with Translations for Non-English Speaking Communities.	The City will continue to expand outreach to reach residents, with translations for non-English speaking communities, to ensure socially vulnerable populations are equipped for natural and man-made hazards.	Administrative	Education and Awareness Programs	All Hazards	Low	Administration/OEM	Municipal Budget	$0.00	Ongoing	Ongoing
09-24	Acquire Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.	Acquisition of Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		State of NJ	State of NJ Blue Acres Program	$8,000,000.00		Completed
09-25	Improve the Stormwater and Sewer System Along East Henry Street and Harrison Place.	Improve the stormwater and sewer system along East Henry Street and Harrison Place to reduce flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Linden Engineering	FEMA HMA, Municipal Budget	$300,000.00	1 year	New
09-26	Build Alternate Access Road to New Jersey Turnpike from Tremley Point Area.	Wood Avenue is the sole public road in/out of Tremley Point. This can become a life threatening situation and a possible security/terrorism risk if the road is blocked or inaccessible; this also impedes emergency vehicle access. This flood-prone area becomes impassable during significant storms. Heavy industrial truck and regular vehicle traffic must use Wood Avenue to access Route 1 and the NJ Turnpike, which increases accident potential near recreational and educational facilities.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Terrorism, Hazardous Materials Release	High	NJDOT	FEMA HMA	$0.00	1 - 5 years	New
09-27	Coordinate with the Linden Industrial Mutual Aid Council (LIMAC) to Use Their Private Road in the Area of Wood Avenue in the Tremley Point area as an Emergency Evacuation Route.	There is a private road that is loosely maintained and crosses the private properties of industries near Wood Avenue in Tremley Point. This road could serve as an emergency evacuation route, which would require MOUs in Perpetuity or another agreement granting undeniable access to the City of Linden for emergency evacuation use. The road would have to be able to support 35 ton trucks and have sufficient overhead access.	Administrative	Structure and Infrastructure Project	Flood, Terrorism, Hazardous Materials Release	Low	LIMAC, Linden OEM	Municipal Budget	$0.00	1 - 5 years	New
09-28	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 - 2 years	New

Union County Mitigation Action Worksheets

Community Action Number: 09-01 Linden, City of

Describing the Action

Action Name:	Upgrade, Maintain, and Improve Sewer Lines to Reduce Infiltration in the Flood Zone.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade, maintain and improve sewer lines to reduce infiltration in the flood zone.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Sewer lines in their current state may contribute to flooding in the eastern portion of the City.
Life Safety:	This action will protect lives and prevent injuries by reducing infiltration in the flood zone.
Property Protection:	This action will improve sewer infrastructure and reduce future flood damage to structures and infrastructure above the sewer lines.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$265,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden DPW
Likely Funding Source(s):	Municipal budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing action from 2010 and 2016. Ongoing budget line items for improvements.

Union County Mitigation Action Worksheets

Community Action Number: 09-02 Linden, City of

Describing the Action

Action Name:	Install Channel Improvements Along West Brook at Clinton Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Installation of channel improvements along West Brook at Clinton Street.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$600,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Engineer
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been combined with 09-03.

Union County Mitigation Action Worksheets

Community Action Number: 09-03 Linden, City of

Describing the Action

Action Name:	Control Flooding from West Brook by Constructing Flood Walls from 11th Street to Clinton Street, Installing Channel Improvements at Clinton Street, and Cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Control flooding from West Brook by constructing flood walls from 11th Street to Clinton Street, installing channel improvements at Clinton Street, and cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along West Brook are at risk of future damage due to flooding.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding along West Brook.
Property Protection:	This action will reduce future flood damage to structures and infrastructure along West Brook.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Engineering
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Carried Forward
Notes:	This action has been carried forward due to lack of funding. West Brook Cleaning at Linden Ave, Stimpson Ave, and 11 St. is to be included in a future capital budget.

Union County Mitigation Action Worksheets

Community Action Number: 09-04 Linden, City of

Describing the Action

Action Name:	Upgrade and Improve the Drainage System and Retention Basin along Cantor Avenue, Dalziel Road, and Hurst Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and improve the drainage system and retention basin along Cantor Avenue, Dalziel Road, and Hurst Street to control flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood control measures along Cantor Avenue, Dalziel Road, and Hurst Street can be improved.
Life Safety:	This action will protect lives and prevent injuries by improving flood control measures along Cantor Avenue, Dalziel Road, and Hurst Street.
Property Protection:	This action will reduce future flood damage to structures and infrastructure along Cantor Avenue, Dalziel Road, and Hurst Street.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Ongoing from 2010. This action has been carried forward from 2016 when it was put on hold due to private property issues/easements.

Union County Mitigation Action Worksheets

Community Action Number: 09-05 Linden, City of

Describing the Action

Action Name:	Control flooding from Peach Orchard Creek by Installing Channel Improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, Replacing Bridges, and Upgrading and Improving the Stormwater Management System at the Edward Muraski Towers Senior Center and at the Ann J. Ferguson Towers-Senior Center.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Control flooding from Peach Orchard Creek by installing channel improvements at Elizabeth Avenue and St. George Avenue to the Amtrak Railroad, replacing bridges, and upgrading and improving the stormwater management system at Edward Muraski Towers Senior Center and at Ann J. Ferguson Towers- Senior Center.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood control measures along Peach Orchard Creek can be improved.
Life Safety:	This action will protect lives and prevent injuries by improving flood control measures along Peach Orchard Creek and protecting vulnerable populations at the Senior Centers.
Property Protection:	This action will reduce future flood damage to structures and infrastructure along Peach Orchard Creek.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group. It will protect vulnerable populations at two City senior centers.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Engineering
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	TBD
Timeline:	2 years
Action Status:	Carried Forward
Notes:	Ongoing from 2010. This action has been carried forward from 2016 as it is on hold due to lack of funds. Designs have been completed.

Union County Mitigation Action Worksheets

Community Action Number: 09-06 Linden, City of

Describing the Action

Action Name:	Flood-proof Department of Public Works.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Flood-proof Department of Public Works.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$160,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed. This action was partially FEMA funded through reimbursement claim due to Sandy - DR-NJ-4086 and insurance that City of Linden had on the building.

Union County Mitigation Action Worksheets

Community Action Number: 09-07 Linden, City of

Describing the Action

Action Name:	Purchase and Install a Backup Generator and Upgrade Facilities for John T. Gregorio Community Center (Primary Care Shelter).
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Backup generator and upgrading of facilities for John T. Gregorio Community Center (Primary Care Shelter)
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$575,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed. This action was partially funded by FEMA under Energy Resilience Program under the Hazard Mitigation Grant Program (CFDA No. 97.039) FEMA - DR-4086-NJ-0382-F. FEMA funds through the State of NJ provided $75,000. The City of Linden paid the rest.

Union County Mitigation Action Worksheets

Community Action Number: 09-08 Linden, City of

Describing the Action

Action Name:	Purchase and Install a Backup Generator for the Linden Multi-Purpose Center.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a backup generator for the Linden Multi-Purpose Center to provide for continuity of operations during power failure.
Hazard(s) Addressed:	Power Failure, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning
Goals:	4

Evaluating the Action

Risk Reduction:	The Linden Multi-Purpose Center provides necessary services to the community during a disaster and must maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by providing for continuity of operations during power failure.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Engineer
Likely Funding Source(s):	FEMA HMA, Municipal budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Timeline: 6 months Ongoing since 2010. This action has been carried forward from 2016 due to lack of funds.

Union County Mitigation Action Worksheets

Community Action Number: 09-09 Linden, City of

Describing the Action

Action Name:	Geolocate Two Dams on Conoco Phillips Refinery.
Action Category:	Administrative
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Geolocate Two Dams on Conoco Phillips Refinery.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn.

Union County Mitigation Action Worksheets

Community Action Number: 09-10 Linden, City of

Describing the Action

Action Name:	Collect Additional Specific Data for Plan Update (Natural Events).
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Collection of additional specific data for Plan update (natural events).
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm)
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn.

Union County Mitigation Action Worksheets

Community Action Number: 09-11 Linden, City of

Describing the Action

Action Name:	Collect Additional Specific Data for Plan Update (Hazardous Materials).
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Collection of additional specific data for Plan update (HazMat).
Hazard(s) Addressed:	Hazardous Materials Release
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn.

Union County Mitigation Action Worksheets

Community Action Number: 09-12 Linden, City of

Describing the Action

Action Name:	Acquire or Elevate 1 Repetitive Loss Property on Clinton Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structure on Clinton Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	A property on Clinton Street is at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate or demolish the structure, thereby eliminating its future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$350,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	State
Likely Funding Source(s):	FEMA HMA
Target State Date:	On Hold
Timeline:	2 - 4 years
Action Status:	Carried Forward
Notes:	Ongoing from 2010. This action has been carried forward from 2016 and is on hold.

Union County Mitigation Action Worksheets

Community Action Number: 09-13 Linden, City of

Describing the Action

Action Name:	Acquire or Elevate 1 Repetitive Loss Property on Hussa Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structure on Hussa Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	A property on Hussa Street is at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate or demolish the structure, thereby eliminating its future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	State
Likely Funding Source(s):	FEMA HMA
Target State Date:	On Hold.
Timeline:	2 - 4 years
Action Status:	Carried Forward
Notes:	Ongoing action from 2010. This action is carried forward from 2016 when it was on hold and not a state priority.

Union County Mitigation Action Worksheets

Community Action Number: 09-14 Linden, City of

Describing the Action

Action Name:	Acquire or Elevate 1 Repetitive Loss property on N. Stiles Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structure on N. Stiles Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	A property on N. Stiles Street is at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate or demolish the structure, thereby eliminating its future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$400,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	State
Likely Funding Source(s):	FEMA HMA
Target State Date:	On Hold.
Timeline:	2 - 4 years
Action Status:	Carried Forward
Notes:	Ongoing from 2010. This action has been carried forward from 2016 when it was on hold – not a flood zone.

Union County Mitigation Action Worksheets

Community Action Number: 09-15 Linden, City of

Describing the Action

Action Name:	Acquire or Elevate 1 Repetitive Loss property on Sherman Street.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structure on Sherman Street listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	A property on Sherman Street is at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate or demolish the structure, thereby eliminating its future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	State
Likely Funding Source(s):	FEMA HMA
Target State Date:	On Hold.
Timeline:	2 - 4 years
Action Status:	Carried Forward
Notes:	Ongoing action from 2010. This action has been carried forward from 2016 when it was on hold, not a state priority.

Union County Mitigation Action Worksheets

Community Action Number: 09-16 Linden, City of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The high hazards in Linden are flood, hazardous materials release (both fixed site and transportation), severe storm-winter weather and storm surge. The community's overall level of disaster resilience would increase if the risks from these hazards were better understood by the community and households implemented small-scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated cost: Staff time. Ongoing from 2010 and 2016. Had several community meetings with FEMA and Blue Acres along with Senator Sweeney. Disaster assistance for filing claims after Sandy for several weeks.

Union County Mitigation Action Worksheets

Community Action Number: 09-17 Linden, City of

Describing the Action

Action Name:	Restore Wetlands, Conduct Drainage Improvements, and Conduct Bird Surveys Near Marshes Creek.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	
Action Description:	In coordination with Rutgers University, restore wetlands, conduct drainage improvements, and conduct bird surveys near Marshes Creek.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$2,500,000.00
Priority:	
Local Planning Mechanism:	NFWF grant program
Responsible Party:	Engineering
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed. This work was funded through a NFWF grant applied for by Rutgers University.

Union County Mitigation Action Worksheets

Community Action Number: 09-18 Linden, City of

Describing the Action

Action Name:	Purchase a Backup Generator for City Hall.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Back-up generator for City Hall.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$575,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed. This became part of Community Action 09-07 as both buildings are being supplied by this generator. Please note this is a bi-fuel generator so in case there is a disruption in one fuel supply it can be switched over to the other.

Union County Mitigation Action Worksheets

Community Action Number: 09-19 Linden, City of

Describing the Action

Action Name:	Replace Range Road Bridge.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Replace Range Road Bridge to eliminate flood risk.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Range Road Bridge is vulnerable to flooding.
Life Safety:	This action will protect lives and prevent injuries by eliminating flood risk on Range Road Bridge.
Property Protection:	This action will eliminate flood damage to Range Road Bridge.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political support for this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Engineer
Likely Funding Source(s):	FEMA HMA, Municipal budget
Target State Date:	In the permitting stage.
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing action from 2016. In the permitting stage.

Union County Mitigation Action Worksheets

Community Action Number: 09-20 Linden, City of

Describing the Action

Action Name:	Improve the Stormwater and Sewer System in the Rosewood Terrace Area and Along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Improve the stormwater and sewer system in the Rosewood Terrace area and along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace to control flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Improvements to the stormwater and sewer system in these areas would better control flooding.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding in the Rosewood Terrace area and along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.
Property Protection:	This action will reduce future flood damage to structure and infrastructure in the Rosewood Terrace area and along Wickersham Ave., Elmwood Terrace, DeWitt Terrace and Summit Terrace.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political support for this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Roselle Sewerage Authority
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Ongoing
Timeline:	2 years
Action Status:	Ongoing
Notes:	Ongoing from 2016. Studies are being conducted as of early 2021. This action was awarded to the Linden Roselle Sewerage Authority.

Union County Mitigation Action Worksheets

Community Action Number: 09-21 Linden, City of

Describing the Action

Action Name:	Acquire Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire structures that are listed as RL/SRL properties. Linden City will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas cover almost the entire eastern portion of the City. Properties in this area are at risk of future destruction and property loss due to repetitive flooding. RL losses are concentrated in the flood zones along Peach Orchard Brook (northeast), Morses Creek (center-east), and Marshes Creek (south-east).
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will demolish structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Linden Engineering
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	According to the USACE Rahway River Basin (Tidal), NJ Storm Risk Management Feasibility Study, USACE New York District has selected the Recommended Plan, which includes the elevation, buyout and flood proofing of properties in the City of Rahway and City of Linden. The project is authorized for construction in Section 401 WRDA 2020.

Union County Mitigation Action Worksheets

Community Action Number: 09-22 Linden, City of

Describing the Action

Action Name:	Elevate Buildings and Infrastructure in Flood-prone Areas in the Eastern Half of the City, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Elevate structures that are listed as RL/SRL properties. Linden City will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	RL losses are concentrated in the flood zones along Peach Orchard Brook (northeast), Morses Creek (center-east), and Marshes Creek (south-east). Properties in this area are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Linden Engineering
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Cost varies. Ongoing action from 2016. According to the USACE Rahway River Basin (Tidal), NJ Storm Risk Management Feasibility Study, the USACE New York District has selected the Recommended Plan, which includes the elevation, buyout and floodproofing of properties in the City of Rahway and City of Linden. The project is authorized for construction in Section 401 WRDA 2020.

Union County Mitigation Action Worksheets

Community Action Number: 09-23 Linden, City of

Describing the Action

Action Name:	Expand Outreach to Reach Residents, with Translations for Non-English Speaking Communities.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	The City will continue to expand outreach to reach residents, with translations for non-English speaking communities, to ensure socially vulnerable populations are equipped for natural and man-made hazards.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Equitable hazard mitigation outreach requires engagement with socially vulnerable populations, including non-English speaking communities.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards among non-English speaking communities.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents among non-English speaking communities.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will benefit socially vulnerable populations.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Administration/OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Cost varies. Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 09-24 Linden, City of

Describing the Action

Action Name:	Acquire Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquisition of Repetitive and Severe Repetitive Loss Residential Properties on Madison Street, Main Street, Irene Street, Arthur Street, and Parkway Avenue.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$8,000,000.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	State of NJ
Likely Funding Source(s):	State of NJ Blue Acres Program
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This is done.

Union County Mitigation Action Worksheets

Community Action Number: 09-25 Linden, City of

Describing the Action

Action Name:	Improve the Stormwater and Sewer System Along East Henry Street and Harrison Place.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Improve the stormwater and sewer system along East Henry Street and Harrison Place to reduce flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along East Henry Street and Harrison Place are at risk of future damage due to flooding.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding along East Henry Street and Harrison Place.
Property Protection:	This action will reduce future flood damage to structure and infrastructure along East Henry Street and Harrison Place.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political support for this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Linden Engineering
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 09-26 Linden, City of

Describing the Action

Action Name:	Build Alternate Access Road to New Jersey Turnpike from Tremley Point Area.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Wood Avenue is the sole public road in/out of Tremley Point. This can become a life threatening situation and a possible security/terrorism risk if the road is blocked or inaccessible; this also impedes emergency vehicle access. This flood-prone area becomes impassable during significant storms. Heavy industrial truck and regular vehicle traffic must use Wood Avenue to access Route 1 and the NJ Turnpike, which increases accident potential near recreational and educational facilities.
Hazard(s) Addressed:	Flood, Terrorism, Hazardous Materials Release
Goals:	4

Evaluating the Action

Risk Reduction:	There have been accidents in this area. During one event a gasoline tanker truck flipped over and spilled its entire contents on Wood Avenue. The gasoline went into the sewers and residences in the area. All residents were evacuated for a week. One house caught fire and was destroyed. Utilities were cut off. It created a significant hardship for area residents. Many residents lost food when the power was shut off for a week. Daily reports were given to the Governor's Office at that time.
Life Safety:	This action will protect lives and prevent injuries that may results from hazardous materials release near residential areas and recreational and educational facilities.
Property Protection:	This action will prevent damage to residences, recreational facilities, and educational facilities due to hazardous materials release and/or road closures.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will and public support for this action.
Legal:	The City may need to coordinate with NJDOT.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action benefits the mentally disabled children and other students who attend Public School No. 2 who are exposed to the dangers of heavy truck and hazardous materials traffic that continually pass the school going to Route 1 to get to the NJ Turnpike. The turnpike access road would alleviate this issue.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Linden OEM
Other Community Objectives:	This project protects the health and safety of the mentally disabled children who attend Public Safety School No. 2 and is a very high priority for the City.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	NJDOT
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 09-27 Linden, City of

Describing the Action

Action Name:	Coordinate with the Linden Industrial Mutual Aid Council (LIMAC) to Use Their Private Road in the Area of Wood Avenue in the Tremley Point area as an Emergency Evacuation Route.
Action Category:	Administrative
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	There is a private road that is loosely maintained and crosses the private properties of industries near Wood Avenue in Tremley Point. This road could serve as an emergency evacuation route, which would require MOUs in Perpetuity or another agreement granting undeniable access to the City of Linden for emergency evacuation use. The road would have to be able to support 35 ton trucks and have sufficient overhead access.
Hazard(s) Addressed:	Flood, Terrorism, Hazardous Materials Release
Goals:	4

Evaluating the Action

Risk Reduction:	Wood Avenue is the sole public road in/out of Tremley Point. This can become a life threatening situation and a possible security/terrorism risk if the road is blocked or inaccessible; this also impedes emergency vehicle access. This flood-prone area becomes impassable during significant storms. Heavy industrial truck and regular vehicle traffic must use Wood Avenue to access Route 1 and the NJ Turnpike, which increases accident potential near recreational and educational facilities. Please see 09-26 for additional information.
Life Safety:	This action will protect lives and prevent injuries that may results from hazardous materials release near residential areas and recreational and educational facilities.
Property Protection:	This action will prevent damage to residences, recreational facilities, and educational facilities due to hazardous materials release and/or road closures.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will and public support for this action.
Legal:	There would be questions of maintenance and construction, taxes and liabilities in addition to security issues that would have to be addressed.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group. It will benefit the residents and businesses in Tremley Pt.
Administrative:	There would be questions of maintenance and construction, taxes and liabilities in addition to security issues that would have to be addressed.
Local Champion:	Linden OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	LIMAC, Linden OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	The road would only be used for emergencies.

Union County Mitigation Action Worksheets

Community Action Number: 09-28 Linden, City of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	City Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: _____CITY OF LINDEN_____

Joseph Chrobak Supervising Engineer

Name: __Kathleen Colgan_____ Title: _OEM Public Information Officer___

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	No
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	Covered by first responder departments according to their protocols, and operation regulations
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	If a hazard or need arises, then it gets incorporated into the plan
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	Incorporates COOP/COG Plans, Memos of Understanding, Mutual Aid, agreements w/ agencies such as the American Red Cross

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	Dictated by NJDEP Guidelines
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	Establishes lead agencies, mutual aid, cost capture
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	
Site Plan Review Requirements: Review of new development applications	Y	Reviewed by various departments for compliance w/ ordinances, flooding issues, environmental etc
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	As above
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	Works w/State regulations implements Blue Acres Program, NFIP, CRS and tries to prevent hazard creation.
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	As above
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	It provides for additional assistance when local resources need additional assistance

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	Insures compliance w/current regulations
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	Use CAFRA Plans

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N/A	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	N	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	N	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	N	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	Follow NJDEP Regulations
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	N	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	Y	NJDEP Blue Acres Program
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	N	Not specifically; see Master Plan and Zoning Ordinance
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Y	Zoning Ordinance and FEMA FIRM Maps

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	N	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	Y	NJ State law for Seller Disclosure

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	DUE TO COVID REGULATIONS ALL ACTIVITIES/PROGRAMS HAVE BEEN POSTPONED OR CANCELLED.
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	N	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	Police and Fire Depts conduct yearly programs Information readily available at festivals and City programs
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	N	

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Y	American Red Cross and Phillips 66 - CAP Program Phillips 66, Spectra Energy, NuStar and other businesses have assisted with programs with funding and expertise

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	Storm water, environmental issues, traffic, emergency response and compliance with codes and standards
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	N	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Y	No
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	No
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	Storm and sanitary sewer maintenance, trees, road and sidewalk maintenance and repair

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	Part time
Engineer: a New Jersey licensed Professional Engineer	Y	Full time

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	Both full and part time personnel
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	Full time
Floodplain Manager: a Certified Floodplain Manager	Y	
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	Part time
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Y	Part time

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Y	Possibly
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Y	Possibly
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital	N/A	

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
programs, e.g., non-federal share for mitigation actions		
Impact fees for new development: Fees paid by a developer to the municipality	N/A	Starting to incorporate off-site improvements as required
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Y	Possibility
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	Y	

What capability would you like your community to gain in the next five to ten years?

Transportation Advisory Committee that would have traffic/development expertise and interact with other municipalities, county and state committees. They would address traffic flow through the municipality and the impact on the municipality of other transportation projects on connecting roads. They would also examine flooding concerns and density issues. They could advise on upcoming projects so grant funding can be explored.

The need of the access road to the NJTP. This would relieve the very heavy hazardous materials traffic that traverses South Wood Avenue on a daily basis and passes not only residences but an elementary school that is designated and is occupied by many special needs students. This traffic also passes a large amount of recreational facilities. There have been hazardous materials truck accidents in this area in the past and we have just been lucky that the school was closed at the time of the accidents. Evacuation of this area, especially when school is in session or businesses are open is extremely difficult to nearly impossible. South Wood Avenue on the other side of the NJTP is the only public road out of the area.

LINDEN CITY
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,800 3,600 Feet

N

Source: FEMA; NJDEP; NJDOT;
NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Garwood Borough
Cranford Station
Cranford Township
Roselle Borough
Elizabeth City
Westfield
Winfield Township
Clark Township
Rahway City
Rahway Station
New York
Middlesex County

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 10 BOROUGH OF MOUNTAINSIDE

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Matthew DeAnna, Director of Public Works & Facilities

COMMUNITY PROFILE

The Borough of Mountainside has a total area of 4.049 square miles and is located in western Union County, New Jersey. Major thoroughfares include Route 22 and Interstate 78. As of 2018, the population was estimated at 6,820. This is a 1.17 percent increase in population since the last plan's update of 6,741 (est. 2013). The area occupied by Borough of Mountainside has a similar history to other locations in Union County, serving initially as farmland, and developing into communities serving travelers and light industry into the 20th century. The Borough of Mountainside was officially incorporated on Sept. 25, 1895 from a portion of northern Westfield Village, a result of a referendum to separate so that residents' taxes would not go toward Westfield improvements.

Compared to many other jurisdictions in Union County, the flood hazard in Mountainside Borough is very minor and limited to only two small areas. These appear to be along minor and unnamed streams that drain into the south side of Echo Lake. There is only a small amount of floodplain in the jurisdiction, and very few flood insurance claims since the community entered the National Flood Insurance Program in 1977. When flooding does occur in Mountainside, it is most likely related to overland flow and ponding, although the few properties with flood insurance claims are near mapped Special Flood Hazard Areas (SFHA).

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Mountainside	
Number of Policies In-Force:	37
Total Losses:	25
Total Payments:	$156,498.02
Number of RL Properties:	2
Number of Mitigated RL Properties:	0
RL – Total Losses:	5
RL – Total Paid:	$41,477
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	$0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARDS IDENTIFICATION

Since the last Union County HMP, Mountainside has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
April 30, 2014	Flood	N/A	N/A	Route 22 was closed between Summit Rd. and Lawrence Ave. in Mountainside due to flooding. Storm total rainfall amounts reported across the county ranged from 4.57 inches in Linden to 6.06 inches in Mountainside.
May 1, 2014	Flood	N/A	N/A	Route 27 was closed in both directions at county road 621 in Rahway due to flooding. Additionally, Route 22 westbound at Glenside Ave. in Scotch Plains and at New Providence Rd. in Mountainside were also closed due to flooding.
August 19, 2015	Flash Flood	N/A	N/A	County Road (CR)-22 was closed between Mountain Avenue and New Providence Road in Mountainside due to flash flooding.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Extreme Temperature – Cold	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
Flood	Med
Hazardous Materials Release – Fixed Site	Med
Hazardous Materials Release – Transportation	Med
High Wind – Straight- Line Winds	Med
High Wind – Tornado	Med
Dam Failure	Low
Drought	Low
Earthquake / Geological	Low
Erosion	Low
Extreme Temperature – Heat	Low
Hail	Low
Landslide (Non-Seismic)	Low

Hazard	Priority
Severe Storm – Lightning	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Storm Surge	None
Wildfire	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	29.71	29.07	-2.15%
Barren Land	0.00	1.91	0.00%
Forest	933.47	933.46	0.00%
Urban	1,565.14	1563.88	-0.08%
Water	29.46	29.46	0.00%
Wetlands	27.45	27.45	0.00%

Source: NJDEP Land Use/Land Cover 2019

Watchung Reservation in the northern portion of the Borough consists of the majority of the open space and is connected by open space to Echo Lake Park in the southern portion of the Borough. Small street-side detention and retention green stormwater solutions are recommended along streets prone to flooding including Cherry Hill Rd and Poplar Ave.

FUTURE DEVELOPMENT

Mountainside currently has three plans for new development: a new educational facility, a 36-unit townhouse development (with six affordable housing units) along Mountain Ave, and a long-term care facility on Springfield Ave. The long-term care facility is located within the SFHA. The

developer obtained a DEP permit to build in the SFHA and the application went in front of the Planning Board. The Board found no negative increase to stormwater runoff and no risk of flooding to the facility. The access road was designed so that the it will not be flooded during a storm event.

CRITICAL FACILITIES

There are 22 critical facilities in the Borough. There are three dams located in the SFHA. A new long-term care facility noted in Future Development is also located in the SFHA, for a total of 4 critical facilities in the SFHA.

SUCCESSFUL PAST MITIGATION ACTIONS

- 10-02: Dredging of Pre-Existing Creek that Runs South of Charles St. and North of Willow Road (Approximately 1,500 ft.).
- 10-03: Develop Media Committee. Join New Emergency System (First-Alert). Develop Telephone Emergency-Based System to Notify Residents, Including Facebook and Twitter.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Borough of Mountainside has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Redevelopment Plan/Study
- Community Wildfire Protection Plan
- Post-Disaster Recovery Plan
- Growth Management Ordinance
- Natural Hazard Ordinance
- The Borough has a Streambank Buffer Protection Program, Watershed Management Plan, and Floodplain Management Plan that follows all regulations through the New Jersey Department of Environmental Protection.
- The Borough also has a Mitigation Planning Committee.
- The Borough's site plan regulations consider hazard mitigation

The complete Mitigation Strategy and Capability Assessment for Mountainside is part of this appendix.

Mountainside, Borough of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
10-01	Install Emergency Backup Generator at Mountainside Rescue Squad EOC (1399 Route 22 East).	Install emergency backup generator at Mountainside Rescue Squad EOC (1399 Route 22 East) to power the entire building, allowing the rescue squad to provide essential services during storms regardless of a major power outage. The EOC may also serve as a charging station for residents during a power outage.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds	Medium	Chief of Rescue Squad/Borough Administrator	Rescue Squad Budget/Borough Tax Dollars	$75,000.00	1 year	Ongoing
10-02	Dredge Pre-Existing Creek that Runs South of Charles St. and North of Willow Road (Approximately 1,500 ft.).	Dredging of pre-existing creek that runs south of Charles St. and North of Willow Road (approximately 1,500 ft.).	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		Engineering/Public Works		$100,000.00		Completed
10-03	Develop Media Committee. Join New Emergency System (First-Alert). Develop Telephone Emergency-Based System to Notify Residents, Including Facebook and Twitter.	Develop media committee. Join new emergency system (First-Alert). Develop telephone emergency-based system to notify residents, including Facebook and Twitter.	Administrative	Education and Awareness Programs	All Hazards		Mayor's Office		$0.00		Completed
10-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness to teach all residents about how the weather has been changing..	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Borough funds	$0.00	1 year	Carried Forward
10-05	Replace the Grate at the End of Charles Street Creek.	Install new grate at the end of Charles Street Creek to address flood risk by maintaining flow of water and clearing debris.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood	High	Engineering/Public Works	Capital Improvement Budget	$25,000.00	Ongoing	New
10-06	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Nomahegan Brook and the Southern Border of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire, elevate, or floodproof structures that are listed as RL/SRL properties. Mountainside Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
10-07	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 - 2 years	New
10-08	Purchase and Install a Generator for Borough Hall.	Purchase and Install a Generator for Borough Hall.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	High	Borough OEM	FEMA HMA	$500,000.00	1 - 3 years	New

Union County Mitigation Action Worksheets

Community Action Number: 10-01 Mountainside, Borough of

Describing the Action

Action Name:	Install Emergency Backup Generator at Mountainside Rescue Squad EOC (1399 Route 22 East).
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install emergency backup generator at Mountainside Rescue Squad EOC (1399 Route 22 East) to power the entire building, allowing the rescue squad to provide essential services during storms regardless of a major power outage. The EOC may also serve as a charging station for residents during a power outage.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The Mountainside Rescue Squad EOC provides necessary services to the community during a disaster. It is critical for this facility to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by ensuring the continuity of operations for the rescue squad during a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will enhance rescue capabilities to better protect all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$75,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Chief of Rescue Squad/Borough Administrator
Likely Funding Source(s):	Rescue Squad Budget/Borough Tax Dollars
Target State Date:	October 2013
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing from 2016. The generator for the Mountainside Rescue Squad should be installed starting in early 2021. The generator of the Mountainside Public Library shelter has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 10-02 Mountainside, Borough of

Describing the Action

Action Name:	Dredge Pre-Existing Creek that Runs South of Charles St. and North of Willow Road (Approximately 1,500 ft.).
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Dredging of pre-existing creek that runs south of Charles St. and North of Willow Road (approximately 1,500 ft.).
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement Plan
Responsible Party:	Engineering/Public Works
Likely Funding Source(s):	
Target State Date:	2012
Timeline:	
Action Status:	Completed
Notes:	Completed in 2013 using Borough funds. This project addressed the area that had been repetitively flooding.

Union County Mitigation Action Worksheets

Community Action Number: 10-03 Mountainside, Borough of

Describing the Action

Action Name:	**Develop Media Committee. Join New Emergency System (First-Alert). Develop Telephone Emergency-Based System to Notify Residents, Including Facebook and Twitter.**
Action Category:	**Administrative**
Action Type:	**Education and Awareness Programs**
HMA Eligible:	
Action Description:	**Develop media committee. Join new emergency system (First-Alert). Develop telephone emergency-based system to notify residents, including Facebook and Twitter.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$0.00**
Priority:	
Local Planning Mechanism:	**Borough Tax Dollars**
Responsible Party:	**Mayor's Office**
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	**Completed**
Notes:	**Joined First Alert in 2013, developed website, and created emergency division of CC-TV. This action was completed in 2019 with funding from Borough tax dollars.**

Union County Mitigation Action Worksheets

Community Action Number: 10-04 Mountainside, Borough of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness to teach all residents about how the weather has been changing..
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The re has been an increased frequency of storms that used to be unusual occurrences for Mountainside Borough. Education and outreach programs would help residents become more aware of and prepared for changing weather patterns. Further, the community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Borough funds
Target State Date:	TBD
Timeline:	1 year
Action Status:	Carried Forward
Notes:	This action has been carried forward from 2016. The Borough currently does not engage in any emergency management and mitigation outreach activities.

Union County Mitigation Action Worksheets

Community Action Number: 10-05 Mountainside, Borough of

Describing the Action

Action Name:	Replace the Grate at the End of Charles Street Creek.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Install new grate at the end of Charles Street Creek to address flood risk by maintaining flow of water and clearing debris.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The grate on the south side of Charles Street and Possum Pass at the end of Charles Street Creek has been broken for about a year. The grate decayed over time due to water and debris. Replacement is necessary to ensure leaves and tree limbs do not enter the storm water pipe.
Life Safety:	This action will protect lives and prevent injuries by allowing for the reducing flooding through the continued functional use of the stormwater management system.
Property Protection:	This action will allow for the continued functional use of the stormwater management system. It will also reduce the flooding risk to the properties near Charles Street Creek.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. This action will comply with all relevant environmental regulations.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$25,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement Plan
Responsible Party:	Engineering/Public Works
Likely Funding Source(s):	Capital Improvement Budget
Target State Date:	2021
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 10-06 Mountainside, Borough of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Nomahegan Brook and the Southern Border of the Borough, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire, elevate, or floodproof structures that are listed as RL/SRL properties. Mountainside Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas extend from Nomahegan Brook in Echo Lake Park and along the southern border of the Borough. There are currently 2 properties in the Borough that are on FEMA's list of Repetitive Loss (RL) Properties that are especially prone to damage from flood hazards that exist off of the rivers and outside of FEMA Flood Zones. These properties and properties inside the FEMA Flood Zones are at risk of damage due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 10-07 Mountainside, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	12

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 2 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 10-08 Mountainside, Borough of

Describing the Action

Action Name:	Purchase and Install a Generator for Borough Hall.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and Install a Generator for Borough Hall.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Borough Hall is at risk of losing power due to the increased severity of storms.
Life Safety:	This action can save lives by serving as a shelter during storm events and allowing for the continuity of operations during a hazard event.
Property Protection:	This action will indirectly reduce
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Borough DPW
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	
Timeline:	1 - 3 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Borough of Mountainside

Name: Keith C. Turner Title: OEM Director

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	**YES**	N/A
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	**YES**	N/A
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	**YES**	N/A
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	**YES**	N/A
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	**YES**	Follows NJDEP Regulations

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	**YES**	N/A
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	**YES**	Rating comes from County/State
Site Plan Review Requirements: Review of new development applications	**YES**	Built in hazard mitigation
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	**YES**	Follows all NJDEP guidelines along with all municipality codes and regulations
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	**YES**	Follows our Master Plan
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	**YES**	Follows all NJDEP regulations along with all municipality codes and regulations
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	**YES**	Follows agreement between municipality and union county

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	**YES**	Follows our Master Plan
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	**NO**	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	**YES**	Follows the plan through Union County
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	**NO**	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	**YES**	Follows all regulations through the NJDEP
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	**YES**	Follows all regulations through the NJDEP
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	**YES**	Follows all regulations through the NJDEP
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	**YES**	Follows our Emergency Response Plan
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	**NO**	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	**NO**	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	**YES**	Follows all regulations from the Land Use Board
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	**YES**	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	**NO**	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	**NO**	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	**NO**	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	**NO**	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	**NO**	
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	**NO**	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	**NO**	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	**NO**	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	**NO**	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	**YES**	Yes, stormwater management, coverage areas, ETC.
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	**YES**	Yes, follows all regulations from the Land Use Board
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	**NO**	
Economic Development Commission: Provides recommendations on economic development policies and issues	**NO**	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	**YES**	Yes, DPW limits the possibility of flooding, trims trees, ETC.

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	**YES**	Private Company
Engineer: a New Jersey licensed Professional Engineer	**YES**	Part-Time
Code Enforcement: Evaluates private properties and public grounds against local codes	**YES**	Part-Time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	**YES**	Borough Engineer/Part-time
Floodplain Manager: a Certified Floodplain Manager	**YES**	Borough Engineer/Part-time

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	**NO**	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	**YES**	Police Officer

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	**YES**	Yes, paving and drainage through the Borough
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	**YES**	Yes, we apply for grants yearly through the NJ Department of Transportation
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	**NO**	
Impact fees for new development: Fees paid by a developer to the municipality	**YES**	Yes, all new development pays a fee to the Borough
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	**YES**	Yes, we bond certain projects each year.

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	**NO**	

What capability would you like your community to gain in the next five to ten years?

MOUNTAINSIDE BOROUGH FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,200 2,400 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Summit City

Murray Hill Station

New Providence Borough

Springfield Township

Berkeley Heights Township

Scotch Plains Township

Somerset County

Westfield Town

Kenilworth Borough

Cranford Township

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 11 BOROUGH OF NEW PROVIDENCE

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Theresa A. Gazaway, Chief of Police

COMMUNITY PROFILE

The Borough of New Providence has a total area of 3.7 square miles and is located in the western region of Union County, New Jersey. As of 2018, the population was estimated at 12,808. This is a 4.77 percent increase in population since the last plan's population estimate of 12,225 (est. 2013). The area of New Providence was first settled by the brother to King Charles II, the Duke of York at the time, in 1664. The first colonists were Puritans who arrived years later in 1720. Its name was born from an accident in which the balcony of the local Presbyterian Church collapsed in 1759 but injured no one. The incident was viewed as divine act of "providence", which led to the area being called "New Providence". At the time, the town included present-day Summit and Berkeley Heights. In 1869 Summit seceded, and thirty years later the Borough of New Providence was formally incorporated. The Borough of New Providence was formally incorporated on March 14th, 1899.

New Providence Borough has four significant areas of Special Flood Hazard Area (SFHA). One of them is along the Passaic River itself, along the low-lying floodplain that extends across almost entire northern jurisdictional boundary. The other two areas are the Central Branch and the South Fork of Salt Brook, tributaries of Salt Brook. Salt Brook flows from the eastern side of the community, intersects the ConRail tracks and flowing through the central part of Borough eventually joins the Passaic River. The floodplains in the lower reach of Salt Brook are inundated by the backflow from Passaic River floods; on the other side, the upper reach of the Salt Brook and its two tributaries exhibit flooding that is contributed to by inadequate interior drainage and seemingly insufficient capacity of culverts under the railroad. The fourth area of flooding is really attributed to the localized flooding throughout the community. A good example is an unnamed, previously unmapped stream, West Brook, that flows parallel to Walton Avenue in New Providence. It has properties that are flooding, and one of them is a repetitive loss property on Pitney Avenue. There are significant concentrations of NFIP insurance claims (including properties classified as repetitive loss along the banks of all four of these sources.

In addition to flooding, New Providence experiences riverine erosion. All portions of Salt Brook that have not been channelized and lined with concrete are subject to erosion. The Borough also has a High Hazard Potential Dam, Clearwater Detention Dam, located along the Salt Brook. There is no record of the Clearwater Detention Dam every having failed. This does not ensure that no event will occur in the future, but it is impossible to quantify the probability of such an event. The probability of dam failure increases in situations when the impoundment is not routinely maintained, reaches the end of its design-life, or is operated outside of its designed intention.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

New Providence	
Number of Policies In-Force:	131
Total Losses:	80
Total Payments:	$334,247.58
Number of RL Properties:	6

New Providence	
Number of Mitigated RL Properties:	0
RL – Total Losses:	12
RL – Total Paid:	$181,594
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	$0
SRL – Total Paid:	0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, New Providence has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
April 30, 2014	Flood	N/A	N/A	All westbound lanes of route 22 were closed west of Union Ave. in Scotch Plains due to flooding of the Green Brook Stream.
August 19, 2015	Flash Flood	N/A	N/A	Multiple water rescues were underway on Diamond Hill Road between Valley Road and Mountain Avenue in Berkeley Heights.
June 28, 2016	Thunderstorm Wind	N/A	N/A	The National Weather Service in New York, NY confirmed a microburst in New Providence in Union County, New Jersey on June 28, 2016.||The microburst occurred along Central Avenue, within roughly 1/8 of a mile in either direction from the intersection with South Street and had a maximum width along the 1/4 mile path of 50 yards. The microburst lasted only around 2 minutes and had a maximum estimated wind speed of 70 mph. Most of the downed trees and tree limbs showed signs of rot and decay. There was some siding observed to be peeled back along one home. A car was also flipped onto its roof near Central Avenue as well.
July 25, 2016	Flash Flood	N/A	N/A	The intersection of Route 22 and Park Avenue in Scotch Plains was impassable due to flooding.
July 3, 2018	Flash Flood	N/A	N/A	Westfield Road was closed due to flooding in Fanwood after sewage drains could not handle the volume of water.
August 4, 2018	Flash Flood	N/A	N/A	Both lanes of Division Avenue in Summit were closed due to flooding.
July 31, 2019	Thunderstorm Wind	N/A	N/A	Tree reported down on Hedden Place.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Dam Failure	High
Erosion	High
Extreme Temperature – Cold	Med
Extreme Temperature – Heat	Med
Flood	Med
Severe Storm – Winter Weather (Includes Ice Storm)	Med
Drought	Low
Earthquake / Geological	Low
Hail	Low
Hazardous Materials Release – Fixed Site	Low
Hazardous Materials Release – Transportation	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Severe Storm – Lightning	Low
Storm Surge	Low
Straight-Line Winds	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the

change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	0.00	16.38	0.00%
Forest	241.15	239.57	-0.65%
Urban	1,992.01	1,977.21	-0.74%
Water	21.71	21.71	0.00%
Wetlands	118.87	118.87	0.00%

Source: NJDEP Land Use/Land Cover, 2019

Forestland, wetlands, open space and FEMA Flood Zones follow the Passaic River along the Borough's border with Morris County. They also extend into the center of the Borough along the Salt Brook and its branches and tributaries. Riparian buffers expansion and creation would be suitable. The Township may want to look into mitigation planting locations along the Salt Brook and within the channel to mitigate flooding and stabilize banks at risk of eroding.

FUTURE DEVELOPMENT

Lantern Hill, a senior care facility, was recently developed at the intersection of Mountain Ave. and South Street. Phase I is complete, which included 275 independent living units and 85 assisted living units. Phase II is in the process of getting Zoning Board approval and includes 550 independent living units and 108 health care. Both Phase I and Phase II of the development are located outside the SFHA.

CRITICAL FACILITIES

There are 27 critical facilities in New Providence, with one facility located within the SFHA.

SUCCESSFUL PAST MITIGATION ACTIONS

- 11-06: Erosion at Existing Outfalls to the Passaic River at Pine Way and Ashwood Road.
- 11-07: Erosion Along Surface Drainage Feature at Brook Hollow Lane.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Borough of New Providence has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- The Borough master plan Promotes development in areas not encumbered by environmental constraints.
- Land Acquisition for Open Space and Public Recreation Uses
- The Borough also has a Streambank Buffer Protection Program, Watershed Management Plan, Floodplain Management Plan, Growth Management Ordinance, and Natural Hazard Ordinance based on various Borough Ordinances and State Regulations.

- The Borough has a Real Estate Disclosure Requirement as required under NJ law, but do not have any local ordinances.
- The Borough is certified Bronze by Sustainable Jersey and is involved in public-private partnership initiatives addressing disaster related issues.

The complete Mitigation Strategy and Capability Assessment for New Providence is part of this appendix.

New Providence, Borough of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
11-01	Upgrade and Improve the Stormwater Management System for Passaic Avenue, North of Springfield Avenue, and All Areas Along Salt Brook Bank (South/West/Central).	Upgrade and improve the stormwater management system for Passaic Avenue, North of Springfield Avenue, and all areas along Salt Brook Bank (South/West/Central) to control localized flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	New Providence OEM & DPW	FEMA HMA	$10,000,000.00	5 + years	Carried Forward
11-02	Elevate or Floodproof Properties Along the Passaic River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Elevate or floodproof structures that are listed as RL/SRL properties. New Providence Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$150,000.00	Ongoing	Carried Forward
11-03	Implement Channel Improvements for Salt Brook.	Implement channel improvements for Salt Brook to protect against flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	New Providence Engineer	FEMA HMA	$800,000.00	1 year	Carried Forward
11-04	Flood-proof Wastewater Treatment Plant.	Flood-proof wastewater treatment plant to prevent flood damage and disruption of operations at critical infrastructure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	New Providence DPW	FEMA HMA, New Jersey Environmental Infrastructure Trust (NJEIT)	$250,000.00	1 year	Carried Forward
11-05	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness. The Borough will distribute preparedness and safety information for the public to follow during OEM events.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with SCOEM	Municipal Budget	$0.00	1 year	Ongoing
11-06	Control Erosion at Existing Outfalls to the Passaic River at Pine Way and Ashwood Road.	Control erosion at existing outfalls to the Passaic River at Pine Way and Ashwood Road.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		New Providence Engineer		$300,000.00		Completed
11-07	Control Erosion Along Surface Drainage Feature at Brook Hollow Lane.	Control erosion along surface drainage feature at Brook Hollow Lane.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		New Providence Engineer		$100,000.00		Completed
11-08	Repair, Remove, or Rehabilitate the Clearwater Detention Dam.	Repair, remove, or rehabilitate Clearwater Detention Dam, a High-Hazard Potential Dam, located along Salt Brook. Recently, some work was completed to the dam to reduce the risk of dam failure and flooding. The projects include cleaning out the emergency dam spillway, the gabion baskets, remove and replace trash racks, and repaired the scour of the dam inlet and outlets.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Dam Failure	High	Borough	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	$0.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
11-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Passaic River and Salt Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire, elevate, or relocate structures that are listed as RL/SRL properties. New Providence Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners, OEM	FEMA HMA	$0.00	Ongoing	New
11-10	Replace the Mee Lane Pedestrian Bridge to Allow for Continuity of Operations during a Hazard Event.	Replace the Mee Lane Pedestrian Bridge with an elevated and wider bridge that can accommodate emergency vehicles. And be above the BFE. The pedestrian bridge connects to the rear of the New Providence High School and an upgraded bridge would allow emergency vehicles to access the school from the rear during a hazard event and allow for the continuity of operations after a hazard.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	All Hazards	High	New Providence Engineering	FEMA HMA	$3,000,000.00	4 years	New
11-11	Remediate the Ping Wang Property and Convert to a Stormwater Lot to Absorb Runoff.	Remediate the contaminated soils and create a stormwater lot to absorb the volume of runoff.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	New Providence Engineer	FEMA HMA, Blue Acres/Green Acres	$3,000,000.00	5 + years	New
11-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 11-01 New Providence, Borough of

Describing the Action

Action Name:	Upgrade and Improve the Stormwater Management System for Passaic Avenue, North of Springfield Avenue, and All Areas Along Salt Brook Bank (South/West/Central).
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and improve the stormwater management system for Passaic Avenue, North of Springfield Avenue, and all areas along Salt Brook Bank (South/West/Central) to control localized flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas extend into the center of the Borough along Salt Brook as well as its branches and tributaries. Properties along Passaic Avenue, North of Springfield Avenue, and along Salt Brook are at risk of future destruction and property loss.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to flooding from Salt Brook.
Property Protection:	his action will reduce future damage to structure and infrastructure by better controlling flooding from Salt Brook.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All applicable environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	New Providence OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$10,000,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	New Providence OEM & DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	5 + years
Action Status:	Carried Forward
Notes:	Carried forward from 2016; lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 11-02 — New Providence, Borough of

Describing the Action

Action Name:	Elevate or Floodproof Properties Along the Passaic River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Elevate or floodproof structures that are listed as RL/SRL properties. New Providence Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas around the Passaic River along the Borough's border with Morris County are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate or floodproof structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot through structure elevation, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$150,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	Estimated Cost: $100,000-150,000 per home. Carried forward from 2016; lack of funding

Union County Mitigation Action Worksheets

Community Action Number: 11-03 New Providence, Borough of

Describing the Action

Action Name:	Implement Channel Improvements for Salt Brook.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Implement channel improvements for Salt Brook to protect against flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas extend into the center of the Borough along Salt Brook as well as its branches and tributaries.
Life Safety:	This action will protect lives and prevent injuries by protecting against flooding from Salt Brook.
Property Protection:	his action will reduce future damage to structure and infrastructure by protecting against flooding from Salt Brook.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough may require permits from NJDEP to implement this action.
Environmental:	The Borough may require permits from NJDEP to implement this action to ensure there are no significant adverse environmental impacts.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	New Providence OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$800,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	New Providence Engineer
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Carried forward from 2016; lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 11-04 — New Providence, Borough of

Describing the Action

Action Name:	Flood-proof Wastewater Treatment Plant.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Flood-proof wastewater treatment plant to prevent flood damage and disruption of operations at critical infrastructure.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The Borough's wastewater treatment plant is at risk of flooding.
Life Safety:	This action does not substantially relate to protecting lives and preventing injuries.
Property Protection:	This action will reduce future flood damage to and disruption of operations at the wastewater treatment plant.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All applicable environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	New Providence OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	New Providence DPW
Likely Funding Source(s):	FEMA HMA, New Jersey Environmental Infrastructure Trust (NJEIT)
Target State Date:	
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Carried forward from 2016; Lack of funding

Union County Mitigation Action Worksheets

Community Action Number: 11-05 New Providence, Borough of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness. The Borough will distribute preparedness and safety information for the public to follow during OEM events.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for hazards. It is very effective at achieving behavioral change in certain scenarios, i.e. reducing the number of people who touch downed
Property Protection:	This action does not significantly reduce damage to structure and infrastructure.
Cost Effectiveness:	There is little to no cost for this action; it is very cost effective.
Technical:	This action is technically feasible and simple.
Political:	There is a lot of public support and engagement with posts.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no environmental impacts.
Social:	The are no negative social impacts.
Administrative:	Current personnel can easily handle this action; no outside assistance necessary.
Local Champion:	The community is very supportive of emergency preparedness information being disseminated.
Other Community Objectives:	It does support policies of other plans and programs because it allows the distribution of information to promote them.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with SCOEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Cost estimate: staff time Ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 11-06 New Providence, Borough of

Describing the Action

Action Name:	Control Erosion at Existing Outfalls to the Passaic River at Pine Way and Ashwood Road.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Control erosion at existing outfalls to the Passaic River at Pine Way and Ashwood Road.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	New Providence Engineer
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Completed.

Union County Mitigation Action Worksheets

Community Action Number: 11-07 New Providence, Borough of

Describing the Action

Action Name:	Control Erosion Along Surface Drainage Feature at Brook Hollow Lane.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Control erosion along surface drainage feature at Brook Hollow Lane.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	New Providence Engineer
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Completed.

Union County Mitigation Action Worksheets

Community Action Number: 11-08 New Providence, Borough of

Describing the Action

Action Name:	Repair, Remove, or Rehabilitate the Clearwater Detention Dam.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Repair, remove, or rehabilitate Clearwater Detention Dam, a High-Hazard Potential Dam, located along Salt Brook. Recently, some work was completed to the dam to reduce the risk of dam failure and flooding. The projects include cleaning out the emergency dam spillway, the gabion baskets, remove and replace trash racks, and repaired the scour of the dam inlet and outlets.
Hazard(s) Addressed:	Dam Failure
Goals:	5

Evaluating the Action

Risk Reduction:	NJDEP classifies Clearwater Detention Dam to be a High-Hazard Potential, meaning failure of the dam may result in probable loss of life and/or extensive property damage.
Life Safety:	This action will protect lives and prevent injuries by mitigating a high-hazard potential dam, which, if it failed, would result in probable loss of life.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by mitigating a high-hazard potential dam, which, if it failed, would result in extensive property damage.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	This action may require coordination with NJDEP.
Environmental:	This action may have minor affects to the environment; however, dam removal may also be environmentally beneficial by restoring a river's natural flow, according to American Rivers.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	New Providence OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough
Likely Funding Source(s):	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA
Target State Date:	TBD
Timeline:	1 - 5 years
Action Status:	New
Notes:	FEMA has a National Dam Safety Program with funding available to High-Hazard Potential Dams.

Union County Mitigation Action Worksheets

Community Action Number: 11-09 New Providence, Borough of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Passaic River and Salt Brook, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire, elevate, or relocate structures that are listed as RL/SRL properties. New Providence Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas near the Passaic River along the Borough's border with Morris County and into the center of the Borough along the Salt Brook (and its branches and tributaries) are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners, OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 11-10 New Providence, Borough of

Describing the Action

Action Name:	Replace the Mee Lane Pedestrian Bridge to Allow for Continuity of Operations during a Hazard Event.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Replace the Mee Lane Pedestrian Bridge with an elevated and wider bridge that can accommodate emergency vehicles. And be above the BFE. The pedestrian bridge connects to the rear of the New Providence High School and an upgraded bridge would allow emergency vehicles to access the school from the rear during a hazard event and allow for the continuity of operations after a hazard.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	The pedestrian bridge is at risk of collapse and historically becomes flooded which limits access to a critical facility. This action would provide alternative emergency vehicular access to New Providence High School.
Life Safety:	Reconstructing the bridge will protect lives and preventing injuries.
Property Protection:	This action will reduce damage to the structure.
Cost Effectiveness:	The benefits of the bridge will outweigh the costs to implement the project.
Technical:	This action is technically feasible.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This project will most likely require environmental permits.
Social:	This action does not adversely affect one segment of the population; it will help improve access to a critical facility.
Administrative:	The Borough has the administrative capabilities to implement the action.
Local Champion:	Engineering and OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, OEM
Responsible Party:	New Providence Engineering
Likely Funding Source(s):	FEMA HMA
Target State Date:	2022
Timeline:	4 years
Action Status:	New
Notes:	The Borough already has a cost estimate to replace the bridge - not including elevating and widening the bridge.

Union County Mitigation Action Worksheets

Community Action Number: 11-11 New Providence, Borough of

Describing the Action

Action Name:	Remediate the Ping Wang Property and Convert to a Stormwater Lot to Absorb Runoff.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Remediate the contaminated soils and create a stormwater lot to absorb the volume of runoff.
Hazard(s) Addressed:	Flood
Goals:	3, 4

Evaluating the Action

Risk Reduction:	A stormwater lot will reduce downstream flooding to Salt Brook tributary.
Life Safety:	This action will protecting lives by reducing flooding downstream.
Property Protection:	This action will protecting properties along the Salt Brook tributary.
Cost Effectiveness:	The benefits of this action outweigh the costs.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	New Providence has authority to remediate this site once the property is purchased.
Environmental:	NJDEP permits may be required to remediate this property.
Social:	There are no adverse affects to a portion of the community.
Administrative:	New Providence has the personnel and administrative capabilities to implement the action.
Local Champion:	Engineering and OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$3,000,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	New Providence Engineer
Likely Funding Source(s):	FEMA HMA, Blue Acres/Green Acres
Target State Date:	2021
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 11-12 New Providence, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Borough of New Providence

Name: Chief Theresa Gazaway Title: Chief of Police

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	Promotes development in areas not encumbered by environmental constraints.
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	Establishes planning objectives and resource inventories.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	Yes, Borough Ordinances adopted state Stormwater Regulations and requirements for residential development.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	Yes. The planning process prepares Borough departments by checking preparedness of equipment and availability of personnel.
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	New Providence maintains a rating of 3. ISO integrates hazard mitigation by evaluating our compliance with national standards.
Site Plan Review Requirements: Review of new development applications	Y	Yes, based on various Borough Ordinances and State Regulations
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	Yes, based on various Borough Ordinances and State Regulations
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	Yes, based on various Borough Ordinances and State Regulations
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	Yes, based on various Borough Ordinances and State Regulations
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	Yes, if our resources are depleted we can request resources from other agencies.

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	N	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N/A	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Y	Yes, based on various Borough Ordinances and State Regulations
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Y	Yes, based on various Borough Ordinances and State Regulations
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	Yes, based on various Borough Ordinances and State Regulations
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters		
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	Y	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	Y	Yes, based on various Borough Ordinances and State Regulations
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Y	Yes, based on various Borough Ordinances and State Regulations
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	N	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	Y	Those that are required under NJ law. We do not have any local ordinances.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	Environmental Committee
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	Facebook and Smart 911 messages.
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	N	
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Y	Bronze level
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Y	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	Yes, based on various Borough Ordinances and State Regulations
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government		
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Y	Yes, based on various Borough Ordinances and State Regulations
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	Maser Consulting
Engineer: a New Jersey licensed Professional Engineer	Y	Maser Consulting
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	Full Time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	Full time
Floodplain Manager: a Certified Floodplain Manager	Y	Maser Consulting

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	Maser Consulting
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Y	Maser Consulting

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Y	
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Y	
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	N	
Impact fees for new development: Fees paid by a developer to the municipality		
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Y	

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	Y	

What capability would you like your community to gain in the next five to ten years?

NEW PROVIDENCE BOROUGH FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Morris County

Summit City

New Providence Station

Murray Hill Station

Berkeley Heights Township

Mountainside Borough

Scotch Plains Township

Westfield Town

512

622

655

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 1,200 2,400 Feet

Michael Baker INTERNATIONAL

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 12 CITY OF PLAINFIELD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Malcolm Alston, Fire Division

COMMUNITY PROFILE

The City of Plainfield has a total area of 6.034 Square miles and is located in the southwestern corner of Union County, adjacent to Somerset County. Major transportation routes include Route 28. As of 2018, the population was estimated at 50,508. This is a 0.88% percent increase in population since the last plan's update of 50,065 (est. 2013). Originally land occupied by the Watchungs of the Lenape Tribe, the land currently known as Plainfield was later occupied by settlers for farming and mill works. An original site in what is now Plainfield was referred to as "Milltown", and there was a militia post in the area during the Revolutionary War. In the early 1800's, the Village of Plainfield, named for the flat land it occupied, included mills, hatters, and an insurance company along with other local enterprises to support the community.1 Following the completion of the railroad, Plainfield continued to grow, and became a Township in 1847, a Village in 1867 and finally, a City on April 2, 1869.

The City of Plainfield has three areas that are the main source of flooding: Green Brook, Cedar Brook, and Branch 22 of Robinsons Branch. Green Brook constitutes the western boundary of the City. It has a relatively narrow floodplain in its southern section, while in its northern reach, it has a very wide floodplain that eventually spreads out as shallow flooding zone all the way to the Conrail railroad tracks. There is significant Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties in this section of the City.

The Cedar Brook seems to be a major source of flooding, although its original dry weather flow path is diverted though the underground tunnel under the City center. During flood events, this flow partially reverts to its original path and its zone of shallow flooding joins the one of the Green Brook. The over ground flow continues in southward direction and eventually joins the underground discharge at the Cedar Brook tunnel outflow below the Plainfield High School.

The third source of flooding is located in the northeastern corner of the City, where Branch 22 of Robinsons Branch flows in southward directions and has a relatively wide floodplain. All of the above flood sources seem to be affecting numerous properties. Also, flooding occurs to a few additional individual properties outside of the Special Flood Hazard Area (SFHA), particularly within Wards 1 and 3, as a result of drainage problems along smaller, unnamed streams and drainage channels. Plainfield entered into the National Flood Insurance Program's (NFIP) Community Rating System (CRS) in 1991, however has since rescinded participation. The City created a mitigation action as part of this HMP update to rejoin the CRS program to assist flood insurance premiums for homeowners and businesses located in the SFHA.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Plainfield	
Number of Policies In-Force:	131
Total Losses:	80
Total Payments:	$334,247.58

Plainfield	
Number of RL Properties:	75
Number of Mitigated RL Properties:	0
RL – Total Losses:	187
RL – Total Paid:	$1,542,370
Number of SRL Properties:	4
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	20
SRL – Total Paid:	$347,123

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Plainfield has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
June 29, 2019	Thunderstorm Wind	N/A	N/A	Trees and branches reported down around town, time estimated by radar.
July 22, 2020	Thunderstorm Wind	N/A	N/A	Downed trees reported on South End Parkway.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Extreme Temperature – Cold	High
Flood	High
Severe Storm – Lightning	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
Extreme Temperature – Heat	Med
Hazardous Materials Release – Fixed Site	Med
Hazardous Materials Release – Transportation	Med
Straight-Line Winds	Med
Dam Failure	Low
Drought	Low
Earthquake / Geological	Low
Erosion	Low

Hazard	Priority
Hail	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Storm Surge	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Storm Surge	None
Wildfire	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	6.45	6.45	0.00%
Barren Land	1.24	1.14	-7.97%
Forest	52.44	52.44	0.00%
Urban	3,592.21	3,593.59	0.04%
Water	17.51	17.51	0.00%
Wetlands	149.23	147.94	-0.86%

Source: NJDEP Land Use/Land Cover, 2019

Wetlands, forestlands, open space, and FEMA Flood Zones surround Green Brook on the border with Somerset County as well as Cedar Brook in the southern portion of the City. The 1% annual chance flood zone cuts through the vertical center of the City. The City would benefit from projects

that complement the work of the USACE in the Green Brook Sub basin. Repetitive Loss properties could be mitigated with green stormwater infrastructure.

FUTURE DEVELOPMENT

There are currently no plans for future development for the City of Plainfield.

CRITICAL FACILITIES

The City of Plainfield has 77 critical facilities, with 11 facilities located within the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 12-04: Backup power/bury lines for Fire Station on Central Avenue
- 12-05: Backup power/ bury lines for Fire Station at Bergen and 3rd
- 12-06: Backup power/bury lines for Fire Station at South Avenue and Belvedere
- 12-13: Install emergency generator at Warming Centers (Welcome Center) at two locations. YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.

SUCCESSES IN MUNICIPAL CAPABILITIES

The City of Plainfield has the following Planning & Regulatory capabilities not required in all communities:

- **Redevelopment Plan/Study:** Studies are conducted whenever new development or redevelopment is initiated. Risks that generally affect that geographic area are assessed and addressed for mitigation planning prior to initiating construction.
- **Coastal Zone Management Program:** Planning committees assess all new projects prior to development. Hazards associated in high risk areas are addressed and the city and builders come together to formulate mitigation efforts for overall risk reduction.
- **Floodplain Management Plan:** Mitigation efforts related to this plan are listed in the action worksheets.
- **Post-Disaster Recovery Plan:** Hazard mitigation initiatives are outline in this section of the EOP.
- **Natural Hazard Ordinance:** Regulations and policies enforced by the zoning board in high risk areas.
- **Post-Disaster Recovery Ordinance:** Risk assessments are calculated pre-incident and post-incident in efforts to prepare for and allocate resources and funding for resiliency efforts.
- Community entities come together to enhance and improve the overall effectiveness of recovery post-incident as a part of public-private partnership initiatives in the City.
- The City has a Mitigation Planning Committee that addresses the hazards listed in the HMP and attempts to mitigate prior to incidents occurring.

The complete Mitigation Strategy and Capability Assessment for the City of Plainfield is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
12-01	Upgrade and Improve the Stormwater Management System, Including Retention Basins, Along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.	Upgrade and improve the stormwater management system, including retention basins, along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Plainfield DPW	FEMA HMA	$400,000.00	1 - 2 years	Ongoing
12-02	Stabilize and Augment the Streambanks of Cedar Brook to Protect the Apartment Complexes at Rose and Randolf Road.	Stabilize and augment the streambanks of Cedar Brook to protect the apartment complexes at Rose and Randolf Road.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	Plainfield OEM & Engineer	FEMA HMA	$500,000.00	1 - 2 years	Carried Forward
12-03	Flood-proof Four Apartment Complexes Located Within the SFHA. These Include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.	Flood-proof four apartment complexes located within the SFHA. These include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Plainfield OEM	FEMA HMA	$320,000.00	2 - 3 years	Carried Forward
12-04	Obtain Backup Power or Bury Lines for Fire Station on Central Avenue.	Obtain backup power or bury lines for Fire Station on Central Avenue.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards		Plainfield DPW		$315,000.00		Completed
12-05	Obtain Backup Power or Bury Lines for Fire Station at Bergen and 3rd.	Obtain backup power or bury lines for Fire Station at Bergen and 3rd.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards		Plainfield DPW		$500,000.00		Completed
12-06	Obtain Backup Power or Bury Lines for Fire Station at South Avenue and Belvedere.	Obtain backup power or bury lines for Fire Station at South Avenue and Belvedere.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards		Plainfield DPW		$500,000.00		Completed
12-07	Dredge and Clean Green Brook and Cedar Brook.	Dredge and clean Green Brook and Cedar Brook.	Maintenance/Response/Recovery	Natural Systems Protection	Flood	Low	Plainfield DPW	Municipal Budget	$3,500,000.00	1 - 2 years	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
12-08	Flood-proof Structures and Infrastructure on St Mary's Ave., Carlisle Terrace, and George Street, with a Focus on 8 Repetitive Loss Properties.	Flood-proof 8 Repetitive Loss Properties on St Mary's Ave., Carlisle Terrace, and George Street.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Plainfield OEM	FEMA HMA	$100,000.00	1 year	Carried Forward
12-09	Acquire or Elevate Buildings and Infrastructure on Inwood Place, with a Focus on 2 Repetitive Loss (RL) Properties.	Acquire or elevate structures that are listed as RL/SRL properties on Inwood Place.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Plainfield OEM	FEMA HMA	$1,400,000.00	1 year	Carried Forward
12-10	Elevate/Acquire 3 Repetitive Loss Properties on Johnston Ave.	Elevate/acquire 3 Repetitive Loss properties on Johnston Ave.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Plainfield OEM	FEMA HMA	$600,000.00	1 year	Carried Forward
12-11	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	1 year	Ongoing
12-12	Remove Trees and Trim Tree Limbs Near Power Lines.	Remove trees and trim tree limbs near power lines.	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds	Low	Public Works	Municipal Budget	$500,000.00	1 - 2 years	Ongoing
12-13	Install emergency generator at Warming Centers (Welcome Center) at two locations. YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.	Install emergency generator at Warming Centers (Welcome Center) at two locations. YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		OEM Coordinator		$1,200,000.00		Completed
12-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Administrative	Local Plans and Regulations	Flood	Low	OEM Coordinator/ Inspections Department (NFIP Administrator)	Municipal Budget	$0.00	1 - 2 years	Ongoing
12-15	Obtain Backup Power or Bury Lines for the Washington School.	Backup power/bury lines for critical facility at Washington School.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	High	Plainfield DPW	FEMA HMA, Municipal Budget	$750,000.00	1 year	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
12-16	Obtain Backup Power or Bury Lines at 724 Park Ave.	Full backup power/bury lines for critical facility at 724 Park Ave.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	High	Plainfield DPW		$315,000.00	1 year	New
12-17	Obtain Backup Power or Bury Lines at Emerson School.	Full backup power/bury lines for critical facility at Emerson School.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	High	Plainfield DPW		$750,000.00	1 year	New
12-18	Create a Microgrid of Underground Electricity Tying Critical Infrastructure Together.	Establish underground power to reduce outages and shortages to ensure that critical infrastructure may sustain operability during severe incidents.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	High	Utility companies/DPW	FEMA Grant	$5,000,000.00	5 + years	New
12-19	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 12-01 Plainfield, City of

Describing the Action

Action Name:	Upgrade and Improve the Stormwater Management System, Including Retention Basins, Along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and improve the stormwater management system, including retention basins, along Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Leland Avenue, Netherwood Avenue, Farraget Avenue, Raymond Avenue, Milton Place, Rose Street, 1200 Block of Arlington Avenue, Stelle Avenue, and 500 North Block Avenue are vulnerable to flooding.
Life Safety:	This action will reduce flood damage within low tide areas.
Property Protection:	This action will relocate water preventing structural damage.
Cost Effectiveness:	The benefits are effective, but no funding source has been established as of yet.
Technical:	This is a long term solution and feasible if funding can be secured.
Political:	Unsure of current political support for this project.
Legal:	The municipality is currently unable to complete this project.
Environmental:	This action will comply with environmental regulations.
Social:	The action will not adversely affect one segment of the population.
Administrative:	The administration should be able to complete these measures.
Local Champion:	There are no current local champions.
Other Community Objectives:	
STAPLEE Evaluation:	4

Implementing the Action

Cost Estimate:	$400,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management/ City Capital Improvement Plan (CIP)
Responsible Party:	Plainfield DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Summer 2014
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	Ongoing since 2010 and 2016. Since project initiated in the summer of 2014, catch basins have been updated along Leland Avenue. Currently replacing the Raymond Ave. Bridge. Some catch basins have been installed, but there are still locations where they would prove useful.

Union County Mitigation Action Worksheets

Community Action Number: 12-02 Plainfield, City of

Describing the Action

Action Name:	Stabilize and Augment the Streambanks of Cedar Brook to Protect the Apartment Complexes at Rose and Randolf Road.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Stabilize and augment the streambanks of Cedar Brook to protect the apartment complexes at Rose and Randolf Road.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The apartment complexes at Rose St. and Randolph Rd are vulnerable to flooding.
Life Safety:	The action will prevent the banks from overflowing and reaching the complexes.
Property Protection:	This action will protect the apartments complexes at Rose and Randolf Road from future flood damage.
Cost Effectiveness:	The benefits will be effective, but no funding source has been obtained to complete this project.
Technical:	This is a long term project and it is feasible.
Political:	Unsure of current political support for this project.
Legal:	I believe the municipality has the authority to complete this project.
Environmental:	This project will comply with environmental regulations.
Social:	The action will not adversely affect one segment of the population.
Administrative:	The administration should be able to complete these measures.
Local Champion:	There are no current local champions.
Other Community Objectives:	
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management/CIP
Responsible Party:	Plainfield OEM & Engineer
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	1 - 2 years
Action Status:	Carried Forward
Notes:	Ongoing action from 2010. Carried forward from 2016. Currently no funding source identified.

Union County Mitigation Action Worksheets

Community Action Number: 12-03 Plainfield, City of

Describing the Action

Action Name:	Flood-proof Four Apartment Complexes Located Within the SFHA. These Include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Flood-proof four apartment complexes located within the SFHA. These include the Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Richmond Tower Apartments, Cedar Brook Apartments, and Covenant Manor are vulnerable to flooding.
Life Safety:	The action will be effective at minimizing damage that could potentially occur during heavy flooding.
Property Protection:	The action will be significant because we have high life hazards at each of these facilities. All of the structures listed are senior living facilities.
Cost Effectiveness:	The benefits of the project are substantial, but funding has yet to be secured for this project.
Technical:	The project is currently not feasible, but is a long term plan.
Political:	Unsure of current political support.
Legal:	I believe the municipality has the authority to complete the action.
Environmental:	The project will comply with environmental regulations.
Social:	This project will not disrupt established neighborhoods or adversely affect one segment of the population.
Administrative:	Outside agencies will be required to complete this project.
Local Champion:	There are no current local champions.
Other Community Objectives:	
STAPLEE Evaluation:	3

Implementing the Action

Cost Estimate:	$320,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Plainfield OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	TBD
Timeline:	2 - 3 years
Action Status:	Carried Forward
Notes:	Ongoing from 2010. Carried forward from 2016. Currently no funding source identified.

Union County Mitigation Action Worksheets

Community Action Number: 12-04 Plainfield, City of

Describing the Action

Action Name:	**Obtain Backup Power or Bury Lines for Fire Station on Central Avenue.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Obtain backup power or bury lines for Fire Station on Central Avenue.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$315,000.00**
Priority:	
Local Planning Mechanism:	**FEMA HMGP grant (DR-4086)**
Responsible Party:	**Plainfield DPW**
Likely Funding Source(s):	
Target State Date:	**2015**
Timeline:	
Action Status:	**Completed**
Notes:	**HMGP grant submitted in March 2014. Grant funding was obtained and this action was completed since the 2016 Plan Update. The station's generator has been installed.**

Union County Mitigation Action Worksheets

Community Action Number: 12-05 Plainfield, City of

Describing the Action

Action Name:	**Obtain Backup Power or Bury Lines for Fire Station at Bergen and 3rd.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Obtain backup power or bury lines for Fire Station at Bergen and 3rd.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$500,000.00**
Priority:	
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Plainfield DPW**
Likely Funding Source(s):	
Target State Date:	**2016**
Timeline:	
Action Status:	**Completed**
Notes:	**Grant funding was obtained and this action was completed since the 2016 Plan Update. The station's generator has been installed.**

Union County Mitigation Action Worksheets

Community Action Number: 12-06 Plainfield, City of

Describing the Action

Action Name:	**Obtain Backup Power or Bury Lines for Fire Station at South Avenue and Belvedere.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Obtain backup power or bury lines for Fire Station at South Avenue and Belvedere.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$500,000.00**
Priority:	
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Plainfield DPW**
Likely Funding Source(s):	
Target State Date:	**2017**
Timeline:	
Action Status:	**Completed**
Notes:	**Grant funding was obtained and this action was completed since the 2016 Plan Update. The station's generator has been installed.**

Union County Mitigation Action Worksheets

Community Action Number: 12-07 Plainfield, City of

Describing the Action

Action Name:	Dredge and Clean Green Brook and Cedar Brook.
Action Category:	Maintenance/Response/Recovery
Action Type:	Natural Systems Protection
HMA Eligible:	No
Action Description:	Dredge and clean Green Brook and Cedar Brook.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Green Brook and Cedar Brook are sources of flooding in the City.
Life Safety:	The project will reduce excessive flooding and overflow from the bodies of water.
Property Protection:	The project will reduce excessive flooding and overflow from the bodies of water.
Cost Effectiveness:	There are numerous benefits, but it comes at a hefty cost.
Technical:	This is a feasible and long term plan.
Political:	Unsure of current political support.
Legal:	The City has the authority to implement this action.
Environmental:	The dredging and cleaning of Green Brook and Cedar Brook park aids in floodplain management, waste removal, and improvement of wildlife.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside agencies will need to be hired to aid in the completion.
Local Champion:	There is no current champion.
Other Community Objectives:	
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$3,500,000.00
Priority:	Low
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Plainfield DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	June 2014
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	Ongoing since 2010 and 2016. The project has been started since 2014 with most of the tasks being completed.

Union County Mitigation Action Worksheets

Community Action Number: 12-08 Plainfield, City of

Describing the Action

Action Name:	Flood-proof Structures and Infrastructure on St Mary's Ave., Carlisle Terrace, and George Street, with a Focus on 8 Repetitive Loss Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Flood-proof 8 Repetitive Loss Properties on St Mary's Ave., Carlisle Terrace, and George Street.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Prc erties on St Mary's Ave, Carlisle Terrace, and George Street are at risk of future destruction and property loss due to repetitive flooding. The risk that is being reduced is flood water reaching and damaging eight repetitive loss properties on the listed streets.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding. The action will be effective at minimizing damage that could potentially occur during heavy flooding.
Property Protection:	This action will floodproof structures, thereby eliminating their future damage by repetitive flooding. The action will be significant because these structures are in a high risk flood zone.
Cost Effectiveness:	The benefits of the project are substantial, but funding has yet to be secured for this project.
Technical:	The project is currently not feasible, but is a long term plan.
Political:	Unsure of current political support.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial. The project will comply with environmental regulations.
Social:	This project will not disrupt established neighborhoods or adversely affect one segment of the population.
Administrative:	Outside agencies will be required to complete this project.
Local Champion:	There are no current local champions.
Other Community Objectives:	
STAPLEE Evaluation:	4

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Plainfield OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	2017
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Cost Estimate: $100,000 per unit. Ongoing action from 2010. This action has been carried forward from 2016 as no funding source has been identified.

Union County Mitigation Action Worksheets

Community Action Number: 12-09 Plainfield, City of

Describing the Action

Action Name:	Acquire or Elevate Buildings and Infrastructure on Inwood Place, with a Focus on 2 Repetitive Loss (RL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structures that are listed as RL/SRL properties on Inwood Place.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Prc erties on Inwood Place are at risk of future destruction and property loss due to repetitive flooding. The risk that is being reduced is the potential flood damage from properties that need to be elevated.
Life Safety:	This action will protect lives and reduce injury by minimizing the amount of damage caused to these structures by excessive flooding.
Property Protection:	The costs to implement the project are high and funding has not been obtained.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Unsure of current political support.
Legal:	The municipality has the authority to implement the action.
Environmental:	The action will comply with environmental regulations.
Social:	The project will not disrupt any neighborhoods.
Administrative:	Outside agencies will need to be sought to complete the action.
Local Champion:	There are no current champions.
Other Community Objectives:	
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$1,400,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Plainfield OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	2017
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Ongoing action from 2010. This action has been carried forward from 2016 as no funding source has been identified.

Union County Mitigation Action Worksheets

Community Action Number: 12-10 Plainfield, City of

Describing the Action

Action Name:	Elevate/Acquire 3 Repetitive Loss Properties on Johnston Ave.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Elevate/acquire 3 Repetitive Loss properties on Johnston Ave.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Johnston Ave. properties are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and reduce injury by minimizing the amount of damage caused to these structures by excessive flooding.
Property Protection:	This action will elevate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The costs to implement the project are high and funding has not been obtained.
Technical:	This action is both technically feasible and a long-term solution.
Political:	Unsure of current political support.
Legal:	The municipality has the authority to implement the action.
Environmental:	The action will comply with environmental regulations.
Social:	The project will not disrupt any neighborhoods.
Administrative:	Outside agencies will need to be sought to complete the action.
Local Champion:	There are no current champions.
Other Community Objectives:	
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$600,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Plainfield OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	2017
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Ongoing action from 2010. This action has been carried forward from 2016 as no funding source has been identified.

Union County Mitigation Action Worksheets

Community Action Number: 12-11 Plainfield, City of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The City's High Priority hazard are Extreme Temperature-Cold, Flood, Severe Storm-Lightning and Severe Storm-Winter Weather. The community's overall level of disaster resilience would increase with better awareness of and preparation for these hazards.
Life Safety:	Conducting all hazards public education helps to save lives and property by empowering citizens with the basics of response to all hazards. This project is significant in community relations and resiliency in times of peril.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs are minimal and primarily for the time of the staff that are leading the training program.
Technical:	This is a long term, ongoing plan.
Political:	This action has political support.
Legal:	The municipality has the authority to complete this action.
Environmental:	The training will comply with environmental policies.
Social:	This will have a positive effect on all the citizens that it reaches.
Administrative:	The administration possesses the capabilities to carry out this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	2017
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated cost: staff time Ongoing since 2010 and 2016. Programs have been implemented in the past, and they're being evaluated and updated for future programs.

Union County Mitigation Action Worksheets

Community Action Number: 12-12 Plainfield, City of

Describing the Action

Action Name:	**Remove Trees and Trim Tree Limbs Near Power Lines.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**No**
Action Description:	**Remove trees and trim tree limbs near power lines.**
Hazard(s) Addressed:	**High Wind–Tornado, High Wind–Straight-Line Winds**
Goals:	**3**

Evaluating the Action

Risk Reduction:	**The risk that is reduced potential trees falling due to high winds and severe storms.**
Life Safety:	**The tree trimming and removal program is essential to protecting life and property from falling hazards during adverse weather.**
Property Protection:	**The tree trimming and removal program is essential to protecting life and property from falling hazards during adverse weather. This action will be significant in reducing the number of tree limbs that damage power lines and**
Cost Effectiveness:	**The benefits of this program are worth the cost as opposed to the cost of rebuilding damaged property.**
Technical:	**This action is technically feasible. It is an ongoing initiative.**
Political:	**There is public support for this project.**
Legal:	**The municipality has the authority to implement this action.**
Environmental:	**The potential impact will be fewer trees around the city, but the action will follow environmental guidelines.**
Social:	**This action will not disrupt established neighborhoods or cause relocations of lower income people.**
Administrative:	**The municipality is equipped to handle these tasks.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**9**

Implementing the Action

Cost Estimate:	**$500,000.00**
Priority:	**Low**
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Public Works**
Likely Funding Source(s):	**Municipal Budget**
Target State Date:	**2016**
Timeline:	**1 - 2 years**
Action Status:	**Ongoing**
Notes:	**Ongoing action since 2016.**

Union County Mitigation Action Worksheets

Community Action Number: 12-13 Plainfield, City of

Describing the Action

Action Name:	Install emergency generator at Warming Centers (Welcome Center) at two locations. YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Install emergency generator at Warming Centers (Welcome Center) at two locations. YMCA – 518 Watchung Senior Citizens Building - 400 East Front St.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,200,000.00
Priority:	
Local Planning Mechanism:	CIP
Responsible Party:	OEM Coordinator
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action has since been completed at one location (400 East Front). The other location has been vacated (Watching Ave).

Union County Mitigation Action Worksheets

Community Action Number: 12-14 Plainfield, City of

Describing the Action

Action Name:	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	The City's participation status in the CRS program has been rescinded. The City is still vulnerable to flooding, and rejoining the CRS program would incentivize flood risk reduction in the community.
Life Safety:	This action will prevent injuries and protect lives by encouraging the municipality to ensure an adequate level of floodplain management and protection.
Property Protection:	This action will indirectly protect lives and prevent injuries by encouraging flood mitigation actions throughout the City.
Cost Effectiveness:	The costs to implement this action are worth the benefits that it brings.
Technical:	The plan is feasible and its implementation is ongoing.
Political:	Unsure of political support at this time.
Legal:	The municipality has the authority to implement the action.
Environmental:	The action will follow all environmental policies
Social:	This action will not disrupt any established neighborhoods.
Administrative:	The administration has the capability to complete this task.
Local Champion:	OEM
Other Community Objectives:	This action will advance capital improvements and economic development. A high CRS rating will discount flood insurance premiums for community members.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Existing Resources
Responsible Party:	OEM Coordinator/ Inspections Department (NFIP Administrator)
Likely Funding Source(s):	Municipal Budget
Target State Date:	2016
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	Cost Estimate: Minimal resources and staff time Ongoing action since 2016.

Union County Mitigation Action Worksheets

Community Action Number: 12-15 Plainfield, City of

Describing the Action

Action Name:	**Obtain Backup Power or Bury Lines for the Washington School.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Backup power/bury lines for critical facility at Washington School.**
Hazard(s) Addressed:	**All Hazards**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**The risk that is being reduced is the chance for a critical structure to lose power.**
Life Safety:	**This action will enable the school to remain operational and functional should there be a power outage.**
Property Protection:	**This action will enable the school to remain operational and functional should there be a power outage.**
Cost Effectiveness:	**The costs of implementation are worth the benefits.**
Technical:	**The mitigation action is feasible, and long term.**
Political:	**There is political support in providing equipment for an essential facility and maintaining infrastructure.**
Legal:	**The municipality has the authority to implement this action.**
Environmental:	**The action will follow all environmental policies**
Social:	**This action will not adversely affect one segment of the population.**
Administrative:	**An outside company may need to be hired for the installation.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**9**

Implementing the Action

Cost Estimate:	**$750,000.00**
Priority:	**High**
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Plainfield DPW**
Likely Funding Source(s):	**FEMA HMA, Municipal Budget**
Target State Date:	**2021**
Timeline:	**1 year**
Action Status:	**New**
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 12-16 Plainfield, City of

Describing the Action

Action Name:	**Obtain Backup Power or Bury Lines at 724 Park Ave.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Full backup power/bury lines for critical facility at 724 Park Ave.**
Hazard(s) Addressed:	**All Hazards**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**The risk that is being reduced is the chance for a critical structure to lose power.**
Life Safety:	**This action will enable the facility to remain operational and functional should there be a power outage.**
Property Protection:	**This action will enable the facility to remain operational and functional should there be a power outage.**
Cost Effectiveness:	**The costs of implementation are worth the benefits.**
Technical:	**The mitigation action is feasible, and long term.**
Political:	**There is political support for this action.**
Legal:	**The municipality has the authority to implement this action.**
Environmental:	**The action will follow all environmental policies**
Social:	**This action will not adversely affect one segment of the population.**
Administrative:	**An outside company may need to be hired for the installation.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**9**

Implementing the Action

Cost Estimate:	**$315,000.00**
Priority:	**High**
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Plainfield DPW**
Likely Funding Source(s):	
Target State Date:	**2021**
Timeline:	**1 year**
Action Status:	**New**
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 12-17 Plainfield, City of

Describing the Action

Action Name:	**Obtain Backup Power or Bury Lines at Emerson School.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Full backup power/bury lines for critical facility at Emerson School.**
Hazard(s) Addressed:	**All Hazards**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**The risk that is being reduced is the chance for a critical structure to lose power.**
Life Safety:	**This action will enable the school to remain operational and functional should there be a power outage.**
Property Protection:	**This action will enable the school to remain operational and functional should there be a power outage.**
Cost Effectiveness:	**The costs of implementation are worth the benefits.**
Technical:	**The mitigation action is feasible, and long term.**
Political:	**There is political support in providing equipment for an essential facility and maintaining infrastructure.**
Legal:	**The municipality has the authority to implement this action.**
Environmental:	**The action will follow all environmental policies**
Social:	**This action will not adversely affect one segment of the population.**
Administrative:	**An outside company may need to be hired for the installation.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**9**

Implementing the Action

Cost Estimate:	**$750,000.00**
Priority:	**High**
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Plainfield DPW**
Likely Funding Source(s):	
Target State Date:	**2021**
Timeline:	**1 year**
Action Status:	**New**
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 12-18 Plainfield, City of

Describing the Action

Action Name:	**Create a Microgrid of Underground Electricity Tying Critical Infrastructure Together.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Establish underground power to reduce outages and shortages to ensure that critical infrastructure may sustain operability during severe incidents.**
Hazard(s) Addressed:	**All Hazards**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**The risk that is being reduced is the chance for critical structures to lose power.**
Life Safety:	**This action will enable critical facilities to remain operational and functional should there be a power outage.**
Property Protection:	**This action will enable critical facilities to remain operational and functional should there be a power outage.**
Cost Effectiveness:	**The costs of implementation are worth the benefits.**
Technical:	**The mitigation action is feasible, and long term.**
Political:	**There is political support in providing equipment for essential facilities and maintaining infrastructure.**
Legal:	**The municipality has the authority to implement this action.**
Environmental:	**The action will follow all environmental policies**
Social:	**This action will not adversely affect one segment of the population.**
Administrative:	**An outside company may need to be hired for the installation.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**9**

Implementing the Action

Cost Estimate:	**$5,000,000.00**
Priority:	**High**
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Utility companies/DPW**
Likely Funding Source(s):	**FEMA Grant**
Target State Date:	**2021**
Timeline:	**5 + years**
Action Status:	**New**
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 12-19 Plainfield, City of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	City Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: City of Plainfield

Name: Malcolm Alston Title: Deputy Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	All hazard mitigation guide for response and recovery efforts.
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	General guidelines for response and mitigation of incidents. Details on resiliency efforts and interagency operations.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	Ensuring critical infrastructure is continually evaluated and improved. Long term planning for improvements.
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	Identified in the E.O.P., such as mapping out the low-risk and high-risk flood areas. Response protocol for a variety of incidents that may occur.
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	Planning, identifying, implementing, and evaluating mitigation efforts in high risk flood areas.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	Outlined in public safety response guides. Mutual aid plans.
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Y	Currently a level 3 rated department. Categorizes department based on capabilities and training and a variety of other factors. Impacts resident insurance premiums.
Site Plan Review Requirements: Review of new development applications	Y	Verify that emergency service personnel and city policy enforcers are involved in the planning processes.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	Ensure current regulations and policies are being met.
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	Zoning policies and agreements enforced by the zoning board.
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	Flood risk level map included. Efforts to mitigate listed in action worksheets.
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	Mutual aid agreements are outlined.

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	Studies are conducted whenever new development or redevelopment is initiated. Risks that generally affect that geographic area are assessed and addressed for mitigation planning prior to initiating construction.
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	Y	Planning committees assess all new projects prior to development. Hazards associated in high risk areas are addressed and the city and builders come together to formulate mitigation efforts for overall risk reduction.
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	N	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	N	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	Outlined mitigation efforts listed in the action worksheets.
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Y	Outlined in the E.O.P.
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	N	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	N	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Y	Regulations and policies enforced by the zoning board in high risk areas.
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	Y	Risk assessments are calculated pre-incident and post-incident in efforts to prepare for and allocate resources and funding for resiliency efforts.
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	Yes, organizations use training sessions to educate various demographic groups within the community. Pamphlets are distributed along with lecture based training.
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	Social media outlets and websites keep citizens updated on weather related emergency and other hazards.
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	Hazard prevention months are headed up by public safety education programs.
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	N	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Y	Community entities come together to enhance and improve the overall effectiveness of recovery post-incident.

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	Hazards addressed are infrastructure capabilities, severe weather impact, and economic impacts.
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	Y	Addresses the hazards listed in the H.M.P. and attempts to mitigate prior to incidents occurring.
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	N	
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	Hazards addressed are infrastructure capabilities, severe weather impact, and economic impacts.
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	Tree trimming outlined in action worksheets. Ongoing efforts to reduce outages during sever weather incidents.

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y (RVA)	
Engineer: a New Jersey licensed Professional Engineer	Y (RVA)	
Code Enforcement: Evaluates private properties and public grounds against local codes	Y (RVA)	
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y (RVA)	
Floodplain Manager: a Certified Floodplain Manager	Y (RVA)	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y (RVA)	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Y (RVA)	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Y	This funding source is target for future mitigation projects.
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Y	This funding source is target for future mitigation projects.
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	N	No.
Impact fees for new development: Fees paid by a developer to the municipality	Y	Yes, fees assist with risk mitigation for project development.
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	N	No.

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	Y	This funding source is target for future mitigation projects.

What capability would you like your community to gain in the next five to ten years?

We would like to see continued overall improvement for city infrastructure. We want our citizens empowered and educated on how to remain resilient during times of crisis, not only post incidents. Our public safety capabilities can always be enhanced and improved to provide the community with unparalleled service in times of peril. The city of Plainfield O.E.M. would like to install more generators at our critical facilities, establish a long term plan to install an underground micro-grid of electricity, and continue the public education efforts to keep our community well informed and prepared.

PLAINFIELD CITY
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,650 3,300 Feet

N

Source: FEMA; NJDEP; NJDOT;
NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Scotch Plains Township

Fanwood Borough

Fanwood Station

Westfield Town

Somerset County

Netherwood Station

Plainfield Station

Scotch Plains Township

Clark Township

Middlesex County

611

620

28

601

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 13 CITY OF RAHWAY

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

Joe DiLorenzo, CRS Coordinator

COMMUNITY PROFILE

The City of Rahway has a total area of 4.03 square miles and is located in southeastern Union County, New Jersey. Major transportation routes in Rahway include Route 1 and Route 27, and there is a railway station for the NJ Transit Northeast Corridor line. The Rahway River is a major feature, including the Rahway River Park that spans into neighboring Clark, NJ. As of 2018, the population of Rahway was estimated at 29,370. This is a 6.03 percent increase from the last plan update estimated at 27,701 (est. 2013).

This City of Rahway began as outlying settlements of Elizabethtown and Woodbridge and is possibly named for a Lenape Chief from the area. The area was important during the Revolutionary War, and Abraham Clark, one of the signers of the Declaration of Independence, is buried in the Rahway Cemetery. The construction of the railroad in the early 19th century contributed to the growth and development as an important stagecoach hub, to include an economic foundation on factories that produced stagecoach parts.1 This industrial character continued through the first half of the 20th century with companies such as Merck, Purolator and others.

Flood impacts in the City are significant compared to other jurisdictions in Union County. The Rahway River runs through the City, with the South Branch of the Rahway River and Robinsons Branch running through the west of the Rahway River. As expected, the most frequent and serious damages appear to be related to structures that are well within the boundaries of the floodplain, i.e. close to the stream or river center line. The City has numerous NFIP Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties, distributed across most areas of floodplain. As of December 2020, the City has acquired and demolished 16 RL/SRL properties through NJDEP Blue Acres Program. The City is in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) at a Classification of 7.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Rahway	
Number of Policies In-Force:	502
Total Losses:	810
Total Payments:	$17,773,269.79
Number of RL Properties:	114
Number of Mitigated RL Properties:	8
RL – Total Losses:	306
RL – Total Paid:	$9,178,132
Number of SRL Properties:	15
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	84
SRL – Total Paid:	$2,975,317

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021

HAZARD IDENTIFICATION

Since the last Union County HMP, Rahway has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
June 7, 2013	Flood	N/A	N/A	Motorists were stranded in flood waters under the bridge at the intersection of Rt. 35 and Rt. 27 in Rahway with rescues being performed by local emergency responders. Route 35 was closed between Lincoln Highway and County Road 650 in Rahway due to flooding.
July 1, 2013	Flash Flood	N/A	N/A	The intersection of Inman Ave. and New Brunswick Ave. in Rahway was closed due to flooding.
June 29, 2019	Thunderstorm Wind	N/A	N/A	Large tree branches down at the intersection of West Inman Avenue and Cornell Avenue blocking the road with time estimated by radar.
July 22, 2019	Flash Flood	N/A	N/A	All lanes were closed in both directions due to flooding on NJ 27 (Lincoln Highway) at St. Georges Avenue (NJ 35) in Rahway.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
High Wind – Straight-line Winds	High
Storm Surge	High
Dam Failure	Medium
Severe Storm – Winter Weather (Including Ice Storms)	Medium
Drought	Low
Earthquake / Geological	Low
Erosion	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hail	Low
Hazardous Materials Release - Fixed Site	Low
Hazardous Materials Release - Transportation	Low

Hazard	Priority
High Wind – Tornado	Low
Landslide (non-seismic)	Low
Severe Storm – Lightning	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	26.85	15.19	-43.41%
Forest	73.69	73.69	0.00%
Urban	2,316.86	2,328.51	0.50%
Water	86.55	86.55	0.00%
Wetlands	82.92	82.92	0.00%

Source: NJDEP Land Use/Land Cover, 2019

The City has flood zones along the Rahway River and its tributaries that cut through the vertical center of the City. Losses are particularly concentrated along the Robinsons Branch that runs along the horizontal center of the City. Parkland, forestland, and wetlands border the rivers and streams. Wetland restoration as well as creating and connecting a vegetated buffer along the Robinson Branch is advised.

FUTURE DEVELOPMENT

The Rahway Redevelopment Agency has two proposed projects:

1. **Tesla's Bridgeview – Block 322, Lots 4.02, 7, 8, 10, & 11**
   Lots 4.02 and 7 are in the 0.2% Annual Chance flood zone. Lots 8, 10, and 11 are at least partially in the Special Flood Hazard Area (SFHA) with the remainder of the lots being in the 0.2% Annual Chance flood zone.

2. **AST's Hamilton Street Redevelopment – Block 162, Lots 5-13**
   A majority of Block 162 is in the 0.2% Annual Chance flood zone. Lots 5, 9, and 13 also intersect with the SFHA.

CRITICAL FACILITIES

The Township of Rahway has 38 critical facilities, with nine facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 13-01: Storm-water Management System Upgrade and Improvement Along Central and St. George's Streets (Robinson's).
- 13-05: Replace and elevate existing generator above flood level at the City Hall and Rahway Police Department; provide mobile connector for emergency generator hook- up; install sewer check valve to eliminate basement flooding
- 13-06: Replace and elevate existing generator for the Dock Street Sanitary Sewer above flood level; elevate electrical controls above flood level
- 13-08: Maple Ave Firehouse-Replace Existing Generator.
- 13-09: Main Street Firehouse- Provide Mobile Connector for Emergency Hook-Up.
- 13-10: Recreation Center - Replace Gymnasium Hardwood Floor with Vinyl Floor, which is More Flood-Resistant.

SUCCESSES IN MUNICIPAL CAPABILITIES

The City of Rahway has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Redevelopment Plan/Study
- Watershed Management Plan
- The City of Rahway also has a Real Estate Disclosure Requirement in accordance with State law.

The complete Mitigation Strategy and Capability Assessment for Rahway is part of this appendix.

Rahway, City of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
13-01	Upgrade and Improve the Storm-water Management System Along Central and St. George's Streets (Robinson's).	Union County is replacing the inlet and stormwater outfall structures that drain to the Rahway River.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Rahway DPW	NJDOT	$400,000.00		Completed
13-02	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Union County	City funds	$450,000.00	1 - 2 years	Ongoing
13-03	Flood-proof Homes.	Flood-proof homes along Central Avenue, Lawrence Street, Elm Avenue, Main Street, Whittier Street, Orchard Street, Plainfield Avenue, Minna Street, Monroe Street, Irving Street, Hamilton Street, New Church Street, St Georges Avenue, Jefferson Avenue, W Scott Avenue, Linden Avenue, Essex Street, W Milton.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Rahway		$100,000.00		Withdrawn
13-04	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with SCOEM	City funds	$0.00	1 year	Ongoing
13-05	Replace and Elevate Existing Generator Above Flood Level at the City Hall and Rahway Police Department. Provide Mobile Connector for Emergency Generator Hook-up. Install Sewer Check Valve to Eliminate Basement Flooding.	City Hall and Rahway Police Department - replace existing generator and elevate same above flood level; provide mobile connector for emergency generator hook- up; install sewer check valve to eliminate basement flooding.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood		DPW		$200,000.00		Completed
13-06	Replace and Elevate Existing Generator for the Dock Street Sanitary Sewer Above Flood Level. Elevate Electrical Controls Above Flood Level.	Dock Street Sanitary Sewer - replace existing generator and elevate same above flood level; raise electrical controls above flood level.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood		DPW		$200,000.00		Completed
13-07	Purchase and Install Traffic Signal and Trailer-Mounted Emergency Generators.	The City seeks to provide temporary power via traffic signal and trailer-mounted emergency generators.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Low	DPW	City funds	$0.00	1 - 2 years	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
13-08	Replace Existing Generator at Maple Ave Firehouse.	Maple Ave Firehouse- replace existing generator.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		DPW		$100,000.00		Completed
13-09	Provide Mobile Connector for Emergency Hook-Up at Main Street Firehouse.	Main Street Firehouse- provide mobile connector for emergency hook-up.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		DPW		$25,000.00		Completed
13-10	Replace Gymnasium Hardwood Floor with Vinyl Floor, Which is More Flood-Resistant at Recreation Center .	Recreation Center - replace gymnasium hardwood floor with vinyl floor, which is more flood-resistant.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		DPW		$450,000.00		Completed
13-11	Adopt an Ordinance To Limit Stormwater Direction or Quantity Changes on Private Property That May Have a Compounding Effect on Downstream or Adjacent Properties.	At this time, the City is planning to adopt in the near future an ordinance to allow the City to more definitively limit what property owners are permitted to do in terms of changing the direction or quantity of stormwater on their properties that may impact downstream or adjacent properties, which the City has identified as having a compounding effect.	Administrative	Local Plans and Regulations	Flood	Low	Administration/ Code Enforcement	City funds	$0.00	1 - 2 years	Ongoing
13-12	Coordinate with Adjacent Municipalities to Reduce Flooding within the Watershed.	Work with adjacent municipalities to reduce flooding within the watershed. The City is an active participant in the Mayor's Council on Watershed Flood Control Project, which was formed after Hurricane Irene's devastation. The Council works to prevent future flooding. One options is to consider additional detention within the South Mountain Reservoir.	Administrative	Local Plans and Regulations	Flood	Low	Administration	City funds	$0.00	Ongoing	Ongoing
13-13	Elevate, Floodproof, Acquire or Relocate Buildings and Infrastructure in Flood-prone Areas Along the South Branch and Robinson Branch of the Rahway River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Mitigate properties prone to repetitive flooding through elevation, floodproofing, acquisition, or relocation. Flood-prone properties exist along Central Avenue, Lawrence Street, Elm Avenue, Main Street, Whittier Street, Orchard Street, Plainfield Avenue, Minna Street, Monroe Street, Irving Street, Hamilton Street, New Church Street, St Georges Avenue, Jefferson Avenue, W Scott Avenue, Linden Avenue, Essex Street, and W Milton.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Administration/NJ DEP	FEMA HMA	$100,000.00	Ongoing	Ongoing
13-14	Update the City's Flood Damage Prevention Ordinance to Conform to NJDEP's Model Ordinance Standards.	Update the City's Flood Damage Prevention Ordinance to conform to NJDEP's model ordinance standards to reduce flood risk and prevent flood damage in Rahway City.	Administrative	Local Plans and Regulations	Flood	Low	Jacqueline Foushee, City Engineer	City Engineering Department Budget	$5,000.00	1 year	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
13-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 13-01 Rahway, City of

Describing the Action

Action Name:	Upgrade and Improve the Storm-water Management System Along Central and St. George's Streets (Robinson's).
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Union County is replacing the inlet and stormwater outfall structures that drain to the Rahway River.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$400,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Rahway DPW
Likely Funding Source(s):	NJDOT
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action was completed with funding from an NJDOT grant.

Union County Mitigation Action Worksheets

Community Action Number: 13-02 Rahway, City of

Describing the Action

Action Name:	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Coordinate with Union County to rehabilitate the Irving Street Bridge and implement scour erosion protection through blocks in the adjacent streambed. Rebuild the upper part of Irving Street Bridge.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	Reducing the risk of bridge failure and nearby flooding.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding.
Property Protection:	This action will prevent future flood damage to structures and infrastructure.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will not adversely affect one segment of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$450,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Union County
Likely Funding Source(s):	City funds
Target State Date:	
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	The Iriving Street Bridge is currently under repair.

Union County Mitigation Action Worksheets

Community Action Number: 13-03 Rahway, City of

Describing the Action

Action Name:	Flood-proof Homes.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Flood-proof homes along Central Avenue, Lawrence Street, Elm Avenue, Main Street, Whittier Street, Orchard Street, Plainfield Avenue, Minna Street, Monroe Street, Irving Street, Hamilton Street, New Church Street, St Georges Avenue, Jefferson Avenue, W Scott Avenue, Linden Avenue, Essex Street, W Milton.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Rahway
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Cost: $100,000 per unit. This action has been withdrawn. The mitigation of these properties has been integrated into Action 13-13.

Union County Mitigation Action Worksheets

Community Action Number: 13-04 Rahway, City of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The City of Rahway is most vulnerable to flooding, high wind-straight-line winds, and storm surge. Public education and outreach about these hazards in particular would increase resilience by improving the general public's understanding of these hazards. Further, the community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with SCOEM
Likely Funding Source(s):	City funds
Target State Date:	
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated Cost: Staff Time Ongoing from 2010 and 2016. Public outreach has been done since it will result in additional protection of people and property form flooding hazards. Outreach has been accomplished by sharing of existing information on flood hazards in the City through new mediums including the City's Cable Station and Website. As of the 2021 HMP update, the City currently uses Nixle, Twitter, Facebook, and Union County Emergency Alert to notify the public regarding preparedness for flooding and other storm instances.

Union County Mitigation Action Worksheets

Community Action Number: 13-05 Rahway, City of

Describing the Action

Action Name:	Replace and Elevate Existing Generator Above Flood Level at the City Hall and Rahway Police Department. Provide Mobile Connector for Emergency Generator Hook-up. Install Sewer Check Valve to Eliminate Basement Flooding.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	City Hall and Rahway Police Department - replace existing generator and elevate same above flood level; provide mobile connector for emergency generator hook- up; install sewer check valve to eliminate basement flooding.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$200,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Ongoing from 2010; complete. No priority listed

Union County Mitigation Action Worksheets

Community Action Number: 13-06 Rahway, City of

Describing the Action

Action Name:	Replace and Elevate Existing Generator for the Dock Street Sanitary Sewer Above Flood Level. Elevate Electrical Controls Above Flood Level.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Dock Street Sanitary Sewer - replace existing generator and elevate same above flood level; raise electrical controls above flood level.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$200,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	ongoing from 2010; complete

Union County Mitigation Action Worksheets

Community Action Number: 13-07 Rahway, City of

Describing the Action

Action Name:	Purchase and Install Traffic Signal and Trailer-Mounted Emergency Generators.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	The City seeks to provide temporary power via traffic signal and trailer-mounted emergency generators.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Critical facilities and infrastructure, like traffic signals, require backup sources of power to ensure roadway safety and the continuity of operations during a disaster despite power outages.
Life Safety:	This action will protect lives and prevent injuries by ensuring roadway safety and the continuity of operations during a disaster despite power outages.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	City funds
Target State Date:	TBD
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	No cost listed. Ongoing action from 2010 and 2016. Some trailer-mounted generators have been acquired, however the effort is ongoing.

Union County Mitigation Action Worksheets

Community Action Number: 13-08 Rahway, City of

Describing the Action

Action Name:	Replace Existing Generator at Maple Ave Firehouse.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Maple Ave Firehouse- replace existing generator.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Complete

Union County Mitigation Action Worksheets

Community Action Number: 13-09 Rahway, City of

Describing the Action

Action Name:	Provide Mobile Connector for Emergency Hook-Up at Main Street Firehouse.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Main Street Firehouse- provide mobile connector for emergency hook-up.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$25,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Ongoing action from 2010; Complete

Union County Mitigation Action Worksheets

Community Action Number: 13-10 Rahway, City of

Describing the Action

Action Name:	Replace Gymnasium Hardwood Floor with Vinyl Floor, Which is More Flood-Resistant at Recreation Center .
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Recreation Center - replace gymnasium hardwood floor with vinyl floor, which is more flood-resistant.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$450,000.00
Priority:	
Local Planning Mechanism:	Capital improvement
Responsible Party:	DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Action from 2010; complete

Union County Mitigation Action Worksheets

Community Action Number: 13-11 Rahway, City of

Describing the Action

Action Name:	Adopt an Ordinance To Limit Stormwater Direction or Quantity Changes on Private Property That May Have a Compounding Effect on Downstream or Adjacent Properties.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	At this time, the City is planning to adopt in the near future an ordinance to allow the City to more definitively limit what property owners are permitted to do in terms of changing the direction or quantity of stormwater on their properties that may impact downstream or adjacent properties, which the City has identified as having a compounding effect.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	The City has identified that when property owners change the direction or quantity of stormwater on their properties, it impacts downstream and adjacent properties and has a compounding effect on stormwater flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing the compounding effects of stormwater flooding on downstream properties.
Property Protection:	This action will reduce property damage at downstream properties as a result of stormwater flooding.
Cost Effectiveness:	Adopting an ordinance may require few costs on behalf of the City; however, the City will have to determine the ext
Technical:	This action is technically feasible and is a long-term solution.
Political:	There is political will to support this action.
Legal:	The City has the authority to pass ordinances. The City should seek legal council in drafting the ordinance to ensure it does not does not infringe on private property rights.
Environmental:	There are no known adverse environmental impacts. The ordinance will conform to NJDEP and other state regulations.
Social:	Currently, adjacent and downstream properties disproportionately bear the burden of stormwater flooding. This action would rectify this externality.
Administrative:	The municipality has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Regulations
Responsible Party:	Administration/ Code Enforcement
Likely Funding Source(s):	City funds
Target State Date:	TBD
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	Estimated cost: staff time This action is ongoing from 2016. In May 2019, the City of Rahway updated its Municipal Stormwater Management Plan in which it reviewed existing ordinances and other planning documents.

Union County Mitigation Action Worksheets

Community Action Number: 13-12 Rahway, City of

Describing the Action

Action Name:	Coordinate with Adjacent Municipalities to Reduce Flooding within the Watershed.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Work with adjacent municipalities to reduce flooding within the watershed. The City is an active participant in the Mayor's Council on Watershed Flood Control Project, which was formed after Hurricane Irene's devastation. The Council works to prevent future flooding. One options is to consider additional detention within the South Mountain Reservoir.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	The City recognizes that flooding does not conform to municipal boundaries. Continued involvement in the Mayor's Council on Watershed Flood Control Project will ensure the City's mitigation efforts coincide with the mitigation efforts of adjacent municipalities.
Life Safety:	Intergovernmental coordination ensures individual mitigation actions have greater regional impact and are more effective at protecting lives and preventing injuries.
Property Protection:	Intergovernmental coordination ensures individual mitigation actions have greater regional impact and are more effective at reducing property damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All regional actions will conform to environmental regulations.
Social:	This action does not adversely affect any particular social group.
Administrative:	This action requires coordination with the other municipalities in the Mayor's Council on Watershed Flood Control Project
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Administration
Likely Funding Source(s):	City funds
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Cost Estimate: Staff time This action is ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 13-13 Rahway, City of

Describing the Action

Action Name:	Elevate, Floodproof, Acquire or Relocate Buildings and Infrastructure in Flood-prone Areas Along the South Branch and Robinson Branch of the Rahway River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Mitigate flood-prone properties along Central Ave, Lawrence St, Elm Ave, Main St, Whittier St, Orchard St, Plainfield Ave, Minna St, Monroe St, Irving St, Hamilton St, New Church St, St Georges Ave, Jefferson Ave, W Scott Ave, Linden Ave, Essex St, and W Milton Ave.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the South Branch and Robinson Branch of the Rahway River in the City are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will floodproof, elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Administration/NJDEP
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Combined with mitigation action 13-03. This effort is ongoing. As of the 2021 HMP update, the City has acquired and demolished 16 of the City's RL/SRL properties through NJDEP Blue Acres Program. Cost Estimate: $100,000 per unit. The Recommended Plan from the USACE Rahway River Basin (Tidal), NJ Storm Risk Management Feasibility Study includes the elevation, buyout and floodproofing of properties in the City of Rahway and City of Linden. The

project is authorized for construction in Section 401 WRDA 2020.

Union County Mitigation Action Worksheets

Community Action Number: 13-14 Rahway, City of

Describing the Action

Action Name:	Update the City's Flood Damage Prevention Ordinance to Conform to NJDEP's Model Ordinance Standards.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Update the City's Flood Damage Prevention Ordinance to conform to NJDEP's model ordinance standards to reduce flood risk and prevent flood damage in Rahway City.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Guidance from the New Jersey Department of Environmental Protection (NJDEP) on Flood Damage Prevention Ordinances differs from the City's current ordinance. The City would reduce its flood risk if it adopted the standards set by NJDEP.
Life Safety:	The more stringent ordinances will effectively protect lives and prevent injuries from flooding.
Property Protection:	The more stringent ordinances will effectively reduce flood damages to structures and infrastructure.
Cost Effectiveness:	There are relatively high benefits to this action as compared to it cost.
Technical:	This action is technically feasible and is a long-term solution.
Political:	There is statewide political will to support this action.
Legal:	The City has the authority to update ordinances.
Environmental:	No environmental impacts anticipated.
Social:	This action will not adversely affect any segment of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM, state-level support from NJDEP
Other Community Objectives:	This action supports other City plans by preventing flood damages.
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$5,000.00
Priority:	Low
Local Planning Mechanism:	Engineering review panel
Responsible Party:	Jacqueline Foushee, City Engineer
Likely Funding Source(s):	City Engineering Department Budget
Target State Date:	July, 2020
Timeline:	1 year
Action Status:	New
Notes:	This action is near completion as the ordinance is under attorney review.

Union County Mitigation Action Worksheets

Community Action Number: 13-15 Rahway, City of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	12

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	City Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: City of Rahway, Union County, NJ

Name: Joseph DiLorenzo Title: Senior Scientist, Najarian Associates

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	YES	NO Note: A goal of the Master Plan, reaffirmed in the 2019 Master Plan Reexamination Report, is to "protect lives and property from flood damage through stormwater control and management".
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	**Yes**	The plan details rescue, evacuation, shelter and all aspects of response to emergencies in the community.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	YES	NO
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	**16**	Not applicable
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	YES	NO
Emergency Response Plan: Outlines the parties	**YES**	All stake holders are identified

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
responsible for and the procedures necessary for emergency response		
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities		
Site Plan Review Requirements: Review of new development applications	YES	NO
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	YES	NO
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	YES	Yes - higher regulatory standard
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	YES	YES - Higher standards
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	YES	NO

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	YES	NO
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	NJDEP	N/A
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	NJDEP	N/A
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	NO	N/A

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	YJDEP	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	YES	NO
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	NJDEP	N/A
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	FEMA	N/A
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	NO	N/A
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	YNJDEP Green Acres	N/A
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	NO	N/A
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	NO	N/A
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	NO	N/A
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	YES (NJ Law)	N/A

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	YES	Community Emergency Response Team, Emergency medical Services, and Auxiliary staff assist in response and recovery
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	**YES**	Nixle, Twitter, Facebook, and Union County Emergency Alert are all used to notify the public regarding preparedness for flooding and other storm instances
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	**NO**	N/A
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property-- before, during and after the event.	NO	N/A
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	NO	N/A
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	NO	N/A
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	NO	N/A

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	YES	YES
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	NO	N/A
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	YES	NO
Economic Development Commission: Provides recommendations on economic development policies and issues	YES	NO
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	YES	NO

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	YES	
Engineer: a New Jersey licensed Professional Engineer	YES	Full-time
Code Enforcement: Evaluates private properties and public grounds against local codes	YES	
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	YES	
Floodplain Manager: a Certified Floodplain Manager	NO	N/A
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	YES	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and	YES	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
community asset data		

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	YES	YES
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	YES	YES
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	YES	NO
Impact fees for new development: Fees paid by a developer to the municipality	YES	NO
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	YES	YES
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	YES	YES

What capability would you like your community to gain in the next five to ten years?

RAHWAY CITY
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,200 2,400 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

Winfield Township

Westfield Town

Scotch Plains Township

Clark Township

Linden Station

Linden City

Rahway Station

Middlesex County

605 604 608 609 514 652 613 621 1

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 14 BOROUGH OF ROSELLE

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Cesar Perez, OEM Coordinator

COMMUNITY PROFILE

The Borough of Roselle has a total land area of 2.64 square miles and is located in central Union County, west of Elizabeth, New Jersey. Major transportation bordering Roselle include Route 27 and Route 28, and there is a Conrail freight railroad line passing through the Borough. As of 2018, the population was estimated at 21,582. This is a 1.74% increase from the last plan update's population of 21,212 (est. 2013).

The site of present-day Roselle originally was part of the Elizabethtown Settlement, and was later carved from Linden. Originally settled as farmland, the community grew as a result of land development ventures following the creation of the Mulford Station stop on the Central Railroad. On January 19, 1883 the Borough of Roselle became the first village lighted by Edison's incandescent light bulb. Electric trolleys followed, and Roselle became developed as a center of light industry and residences.

As a riverine community, Roselle does not have any coastal erosion issues. Their extensive flooding and stormwater history has led to streambank erosion and subsidence. They have not experienced any property or life loss to date from this hazard and have taken measures to reduce risk in the future. The Morses Creek/West Brook has undergone channelization and bank stabilization improvements, consisting of both structural measures like gabion baskets and soil bioengineering/vegetative plantings. Maintenance measures will be required to ensure that the vegetative plantings remain stable and erosion is prevented.

Flooding in Roselle Borough is primarily related to overbank from Morses Creek (aka. West Brook), which traverses the west side of the jurisdiction in a roughly north to south direction. There are two Special Flood Hazard Areas (SFHA) in the western side of the Borough, both related to Morses Creek. In addition to the floodplain mapping, NFIP claims information indicates particularly flood-prone areas immediately south of West 1st Avenue and around Hory Street west of the western branch of Morses Creek. These areas have concentrations of flood insurance claims, including numerous National Flood Insurance Program's (NFIP) Repetitive Loss (RL) properties. The Borough is currently in the NFIP's Community Rating System (CRS), with the classification of 7.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Roselle Borough	
Number of Policies In-Force:	217
Total Losses:	411
Total Payments:	$7,279,876.63
Number of RL Properties:	39
Number of Mitigated RL Properties:	2
RL – Total Losses:	94
RL – Total Paid:	$546,570

Roselle Borough	
Number of SRL Properties:	4
Number of Mitigated SRL Properties:	1
SRL – Total Losses:	70
SRL – Total Paid:	$6,028,786

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Roselle has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
July 18, 2016	Thunderstorm Wind	N/A	N/A	A tree and wires were reported down along Pine Street just southwest of Roselle.
August 22, 2019	Thunderstorm Wind	N/A	N/A	Tree and wires reported down at 9th Avenue and 10th.
July 6, 2020	Flash Flood	N/A	N/A	Vehicles reported stranded on East 1st Avenue in Roselle due to flooding.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Erosion	High
Flood	High
Extreme Temperature – Cold	Medium
Extreme Temperature – Heat	Medium
Severe Storm – Winter Weather	Medium
Drought	Low
Earthquake / Geological	Low
Hail	Low
Hazardous Materials Release - Fixed Site	Low
Hazardous Materials Release - Transportation	Low
High Wind – Straight-line Winds	Low
Severe Storm – Lightning	Low
Animal Disease	Low
Civil Unrest	Low

Hazard	Priority
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Dam Failure	None
High Wind – Tornado	None
Landslide (non-seismic)	None
Storm Surge	None
Wildfire	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	0.00	1.53	153.00%
Forest	106.87	102.29	-4.28%
Urban	1,574.90	1,577.95	0.19%
Water	8.39	8.39	0.00%
Wetlands	2.64	2.64	0.00%

Source: NJDEP Land Use/Land Cover 2019

Warinanco Park in the eastern portion of the Borough is the major open space in Roselle; there are some patches of forestland throughout the Borough. FEMA Flood Zones extend throughout Warinanco Park stemming from Peach Orchard Brook. RL losses are concentrated in and near the FEMA Flood Zones along Morses Creek and its tributaries in the western portion of the Borough. The Borough may want to consider coordinating with Roselle Park to create and connect a vegetated buffer along Morses Creek.

FUTURE DEVELOPMENT

In 2007, the entire Borough of Roselle was designated as "An Area in Need of Rehabilitation." In 2014, the Central Roselle Revitalization Plan Area was designated as "An Area in Need of

Development." The Central Roselle Revitalization Plan Area, most recently amended in 2021, is partially within the SFHA. In 2017, the Borough adopted the Scattered Site Redevelopment Plan. In this Plan, Block 1404, Lot 5 – Between 1119 and 1123 Thompson Ave. and Block 5405, Lot 14 – Between 204 and 210 Sterling Pl., and Block 6701, Lot 9 – Prosper Ave. are within the SFHA.

CRITICAL FACILITIES

The Borough of Roselle has 23 critical facilities, none of which are located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

All actions from the Borough of Roselle are either ongoing, carried forward, or new.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Berkeley Heights has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Redevelopment Plan/Study
- Growth Management Ordinance

The complete Mitigation Strategy and Capability Assessment for the Borough of Roselle is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
14-01	Purchase and Install a Generator at the Community Center.	Purchase and install a generator at the Community Center.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, High Wind–Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Carried Forward
14-02	Purchase and Install a Generator at the Department of Public Works (DPW).	Purchase and install a generator at the DPW.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, High Wind–Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Carried Forward
14-03	Purchase and Install a Generator at the Sanitary Sewer Pump Station.	Purchase and install a generator at the Sanitary Sewer Pump Station.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, High Wind–Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Carried Forward
14-04	Mitigate Repetitive Loss Properties Through Channel Improvements to Tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.	Mitigate repetitive loss properties through channel improvements to tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Engineering	FEMA HMA, Municipal Budget	$5,000,000.00	3 years	Carried Forward
14-05	Improve and Convert Roadway Stormwater Systems at Harrison Ave., Wheat Sheaf Ave, and Brook Run.	Improve and convert roadway stormwater systems along Harrison Ave., Wheatsheaf Rd., and Brook Run to control stormwater.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	Medium	Engineering	FEMA HMA	$2,000,000.00	3 years	Ongoing
14-06	Conduct Stream Maintenance to West Brook and Peach Orchard Brook.	Conduct steam maintenance to West Brook and Peach Orchard Brook.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Medium	Engineering	Municipal Budget	$250,000.00	Ongoing	Ongoing
14-07	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Peach Orchard Brook, West Brook, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire or elevate structures that are listed as RL/SRL properties not already mitigated by channel improvements. Roselle Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	Medium	Engineering, Affected homeowners	FEMA HMA	$100,000.00	Ongoing	Carried Forward

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
14-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$0.00	1 year	Ongoing
14-09	Install Underground Gridwork That Continues Service During Blackouts.	Install underground gridwork to ensure electricity service is sustained despite an event that may trigger power failure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Power Failure, All Hazards	High	Borough	FEMA HMA	$0.00	1 year	New
14-10	Create and Connect a Vegetated Buffer Along Morses Creek in Coordination with Roselle Park Borough.	Create and connect a vegetated buffer along Morses Creek in coordination with Roselle Park Borough.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	Borough	FEMA HMA	$0.00	1 year	New
14-11	Construct an Emergency Operations Center (EOC) Facility.	Construct a facility to serve as an EOC, self-powered shelter, community outreach and education center, vaccination and test site, and a Point of Distribution.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	High	OEM	FEMA HMA and several other sources	$5,500,000.00	3 - 5 years	New
14-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 year	New
14-13	Bury Electrical and Cable Wiring Underground.	Create a viable plan to bury electrical and cable wiring within Roselle Borough to reduce the risks of long-term power failure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Pandemic, Flood, Power Failure	High	Roselle OEM	FEMA HMA	$0.00	3 - 5 years	New

Union County Mitigation Action Worksheets

Community Action Number: 14-01 Roselle, Borough of

Describing the Action

Action Name:	Purchase and Install a Generator at the Community Center.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator at the Community Center.
Hazard(s) Addressed:	Flood, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The Community Center is an important community facility. It is critical for this facility to maintain emergency power until the primary power is restored.
Life Safety:	This action will protect lives and prevent injuries by maintaining emergency power at the Community Center.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2017
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Timeline: 6 months timeline Carried forward from 2016 due to lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 14-02 Roselle, Borough of

Describing the Action

Action Name:	Purchase and Install a Generator at the Department of Public Works (DPW).
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Purchase and install a generator at the DPW.
Hazard(s) Addressed:	Flood, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The DPW is an important community facility. It is critical for this facility to maintain emergency power until the primary power is restored.
Life Safety:	This action will protect lives and prevent injuries by maintaining emergency power at the DPW.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2017
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Timeline: 6 months timeline Carried forward from 2016 due to lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 14-03 Roselle, Borough of

Describing the Action

Action Name:	Purchase and Install a Generator at the Sanitary Sewer Pump Station.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator at the Sanitary Sewer Pump Station.
Hazard(s) Addressed:	Flood, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The Sanitary Sewer Pump Station is important community infrastructure. It is critical for this infrastructure to maintain emergency power until the primary power is restored.
Life Safety:	This action will protect lives and prevent injuries by maintaining emergency power at the Sanitary Sewer Pump Station.
Property Protection:	This action will prevent structure and infrastructure damage that may result from a non-operational Sanitary Sewer Pump Station.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2017
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Timeline: 6 months timeline Carried forward from 2016 due to lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 14-04 Roselle, Borough of

Describing the Action

Action Name:	Mitigate Repetitive Loss Properties Through Channel Improvements to Tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Mitigate repetitive loss properties through channel improvements to tributaries to West Brook/Morses Creek and Peach Orchard Brook/Morses Creek and Peach Orchard Brook/Jouet Brook.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	RL losses are concentrated in and near the FEMA Flood Zones along Morses Creek and its tributaries in the western portion of the Borough.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will prevent structure and infrastructure damage by reducing exposure to repetitive flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. Channel improvements are generally environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has sufficient capacity and experience to administer this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$5,000,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Engineering
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2017
Timeline:	3 years
Action Status:	Carried Forward
Notes:	Carried forward from 2016 due to lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 14-05 Roselle, Borough of

Describing the Action

Action Name:	Improve and Convert Roadway Stormwater Systems at Harrison Ave., Wheat Sheaf Ave, and Brook Run.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Improve and convert roadway stormwater systems along Harrison Ave., Wheatsheaf Rd., and Brook Run to control stormwater.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Roadway stormwater systems along Harrison Ave., Wheatsheaf Rd., and Brook Run are in need of improvements and conversions.
Life Safety:	This action will protect lives and prevent injuries by controlling stormwater.
Property Protection:	This action will prevent structure and infrastructure damage by controlling stormwater.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has sufficient capacity and experience to administer this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$2,000,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Engineering
Likely Funding Source(s):	FEMA HMA
Target State Date:	2016
Timeline:	3 years
Action Status:	Ongoing
Notes:	Ongoing from 2016; seeking funding.

Union County Mitigation Action Worksheets

Community Action Number: 14-06 Roselle, Borough of

Describing the Action

Action Name:	Conduct Stream Maintenance to West Brook and Peach Orchard Brook.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Conduct steam maintenance to West Brook and Peach Orchard Brook.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Peach Orchard Brook and West Brook are main source of flooding in the Borough, and require regular maintenance.
Life Safety:	This action will protect lives and prevent injuries by regularly maintaining the streams that flood the Borough.
Property Protection:	This action will prevent structure and infrastructure damage by regularly maintaining the streams that flood the Borough.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and an ongoing effort.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has sufficient capacity and experience to administer this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Engineering
Likely Funding Source(s):	Municipal Budget
Target State Date:	2016
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing from 2016; seeking funding.

Union County Mitigation Action Worksheets

Community Action Number: 14-07 Roselle, Borough of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Peach Orchard Brook, West Brook, and Morses Creek, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structures that are listed as RL/SRL properties not already mitigated by channel improvements. Roselle Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along Peach Orchard Brook in the eastern portion of the Borough and along Morses Creek and its tributaries in the western portion of the Borough are at risk of future destruction and property loss due to repetitive flooding. RL losses are concentrated in and near the FEMA Flood Zones along Morses Creek and its tributaries in the western portion of the Borough.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate or demolish structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Engineering, Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	Carried forward from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 14-08 Roselle, Borough of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The Borough's highest priority hazards are Flood and Erosion. The community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions related to these hazards.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with County OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated Cost: Staff time Ongoing from 2016; Distributed Roselle Flood Hazard Map brochure in 2014 (3,700 residents).

Union County Mitigation Action Worksheets

Community Action Number: 14-09 Roselle, Borough of

Describing the Action

Action Name:	Install Underground Gridwork That Continues Service During Blackouts.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install underground gridwork to ensure electricity service is sustained despite an event that may trigger power failure.
Hazard(s) Addressed:	Power Failure, All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	The current power grid is at risk of failure during hazard events.
Life Safety:	This action will protect lives and prevent injuries by ensuring electricity service is sustained despite an event that may trigger power failure.
Property Protection:	This action will enhance and prevent future damage to the Borough's electricity infrastructure.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Mayor
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 14-10 Roselle, Borough of

Describing the Action

Action Name:	Create and Connect a Vegetated Buffer Along Morses Creek in Coordination with Roselle Park Borough.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Create and connect a vegetated buffer along Morses Creek in coordination with Roselle Park Borough.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Warinanco Park in the eastern portion of the Borough is the major open space in the Borough; there are some patches of forestland throughout the Borough. FEMA Flood Zones extend throughout Warinanco Park stemming from Peach Orchard Brook. Peach Orchard Brook and West Brook are main source of flooding in the Borough. RL losses are concentrated in and near the FEMA Flood Zones along Morses Creek and its tributaries in the western portion of the Borough.
Life Safety:	This action will protect lives and prevent injuries by controlling repetitive flooding.
Property Protection:	This action will ensure new structures and infrastructure are protected from future flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Nature-based solutions are generally environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 14-11 Roselle, Borough of

Describing the Action

Action Name:	Construct an Emergency Operations Center (EOC) Facility.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct a facility to serve as an EOC, self-powered shelter, community outreach and education center, vaccination and test site, and a Point of Distribution.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	A multi-purpose EOC is necessary to meet the community's needs during an emergency. There is a significant need for a self-power energy efficient shelter.
Life Safety:	This action will protect lives and prevent injuries by designating a shelter for any displaced community members, providing a location for power during power outages, and converting into a triage location, reunification, and
Property Protection:	This action is not related to structure and infrastructure protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved. It reduces the need and costs on
Technical:	This action is technically feasible and a permanent, long-term solution.
Political:	There is public support for this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group. It will provide an overall positive social impact for the community.
Administrative:	Yes, the administration has the capability to implement and maintain this action.
Local Champion:	OEM
Other Community Objectives:	The public is asking for a recreation center for the community which this facility can be used as such during non-emergency times.
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$5,500,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	FEMA HMA and several other sources
Target State Date:	Immediate planning phase
Timeline:	3 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 14-12 Roselle, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 14-13 Roselle, Borough of

Describing the Action

Action Name:	Bury Electrical and Cable Wiring Underground.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Create a viable plan to bury electrical and cable wiring within Roselle Borough to reduce the risks of long-term power failure.
Hazard(s) Addressed:	Pandemic, Flood, Power Failure
Goals:	4

Evaluating the Action

Risk Reduction:	Roselle Borough may experience continue long-term power failure if electrical and cable wiring remains aboveground.
Life Safety:	This action will protect lives and prevent injuries by reducing the risk of long-term power outages.
Property Protection:	This action will allow for continuity of operations by preventing power failure.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved. This action reduce the need and
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group. This action will have a positive effect on the community as a whole.
Administrative:	The Borough has the capability to implement and maintain this action.
Local Champion:	Roselle OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	Immediate Planning Phase-2021.
Timeline:	3 - 5 years
Action Status:	New
Notes:	The cost estimate is unknown as the plan is in its preliminary stages. There is a significant need for the community to be protected from constant power outages.

Local Capability Assessment Worksheet

Jurisdiction: _____ROSELLE OEM_____

Name: _____CESAR I PEREZ_____ Title: _____COORDINATOR_____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	N
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	N
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Y	N
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	N	N
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	N
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities		
Site Plan Review Requirements: Review of new development applications	Y	N
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	N
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	N
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	N	N
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	N

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	N
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	N
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	N
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	N	N

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	N	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution		
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	N	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	N	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	N	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	Y	N
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	N	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	N	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	N	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	N	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	N	
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	N	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	N	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	N
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	N	N
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	N	N
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	N
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	N

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	
Engineer: a New Jersey licensed Professional Engineer	Y	N
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	FT
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	FT
Floodplain Manager: a Certified Floodplain Manager	N	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	N
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	N	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	N	
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	N	
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	N	
Impact fees for new development: Fees paid by a developer to the municipality	N	
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	N	

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	N	

What capability would you like your community to gain in the next five to ten years?

Basic knowledge, understanding, and need of the Office of Emergency Management, Hazard Mitigation Plans, EOP and other plans in general.

ROSELLE BOROUGH FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 750 1,500 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

Roselle Park Borough

Elizabeth City

Cranford Township

Linden City

Clark Township

Winfield Township

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 15 BOROUGH OF ROSELLE PARK

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Detective Sgt. Rich Cocca, Police

COMMUNITY PROFILE

The Borough of Roselle Park has a total area of 1.23 square miles and is located in the northern region of Union County, New Jersey. As of 2018, the population was estimated at 13,568. This is a 1.37 percent increase in population since the last plan's population estimate of 13,384 (est. 2013). The first record of settlement in Roselle Park was in 1700, by Samuel Williams and his son Joseph. At this time the present-day Roselle Park was part of the Elizabethtown Settlement, and was primarily undeveloped. The community began to grow substantially in response to the establishment of the railroads. In 1839 the Elizabethtown & Somerville Railroad began to run regular routes through the region. The railroad is still an important part of the Borough, which offers a commuter rail stop on the NJ Transit Raritan Valley Line.

Flooding in Roselle Park Borough most often occurs during extreme rain events. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes Nor'easters. There are two typical modes of flooding – overbank floods from several culverts and stream channels that run generally north to south across the jurisdiction, and (to a lesser extent) sheet flow and ponding in very specific areas. There are three areas of flood concern in Roselle Park, two of which are related to Morses Creek, which meanders along the western border of the jurisdiction. There is also a high-water table that exacerbates localized flooding.

There are two small areas of the Borough within the Special Flood Hazard Areas (SFHA); one area is the western boundary of the Borough and the second is in the east-central part of the Borough. Again, the flooding is associated with extreme rain events, and is caused by a combination of modes – overbank from culverts, as well as sheet flow and ponding. The flooding can be exacerbated by narrower downstream channels, but these are gradually being corrected through civil works projects and improved maintenance. Over time, the Borough has tried successfully to reduce flooding in this area by carefully maintaining (and occasionally widening) culverts, catch basins and channels. Although this area appears to be flood-prone based on the map, in fact there has not been any significant flooding there in some time, in large measure because of the jurisdiction's commitment to maintenance. The Borough is now in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) at a Classification of 8.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Roselle Park	
Number of Policies In-Force:	54
Total Losses:	64
Total Payments:	$249,986.88
Number of RL Properties:	2
Number of Mitigated RL Properties:	0
RL – Total Losses:	5

Roselle Park	
RL – Total Paid:	$47,870
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	$0
SRL – Total Paid:	0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Roselle Park has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
July 22, 2018	Strong Wind	N/A	N/A	At 3 am, emergency management reported a tree down in the town of Roselle Park. The tree was downed on Colfax Manor and West Roselle Avenue.
August 21, 2019	Thunderstorm Wind	N/A	N/A	Trees reported down by law enforcement in Winfield.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Hazardous Materials Release– Fixed Site	High
Hazardous Materials Release – Transportation	High
High Wind – Straight-Line Winds	Med
Severe Storm – Winter Weather (Includes Ice Storms)	Med
Drought	Low
Earthquake / Geological	Low
Erosion - Hurricane/Nor'easter/Coastal Storm	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hail	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low

Hazard	Priority
Severe Storm – Lightning	Low
Storm Surge - Hurricane/Nor'easter/Coastal Storm	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Dam Failure	None
Wildfire	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	0.00	0.00	0.00%
Forest	7.76	7.76	0.00%
Urban	775.86	775.86	0.00%
Water	0.00	0.00	0.00%
Wetlands	0.00	0.00	0.00%

Source: NJDEP Land Use/Land Cover 2019

There are no wetlands and some forestland in Roselle Park. Open space is scattered throughout the Borough. The Borough may want to consider coordinating with Roselle to create and connect a vegetated buffer along Morses Creek.

FUTURE DEVELOPMENT

Roselle Park has the following list of properties recently developed or areas of interest for development. One future development is located in the SFHA.

- There are three locations of new apartments above garages going in along West Westfield Ave. One property, 450 West Westfield Ave., is located in a flood zone. This property also

has a tunnel that goes underneath the Gordon Street bridge which will remain for the new construction.

- 118 West Wester Avenue, a mixed-use apartment complex and parking garage, is outside the SFHA. Proposed parking will be underneath the apartment units.

Roselle Park also tracked building permits between January 2020 – May 2021 that are located within the SFHA. Most building permits were for minor renovations, however there were some permits issued to expand the use of use of a basement. Concentrations of new building permits within the Borough are located on Lincoln Ave. E., Webster Ave E., Clay Ave. E., and Dalton St.

2020-2021 Building Permits Located Within the SFHA				
Address	**Permit Number**	**Description of Work**	**Date**	**Status**
138 Lincoln Ave E	20-191	Sink/Dishwasher/ Electric Upgrades	2/7/2020	Closed
132 Lincoln Ave E	20-029	Chimney Liner	2/4/2020	Closed
164 Lincoln Ave E	20-105	Tank Removal	4/29/2020	Closed
165 Lincoln Ave E	20-065	Plywood on Roof	3/6/2020	Open
176 Lincoln Ave E	20-487	Tank Removal AST	11/6/2020	Closed
213 Lincoln Ave E	20-176	Water Heater	6/29/2020	Closed
116 Webster Ave E	21-013	Boiler	1/13/2021	Open
140 Webster Ave E	20-427	Generator	12/7/2020	Closed
145 Webster Ave E	20-170	Sump Pump	6/25/2020	Open
151 Webster Ave E	20-031	Add Master Bathroom To 2nd Floor	2/4/2020	Open
155 Webster Ave E	20-019	Water Heater	1/19/2021	Open
128 Clay Ave E	21-041	Bathroom in Basement	1/28/2021	Closed
175 Clay Ave E	21-088	Tank Removal	3/30/2021	Closed
138 Clay Ave E	21-052	Boiler	2/17/2021	Closed
153 Clay Ave E	20-315	Deck	10/29/2021	Open
164 Dalton St	20-273	Replace Plaster, Insulation, With Electrical Update	8/31/2020	Open
120 Dalton St	20-276	Sewer Connection	9/1/2020	Open
124 Dalton St	20-089	Tank Removal UST	4/6/2020	Closed
154 Dalton St	20-400	Basement and Attic	11/18/2020	Open
117 Grant Ave E	19-454+A	Interior Renovations	1/10/2020	Open
43 Grant Ave E	21-066	Water Heater	3/4/2021	Open
44 Grant Ave E	20-050	Solar Panels	2/26/2020	Closed
120 Union Rd	20-093	Solar Panels	4/8/2020	Closed
123 Union Rd	21-106	Finish Basement	4/15/2021	Open
159 Union Rd	20-235	Tank UST	8/11/2020	Open
217 Sheridan Ave	20-018	Water Heater	1/23/2020	Closed
221 Sheridan Ave	20+174	Above Ground Pool	6/29/2020	Closed
221 Sherman Ave	20-004	A/C	1/8/2020	Open
320 Walnut St	20-190	A/C	7/7/2020	Closed

2020-2021 Building Permits Located Within the SFHA				
Address	**Permit Number**	**Description of Work**	**Date**	**Status**
324 Walnut St	20-434	Steps and Deck	12/16/2020	Open
211 Colfax Ave E	20-164	Above Ground Pool	6/23/2020	Closed
150 Colfax Ave E	20-199	Renovation, Sump Pump with French Drain	7/16/2020	Closed
516 Spruce St	21-115	Deck	4/16/2021	Open
525 Spruce St	20-005	Basement and New Bathroom	1/8/2020	Open
47 Westfield Ave W	20-043	Exterior Work	8/13/2020	Closed
512 Pinewood Ave	21-045	Water Service	2/3/2021	Open
107 Filbert St	20-299	A/C	9/11/2020	Open
233 Pershing Ave	20-173	Above Ground Pool	6/25/2020	Open
421 Cherry St	20-202	Addition	7/16/2020	Closed
214 Lincoln Ave E	21-076	Patio Door	3/16/2021	Open

CRITICAL FACILITIES

The Borough of Roselle Park has 20 critical facilities, none located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 15-01: Retrofit Roof to Meet Current Standards on Municipal Building that Houses the Local Police Department and OEM.
- 15-02: Floodproofing of the Chestnut Street Fire Station.
- 15-03: Floodproofing of the Lorane Fire House.
- 15-04: Floodproofing and Backup Generator for the Faitoute Fire House.
- 15-05: Retrofit Roof to Meet Current High Wind Standards on the Faitoute Fire House.
- 15-07: Mitigate Flooding of the Sherman School.
- 15-08: Backup Power to the Roselle Parks Middles School.
- 15-09: Increase Holding Capacity to Basin Along Meadow Street (East Grant Ave and Walnut Street).
- 15-10: Backup Power/Retrofitting of the Aldine School.
- 15-11: Backup Power/Retrofitting of Roselle Park High School.
- 15-13: Upgrade and Improvement of the Drainage System for the Tributary to the West Brook in Grant Avenue Area.
- 15-14: Impact Harden and Retrofit Roofs on 4 Schools Located on West Grant Ave (2 Facilities), Laurel Ave, and Chestnut Ave.
- 15-15: Covered Culvert Upgrade Along West Westfield Ave.
- 15-20: Join CRS Program.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Borough of Roselle Park has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Redevelopment Plan/Study
- Floodplain Management Plan: The Borough has a Stormwater and Flooding Chapter in their 2020 Environmental Resources Inventory.
- The Borough is Sustainable Jersey Certification.

The complete Mitigation Strategy and Capability Assessment for the Borough of Roselle Park is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
15-01	Retrofit Roof to Meet Current Standards on Municipal Building that Houses the Local Police Department and OEM.	Retrofit roof to meet current standards on municipal building that houses the local police department and OEM.	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Straight-Line Winds		Roselle Park Administrator	FEMA HMA, Insurance	$250,000.00	1 - 5 years	Ongoing
15-02	Flood-proof the Chestnut Street Fire Station.	Flood-proof the Chestnut Street fire station.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Roselle Park Fire Chief		$125,000.00		Completed
15-03	Flood-proof the Lorane Fire House.	Flood-proof the Lorane Fire House	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Roselle Park Fire Chief		$125,000.00		Completed
15-04	Flood-proof and Purchase and Install a Backup Generator for the Faitoute Fire House.	Floodproofing and backup generator for the Faitoute Fire House.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning		Roselle Park	FEMA HMA, Municipal Budget	$300,000.00	1 - 5 years	Ongoing
15-05	Retrofit Roof to Meet Current High Wind Standards on the Faitoute Fire House.	Retrofit roof to meet current high wind standards on the Faitoute Fire House.	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park		$250,000.00		Completed
15-06	Mitigate Flood/High Winds Affecting the First Aid House on Laurel Avenue.	Mitigation of Flood/High Winds affecting the first aid house on Laurel Avenue.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park Fire Chief		$45,000.00		Withdrawn
15-07	Mitigate Flooding of the Sherman School.	Mitigate flooding of the Sherman School.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Roselle Park OEM		$25,000.00		Completed
15-08	Obtain Backup Power to the Roselle Parks Middles School.	Backup power to the Roselle Parks Middles School.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$100,000.00		Completed
15-09	Increase Holding Capacity to Basin Along Meadow Street (East Grant Ave and Walnut Street).	Increase holding capacity to Basin along Meadow Street (East Grant Ave and Walnut Street).	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood		Roselle Park OEM		$130,000.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
15-10	Obtain Backup Power for and Retrofit the Aldine School.	Backup power/retrofitting of the Aldine School.	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$125,000.00		Completed
15-11	Obtain Backup Power for and Retrofit Roselle Park High School.	Backup power/retrofitting of Roselle Park High School.	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$125,000.00		Completed
15-12	Flood-proof the Department of Public Works.	Floodproofing of the Department of Public Works.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park DPW		$150,000.00		Withdrawn
15-13	Upgrade and Improve the Drainage System for the Tributary to the West Brook in Grant Avenue Area.	Upgrade and improvement of the drainage system for the Tributary to the West Brook in Grant Avenue Area.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		Roselle Park DPW		$350,000.00		Completed
15-14	Impact Harden and Retrofit Roofs on 4 Schools Located on West Grant Ave (2 Facilities), Laurel Ave, and Chestnut Ave.	Impact Harden and retrofit roofs on 4 schools located on West Grant Ave (2 facilities), Laurel Ave, and Chestnut Ave.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$750,000.00		Completed
15-15	Upgrade the Covered Culvert Along West Westfield Ave.	Covered culvert upgrade along West Westfield Ave.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		Roselle Park OEM		$1,200,000.00		Completed
15-16	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with NJOEM	OEM Budget	$0.00	1 year	Ongoing
15-17	Reinforce the Berm Surrounding the Hawthorne Basin (Between Hawthorne St. /Meadow).	Hawthorne Basin (Between Hawthorne St. /Meadow). Reinforce the berm surrounding the basin.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Engineering		$0.00		Withdrawn

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
15-18	Rebuild Trash Racks with Stronger Material to Prevent Debris from Clogging Drains at the Walnut St. Basin.	Walnut St Basin (Rebuild trash racks with stronger material to prevent debris from clogging drains).	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		DPW	Capital Improvement	$200,000.00		Completed
15-19	Identify High Risk Trees through the Tree Management Program with Right of Way Survey and Trim or Remove Trees to Reduce Property Damage During and Debris After Storms and Severe Weather Events.	Identify high risk trees through the Tree Management Program with Right of Way survey and trim or remove trees to reduce property damage during and debris after storms and severe weather events.	Maintenance/Response/Recovery	Local Plans and Regulations	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds	Low	Tree Management Program	Green Communities Grant Agreement $3,000 grant from State ($3,000 town match)	$6,000.00	Ongoing	Ongoing
15-20	Join CRS Program.	Join CRS Program.	Administrative	Education and Awareness Programs	Flood		Floodplain Administrator		$0.00		Completed
15-21	Purchase and Install a New Generator for the OEM Building.	Purchase and install a new generator for the OEM building located at 110 East Westfield Ave.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Rochelle Park OEM	Capital Improvement funding	$0.00	1 - 5 years	New
15-22	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Morses Creek and a Peach Orchard Brook Tributary, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	The Borough will coordinate with residents to mitigate properties through structure elevation, demolition to open space, or another type of mitigation.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	New
15-23	Upgrade the Hawthorne Street Basin and the Grove Street Basin.	Upgrade the Hawthrone Street basin and the Grove Street basin (the shared basin on the Cranford/Roselle Park border). Upgrades include making the retension basins deeper and providing better security fencing around both.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Terrorism	High	Roselle Park OEM	FEMA HMA	$0.00	1 - 5 years	New
15-24	Create and Connect a Vegetated Buffer Along Morses Creek With the Borough of Roselle.	Create and connect a vegetated buffer along Morses Creek with the Borough of Roselle to mitigate repetitive flooding.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	Borough of Roselle and Borough of Roselle Park	FEMA HMA, NJ Green Acres	$0.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
15-25	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 year	New
15-26	Retrofit All Public Buildings with Generator Plugs for Mobile Power and Purchase a Large Mobile Generator.	Retrofit all public buildings with generator plugs for mobile power and purchase a mobile large generator that could provide power to any borough building in case of a generator failure.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	Roselle Park OEM	FEMA HMA	$0.00	1 - 5 years	New
15-27	Retrofit Police Headquarters and Casano Center with Full Building Surge Protection Against Lightning Strikes and Severe Weather.	Retrofit Police Headquarters (OEM) and Casano Center with full building surge protection against lightning strikes and severe weather.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Severe Storm –Lightning	Medium	Roselle Park OEM	Municipal budget	$0.00	1 - 5 years	New
15-28	Target Harden Police Headquarters Against Terror Attacks with New Fencing, Cams, and More Secure Parking for Police Vehicles.	Target harden police headquarters against terror attacks with new fencing, cams, and more secure parking for police vehicles.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Terrorism	High	Roselle Park OEM	Homeland Security grants	$0.00	1 - 5 years	New
15-29	Replace Computer/Network Infrastructure to Further Prevent Cyber Attacks.	Replace computer/network infrastructure to further prevent cyber attacks.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Cyber Attack	High	Roselle Park OEM	Homeland Security grants	$0.00	1 - 5 years	New
15-30	Purchase a High-Capacity Mobile Pump for thee Two Basins in Town to Prevent Overflow.	Purchase a high-capacity mobile pump for the two basins in town to prevent overflow.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm –Lightning	Medium	Roselle Park OEM	FEMA, Municipal budget	$0.00	1 - 5 years	New
15-31	Upgrade Current Storm Water/Wastewater System in Town to Keep Up with New Development.	Upgrade current storm water/wastewater system in town to keep up with current construction.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	High	Roselle Park OEM	Municipal budget	$0.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
15-32	Purchase a New Sewer Truck to Assist in Cleaning Catch Basins and a New Large Dump Truck for DPW to Assist with Clean Ups During Storm Impacts.	Purchase a new sewer truck to assist in cleaning catch basins and a new large dump truck for DPW to assist in clean ups during storm impacts.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Low	Roselle Park DPW	Municipal budget	$0.00	1 - 5 years	New

Union County Mitigation Action Worksheets

Community Action Number: 15-01 Roselle Park, Borough of

Describing the Action

Action Name:	Retrofit Roof to Meet Current Standards on Municipal Building that Houses the Local Police Department and OEM.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Retrofit roof to meet current standards on municipal building that houses the local police department and OEM.
Hazard(s) Addressed:	High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The roof of the municipal building needs to be brought up to current standards. Solar panels on the roof offer an additional source of power.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at the municipal building during storm events.
Property Protection:	This action will allow for continuity of operations at the municipal building during storm events.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	
Local Planning Mechanism:	Funded by FEMA grant and Insurance
Responsible Party:	Roselle Park Administrator
Likely Funding Source(s):	FEMA HMA, Insurance
Target State Date:	2016
Timeline:	1 - 5 years
Action Status:	Ongoing
Notes:	This action was partially completed with funding from a FEMA grant as well as insurance. As of the 2021 HMP update, Roselle Park is redoing their roof to accommodate solar panels.

Union County Mitigation Action Worksheets

Community Action Number: 15-02 Roselle Park, Borough of

Describing the Action

Action Name:	Flood-proof the Chestnut Street Fire Station.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Flood-proof the Chestnut Street fire station.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$125,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park Fire Chief
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed with Capital Improvement funding through the DPW.

Union County Mitigation Action Worksheets

Community Action Number: 15-03 Roselle Park, Borough of

Describing the Action

Action Name:	Flood-proof the Lorane Fire House.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Flood-proof the Lorane Fire House
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$125,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park Fire Chief
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed with Capital Improvement funding through the DPW.

Union County Mitigation Action Worksheets

Community Action Number: 15-04 Roselle Park, Borough of

Describing the Action

Action Name:	Flood-proof and Purchase and Install a Backup Generator for the Faitoute Fire House.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Floodproofing and backup generator for the Faitoute Fire House.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning
Goals:	4

Evaluating the Action

Risk Reduction:	The Faitoute Fire House is vulnerable to flooding and power failure that may occur during storm events.
Life Safety:	This action will protect lives and prevent injuries by reducing flood risk to the Faitoute Fire House and allowing for continuity of operations.
Property Protection:	This action will prevent future flood damage to the Faitoute Fire House and allow for continuity of operations.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$300,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2016
Timeline:	1 - 5 years
Action Status:	Ongoing
Notes:	This action was partially completed with Capital Improvement funding. A new roof and generator were installed, but a larger generator is needed.

Union County Mitigation Action Worksheets

Community Action Number: 15-05 Roselle Park, Borough of

Describing the Action

Action Name:	Retrofit Roof to Meet Current High Wind Standards on the Faitoute Fire House.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Retrofit roof to meet current high wind standards on the Faitoute Fire House.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2019 with Capital Improvement funding.

Union County Mitigation Action Worksheets

Community Action Number: 15-06 Roselle Park, Borough of

Describing the Action

Action Name:	Mitigate Flood/High Winds Affecting the First Aid House on Laurel Avenue.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Mitigation of Flood/High Winds affecting the first aid house on Laurel Avenue.
Hazard(s) Addressed:	Flood, High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$45,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park Fire Chief
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn as the property has been sold to Union County.

Union County Mitigation Action Worksheets

Community Action Number: 15-07 Roselle Park, Borough of

Describing the Action

Action Name:	Mitigate Flooding of the Sherman School.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Mitigate flooding of the Sherman School.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$25,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2015 with funding from FEMA as well as insurance.

Union County Mitigation Action Worksheets

Community Action Number: 15-08 Roselle Park, Borough of

Describing the Action

Action Name:	Obtain Backup Power to the Roselle Parks Middles School.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Backup power to the Roselle Parks Middles School.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2017 with Capital Improvement funding through the Board of Education (BOE).

Union County Mitigation Action Worksheets

Community Action Number: 15-09 Roselle Park, Borough of

Describing the Action

Action Name:	Increase Holding Capacity to Basin Along Meadow Street (East Grant Ave and Walnut Street).
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Increase holding capacity to Basin along Meadow Street (East Grant Ave and Walnut Street).
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$130,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2018 with Capital Improvement funding.

Union County Mitigation Action Worksheets

Community Action Number: 15-10 Roselle Park, Borough of

Describing the Action

Action Name:	Obtain Backup Power for and Retrofit the Aldine School.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Backup power/retrofitting of the Aldine School.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$125,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2017 with Capital Improvement funding through the BOE.

Union County Mitigation Action Worksheets

Community Action Number: 15-11 Roselle Park, Borough of

Describing the Action

Action Name:	Obtain Backup Power for and Retrofit Roselle Park High School.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Backup power/retrofitting of Roselle Park High School.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$125,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2017 with Capital Improvement funding through the BOE.

Union County Mitigation Action Worksheets

Community Action Number: 15-12 Roselle Park, Borough of

Describing the Action

Action Name:	Flood-proof the Department of Public Works.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Floodproofing of the Department of Public Works.
Hazard(s) Addressed:	Flood, High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$150,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Roselle Park DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn as the DPW building is no longer active. The construction of a new DPW building is pending.

Union County Mitigation Action Worksheets

Community Action Number: 15-13 Roselle Park, Borough of

Describing the Action

Action Name:	Upgrade and Improve the Drainage System for the Tributary to the West Brook in Grant Avenue Area.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Upgrade and improvement of the drainage system for the Tributary to the West Brook in Grant Avenue Area.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$350,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Roselle Park DPW
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2017 with Capital Improvement funding.

Union County Mitigation Action Worksheets

Community Action Number: 15-14 Roselle Park, Borough of

Describing the Action

Action Name:	Impact Harden and Retrofit Roofs on 4 Schools Located on West Grant Ave (2 Facilities), Laurel Ave, and Chestnut Ave.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Impact Harden and retrofit roofs on 4 schools located on West Grant Ave (2 facilities), Laurel Ave, and Chestnut Ave.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$750,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2015/2016 with Capital Improvement funding through the BOE.

Union County Mitigation Action Worksheets

Community Action Number: 15-15 Roselle Park, Borough of

Describing the Action

Action Name:	Upgrade the Covered Culvert Along West Westfield Ave.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Covered culvert upgrade along West Westfield Ave.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,200,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was patrially completed with Capital Improvement funding. This large project involves putting retaining walls along the culverts to control flooding.

Union County Mitigation Action Worksheets

Community Action Number: 15-16 Roselle Park, Borough of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The Borough's high priority hazards are flooding and hazardous materials release (fixed site and transportation). A education and outreach on these hazards in particular improve the community's resilience. Further, the community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with NJOEM
Likely Funding Source(s):	OEM Budget
Target State Date:	
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated cost: staff time Ongoing from 2010 and 2016. Distributed Roselle Park Flood Hazard Map brochure in 2014 (3,700 residents). The Borough teaches the youth about safety related to hazards through the Police Youth Academy.

Union County Mitigation Action Worksheets

Community Action Number: 15-17 Roselle Park, Borough of

Describing the Action

Action Name:	Reinforce the Berm Surrounding the Hawthorne Basin (Between Hawthorne St. /Meadow).
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Hawthorne Basin (Between Hawthorne St. /Meadow). Reinforce the berm surrounding the basin.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Engineering
Likely Funding Source(s):	
Target State Date:	2017
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn as other drainage improvements have been made.

Union County Mitigation Action Worksheets

Community Action Number: 15-18 Roselle Park, Borough of

Describing the Action

Action Name:	Rebuild Trash Racks with Stronger Material to Prevent Debris from Clogging Drains at the Walnut St. Basin.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Walnut St Basin (Rebuild trash racks with stronger material to prevent debris from clogging drains).
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$200,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	DPW
Likely Funding Source(s):	Capital Improvement
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2017 with Capital Improvement funding.

Union County Mitigation Action Worksheets

Community Action Number: 15-19 Roselle Park, Borough of

Describing the Action

Action Name:	Identify High Risk Trees through the Tree Management Program with Right of Way Survey and Trim or Remove Trees to Reduce Property Damage During and Debris After Storms and Severe Weather Events.
Action Category:	Maintenance/Response/Recovery
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Identify high risk trees through the Tree Management Program with Right of Way survey and trim or remove trees to reduce property damage during and debris after storms and severe weather events.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	3

Evaluating the Action

Risk Reduction:	Storms and severe weather events involving high winds can cause high risk trees and tree limbs to fall, potentially bringing down wires causing power outages and striking people and properties. Fallen trees also create debris that needs to be gathered post-storm to ensure safety on roads and public property.
Life Safety:	This action protect lives and prevents injuries by managing high risk trees that may fall and strike people.
Property Protection:	This action reduce damage to structure and infrastructure by managing high risk trees that may bring down wires causing power outages and property damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to manage trees on locally-owned property, roadways, and rights-of-way. The Borough must coordinate with private property owners, Union County, and the State to manage trees on their properties, roadways, and rights-of-way.
Environmental:	Extensive tree removal may have an adverse impact on the environment. All environmental regulations will be followed.
Social:	This action will involve all segments of the population.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$6,000.00
Priority:	Low
Local Planning Mechanism:	Green Communities Grant Agreement $3,000 grant from State ($3,000 town match)
Responsible Party:	Tree Management Program
Likely Funding Source(s):	Green Communities Grant Agreement $3,000 grant from State ($3,000 town match)
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	A Right of Way Survey was completed in 2014 with a Green Communities Grant of $3,000 from the State with a $3,000 town match. High risk tree management is ongoing.

Union County Mitigation Action Worksheets

Community Action Number: 15-20 Roselle Park, Borough of

Describing the Action

Action Name:	Join CRS Program.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Join CRS Program.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Floodplain Administrator
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Roselle Park Borough joined the CRS program on October 1, 2015. As of the 2021 HMP update, it has a Class 8 designation (10% discount for the Special Flood Hazard Area (SFHA) and 5% discount outside of the SFHA).

Union County Mitigation Action Worksheets

Community Action Number: 15-21 Roselle Park, Borough of

Describing the Action

Action Name:	Purchase and Install a New Generator for the OEM Building.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a new generator for the OEM building located at 110 East Westfield Ave.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	The Office of Emergency Management provides necessary services to the community during a disaster. It is critical for its facility to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations for the Office of Emergency Management during a disaster despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population as the Office of Emergency Management serves all residents.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Rochelle Park OEM
Likely Funding Source(s):	Capital Improvement funding
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-22 Roselle Park, Borough of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Morses Creek and a Peach Orchard Brook Tributary, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	The Borough will coordinate with residents to mitigate properties through structure elevation, demolition to open space, or another type of mitigation.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	There are currently 2 RL properties in Roselle Park Borough. These and other properties in flood-prone areas along Morses Creek and a Peach Orchard Brook tributary are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-23 Roselle Park, Borough of

Describing the Action

Action Name:	Upgrade the Hawthorne Street Basin and the Grove Street Basin.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade the Hawthrone Street basin and the Grove Street basin (the shared basin on the Cranford/Roselle Park border). Upgrades include making the retension basins deeper and providing better security fencing around both.
Hazard(s) Addressed:	Flood, Terrorism
Goals:	4

Evaluating the Action

Risk Reduction:	The retention basins at Hawthorne Street and Grove Street may be in need of improvements to better control flooding and provide necessary security.
Life Safety:	This action will protect lives and prevent injuries by better controlling flooding in the areas around the basins, and providing necessary security measures around the basins.
Property Protection:	This action will reduce damage to structures and infrastructure by better controlling flooding in the areas around the basins, and providing necessary security measures around the basins.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. Environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-24 Roselle Park, Borough of

Describing the Action

Action Name:	Create and Connect a Vegetated Buffer Along Morses Creek With the Borough of Roselle.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Create and connect a vegetated buffer along Morses Creek with the Borough of Roselle to mitigate repetitive flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas near Morses Creek are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will prevent future flood damage to structures and infrastructure along Morses Creek.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	For the vegetated buffer to be most effective, the Borough should coordinate with the Borough of Roselle.
Environmental:	There are no known adverse environmental impacts. Green infrastructure solutions are generally environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Borough of Roselle and Borough of Roselle Park
Likely Funding Source(s):	FEMA HMA, NJ Green Acres
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-25 Roselle Park, Borough of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Borough Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-26 Roselle Park, Borough of

Describing the Action

Action Name:	Retrofit All Public Buildings with Generator Plugs for Mobile Power and Purchase a Large Mobile Generator.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Retrofit all public buildings with generator plugs for mobile power and purchase a mobile large generator that could provide power to any borough building in case of a generator failure.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Borough facilities are at risk of losing power, especially as storms continues to more severe.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at the municipal building during storm events.
Property Protection:	This action will allow for continuity of operations at the municipal building during storm events.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	2022
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-27 Roselle Park, Borough of

Describing the Action

Action Name:	Retrofit Police Headquarters and Casano Center with Full Building Surge Protection Against Lightning Strikes and Severe Weather.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Retrofit Police Headquarters (OEM) and Casano Center with full building surge protection against lightning strikes and severe weather.
Hazard(s) Addressed:	Severe Storm –Lightning
Goals:	3

Evaluating the Action

Risk Reduction:	Borough facilities are at risk getting stuck by lightning, especially as storms continues to more severe.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at the municipal building during storm events.
Property Protection:	This action will reduce any damage to Borough facilities.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	Municipal budget
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-28 Roselle Park, Borough of

Describing the Action

Action Name:	Target Harden Police Headquarters Against Terror Attacks with New Fencing, Cams, and More Secure Parking for Police Vehicles.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Target harden police headquarters against terror attacks with new fencing, cams, and more secure parking for police vehicles.
Hazard(s) Addressed:	Terrorism
Goals:	3

Evaluating the Action

Risk Reduction:	Police Headquarters is a soft target for terrorism.
Life Safety:	This action will protect lives and prevent injuries by ensuring the safety of Borough facilities.
Property Protection:	This action will reduce any damage to Borough facilities.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	Homeland Security grants
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-29 Roselle Park, Borough of

Describing the Action

Action Name:	Replace Computer/Network Infrastructure to Further Prevent Cyber Attacks.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Replace computer/network infrastructure to further prevent cyber attacks.
Hazard(s) Addressed:	Cyber Attack
Goals:	3

Evaluating the Action

Risk Reduction:	The Borough is a soft targer for cyber attacks due to the amount of PPI stored on their servers.
Life Safety:	This action will protect the security of residents.
Property Protection:	This action will protect information on Borough assets.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	Homeland Security grants
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-30 Roselle Park, Borough of

Describing the Action

Action Name:	Purchase a High-Capacity Mobile Pump for thee Two Basins in Town to Prevent Overflow.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase a high-capacity mobile pump for the two basins in town to prevent overflow.
Hazard(s) Addressed:	Flood, Severe Storm –Lightning
Goals:	3

Evaluating the Action

Risk Reduction:	The Borough is a very dense community. As more impervious surfaces are constructed, more water will flow to the basins.
Life Safety:	This action will protect lives and prevent injuries by reducing the amount of flooded areas within the Borough.
Property Protection:	This action will protect properties by reducing the amount of flooded areas within the Borough.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	FEMA, Municipal budget
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-31 Roselle Park, Borough of

Describing the Action

Action Name:	Upgrade Current Storm Water/Wastewater System in Town to Keep Up with New Development.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Upgrade current storm water/wastewater system in town to keep up with current construction.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	The water/wastewater infrastructure is very old and needs upgrading in order to keep operating community lifelines.
Life Safety:	This action will protect lives and prevent injuries by reducing the amount of flooded areas within the Borough.
Property Protection:	This action will protect properties by reducing the amount of flooded areas within the Borough.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park OEM
Likely Funding Source(s):	Municipal budget
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 15-32 Roselle Park, Borough of

Describing the Action

Action Name:	Purchase a New Sewer Truck to Assist in Cleaning Catch Basins and a New Large Dump Truck for DPW to Assist with Clean Ups During Storm Impacts.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Purchase a new sewer truck to assist in cleaning catch basins and a new large dump truck for DPW to assist in clean ups during storm impacts.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at the municipal building during storm events.
Property Protection:	This action will allow for continuity of operations at the municipal building during storm events.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The Borough has the authority to implement this action.
Environmental:	here are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	Roselle Park OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Roselle Park DPW
Likely Funding Source(s):	Municipal budget
Target State Date:	
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Roselle PARK

Name: Richard Cocca Title: Deputy OEM Coord.

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Yes	
Emergency Response Plan: Outlines the parties	Yes	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
responsible for and the procedures necessary for emergency response		
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities		
Site Plan Review Requirements: Review of new development applications	YES	
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	YES	
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	YES	
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	YES	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	YES	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Yes	Done every few years
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N/A	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N/A	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	N/A	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway		
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution		
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards		Stormwater and Flooding Chapter in the 2020 Environmental Resources Inventory.
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters		
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation		
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation		
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl		
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas		
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster		
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	YES	YES - Recycling Program
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction		
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	YES	Police Youth Academy
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.		
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N/A	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	YES	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population		

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	YES	PLANNING Board
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	NO	- DONE Through PLANNING Board
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	NO	-DONE Through PLANNING Board
Economic Development Commission: Provides recommendations on economic development policies and issues	NO	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	YES	DPW DOES this

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	NO	
Engineer: a New Jersey licensed Professional Engineer	YES	- CONTRACTED AS NEEDED
Code Enforcement: Evaluates private properties and public grounds against local codes	YES	PART TIME
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	YES	PART TIME
Floodplain Manager: a Certified Floodplain Manager	NO	
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	NO	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and	NO	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
community asset data		

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	YES	YES
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	YES	YES
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	YES	~~YES~~ NO
Impact fees for new development: Fees paid by a developer to the municipality	YES	YES
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	YES	YES
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	YES	YES

What capability would you like your community to gain in the next five to ten years?

Roselle Park would like to work with Small Business, Board of Education and Residents on input and education on hazard mitigation projects.

ROSELLE PARK
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 750 1,500 Feet

N

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Union Township

Kenilworth Borough

Roselle Park Station

Cranford Township

Roselle Borough

Elizabeth City

Linden City

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 16 TOWNSHIP OF SCOTCH PLAINS

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Dennis VanNatta, OEM Coordinator

COMMUNITY PROFILE

The Township of Scotch Plains has a total area of 9.05 square miles and is located in the southern region of Union County, New Jersey. As of 2018, the population was estimated at 24,183. This is a 2.22 percent increase in population since the last plan's population estimate of 23,657 (est. 2013). The first record of settlement in Scotch Plains was in 1684. It developed as a stop on the line between New York and Philadelphia. At the time of incorporation, the present-day Scotch Plains was part of Fanwood Township. The township was renamed on March 29, 1917. The Township of Scotch Plains was formally incorporated on March 6th, 1978.

Scotch Plains experiences flooding from the Green Brook near the northwestern border with Somerset County. There have been some improvements in the last few years to the Green Brook to improve conditions in this area, but when it overflows, it often floods Route 22, which thus diverts traffic through local roads in the Township. Lamberts Mill floods when the dam is overtopped, Westfield road frequently will flood, as will West Broad Street. There is a group of repetitive loss properties in the northwest section of the Township, along Green Brook. Although the USACE mitigated flooding from Green Brook, there are still areas of risk of repetitive flooding in this neighborhood. The Township was once in the National Flood Insurance Program's (NFIP) Community Rating System (CRS), however has rescinded their participation. As part of this plan update, the Township created a mitigation action to rejoin the CRS program.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Scotch Plains	
Number of Policies In-Force:	258
Total Losses:	223
Total Payments:	$1,181,468.26
Number of RL Properties:	19
Number of Mitigated RL Properties:	0
RL – Total Losses:	51
RL – Total Paid:	$501,232
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	$0
SRL – Total Paid:	0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

RECENT HAZARDS

Since the last Union County HMP, Scotch Plains has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
March 2018	Winter Storm	N/A	N/A	Numerous downed trees, tree limbs, and power in some areas for multiple days.
August 11, 2018	Flash Flood	N/A	N/A	Widespread flooding was reported across the town of Scotch Plains, including two water rescues from vehicles.
July 18, 2019	Flash Flood	N/A	N/A	West Broad Street was closed in the vicinity of White Oak Road and Hetfield Avenue in Scotch Plains after a nearby brook overflowed.
June 29, 2019	Thunderstorm Winds	N/A	N/A	Numerous trees down on the southside of Scotch Plains with Power Outages that lasted in some areas for three days.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
High Wind – Straight-Line Winds	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
Flood	High
Dam Failure	Medium
Hazardous Materials Release– Transportation	Medium
Wildfire	Medium
Dam Failure	Low
Drought	Low
Earthquake / Geological	Low
Erosion - Hurricane/Nor'easter/Coastal Storm	Low
Extreme Temperature – Cold	Low
Extreme Temperature – Heat	Low
Hail	Low
Hazardous Materials Release– Fixed Site	Low
High Wind – Tornado	Low

Hazard	Priority
Landslide (Non-Seismic)	Low
Severe Storm – Lightning	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Storm Surge - Hurricane/Nor'easter/Coastal Storm	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	18.52	18.52	0.00%
Barren Land	3.51	3.39	-3.27%
Forest	770.11	767.90	-0.29%
Urban	4,183.40	4,185.71	0.06%
Water	31.64	31.64	0.00%
Wetlands	788.55	788.55	0.00%

Source: NJDEP Land Use/Land Cover, 2019

FEMA Flood Zones extend from the rivers and streams in the Township, from Green Brook as well as from Ash Brook, Winding Brook, Robinson Branch and their tributaries that extend into the Township from its border with Clark Township. Parkland, forestland, and wetlands are concentrated in the north and south of the Township. To mitigate flood losses with nature-based solutions, the Township should consider green stormwater infrastructure along CR 634 and Farley Ave.

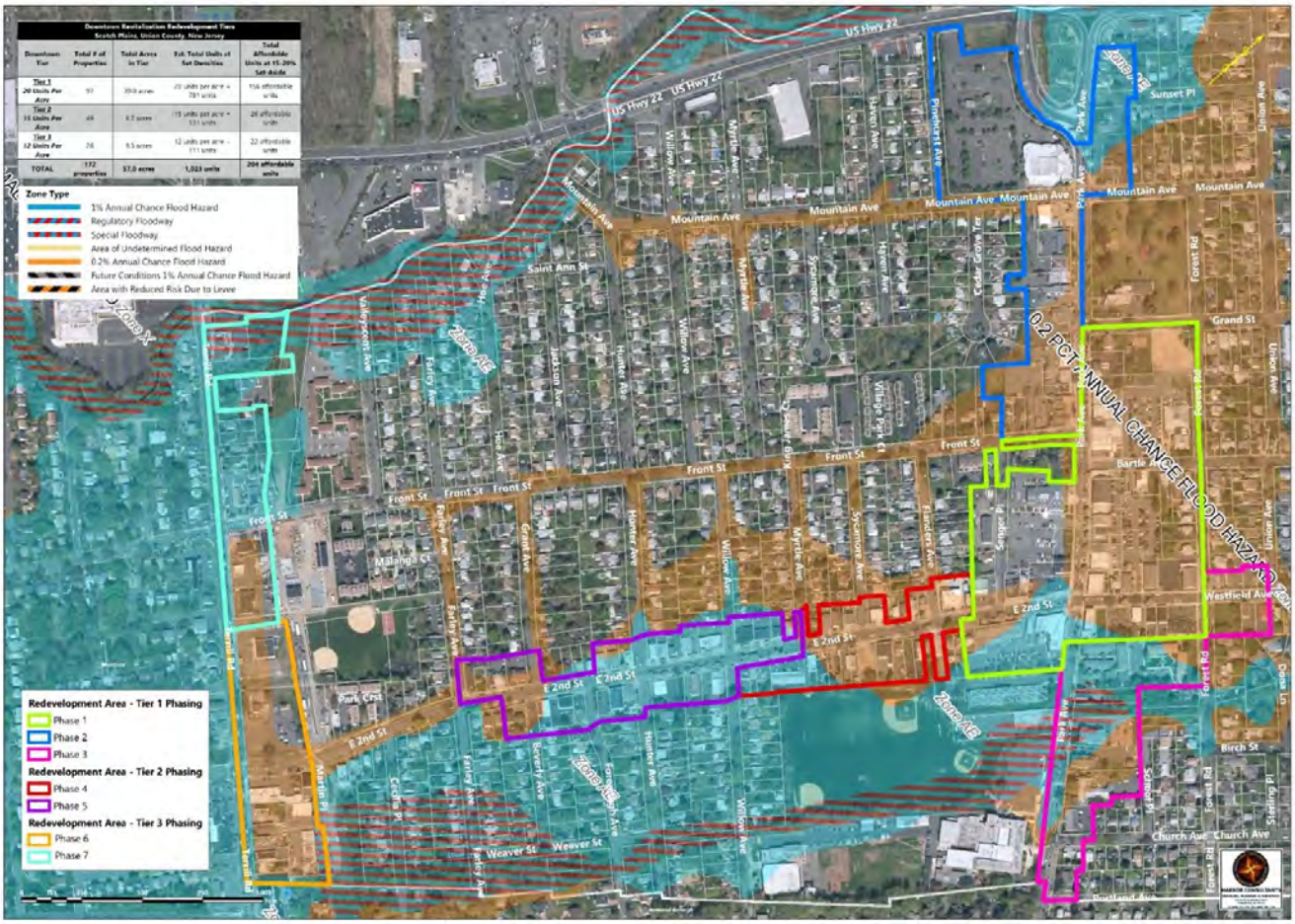
FUTURE DEVELOPMENT

Scotch Plains Township has revitalization and redevelopment planned for their downtown area (northwest corner of the Township). There are three tiers, seven phases of revitalization and

redevelopment proposed for the area, with a total of 1,023 units and 204 affordable units, spanning 57 acres. The entire revitalization and redevelopment area is located with FEMA's SFHA.

The Township Council passed Resolution 2018-24 on January 16, 2018 outlining a Complete Streets policy for the Redevelopment Plan, Tier 1, Phase 1. This policy discusses incorporating green infrastructure through stormwater management, including rain gardens, cisterns, bio-swales, curb interceptors, green roofs, green walls, and permeable pavements. These green infrastructure techniques can help mitigate flooding by absorbing and filtering stormwater runoff.

The Township Redevelopment Plan, laid over top FEMA's SFHA, is displayed below.



CRITICAL FACILITIES

The Township of Scotch Plains has 62 critical facilities, with five facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 16-03: Install Generator at Municipal Building.
- 16-04: Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.
- 16-08: Upgrade EOC.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Scotch Plains has the following Planning & Regulatory capabilities not required in all communities:

- Redevelopment Plan/Study: Downtown Redevelopment Plan Tier 1 Phase 1 and Resolution 2018-24 encourage a Complete Streets policy in the redevelopment area and discusses incorporating green infrastructure through stormwater management
- Community Wildfire Protection Plan: Currently being reviewed and updated
- Streambank Buffer Protection Program
- Watershed Management Plan
- Floodplain Management Plan
- Land Acquisition for Open Space and Public Recreation Uses
- Growth Management Ordinance
- Natural Hazard Ordinance
- The Township has Sustainable Jersey Certification and is involved in public-private partnership initiatives addressing disaster related issues.
- The Township has a Mitigation Planning Committee

The complete Mitigation Strategy and Capability Assessment for Scotch Plains is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
16-01	Purchase and Install a Generator at Department of Public Works to Provide Continuity of Operations During a Power Outage.	The Department of Public Works (DPW) is going to share a complex with the Fire Department and Police Department. The new generator will service this new complex.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds	Medium	OEM	Capital Improvement funding	$25,000.00	1 - 2 years	Ongoing
16-02	Install Generator at Library.	Install generator at library.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		OEM		$250,000.00		Withdrawn
16-03	Install Generator at Municipal Building.	Install generator at municipal building.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		OEM	HMGP Grant	$125,000.00		Completed
16-04	Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.	Restore eroded streambanks upstream of pump station.	Maintenance/Response/Recovery	Natural Systems Protection	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Engineering	Township funds	$100,000.00		Completed
16-05	Increase Drainage in the Southeast quadrant of the Township near Ash Brook Reservation to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.	Address repetitive loss properties by increasing drainage under bridge on Carriage Drive/Cellar Avenue (i.e. sediment removal).	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Engineering/ Union County	FEMA HMA, other grant funding	$500,000.00	5 + years	Ongoing
16-06	Enlarge the Culvert and Improve Drainage to Green Brook and its Tributary under Meadow Street to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.	Address repetitive loss properties by enlarging culvert/drainage improvements to Green Brook & tributary under Meadow Street.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Engineering/ Union County	FEMA HMA and other grant funding	$750,000.00	5 + years	Ongoing
16-07	Partner with the YMCA and/or JCC to Expand Community Shelter Options.	Partner with the YMCA and/or JCC to Expand Community Shelter Options.	Administrative	Education and Awareness Programs	All Hazards	Low	Scotch Plains OEM	Staff Resources	$0.00	2 - 3 years	Carried Forward
16-08	Upgrade EOC.	Upgrade EOC.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	All Hazards		OEM	Capital Improvement / Grant Funding	$800,000.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
16-09	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas along Ash Brook, Winding Brook, and in the Green Brook Subbasin that Extend into the Township from its Border with Clark Township (Not Addressed Through Drainage Improvements), with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire, elevate, or relocate RL properties in the Green Brook Subbasin and other flood-prone areas. Scotch Plains Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	Ongoing
16-10	Support the Green Brook Flood Control Project from USACE.	Support the Green Brook Flood Control Project from USACE.	Administrative	Local Plans and Regulations	Flood	Low	Administration	Federal (USACE), State	$0.00	Ongoing	Ongoing
16-11	Repair, Remove, or Rehabilitate Shackamaxon Dam.	Repair, remove, or rehabilitate Shackamaxon Dam, a High-Hazard Potential Dam, located along Lambert's Run.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Dam Failure	High	Township	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	$0.00	2 years	New
16-12	Coordinate with NJDOT to Mitigate Flooding and Downed Trees Along Rt 22.	Coordinate with NJDOT to mitigate flooding and downed trees along Route 22. Possible projects include tree trimming along Rt 22 West, opening center barriers at some locations to accommodate flash flooding, and installing a gate in the center barrier to allow for traffic redirection and Emergency Vehicle Access.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, High Wind–Straight-Line Winds	High	NJ Department of Transportation, Union County Engineering Department, Twp.	Grant Funding, Township of Scotch Plains Capital improvement, State of NJ, County of Union	$500,000.00	1 year	New
16-13	Purchase and Install a Generator at the Golf Course Center for Use as a Shelter and Heating/Cooling Center.	Purchase and install a generator at the golf course center. The golf course center will be used as a shelter and heating/cooling center and so needs backup power in case of power outages.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Low	OEM	FEMA HMA, Township funds	$0.00	1 year	New
16-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Rejoin NFIP CRS Program to reduce flood insurance premiums for homeowners.	Administrative	Local Plans and Regulations	Flood	Low	Township OEM	Municipal Budget	$0.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
16-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 16-01 Scotch Plains, Township of

Describing the Action

Action Name:	Purchase and Install a Generator at Department of Public Works to Provide Continuity of Operations During a Power Outage.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	The Department of Public Works (DPW) is going to share a complex with the Fire Department and Police Department. The new generator will service this new complex.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The new complex that houses the DPW, Fire and Police Departments will provide necessary services to the community during a disaster. It is critical for these facilities to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by allowing the DPW, Fire, and Police complex to remain operations during a disaster, despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will benefit all segments of the population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$25,000.00
Priority:	Medium
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM
Likely Funding Source(s):	Capital Improvement funding
Target State Date:	TBD
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	The design for the generator was updated in 2018 and 2020. The original plan has been modified to consider a smaller generator.

Union County Mitigation Action Worksheets

Community Action Number: 16-02 Scotch Plains, Township of

Describing the Action

Action Name:	Install Generator at Library.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Install generator at library.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	This action has been withdrawn. The current Redevelopment Plan for the Township includes the building of a new library including an emergency generator.

Union County Mitigation Action Worksheets

Community Action Number: 16-03 Scotch Plains, Township of

Describing the Action

Action Name:	Install Generator at Municipal Building.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Install generator at municipal building.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$125,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM
Likely Funding Source(s):	HMGP Grant
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action was completed in November 2018 with funding from a $100,000 HMGP grant. A portable gas generator was installed, with supplements the fixed generator that powers the Police Department.

Union County Mitigation Action Worksheets

Community Action Number: 16-04 Scotch Plains, Township of

Describing the Action

Action Name:	Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.
Action Category:	Maintenance/Response/Recovery
Action Type:	Natural Systems Protection
HMA Eligible:	
Action Description:	Restore eroded streambanks upstream of pump station.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Engineering
Likely Funding Source(s):	Township funds
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action was completed in 2017 through Township funds.

Union County Mitigation Action Worksheets

Community Action Number: 16-05 Scotch Plains, Township of

Describing the Action

Action Name:	Increase Drainage in the Southeast quadrant of the Township near Ash Brook Reservation to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Address repetitive loss properties by increasing drainage under bridge on Carriage Drive/Cellar Avenue (i.e. sediment removal).
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas in the Southeast quadrant of the Township near Ash Brook Reservation are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by increasing drainage to the nearby stormwater management system.
Property Protection:	This action will reduce future damage to RL properties by increasing drainage to the nearby stormwater management system.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is technically feasible.
Political:	There is political will in favor of this action.
Legal:	This action is currently under investigation to determine who is responsible for these improvements.
Environmental:	Environmental impacts need to be assessed. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	This action is currently under investigation to determine who is responsible for these improvements.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Engineering/ Union County
Likely Funding Source(s):	FEMA HMA, other grant funding
Target State Date:	TBD
Timeline:	5 + years
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 16-06 Scotch Plains, Township of

Describing the Action

Action Name:	Enlarge the Culvert and Improve Drainage to Green Brook and its Tributary under Meadow Street to Mitigate Flooding to the Surrounding Repetitive Loss (RL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Address repetitive loss properties by enlarging culvert/drainage improvements to Green Brook & tributary under Meadow Street.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	There is a group of repetitive loss properties in the northwest section of the Township, along Green Brook. Although the USACE mitigated flooding from Green Brook, there are still areas of risk of repetitive flooding in this neighborhood.
Life Safety:	This action will protect lives and prevent injuries by increasing drainage to the nearby stormwater management system.
Property Protection:	This action will reduce future damage to RL properties by increasing drainage to the nearby stormwater management system.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is technically feasible.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	Environmental impacts need to be assessed. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township needs to coordinate with Union County to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$750,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Engineering/ Union County
Likely Funding Source(s):	FEMA HMA and other grant funding
Target State Date:	TBD
Timeline:	5 + years
Action Status:	Ongoing
Notes:	The United State Army Corps of Engineers (USACE) constructed the Green Brook Flood Control Project (see action 16-10) which mitigated some RL properties; however, there are still RL properties that need mitigating and therefore this mitigation action remains ongoing. As of the 2021 HMP update, the Township is reviewing plans for additional project work in the area.

Union County Mitigation Action Worksheets

Community Action Number: 16-07 Scotch Plains, Township of

Describing the Action

Action Name:	Partner with the YMCA and/or JCC to Expand Community Shelter Options.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Partner with the YMCA and/or JCC to Expand Community Shelter Options.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Additional community shelters may be needed to house individuals and families affected by future disasters.
Life Safety:	This action will ensure that there are an adequate number of shelters to house individuals and families affected by future disasters.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will ensure better protection for all segments of the population.
Administrative:	The Township must partner with the YMCA and/or JCC to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Scotch Plains OEM
Likely Funding Source(s):	Staff Resources
Target State Date:	TBD
Timeline:	2 - 3 years
Action Status:	Carried Forward
Notes:	This action has been carried forward from 2016 as it is still under consideration.

Union County Mitigation Action Worksheets

Community Action Number: 16-08 Scotch Plains, Township of

Describing the Action

Action Name:	Upgrade EOC.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Upgrade EOC.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$800,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	OEM
Likely Funding Source(s):	Capital Improvement / Grant Funding
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed with capital improvement and grant funding.

Union County Mitigation Action Worksheets

Community Action Number: 16-09 Scotch Plains, Township of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas along Ash Brook, Winding Brook, and in the Green Brook Subbasin that Extend into the Township from its Border with Clark Township (Not Addressed Through Drainage Improvements), with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire, elevate, or relocate RL properties in the Green Brook Subbasin and other flood-prone areas. Scotch Plains Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along Ash Brook, Winding Brook, and in the Green Brook Subbasin that extend into the Township from its border with Clark Township are at risk of future destruction and property loss due to repetitive flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	The USACE constructed the Green Brook Flood Control Project (see action 16-10) which mitigated some RL properties, however there are still RL properties that need mitigating.

Union County Mitigation Action Worksheets

Community Action Number: 16-10 Scotch Plains, Township of

Describing the Action

Action Name:	Support the Green Brook Flood Control Project from USACE.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Support the Green Brook Flood Control Project from USACE.
Hazard(s) Addressed:	Flood
Goals:	3, 4

Evaluating the Action

Risk Reduction:	The USACE has found that the Green Brook Sub Basin causes flooding across counties in the region.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding in the Green Brook Sub Basin.
Property Protection:	This action will reduce flood damage to structures and infrastructure by controlling flooding in the Green Brook Sub Basin.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The USACE has the authority to implement this action.
Environmental:	The USACE has identified the environmental impacts of this project in their EIS.
Social:	The USACE has identified the social impacts of this project in their EIS.
Administrative:	The Township has the administrative capabilities to support the USACE.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Green Brook Flood Control Commission
Responsible Party:	Administration
Likely Funding Source(s):	Federal (USACE), State
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	According to the USACE, the Bound Brook portion of the Green Brook Sub Basin project has been completed with a ribbon-cutting ceremony in 2016. Additional improvements in the Borough of Middlesex (Middlesex County) vary from design phase to construction phase to completion. Scotch Plains Township will continue to support Green Brook Flood Control Project as all project phases are completed.

Union County Mitigation Action Worksheets

Community Action Number: 16-11 Scotch Plains, Township of

Describing the Action

Action Name:	Repair, Remove, or Rehabilitate Shackamaxon Dam.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Repair, remove, or rehabilitate Shackamaxon Dam, a High-Hazard Potential Dam, located along Lambert's Run.
Hazard(s) Addressed:	Dam Failure
Goals:	5

Evaluating the Action

Risk Reduction:	NJDEP classifies Shackamaxon Dam to be a High-Hazard Potential, meaning failure of the dam may result in probable loss of life and/or extensive property damage.
Life Safety:	This action will protect lives and prevent injuries by mitigating a high-hazard potential dam, which, if it failed, would result in probable loss of life.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by mitigating a high-hazard potential dam, which, if it failed, would result in extensive property damage.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	This action may require coordination with NJDEP.
Environmental:	This action may have minor affects to the environment; however, dam removal may also be environmentally beneficial by restoring a river's natural flow, according to American Rivers.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA
Target State Date:	TBD
Timeline:	2 years
Action Status:	New
Notes:	FEMA has a National Dam Safety Program with funding available to High-Hazard Potential Dams

Union County Mitigation Action Worksheets

Community Action Number: 16-12 Scotch Plains, Township of

Describing the Action

Action Name:	Coordinate with NJDOT to Mitigate Flooding and Downed Trees Along Rt 22.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Coordinate with NJDOT to mitigate flooding and downed trees along Route 22. Possible projects include tree trimming along Rt 22 West, opening center barriers at some locations to accommodate flash flooding, and installing a gate in the center barrier to allow for traffic redirection and Emergency Vehicle Access.
Hazard(s) Addressed:	Flood, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	The Township would like to work with DOT to figure out how to get better drainage along Rt. 22, which is at risk of nuisance flooding. Additionally, trees fall along the route and are at risk of hitting traffic.
Life Safety:	Reduce the chance of vehicles being trapped in flash floods, trees falling on cars and trying to escape flooded roadway by driving in wrong direction. Prevent possible flooding hazard to properties along RT. 22
Property Protection:	Moderate significance
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township does not have the authority to implement this action.
Environmental:	The environmental impacts of this action are unknown. This action will comply with all relevant environmental regulations.
Social:	This action does not adversely affect any particular social group.
Administrative:	Outside Assistance will be required as it impacts County and State properties.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	NJ Department of Transportation, Union County Engineering Department, Twp. of Scotch Plains Engineering Departm
Likely Funding Source(s):	Grant Funding, Township of Scotch Plains Capital improvement, State of NJ, County of Union
Target State Date:	2022 - 2023
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 16-13 Scotch Plains, Township of

Describing the Action

Action Name:	Purchase and Install a Generator at the Golf Course Center for Use as a Shelter and Heating/Cooling Center.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator at the golf course center. The golf course center will be used as a shelter and heating/cooling center and so needs backup power in case of power outages.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Shelters and heating/cooling centers provide necessary services to the community during a disaster. It is critical for these facilities to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by ensuring shelter and heating/cooling capabilities despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	FEMA HMA, Township funds
Target State Date:	TBD
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 16-14 Scotch Plains, Township of

Describing the Action

Action Name:	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Rejoin NFIP CRS Program to reduce flood insurance premiums for homeowners.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	The Township's participation status in the CRS program has been rescinded. The Township is still vulnerable to flooding, and rejoining the CRS program would incentivize flood risk reduction in the community.
Life Safety:	This action will indirectly protect lives and prevent injuries by encouraging flood mitigation actions throughout the Township.
Property Protection:	This action will indirectly protect structures and infrastructure from future flood damage by encouraging flood mitigation actions throughout the Township.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action. It will likely also have public support because it lowers flood insurance premiums for homeowners.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group. This action would be especially beneficial for flood insurance policyholders.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	Estimated Cost: Staff Time and Resources

Union County Mitigation Action Worksheets

Community Action Number: 16-15 Scotch Plains, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: __Township of Scotch Plains_____

Name: _Dennis VanNatta_____ Title: _OEM Coordinator_____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	y	
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	y	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	y	Continuity of operations plan is an in progress document. EOP does speak of continuity of operations and continuity of government
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	y	
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	y	Current Rating is 5
Site Plan Review Requirements: Review of new development applications	Y	
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	Downtown Redevelopment Plan Tier 1 Phase 1 and Resolution 2018-24 that encourages a Complete Streets policy in the redevelopment area (discussed in the Municipal Narrative).
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N/A	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	Y	Currently being reviewed and updated
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Y	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Y	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	N	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	Y	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	Y	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Y	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	N	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	N	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Y	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Y	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	Y	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Y	
Economic Development Commission: Provides recommendations on economic development policies and issues	Y	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	
Engineer: a New Jersey licensed Professional Engineer	Y	
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	
Floodplain Manager: a Certified Floodplain Manager	Y	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Y	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Y	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Y	
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	Y	
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Y	
Impact fees for new development: Fees paid by a developer to the municipality	Y	
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Y	

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	Y	

What capability would you like your community to gain in the next five to ten years?

1. COMMUNITY EMERGENCY RESPONSE TEAM
2. COMPLETION OF THE CONTINUITY OF OPERATIONS / CONTINUITY OF GOVERNMENT PLAN
3. CONTINUE TO UPGRADE EMERGENCY RESPONSE CAPABILITIES
4. ESTABLISH ADDITIONAL WARMING/COOLING SHELTERING LOCATIONS
5. ESTABLISH A POINT OF DISTRIBUTION PLAN FOR THE MUNICIPALITY

SCOTCH PLAINS TOWNSHIP FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

New Providence Borough
Summit City
Berkeley Heights Township
Mountainside Borough
Somerset County
Westfield Town
Garwood Borough
Garwood Station
Westfield Station
Fanwood Borough
Fanwood Station
Netherwood Station
Plainfield City
Clark Township
Middlesex County

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 1,650 3,300 Feet

Michael Baker INTERNATIONAL

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 17 TOWNSHIP OF SPRINGFIELD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Jennifer Sherman, OEM Assistant

COMMUNITY PROFILE

The Township of Springfield has a total area of 5.2 square miles and is located along the northern border of Union County, New Jersey. Major thoroughfares include Interstate 78, Route 28 and Route 22. As of 2018, the population was estimated at 17,398. This is a 7.07 percent increase from the population from the last plan update (est. 16,249).

The history of Springfield predates the revolutionary war. The earliest settlers arrived in 1717. Farms, mills, and lumbering were the primary sources of livelihood for residents. The Battle of Springfield was fought on June 23rd, 1780 during the Revolutionary War. In a turning point in the war, British forces were defeated, but not before they burned most of Springfield.

Flooding in Springfield Township most often occurs during extreme rain events. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes nor'easters. The Rahway River comprises the much of the eastern boundary of this jurisdiction, and much of the floodplain in Springfield is around this flood source, although a tributary to the Rahway that merges with the River at Meisel Avenue Park also creates a relatively wide floodplain in the northeastern part of the jurisdiction, roughly parallel with the Rahway.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Springfield	
Number of Policies In-Force:	229
Total Losses:	328
Total Payments:	$5,555,172.34
Number of RL Properties:	16
Number of Mitigated RL Properties:	0
RL – Total Losses:	43
RL – Total Paid:	$517,238
Number of SRL Properties:	3
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	13
SRL – Total Paid:	$479,911

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Springfield has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
June 7, 2013	Flood	N/A	N/A	The Rahway River at Springfield exceeded its flood stage of 5.5 feet on June 7 at 2100 EST, crested at 6.15 feet at 2330 EST and fell back within its banks on June 8 at 0430 EST.
November 13, 2013	Flood	N/A	N/A	The Rahway River at Springfield exceeded its flood stage of 5.5 ft. at 0500 EST, crested at 6.16 ft. at 0700 EST and fell below bankfull at 0930 EST. Total reported rainfall amounts in Union County ranged from 2.85 inches in Elizabeth to 2.89 inches in Roselle Park.
April 30, 2014	Flood	N/A	N/A	Meisel Ave. was closed between Cottage Ln. and Linden Ave. in Springfield due to flooding.
August 31, 2014	Thunderstorm Wind	N/A	N/A	A tree was reported down across Route-124 at the intersection with I-78.
January 18, 2015	Flood	N/A	N/A	All lanes of Route 22 east of Michigan Ave. in Union township was closed due to flooding.
February 2017	Landslide	N/A	N/A	N/A
April 16, 2018	Flood	N/A	N/A	The Rahway River near Springfield rose above its flood stage of 5.5 feet at 8:45am EDT, crested at a height of 7.96 feet at 11:15am EDT, and fell back below flood stage at 7:45pm EDT.
June 29, 2019	Thunderstorm Wind	N/A	N/A	Large branch off a Magnolia tree broken and down in Union.
August 7, 2019	Thunderstorm Wind	N/A	N/A	Multiple trees and wires down in Springfield, NJ.
August 7, 2019	Tornado	N/A	N/A	A brief touchdown near South Springfield Avenue and Route 22 in Springfield, NJ. Confirmed by Emergency Management and media. Radar estimated winds of 70 mph with an EF0 rating. YouTube video demonstrates a visual with a brief touchdown. Broadcast media reporting (via CBS 2 New York) showed a debris field by the 21st Century Auto Group shop. The damage included metal scaffolding from a 3 story roof, along with major roof damage to a commercial roof with insulation dumped to the ground, along with solar panels, bricks, air conditioner, and a large transformer. Also several cars that were for sale were damaged, along with the rear windshield of a vehicle. Springfield police said no injuries in the area were related to the weather.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Extreme Temperature – Cold	Medium
Severe Storm – Winter Weather (Includes Ice Storm)	Medium
Dam Failure	Low
Drought	Low
Earthquake / Geological	Low
Extreme Temperature – Heat	Low
Hail	Low
Hazardous Material Release - Fixed Site	Low
Hazardous Material Release - Transportation	Low
High Wind – Straight-Line Winds	Low
High Wind – Tornado	Low
Severe Storm – Lightning	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Landslide (Non-Seismic)	None
Storm Surge	None
Erosion	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	5.86	5.86	-68.60%
Barren Land	67.64	67.01	-38.22%
Forest	545.39	545.23	-1.71%
Urban	2,494.77	2,495.55	2.57%
Water	30.20	30.20	17.97%
Wetlands	166.42	166.42	-0.64%

Source: NJDEP Land Use/Land Cover, 2019

FEMA Flood Zones are concentrated along the Rahway River and its tributaries along the Township's borders with Union Township and Cranford. The Borough may want to look into creating detention ponds or a floodplain or stormwater lot near Lenape Park and Rahway River Park to mitigate flooding.

FUTURE DEVELOPMENT

The only future development planned for Springfield that is located within the SFHA is an apartment complex of 140 units, located at the intersection of Center St. Morris Ave. and Caldwell Place. Only small corner of the property is located within the SFHA. The developer revised the plans for underground parking to be outside SFHA.

CRITICAL FACILITIES

The Township of Springfield has 31 critical facilities, with 11 facilities located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

There have been no new mitigation actions completed since the last plan update.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Springfield has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- **Redevelopment Plan/Study:** Zoning for these plans adhere to specific area requirements.
- **Floodplain Management Plan:** Member of National Flood Insurance Program through FEMA.
- **Post-Disaster Recovery Plan:** Building and Zoning manage all construction due to disaster damages.

- **Natural Hazard Ordinance:** Zoning ordinances for floodplains and steep slopes.
- **Post-Disaster Recovery Ordinance:** Emergency Management Plan covers actions and recovery from disasters.
- **Real Estate Disclosure Requirement:** Building Dept. requires Certificates of Occupancy guidelines.
- The Township also has Sustainable Jersey Certification and a Special Improvement District Committee group focused on local business involvement in addressing disaster related issues.

The complete Mitigation Strategy and Capability Assessment for the Township of Springfield is part of this appendix.

Springfield, Township of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
17-01	Upgrade and Improvement the Stormwater Management System Along Laurel Drive, Meisel Avenue, Cypress Drive, Hemlock Road.	Stormwater management system upgrade and improvement along Laurel Drive, Meisel Avenue, Cypress Drive, Hemlock Road.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood		Springfield Engineering		$350,000.00		Withdrawn
17-02	Dredge Rahway River.	Dredge Rahway River.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		Union County/NJDEP		$120,000.00		Withdrawn
17-03	Flood-proof the Municipal Building Which Includes the Police Department.	Floodproofing of the Municipal Building which includes the Police Department.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Engineering		$150,000.00		Withdrawn
17-04	Flood-proof the First Aid Squad.	Floodproofing of the First Aid Squad.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Springfield/First Aid Squad		$125,000.00		Withdrawn
17-05	Upgrade and Improve the Stormwater Management System for the Department of Public Works (DPW).	Upgrade and improve the stormwater management system for the DPW.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood	High	Springfield DPW	FEMA HMA, Capital Improvement	$250,000.00	1 year	Carried Forward
17-06	Flood-proof the Hersey Building, Department of Public Works.	Floodproofing of the Hersey Building, Department of Public Works.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Springfield DPW	FEMA HMA and other grant funding	$150,000.00	1 year	Carried Forward
17-07	Purchase and Install a Backup Generator for Independence Way to Ensure Continuity of Operations at the Springfield Senior Citizens Housing Facility.	The Springfield Senior Citizens Housing Facility is located on Independence Way. A backup generator is necessary to ensure the safety of the residents in the facility during a disaster, despite a power outage.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning	Medium	Senior Citizens Inc.	FEMA HMA and other grant funding	$100,000.00	3 - 5 years	Ongoing
17-08	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator and Engineering	Staff Resources	$500.00	1 year	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
17-09	Purchase and Install a Generator at the Freeman Apartments at 41 Hillside Avenue.	Purchase and install a generator as the Freeman Apartments at 41 Hillside Avenue to ensure continuity of operations at the facility during a disaster, despite a power outage.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	High	OEM	FEMA HMA and other grant funding	$400,000.00	1 - 2 years	Ongoing
17-10	Install Generator at Gas Station.	Install generator at gas station.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards		OEM		$400,000.00		Withdrawn
17-11	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Along the Township's Borders with Union Township and Cranford Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Mitigate the 15 RL and 2 SRL properties, and any future RL and SRL properties, in the Township through acquisition, elevation, or relocation. Springfield Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	OEM/Code enforcement, Affected homeowners	FEMA HMA	$0.00	Ongoing	Ongoing
17-12	Purchase a Light Tower to Help the Department of Public Works (DPW) Provide Essential Services During Emergencies and Nighttime Hours.	Purchase a light tower to help DPW provide essential services during emergencies and nighttime hours.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	DPW	Grant funding	$15,000.00	1 year	New
17-13	Install Generator for the Town Hall to Provide Local Government Services Uninterrupted by a Potential Power Outage.	Install a generator for the Town Hall to provide local government services uninterrupted to the community during a disaster, despite a power outage.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	DPW	Grant funding	$175,000.00	1 year	New
17-14	Retrofit Pump Stations to the Risk of Flooding in a Residential Zone.	Retrofit pump stations to protect the community from floods by deferring water from low areas to the Rahway River.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	DPW	FEMA HMA	$778,000.00	1 - 5 years	New
17-15	Improve and Retrofit Stormwater Inlets to Reduce Pollution and Runoff from Flooding and Storms into Waterbodies.	Improve and retrofit stormwater inlets to reduce pollution and runoff from flooding and storms into waterbodies.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Erosion–Hurricane/Nor'easter/Coastal Storm	High	DPW	FEMA HMA	$225,000.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
17-16	Install Permeable Pavement at Veterans Park to Reduce Flooding Impacts.	Install permeable pavement at Veterans Park. Permeable pavement would reduce the impervious surface cover of the walkway and would improve the stormwater storage capacity of the park. This would improve the safety of the walkway for park visitors, and reduce flooding impacts.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm)	High	DPW	FEMA HMA	$120,000.00	1 - 5 years	New
17-17	Maintain Trees Along Roads and Power Lines to Reduce Debris And Risk of Power Outages During and After Storms and Severe Weather Events.	Continue tree maintenance along roads and power lines to reduce debris and the risk of power outages during and after storms and severe weather events. Remove ash trees to prevent the spread of the Emerald Ash Borer.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Power Failure, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds	Medium	DPW	Grant funding	$25,000.00	1 - 5 years	New
17-18	Improve Drainage at Ruby Park by Removing Rocks from Drainage Ditch.	Improve the drainage in Ruby Park on Caldwell Place to reduce flooding in park area and surrounding residential zone.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	DPW	Grant funding	$20,000.00	1 - 5 years	New
17-19	Purchase and Install Backup Generators for Essential Services During Hazard Events.	Purchase and install backup generators for the Annex, Hershey, and DPW Garage buildings to ensure the continuity of essential services during hazard events despite power outages.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Power Failure	Medium	DPW/Engineering Department	Grant funding -- over exceeds municipality funding	$150,000.00	1 - 5 years	New
17-20	Reduce Stormwater Flooding in Ruby Park and Irwin Park.	Protect public facilities and prevent flooding and backup of stormwater with stormwater management practices in Ruby Park and Irwin Park.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	DPW	FEMA HMA, other grant funding	$75,000.00	1 - 5 years	New
17-21	Improve Flood Control in Lenape Park.	Coordinate future flood control work with Union County officials in the vicinity of Lenape Park, which may have a positive impact of flood zones and properties near the Springfield/Union/Kenilworth boundary.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	Medium	Springfield Township in conjunction with Union County	FEMA HMA, other grant opportunities	$1,000,000.00	1 - 5 years	New
17-22	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 17-01 Springfield, Township of

Describing the Action

Action Name:	**Upgrade and Improvement the Stormwater Management System Along Laurel Drive, Meisel Avenue, Cypress Drive, Hemlock Road.**
Action Category:	**Mitigation - Continuity of Functional Use**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Stormwater management system upgrade and improvement along Laurel Drive, Meisel Avenue, Cypress Drive, Hemlock Road.**
Hazard(s) Addressed:	**Flood**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$350,000.00**
Priority:	
Local Planning Mechanism:	**Capital Improvement**
Responsible Party:	**Springfield Engineering**
Likely Funding Source(s):	
Target State Date:	**2016**
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdrawn.**

Union County Mitigation Action Worksheets

Community Action Number: 17-02 Springfield, Township of

Describing the Action

Action Name:	**Dredge Rahway River.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Dredge Rahway River.**
Hazard(s) Addressed:	**Flood**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$120,000.00**
Priority:	
Local Planning Mechanism:	**Floodplain management**
Responsible Party:	**Union County/NJDEP**
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdrawn as the Township does not have the authority to implement this action.**

Union County Mitigation Action Worksheets

Community Action Number: 17-03 Springfield, Township of

Describing the Action

Action Name:	**Flood-proof the Municipal Building Which Includes the Police Department.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Floodproofing of the Municipal Building which includes the Police Department.**
Hazard(s) Addressed:	**Flood**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$150,000.00**
Priority:	
Local Planning Mechanism:	**Grants**
Responsible Party:	**Engineering**
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdrawn as the priority for the Township is now to acquire a generator for the building.**

Union County Mitigation Action Worksheets

Community Action Number: 17-04 Springfield, Township of

Describing the Action

Action Name:	**Flood-proof the First Aid Squad.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Floodproofing of the First Aid Squad.**
Hazard(s) Addressed:	**Flood**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$125,000.00**
Priority:	
Local Planning Mechanism:	**Grants**
Responsible Party:	**Springfield/First Aid Squad**
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdraw as the Township has been unable to secure funding and it is no longer a priority for the Township to do so.**

Union County Mitigation Action Worksheets

Community Action Number: 17-05 Springfield, Township of

Describing the Action

Action Name:	Upgrade and Improve the Stormwater Management System for the Department of Public Works (DPW).
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade and improve the stormwater management system for the DPW.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The DPW building is prone to flooding, and therefore better stormwater management is necessary to reduce damage to this facility.
Life Safety:	This action does not relate to protecting lives and preventing injuries.
Property Protection:	This action reduces damage to the DPW facility from flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	Environmental impacts must be determined. All applicable environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Borough has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Springfield DPW
Likely Funding Source(s):	FEMA HMA, Capital Improvement
Target State Date:	2016
Timeline:	1 year
Action Status:	Carried Forward
Notes:	This action has been carried over from the 2010 and 2016 plans. It has not been started due to lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 17-06 Springfield, Township of

Describing the Action

Action Name:	**Flood-proof the Hersey Building, Department of Public Works.**
Action Category:	**Mitigation - Risk Reduction**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	**Yes**
Action Description:	**Floodproofing of the Hersey Building, Department of Public Works.**
Hazard(s) Addressed:	**Flood**
Goals:	**4**

Evaluating the Action

Risk Reduction:	**The DPW building is prone to flooding.**
Life Safety:	**This action does not relate to protecting lives and preventing injuries.**
Property Protection:	**This action reduces damage to the DPW facility from flooding.**
Cost Effectiveness:	**The cost effectiveness of this action is to be determined.**
Technical:	**This action is both technically feasible and a long-term solution.**
Political:	**There is political will in favor of this action.**
Legal:	**The Township has the authority to implement this action.**
Environmental:	**Environmental impacts must be determined. All applicable environmental regulations will be followed.**
Social:	**This action does not adversely affect any particular social group.**
Administrative:	**The Borough has the personnel and administrative capabilities to implement this action.**
Local Champion:	**OEM**
Other Community Objectives:	
STAPLEE Evaluation:	**8**

Implementing the Action

Cost Estimate:	**$150,000.00**
Priority:	**High**
Local Planning Mechanism:	**Hazard Mitigation Plan**
Responsible Party:	**Springfield DPW**
Likely Funding Source(s):	**FEMA HMA and other grant funding**
Target State Date:	**2017**
Timeline:	**1 year**
Action Status:	**Carried Forward**
Notes:	**This action has been carried over from the 2010 and 2016 plans. It has not been started due to lack of funding.**

Union County Mitigation Action Worksheets

Community Action Number: 17-07 Springfield, Township of

Describing the Action

Action Name:	Purchase and Install a Backup Generator for Independence Way to Ensure Continuity of Operations at the Springfield Senior Citizens Housing Facility.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	The Springfield Senior Citizens Housing Facility is located on Independence Way. A backup generator is necessary to ensure the safety of the residents in the facility during a disaster, despite a power outage.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning
Goals:	4

Evaluating the Action

Risk Reduction:	Old r adults are particularly vulnerable to the impacts of disasters. If a power outage were to occur, the residents of the Senior Citizens Housing Facility may lose access to life-saving medical equipment.
Life Safety:	A backup generator ensures all residents of the Senior Citizens Housing Facility has access to life-saving medical equipment despite a power outage.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	Older adults that are residents of the Senior Citizens Housing Facility are considered a socially vulnerable population. This action directly benefits a socially vulnerable population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Senior Citizens Inc.
Likely Funding Source(s):	FEMA HMA and other grant funding
Target State Date:	TBD
Timeline:	3 - 5 years
Action Status:	Ongoing
Notes:	This action has been carried forward from 2010 and 2016 due to lack of funding.

Union County Mitigation Action Worksheets

Community Action Number: 17-08 Springfield, Township of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. Springfield's top hazard is flooding; education and outreach regarding flood hazards would increase the community's resilience. Further, overall disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$500.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM Coordinator and Engineering
Likely Funding Source(s):	Staff Resources
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	This action is ongoing from 2010 and 2016. Springfield Township has an active Environmental Commission working on obtaining Sustainable Jersey Certifications. OEM and CERT perform outreach year-round, and schools perform drills and plan for emergencies.

Union County Mitigation Action Worksheets

Community Action Number: 17-09 Springfield, Township of

Describing the Action

Action Name:	Purchase and Install a Generator at the Freeman Apartments at 41 Hillside Avenue.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator as the Freeman Apartments at 41 Hillside Avenue to ensure continuity of operations at the facility during a disaster, despite a power outage.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Fre man Apartments house low and moderate income adults with a permanent physical disability. A generator is necessary to ensure backup power to ensure continuity of operations at the facility during a disaster, despite a power outage.
Life Safety:	A backup generator ensures all residents of the Freeman Apartments have access to care despite a power outage.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	Low and moderate income adults with disabilities that are residents of the Freeman Apartments are considered a socially vulnerable population. This action directly benefits a socially vulnerable population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$400,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	FEMA HMA and other grant funding
Target State Date:	2016
Timeline:	1 - 2 years
Action Status:	Ongoing
Notes:	This action is ongoing from 2016 and has not been completed due to lack of funds.

Union County Mitigation Action Worksheets

Community Action Number: 17-10 Springfield, Township of

Describing the Action

Action Name:	**Install Generator at Gas Station.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Install generator at gas station.**
Hazard(s) Addressed:	**All Hazards**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$400,000.00**
Priority:	
Local Planning Mechanism:	**Grants**
Responsible Party:	**OEM**
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdrawn as there is a generator already at the Fire House gas tanks.**

Union County Mitigation Action Worksheets

Community Action Number: 17-11 Springfield, Township of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along the Rahway River Along the Township's Borders with Union Township and Cranford Township, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Mitigate the 15 RL and 2 SRL properties, and any future RL and SRL properties, in the Township through acquisition, elevation, or relocation. Springfield Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the Rahway River and its tributaries along the Township's borders with Union Township and Cranford Township are at risk of future destruction and property loss due to repetitive flooding. Repetitive Losses are concentrated inside or near the FEMA Flood Zone but just outside Lenape Park and Rahway River Park.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM/Code enforcement, Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Cost varies This action is ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 17-12 Springfield, Township of

Describing the Action

Action Name:	Purchase a Light Tower to Help the Department of Public Works (DPW) Provide Essential Services During Emergencies and Nighttime Hours.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Purchase a light tower to help DPW provide essential services during emergencies and nighttime hours.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Emergency responders cannot always see when rescuing at night, especially if there is a power outage.
Life Safety:	This action will protect lives and prevent injuries by enhancing the Borough's rescue capabilities, protecting employees and the public from dangerous dark conditions.
Property Protection:	This action reduces the likelihood of structure and infrastructure damage as a result of dangerous dark conditions.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible to attain and is a long term solution.
Political:	There is public support and local political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	A light tower will allow workers to perform environmental emergency services during the nighttime. There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will enhance rescue capabilities to better protect all segments of the population. It will help public and local government employees to do their job in a safe environment.
Administrative:	The Borough has the personnel and administrative capabilities to provide emergency services in dark conditions once the light tower is purchased.
Local Champion:	DPW
Other Community Objectives:	The purchase of a light tower supports all local plans and ordinances to assist in darkness.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$15,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	Grant funding
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-13 Springfield, Township of

Describing the Action

Action Name:	Install Generator for the Town Hall to Provide Local Government Services Uninterrupted by a Potential Power Outage.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install a generator for the Town Hall to provide local government services uninterrupted to the community during a disaster, despite a power outage.
Hazard(s) Addressed:	All Hazards
Goals:	3, 4

Evaluating the Action

Risk Reduction:	Town Hall provides necessary local government services to the community. Backup power is necessary to eliminate any delay to services during power outages.
Life Safety:	This action protects local government employees and the public from dangerous conditions presented by power outages.
Property Protection:	This action reduces and eliminates all delays in services during power outages.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will benefit all segments of the population as it will help the public and local government employees to do their job in a safe environment.
Administrative:	The Township has the ability to provide these services once good is purchased.
Local Champion:	DPW
Other Community Objectives:	This action is supported by all local plans and ordinances.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$175,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	Grant funding
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-14 Springfield, Township of

Describing the Action

Action Name:	Retrofit Pump Stations to the Risk of Flooding in a Residential Zone.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Retrofit pump stations to protect the community from floods by deferring water from low areas to the Rahway River.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The current pump are old, worn, and need to be replaced in order to adequately defer stormwater to the Rahway River and mitigate flooding to the nearby residential properties.
Life Safety:	This action will protect lives and prevent injuries by ensuring proper functioning of the stormwater pump station, thereby mitigating flooding to the nearby residential properties.
Property Protection:	This action will ensure the proper functioning of the stormwater pump station, thereby reducing future flood damage to nearby residential properties.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. In fact, it would be environmentally beneficial to eliminate standing water and reduce flooding.
Social:	This action does not adversely affect any particular social group. It may be perceived as beneficial by property owners as it may reflect positively on property values.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	DPW
Other Community Objectives:	May reflect positively on property values.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$778,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-15 Springfield, Township of

Describing the Action

Action Name:	Improve and Retrofit Stormwater Inlets to Reduce Pollution and Runoff from Flooding and Storms into Waterbodies.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Improve and retrofit stormwater inlets to reduce pollution and runoff from flooding and storms into waterbodies.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	4

Evaluating the Action

Risk Reduction:	Cu ent stormwater inlets pose risks to the environment. Garbage can be found in the catch basins, and floatable are causing pollution.
Life Safety:	This action benefits human health by improving water quality and reducing pollution.
Property Protection:	This action ensures the proper functioning of the stormwater management system.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	Reducing pollution and runoff from flooding and storms is environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	DPW
Other Community Objectives:	Water quality improvements, pollution reduction
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$225,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-16 Springfield, Township of

Describing the Action

Action Name:	Install Permeable Pavement at Veterans Park to Reduce Flooding Impacts.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install permeable pavement at Veterans Park. Permeable pavement would reduce the impervious surface cover of the walkway and would improve the stormwater storage capacity of the park. This would improve the safety of the walkway for park visitors, and reduce flooding impacts.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm)
Goals:	4

Evaluating the Action

Risk Reduction:	Puddles and standing water on the walkway at Veterans Park, on the corner of Mountain and Shunpike Road, pose risks to park visitors during heavy rainfall events.
Life Safety:	This action prevents injuries as a result of unsafe flooding conditions in Veterans Park.
Property Protection:	This action reduces future flood damage to infrastructure in Veterans Park.
Cost Effectiveness:	Permeable pavement is less costly and more durable than asphalt and concrete. There are numerous environmental
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This green infrastructure project is environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with assistance from a contractor.
Local Champion:	DPW
Other Community Objectives:	Water quality improvements, pollution reduction, aesthetic benefits, walkway safety
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$120,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-17 Springfield, Township of

Describing the Action

Action Name:	Maintain Trees Along Roads and Power Lines to Reduce Debris And Risk of Power Outages During and After Storms and Severe Weather Events.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Continue tree maintenance along roads and power lines to reduce debris and the risk of power outages during and after storms and severe weather events. Remove ash trees to prevent the spread of the Emerald Ash Borer.
Hazard(s) Addressed:	Power Failure, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–
Goals:	4

Evaluating the Action

Risk Reduction:	Overgrown vegetation poses a risk of falling on power lines and causing outages during storms and severe weather events. Ash trees in particular are vulnerable to the Emerald Ash Borer (EAB). Ash trees infested with EAB along roadways pose the greatest danger where falling branches have the potential to hit people, structures, or cars according to the State HMP.
Life Safety:	This action will protect lives and prevent injuries by reducing the risk of downed trees and power outages.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by reducing the risk of downed trees and power outages.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	Removing ash trees prevents the spread of the Emerald Ash Borer.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	DPW
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$25,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	Grant funding
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-18 Springfield, Township of

Describing the Action

Action Name:	Improve Drainage at Ruby Park by Removing Rocks from Drainage Ditch.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Improve the drainage in Ruby Park on Caldwell Place to reduce flooding in park area and surrounding residential zone.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Rocks in the drainage ditch at Ruby Park block the flow of water and cause the ditch to overflow, flooding Ruby Park and the surrounding neighborhood.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to flooding in Ruby Park and the surrounding area.
Property Protection:	This action will eliminate or reduce damage to structures and infrastructure by mitigating reducing the risk of flooding and drainage backups.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible, but it is a short-term solution.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	DPW
Other Community Objectives:	Protect park, sports fields, and waterway flow
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$20,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW
Likely Funding Source(s):	Grant funding
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-19 Springfield, Township of

Describing the Action

Action Name:	Purchase and Install Backup Generators for Essential Services During Hazard Events.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install backup generators for the Annex, Hershey, and DPW Garage buildings to ensure the continuity of essential services during hazard events despite power outages.
Hazard(s) Addressed:	Power Failure
Goals:	4

Evaluating the Action

Risk Reduction:	The Annex, Hershey, and DPW Garage buildings provide necessary services during a disaster. Backup power is needed to ensure these facilities can remain operational during a power outage.
Life Safety:	This action will protect lives and prevent injuries by ensuring the Township can carry out essential services despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This is technically feasible and a short term solution to benefit public services.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township needs an outside vendor to provide the product and installation.
Local Champion:	DPW
Other Community Objectives:	Allow township to perform all duties without interference during loss of power for any reason
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$150,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan, Local plans support this action
Responsible Party:	DPW/Engineering Department
Likely Funding Source(s):	Grant funding -- over exceeds municipality funding
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-20 Springfield, Township of

Describing the Action

Action Name:	Reduce Stormwater Flooding in Ruby Park and Irwin Park.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Protect public facilities and prevent flooding and backup of stormwater with stormwater management practices in Ruby Park and Irwin Park.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Ruby Park and Irwin Park are flood-prone areas in the Township.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to flooding.
Property Protection:	This action will reduce future flood damage to public facilities and township drainage waterways.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is public support for this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts of this action. All relevant environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	DPW
Other Community Objectives:	Public open space protection
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$75,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	DPW
Likely Funding Source(s):	FEMA HMA, other grant funding
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 17-21 Springfield, Township of

Describing the Action

Action Name:	Improve Flood Control in Lenape Park.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	No
Action Description:	Coordinate future flood control work with Union County officials in the vicinity of Lenape Park, which may have a positive impact of flood zones and properties near the Springfield/Union/Kenilworth boundary.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Stormwater flooding occurs in Lenape Park.
Life Safety:	This action will protect lives and prevent injuries by protecting Springfield properties from flood risks.
Property Protection:	This action will prevent future property damage by reducing flood risks.
Cost Effectiveness:	Benefits from this action include the reduction in property damage/losses and street and road closures caused by flo
Technical:	This action is technically feasible with long-term effects.
Political:	This action is supported by the public.
Legal:	Springfield Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. This action will reduce standing water.
Social:	This action will not adversely affect any particular social group.
Administrative:	Springfield Township has the capabilities to implement this action.
Local Champion:	OEM strongly supports this action.
Other Community Objectives:	This action will bring about positive and beneficial impacts on Springfield Township, Union Township, Kenilworth Borough, Cranford Township and Union County.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Springfield Township in conjunction with Union County
Likely Funding Source(s):	FEMA HMA, other grant opportunities
Target State Date:	2022
Timeline:	1 - 5 years
Action Status:	New
Notes:	This action is realistic to implement and there will be an alarming need for it in the future.

Union County Mitigation Action Worksheets

Community Action Number: 17-22 Springfield, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Springfield, Union County

Name: Scott Seidel Title: OEM Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Y	PROMOTES PUBLIC HEALTH, SAFETY AND PROTECTS PROPPERTY
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	PLAN UTILZES RESOURCES TO SUPPORT PUBLIC AND PROTECT PROPERTY
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	N	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	IDENTIFIES AND DISCUSSES PROCEDURES TO ADDRESS NATURAL HAZARDS IN OUR AREA
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	PLAN MANAGES STORMWATER DRAINAGE

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	TOWNSHIP RESOURCES AVAILABLE TO HELP SUPPORT PUBLIC HEALTH SAFETY AND PROPERTY
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities		
Site Plan Review Requirements: Review of new development applications	Y	BUILDING AND ZONING REQUIREMENTS ARE REVIEWED
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Y	BUILDING AND ZONING IMPLEMENT TOWNSHIP REQUIREMENTS
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Y	ZONING ADHERES TO TOWNSHIP LOCAL AND STATE REQUIREMENTS
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Y	FLOOD DAMAGE PREVENTION ORDINANCES
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	MANY MUTUAL AGREEMENTS TO MAXIMIZE RESOURCES IN TIME OF NEED

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Y	ZONING ADHERES TO SPECIFIC AREA REQUIREMENTS
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	NA	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	NA	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	N	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	N	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution		
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Y	Member of National Flood Insurance Program through FEMA
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Y	BUILDING AND ZONING MANAGE ALL CONSTURCTION DUE TO DISASTER DAMAGES
Transfer of Development Rights: Designating high-risk or preservation areas as “sending areas,” from which the potential to develop land is transferred to low-risk or growth areas called “receiving areas” for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	N	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	N	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	Y	Zoning Ordinance has standards for flood plains and steep slopes
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	Y	EMERGENCY MANAGEMENT PLAN COVERS ACTIONS AND RECOVERY FROM DISASTERS

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	Y	BUILDING REQUIRES CERTIFICATES OF OCCUPANCY GUIDELINES

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	Y	ENVIRONMENTAL COMMISSION GROUP FOCUSES ON NEW IDEAS
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	EMERGENCY MANAGEMENT/CERT ARE YEAR ROUND GROUPS TO HELP SUPPORT PUBLIC HEATH AND SAFETY
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Y	SCHOOLS PREFORM DRILLS AND PLANS FOR EMERGENCIES
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community		
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Y	ENVIRONEMENTAL COMMISSION WORK HARD ON OBTAINING CERTIFICATIONS

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Y	SPECIAL IMPROVEMENT DISTRICT COMMITTEE GROUP FOCUS ON LOCAL BUSINESSES INVOLVEMENT

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Y	PLANNING BOARD REVIEWS APPLICATIONS AND MAINTAINS LOCAL GUIDELINES
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government		
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Y	ENVIRONMENTAL GROUP WORKS ON SUPPORTING LOCAL ENVIRONMENT NEEDS
Economic Development Commission: Provides recommendations on economic development policies and issues		
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Y	DPW FOCUSES ON SUPPORTING STORMWATER AND OTHER LOCAL PROGRAMS TO BENEFIT THE PUBLIC

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Y	
Engineer: a New Jersey licensed Professional Engineer	Y	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	
Floodplain Manager: a Certified Floodplain Manager	Y	
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	N	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	N	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	YES	NEW ACTIONS THIS YEAR
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.		
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	YES	FEES FOR SEWER

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Impact fees for new development: Fees paid by a developer to the municipality	YES	COAH NO
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects		
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program		

What capability would you like your community to gain in the next five to ten years?

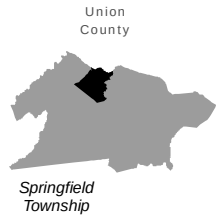
Our Community would like to continue to support hazard mitigation planning and implementation at the local level. We would like to provide ecofriendly hazard mitigation for the citizens benefits. We would like to continue to provide township departments and local citizens to mitigation programs. Our community would like to provide opportunities for businesses and all taxpayers to get involved in planning and implementing.

SPRINGFIELD TOWNSHIP FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space



Essex County

Summit Station

Summit City

Mountainside Borough

Union Township

Kenilworth Borough

Westfield Town

Cranford Township

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 1,200 2,400 Feet

Michael Baker INTERNATIONAL

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 18 CITY OF SUMMIT

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Aaron J. Schrager, Acting Director, Department of Community Services

COMMUNITY PROFILE

The City of Summit has a total area of 6.046 square miles and is located in is located in the Watchung Mountains.in the northwest corner of Union County, New Jersey. Summit is adjacent to Interstate 78 and Route 28 and is home to the Summit Station on the NJ Transit Morris and Essex Line. As of 2018, the population was estimated at 21,921. This is a 1.22 percent increase in population since the last plan update od 21,657 (est. 2013).

The area occupied by Summit was originally part of Springfield Township and New Providence, with settlers arriving after the 1720's establishing small farms. The development of the railroad through Summit drove the character of Summit we see today, and by the mid-1800's Summit served as a vacation spot for residents of New York City. Development grew after WWII, and today Summit is both a commuter community and home to a thriving business community.

There are several potential flood hazards in the City of Summit, but only few flood the properties surrounding them. The jurisdictional boundaries of Summit are defined by water bodies; on the north, the Passaic River, flowing in south-westerly direction; in the south, Surprise Lake and Bryant Brook, which flows in north-easterly direction. None of them constitute a direct flood hazard. In addition to the streams named above, as is shown in Figure 17-2 below, the City of Summit has four significant areas of Special Flood Hazard Area (100-year floodplain). Three of them are the unnamed tributaries of the Passaic River itself, on the north side of the main Conrail line intersecting the area; the fourth SFHA belongs to Salt Brook, which flows from the central Summit area, south of Conrail line, in westerly direction, into the neighboring City of New Providence.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Summit	
Number of Policies In-Force:	78
Total Losses:	84
Total Payments:	$422,325.43
Number of RL Properties:	3
Number of Mitigated RL Properties:	0
RL – Total Losses:	8
RL – Total Paid:	$80,772
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	4
SRL – Total Paid:	$74,899

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Summit has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
June 15, 2015	Flash Flood	N/A	N/A	The intersection of Springfield Rd. at Hobart Ave. in Summit was closed due to flooding with a partial road collapse.
September 17, 2018	Thunderstorm Wind	N/A	N/A	Multiple large trees down on Meadowbrook Court.

prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
High Wind – Tornado	High
Severe Storm – Winter Weather (Including Ice Storm)	High
Straight-Line Winds	High
Erosion	Medium
Flood	Medium
Severe Storm – Lightning	Medium
Wildfire	Medium
Hazardous Release Material – Transportation	Low
Extreme Temperature – Cold	Low
Hazardous Release Material – Fixed Site	Low
Drought	Low
Earthquake / Geological	Low
Extreme Temperature – Heat	Low
Hail	Low
Landslide (Non-Seismic)	Low
Storm Surge	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low

Hazard	Priority
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.71	0.71	0.00%
Barren Land	15.37	14.16	-7.88%
Forest	568.12	567.19	-0.16%
Urban	3,202.52	3,204.66	0.07%
Water	38.56	38.56	0.00%
Wetlands	35.27	35.27	0.00%

Source: NJDEP Land Use/Land Cover, 2019

Open space and forestland are concentrated along streams on the City's borders with Springfield, Mountainside, and Morris County. FEMA Flood Zones extend from the City's streams, including Salt Brook, the Passaic River and its tributaries, and Blue Brook and Rahway River tributaries. Flooding along Morris Ave could be mitigated with green stormwater infrastructure.

FUTURE DEVELOPMENT

The City of Summit has redevelopments planned on Broad Street, however that is out of the SFHA. Planned redevelopment in the City of Summit include:

1. **396 Broad St.** The property where the current firehouse sits will be redeveloped into a mixed-use building, with residential units over commercial uses. This property is part of an overlay zone that mandates a portion of the project be allotted for Below Market Rate housing. This property is not in the SFHA.

2. **289 Broad St.** A new firehouse will be built at this property, which is currently a parking lot. This project is anticipated to start sometime in 2021, after which the redevelopment at 396 Broad St. will begin. This property is not in the SFHA.

These properties are part of the Broad Street West Redevelopment Plan, depicted below:

3. **146 Morris Avenue.** Habitat for Humanity has plans for 12 units at this location. This property is part of an overlay zone that mandates a portion of the project be allotted for Below Market Rate housing. This property is not in the SFHA.
4. An additional townhouse complex is planned for New England Avenue. None of New England Avenue is in the SFHA.
5. **99 Beauvoir Avenue.** Overlook Hospital is currently completing a new multi-level parking garage and Emergency Rooms expansion. This property is not in the SFHA.
6. **556 Morris Avenue.** This property, owned by Bristol Myers Squibb, will be redeveloped into modern research and development buildings with labs and storage buildings. This property is not in the SFHA.

CRITICAL FACILITIES

The City of Summit has 64 critical facilities, with one facility located within the SFHA because it's a dam. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

- 18-01: Backup generator for Department of Public Works
- 18-05: Improve drainage/conveyance along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron avenue, Kent Place Boulevard, Edgemont Avenue, W End Avenue

SUCCESSES IN MUNICIPAL CAPABILITIES

The City of Summit has the following Planning & Regulatory capabilities beyond minimum Federal and State requirements:

- Emergency Operations Plan: Our EOP does somewhat address resilience wit in the plan. Part of each ESF requires each function to establish continuity plans
- Capital Improvements Plan: includes the mitigation of hazards with funding for road, storm and sanitary projects including resiliency for the City's building infrastructure
- Streambank Buffer Protection Program: The City has a riparian ordinance that protects the streambank buffer areas along all water bodies in Summit
- Post-Disaster Recovery Plan: City Admin has in the past provided a path for permitting to be expedited to facilitate recovery. Nothing formal, on an as needed basis.

The complete Mitigation Strategy and Capability Assessment for the City of Summit is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
18-01	Purchase and Install a Backup Generator for Department of Public Works.	Backup generator for Department of Public Works.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning		Engineering		$100,000.00		Completed
18-02	Perform Site Work and Install an Equalization Tank at the Department Of Public Works.	Site Work/equalization tank at Department Of Public Works.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		Summit DPW		$250,000.00		Withdrawn
18-03	Retrofit and Reconstruct the Fire Department Building.	Retrofit and reconstruct the Fire Department Building to prevent wind damage and ensure continuity of operations during storms.	Mitigation - Risk Reduction	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds	High	Summit Fire Chief	FEMA HMA, Municipal Budget	$0.00	1 year	Ongoing
18-04	Upgrade and Improve Channelization of the Salt Brook/West End Brook.	Upgrade and improve channelization of the Salt Brook/West End Brook.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Engineering		$4,000,000.00		Withdrawn
18-05	Improve Drainage/Conveyance Along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron Avenue, Kent Place Boulevard, Edgemont Avenue, and W End Avenue.	Improve drainage/conveyance along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron Avenue, Kent Place Boulevard, Edgemont Avenue, W End Avenue.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood		Engineering		$1,000,000.00		Completed
18-06	Construct Spillway Improvements at River Road.	Construct spillway improvements at River Road to reduce flooding.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood	High	Summit Engineering	FEMA HMA, Municipal Budget	$500,000.00	1 year	Ongoing
18-07	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with NJOEM	Municipal Budget	$0.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
18-08	Right-size Undersized Culverts and Channels in the Corridor Between the Golf Course and Spillway at River Road, Which Includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.	Right-size undersized culverts and channels in the corridor between the golf course and spillway at River Road, which includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway to control flooding.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood	High	Summit Engineering	FEMA HMA, Municipal Budget	$2,000,000.00	Ongoing	Ongoing
18-09	Construct West End Sanitary Sewer Pump Station and holding tank to prevent sewage backups during rainfall events.	West End Sanitary Sewer Pump Station and holding tank to prevent sewage backups during rainfall events.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Engineering		$1,000,000.00		Withdrawn
18-10	Identify a Solution to Mitigate City Water Discharge onto Private Property on Hobart Ave. and Edgewood Drive.	Identify a solution to mitigate city water discharge onto private property on Hobert Ave. and Edgewood Drive.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Medium	Engineering	Municipal Budget	$500,000.00	1 year	Ongoing
18-11	Educate the Public about Risks Associated with Tornadoes and Actions to Take in Advance of Tornado Warning.	Educate public about risks associated with tornadoes and actions to take in advance of tornado warning.	Administrative	Education and Awareness Programs	High Wind–Tornado	Low	Summit OEM	Municipal Budget	$0.00	Ongoing	Ongoing
18-12	Conduct a Full Tree Survey/Inventory Assessment Along City ROWs.	The City Forester completes an annual windshield survey of the City-owned trees annually. Due to significant impact from storms over the last decade, a full assessment will be done upon completion of the City's GIS system scheduled to take place in 2021.	Maintenance/Response/Recovery	Local Plans and Regulations	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds	Medium	Engineering/DPW	Municipal Budget	$500,000.00	Ongoing	Ongoing
18-13	Join the CRS program.	Join the CRS program.	Administrative	Local Plans and Regulations	Flood		Engineering		$0.00		Withdrawn
18-14	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Salt Brook, the Passaic River, Blue Brook, and Rahway River Tributaries Near the City's Borders, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire, elevate, or relocate structures that are listed as RL/SRL properties. Summit City will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Affected homeowners	FEMA HMA	$0.00	Ongoing	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
18-15	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 18-01 Summit, City of

Describing the Action

Action Name:	Purchase and Install a Backup Generator for Department of Public Works.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Backup generator for Department of Public Works.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	FEMA - HMGP
Responsible Party:	Engineering
Likely Funding Source(s):	
Target State Date:	Dec 2014
Timeline:	
Action Status:	Completed
Notes:	Completed and operational in 2019. Funded by HMGP Grant - DR – 02 NJ – 4086-288R.

Union County Mitigation Action Worksheets

Community Action Number: 18-02 Summit, City of

Describing the Action

Action Name:	**Perform Site Work and Install an Equalization Tank at the Department Of Public Works.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Site Work/equalization tank at Department Of Public Works.**
Hazard(s) Addressed:	**Flood**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$250,000.00**
Priority:	
Local Planning Mechanism:	**Floodplain Management**
Responsible Party:	**Summit DPW**
Likely Funding Source(s):	
Target State Date:	**2016**
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdrawn.**

Union County Mitigation Action Worksheets

Community Action Number: 18-03 Summit, City of

Describing the Action

Action Name:	Retrofit and Reconstruct the Fire Department Building.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Retrofit and reconstruct the Fire Department Building to prevent wind damage and ensure continuity of operations during storms.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The current Fire Department Building is vulnerable to high winds from tornadoes and straight-line winds.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at the Fire Department during storms.
Property Protection:	This action will prevent future wind damage to the Fire Department Building and ensure continuity of operations at the Fire Department during storms.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Summit Fire Chief
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	Mid-2021
Timeline:	1 year
Action Status:	Ongoing
Notes:	Estimated cost: TBD by engineer and architect Ongoing from 2010 and 2016. Currently under review for State approval. Anticipate going to bid early 2021. Hope to break ground mid-2021

Union County Mitigation Action Worksheets

Community Action Number: 18-04 Summit, City of

Describing the Action

Action Name:	**Upgrade and Improve Channelization of the Salt Brook/West End Brook.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Upgrade and improve channelization of the Salt Brook/West End Brook.**
Hazard(s) Addressed:	**Flood, Erosion–Hurricane/Nor'easter/Coastal Storm**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$4,000,000.00**
Priority:	
Local Planning Mechanism:	**NRCS**
Responsible Party:	**Engineering**
Likely Funding Source(s):	
Target State Date:	**2016**
Timeline:	
Action Status:	**Withdrawn**
Notes:	**ongoing from 2010; Partially complete. Completed Salt Brook at rear of #17, Sunset Drive. Slope stabilization and channel re-established. This action was withdrawn in 2021.**

Union County Mitigation Action Worksheets

Community Action Number: 18-05 Summit, City of

Describing the Action

Action Name:	Improve Drainage/Conveyance Along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron Avenue, Kent Place Boulevard, Edgemont Avenue, and W End Avenue.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Improve drainage/conveyance along Plymouth Road, Memorial Field House, Laurel Avenue, Community Pool, Waldron Avenue, Kent Place Boulevard, Edgemont Avenue, W End Avenue.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Engineering
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed. Funded by Municipal funds.

Union County Mitigation Action Worksheets

Community Action Number: 18-06 Summit, City of

Describing the Action

Action Name:	Construct Spillway Improvements at River Road.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct spillway improvements at River Road to reduce flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along River Road and the City's border with Morris County are at risk of future damage from flooding.
Life Safety:	This action will protect lives and prevent injuries by reducing flooding along River Road.
Property Protection:	This action will prevent future flood damage to structures and infrastructure along River Road.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Summit Engineering
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing from 2010 and 2016. Project has been designed and permitting complete with anticipated construction in 2021.

Union County Mitigation Action Worksheets

Community Action Number: 18-07 — Summit, City of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The highest priority hazards for Summit are High Wind-Tornado, Severe Storm-Winter Weather, and High Wind-Straight-Line Winds. The community's overall level of disaster resilience would increase if households prepared for and mitigated these hazards.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with NJOEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Estimated cost: staff time Ongoing from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 18-08 Summit, City of

Describing the Action

Action Name:	Right-size Undersized Culverts and Channels in the Corridor Between the Golf Course and Spillway at River Road, Which Includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Right-size undersized culverts and channels in the corridor between the golf course and spillway at River Road, which includes Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway to control flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas around the Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway are at risk of future flood damage.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding around the Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.
Property Protection:	This action will reduce future flood damage to structure and infrastructure around the Canoe Brook Golf Course, Wallace Road, and Canoe Brook Parkway.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$2,000,000.00
Priority:	High
Local Planning Mechanism:	Local CIP
Responsible Party:	Summit Engineering
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	2017
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing project from 2016. In process. A portion of this project will be completed in conjunction with the spillway improvement project schedule for 2021. Others portions will remain in the planning stages.

Union County Mitigation Action Worksheets

Community Action Number: 18-09 Summit, City of

Describing the Action

Action Name:	Construct West End Sanitary Sewer Pump Station and holding tank to prevent sewage backups during rainfall events.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	West End Sanitary Sewer Pump Station and holding tank to prevent sewage backups during rainfall events.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$1,000,000.00
Priority:	
Local Planning Mechanism:	Local CIP
Responsible Party:	Engineering
Likely Funding Source(s):	
Target State Date:	2017
Timeline:	
Action Status:	Withdrawn
Notes:	A study was completed to evaluate the value and practicality of the installation of an additional pump station at this location and it was determined that this project will not be pursued at this time.

Union County Mitigation Action Worksheets

Community Action Number: 18-10 Summit, City of

Describing the Action

Action Name:	Identify a Solution to Mitigate City Water Discharge onto Private Property on Hobart Ave. and Edgewood Drive.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Identify a solution to mitigate city water discharge onto private property on Hobert Ave. and Edgewood Drive.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	City water discharges onto private property on Hobert Avenue and Edgewood Drive, adversely impacting these properties during flood events.
Life Safety:	This action will protect lives and prevent injuries by mitigating flooding to Hobert Avenue and Edgewood Drive.
Property Protection:	This action will reduce future flood damage to structure and infrastructure on Hobert Avenue and Edgewood Drive.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The City may need to obtain easement across private property to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action would alleviate the adverse effect of flooding on Hobert Avenue and Edgewood Drive properties.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Medium
Local Planning Mechanism:	Local CIP
Responsible Party:	Engineering
Likely Funding Source(s):	Municipal Budget
Target State Date:	2023
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing from 2016. This project was pursued in 2010 but ended when easements could not be obtained. Recent flooding has created a renewed interest and the project has been re-opened.

Union County Mitigation Action Worksheets

Community Action Number: 18-11 Summit, City of

Describing the Action

Action Name:	Educate the Public about Risks Associated with Tornadoes and Actions to Take in Advance of Tornado Warning.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Educate public about risks associated with tornadoes and actions to take in advance of tornado warning.
Hazard(s) Addressed:	High Wind–Tornado
Goals:	1

Evaluating the Action

Risk Reduction:	Sur mit is vulnerable to tornadoes, and the general public's understanding of tornadoes and mitigation possibilities could be improved.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for tornadoes.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	City Funds
Responsible Party:	Summit OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Estimated costs: Minimal resources and staff time Ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 18-12 Summit, City of

Describing the Action

Action Name:	Conduct a Full Tree Survey/Inventory Assessment Along City ROWs.
Action Category:	Maintenance/Response/Recovery
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The City Forester completes an annual windshield survey of the City-owned trees annually. Due to significant impact from storms over the last decade, a full assessment will be done upon completion of the City's GIS system scheduled to take place in 2021.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	2

Evaluating the Action

Risk Reduction:	Property damage from storms over the last decade may be attributed to fallen trees and branches.
Life Safety:	This action will protect lives and prevent injuries by identifying hazardous City-owned trees that may fall during storms.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by identifying hazardous City-owned trees that may cause damage during storms.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	Summit OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$500,000.00
Priority:	Medium
Local Planning Mechanism:	City Funds
Responsible Party:	Engineering/DPW
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021 & 2022
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing since 2016.

Union County Mitigation Action Worksheets

Community Action Number: 18-13 Summit, City of

Describing the Action

Action Name:	**Join the CRS program.**
Action Category:	**Administrative**
Action Type:	**Local Plans and Regulations**
HMA Eligible:	
Action Description:	**Join the CRS program.**
Hazard(s) Addressed:	**Flood**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$0.00**
Priority:	
Local Planning Mechanism:	**City Funds**
Responsible Party:	**Engineering**
Likely Funding Source(s):	
Target State Date:	**2015**
Timeline:	
Action Status:	**Withdrawn**
Notes:	**A floodplain specialist was hired to assess the value of being part of this program. Based on the number of policies within the City and the work required to qualify for and maintain CRS rating, the program was not pursued further.**

Union County Mitigation Action Worksheets

Community Action Number: 18-14 — Summit, City of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Salt Brook, the Passaic River, Blue Brook, and Rahway River Tributaries Near the City's Borders, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire, elevate, or relocate structures that are listed as RL/SRL properties. Summit City will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along streams on the City's borders with Springfield, Mountainside, and Morris County are at risk of future destruction and property loss due to repetitive flooding. Currently, losses from repetitive loss structures are concentrated on Morris Ave. outside of the boundaries of the FEMA Special Flood Hazard Area (SFHA).
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The City has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	Ongoing
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	Ongoing

Union County Mitigation Action Worksheets

Community Action Number: 18-15 Summit, City of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The City has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The City has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	City Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: ____City of Summit_____

Name: ___Deputy Chief Donald Nelson_____ Title: ___OEM Coordinator_____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	No.
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	Our EOP does somewhat address resilience wit in the plan. Part of each ESF requires each function to establish continuity plans.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	Yes, partially, the plan inherently includes the mitigation of hazards with funding for road, storm and sanitary projects including resiliency for the City's building infrastructure.
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	The City has done an evaluation of risk to the City and attempted to address those risk in a prudent manner. Mitigation and resilience as well as continuity of ops are addressed in the plan.
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Yes	The City has a stormwater pollution prevention plan to address water quality related issues. Additionally, the City has a grading ordinance to mitigate the increase of

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
		impervious coverage on residential lots for projects that do not meet the definition of a major construction project.
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Yes	Every 5 years and more so as needed, LEPC meet to review responsibilities and Risk Analysis.
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Yes	Summit FD has an ISO rating of 2. The FD has established a continuity plan based on the department leadership structure. An All hazards plan has been developed to a respond to or mitigate fire hazards or other hazards to the city.
Site Plan Review Requirements: Review of new development applications	Yes	Yes, every site plan that is proposed within the City goes through a rigorous review process.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Yes	The City has requirements included in Chapter 35 of the Development Regulation Ordinance (DRO) related to subdivision requirements and standards.
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Yes	The City zoning regulations are included in chapter 35 of the general ordinance.
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Yes	The City has incorporated the Chapter 27, Flood Prevention and Protection into the general ordinances.
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Yes	No mitigation issues but resilience measures. Public Safety agreements with other towns address needs.

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Yes	The City recently approved a redevelopment plan for a specific area known as Broad Street West.
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	No	Not located in Coastal Zone
Community Wildfire Protection Plan: Allows local governments to create their own	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
community-specific wildfire risk reduction strategy		
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	No	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Yes	The City has a riparian ordinance that protects the streambank buffer areas along all water bodies in Summit.
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	No	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	No	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Yes	City Admin has in the past provided a path for permitting to be expedited to facilitate recovery. Nothing formal, on an as needed basis.
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	No	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	No	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	No	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	No	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
short- and long-term recovery either in advance of or after a disaster		
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	No	

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	yes	Summit Environmental Commission
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Yes	Summit uses various media outlets for disbursement of seasonal hazard precautions. For example, during Hurricane season info is sent out to citizens about securing out-door items, have a go bag, etc. Other seasonal information is distributed based on season.
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Yes	Summit Public Safety organizations participate in many Safety programs with the schools. Fire prevention week, Police visit schools, required drills , Police Youth Acad. Etc.
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	No	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	No	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Yes	Silver Level with 640 points approved on Nov 1, 2019.

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	No	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Yes	Summit Planning Board and Summit Zoning Board; Yes, each board reviews development plans and includes the impact of hazards.
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	No	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Yes	The Environmental Commission includes the review of hazard impacts as necessary and when appropriate.
Economic Development Commission: Provides recommendations on economic development policies and issues	Yes	The committee focuses primarily on re-development and not hazards.
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	No	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Yes	Part Time
Engineer: a New Jersey licensed Professional Engineer	Yes	Full Time

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Code Enforcement: Evaluates private properties and public grounds against local codes	Yes	Full Time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Yes	Full Time
Floodplain Manager: a Certified Floodplain Manager	Yes	Full Time
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Yes	Part Time - Contracted
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Yes	In-house & Contracted

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Yes	Yes
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	No	N/A
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Yes	Fees are collected and used in the Budgeting process

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Impact fees for new development: Fees paid by a developer to the municipality	Yes	Fees are collected and used in the Budgeting process
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Yes	Funds current projects for that specific bond
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	No	N/A

What capability would you like your community to gain in the next five to ten years?

Identify specific City properties that would require hazard mitigation.

SUMMIT CITY
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

Morris County

Essex County

New Providence Borough

New Providence Station

Springfield Township

Berkeley Heights Township

Mountainside Borough

649S
649
651
653
657
124
512
78

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)
- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood
- Zone X

Undetermined
- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Michael Baker INTERNATIONAL

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 1,200 2,400 Feet

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICES VOL I – 19 TOWNSHIP OF UNION

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Map

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Frederic Fretz, OEM Coordinator

COMMUNITY PROFILE

The Township of Union has a total area of 9.09 square miles and is located in northern Union County, New Jersey. Major transportation elements include Routes 22 and 82, Interstate 78, the Garden State Parkway and a NJ Transit rail station. As of 2018, the population was estimated at 58,158. This is a 2.18 percent increase from population at the time of the last plan update of 56,915 (2013 est.). The Township of Union was settled in the mid 1600's and developed as a farming community, and was later known as Connecticut Farms in the 1700's. A Revolutionary War battle was fought at the site, and the Caldwell Parsonage Museum is a historic site on the National Register of Historic Places.

The most significant source of flooding in Union Township is overbank flooding from the East Branch of the Rahway River, which runs along the western border of the jurisdiction. Most of the FEMA Special Flood Hazard Area (SFHA) in Union is related to the East Branch of the Rahway River. There are also several other areas of floodplain in the central and eastern parts of the jurisdiction. There is a concentration of flood insurance claims in the area around Joe Collins Park, in the northwest part of the Township. There are relatively high numbers of claims on Liberty Avenue, Audrey Terrace, Carol Road, and Mount Vernon Road among others. These claims are somewhat evenly distributed across a number of events, going back to 1999, suggesting that it is not just major events that cause flooding in some of these areas. About 15 years ago the Township constructed an earthen berm and floodwall in the area around Franklin Street, north of Route 78. This was designed to mitigate flooding and was designed to a 75-year storm. This measure has been effective in most events up to that level, but floodwaters from Hurricane Irene overtopped the low flood wall, with resultant flooding.

The two smaller areas of floodplain directly east of the area described above are related to the Vauxhall Branch, a tributary of the Rahway. Historical flood claims in this area are found in the area of Vauxhall Road and Winslow Avenue. The flooding in all these areas is typically relatively minor, often requiring the Fire Department to pump out basements.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Union Township	
Number of Policies In-Force:	311
Total Losses:	376
Total Payments:	$4,921,541.41
Number of RL Properties:	35
Number of Mitigated RL Properties:	0
RL – Total Losses:	91
RL – Total Paid:	$1,260,142
Number of SRL Properties:	3
Number of Mitigated SRL Properties:	0

Union Township	
SRL – Total Losses:	22
SRL – Total Paid:	$1,618,575

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Union Township has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
August 28, 2013	Flash Flood	N/A	N/A	In Elizabeth, Grove St. was closed due to flooding. In addition, vehicles were stuck in flood waters on Rt. 22 between Spring St. and Bloy St. in Hillside.
May 31, 2015	Flash Flood	N/A	N/A	The intersection of Liberty Ave. and Hillside Ave. in Hillside was closed due to flooding.
July 1, 2016	Thunderstorm Wind	N/A	N/A	Small trees were reported down in Union.
June 25, 2019	Lightning	N/A	N/A	Lightning hit a tree on Union Road causing a large branch to fall on two homes and one car.
July 22, 2020	Flash Flood	N/A	N/A	US Route 22 was closed due to flooding in Hillside.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Flood	High
Hazardous Release Material – Transportation	High
High Wind – Straight- Line Winds	High
Ice Storm	High
Severe Storm – Winter Weather	High
Erosion	Medium
Extreme Temperature – Cold	Medium
Extreme Temperature – Heat	Medium
Hazardous Release Material – Fixed Site	Medium
Severe Storm – Lightning	Medium
High Wind – Tornado	Low

Hazard	Priority
Drought	Low
Earthquake / Geological	Low
Hail	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low
Dam Failure	None
Landslide (Non-Seismic)	None
Storm Surge	None
Wildfire	None

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	2.79	0.00%
Barren Land	24.78	33.37	34.69%
Forest	392.22	391.67	-0.14%
Urban	5,131.27	5,120.45	-0.21%
Water	34.78	34.78	0.00%
Wetlands	231.14	231.14	0.00%

Source: NJDEP Land Use/Land Cover 2019

The Township's wetlands, forested areas, FEMA Flood Zones and open space follow its borders with Hillside Township, Kenilworth Borough, and Springfield Township. Wetlands, forests, and FEMA Flood Zones also cut across the Township along the West Branch of the Elizabeth River. Creating and connecting a vegetated buffer along the Rahway River tributary is recommended as well as the creation of stormwater and/or floodplain lots.

FUTURE DEVELOPMENT

None of the redevelopment areas in Union Township lie in the SFHA.

CRITICAL FACILITIES

Union Township has 58 critical facilities, with eight facilities being located within the SFHA (however two are dams). The list of critical facilities is part of the confidential section of this HMP.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Union has the following Planning & Regulatory capabilities not required in all communities:

- **Redevelopment Plan/Study:** The Township has implemented a number of redevelopment plans where the existing conditions on some of the properties were considered hazardous and satisfied the criteria for redevelopment under the Local Housing and Redevelopment Law.
- **Community Wildfire Protection Plan:** Countywide Plan
- **Streambank Buffer Protection Program:** Article XXIXA, entitled Riparian Buffer Conservation Zone, of the Land Use Ordinance provides protections for vegetative buffers along state open waters.
- **Watershed Management Plan:** Article XXIX entitled Stormwater Management and Control of the Land Use Ordinance identifies stormwater management requirements for major developments in accordance with N.J.A.C. 7:8
- **Floodplain Management Plan:** Article XIII of the Land Use Ordinance addresses floodplain management requirements, and names the Township Engineer as the local administrator
- **Land Acquisition for Open Space and Public Recreation Uses:** Township has over 235 acres of parkland some of which are located in floodplains but with all parkland encumbered under the NJDEP Green Acres Program.
- Union Township has received a bronze star in recognition of its Sustainable Jersey Certification.

SUCCESSFUL PAST MITIGATION ACTIONS

- 19-01: Stormwater management system upgrade and improvement for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.
- 19-02: Hardening/retrofitting of Police Department
- 19-03: Hardening/retrofitting of Municipal Building
- 19-05: Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
- 19-07: New Emergency Standby Generator – Firehouse Headquarters
- 19-08: New Emergency Standby Generator – Senior Center
- 19-09: New Emergency Standby Generator – Police Department
- 19-10: Irvington Branch Retaining Wall Repairs

The complete Mitigation Strategy and Capability Assessment for the Township of Union is part of this appendix.

Union, Township of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
19-01	Upgrade and Improve Stormwater Management System for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.	Stormwater management system upgrade and improvement for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood		Township of Union OEM		$900,000.00		Completed
19-02	Harden and Retrofit Police Department.	Hardening/retrofitting of Police Department.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Township of Union Police Chief		$350,000.00		Completed
19-03	Harden and Retrofit of Municipal Building.	Hardening/retrofitting of Municipal Building.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Township of Union Administrator		$350,000.00		Completed
19-04	Harden and Retrofit the Department of Public Works.	Harden and retrofit the Department of Public Works (DPW) building to allow for continuity of operations during storm events.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds	High	Township of Union DPW	FEMA HMA	$50,000.00	1 year	Ongoing
19-05	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Maintenance/Response/Recovery	Education and Awareness Programs	All Hazards		OEM Coordinator, in coordination with NJOEM		$0.00		Completed
19-06	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct to improve flood control measures.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Flood	High	Township of Union DPW	FEMA HMA	$250,000.00	1 year	Ongoing
19-07	Purchase New Emergency Standby Generator for Firehouse Headquarters.	New Emergency Standby Generator – Firehouse Headquarters	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		Township of Union Fire Department		$150,000.00		Completed
19-08	Purchase New Emergency Standby Generator for Senior Center.	New Emergency Standby Generator – Senior Center	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		Township of Union Administrator		$100,000.00		Completed

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
19-09	Purchase New Emergency Standby Generator for Police Department.	New Emergency Standby Generator – Police Department	Maintenance/Response/Recovery	Structure and Infrastructure Project	High Wind–Straight-Line Winds		Township of Union Police Department		$265,000.00		Completed
19-10	Repair Irvington Branch Retaining Wall.	Irvington Branch Retaining Wall Repairs	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Township of Union Engineering Dept		$2,000,000.00		Completed
19-11	Implement the Flood Control Project on the West Branch of the Rahway River.	Implement the Flood Control Project on the West Branch of the Rahway River.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers	$0.00	Ongoing	Ongoing
19-12	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Union Township's Borders with Hillside Township, Kenilworth Borough, and Springfield Township and Along the West Branch of the Elizabeth River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Acquire or elevate structures that are listed as RL/SRL properties. Union Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township of Union OEM, Affected homeowners	FEMA HMA	$0.00	Ongoing	Ongoing
19-13	Join CRS program	Join CRS program	Administrative	Local Plans and Regulations	Flood	Low	NFIP Administrator	Municipal Budget	$0.00	1 year	Ongoing
19-14	Repair Retaining Walls on Various Streams Throughout the Township.	Repair retaining walls on various streams throughout the Township to ensuring they remain functional during future flood events.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood	Medium	Township	Municipal Budget	$0.00		New
19-15	Designate the Community Center/Senior Center as a Standby Public Shelter During Severe Weather Conditions.	Designate the Community Center/Senior Center as a standby public shelter during severe weather conditions.	Maintenance/Response/Recovery	Structure and Infrastructure Project	All Hazards	Medium	OEM	Municipal Budget	$0.00		New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
19-16	Create and Connect a Vegetated Buffer Along the Township's Rahway River Tributary and/or Create Stormwater and/or Floodplain Lots.	Create and connect a vegetated buffer along the Township's Rahway River tributary and/or create stormwater and/or floodplain lots to mitigate flooding.	Mitigation - Risk Reduction	Natural Systems Protection	Flood	High	OEM	FEMA HMA	$0.00		New
19-17	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 19-01 Union, Township of

Describing the Action

Action Name:	Upgrade and Improve Stormwater Management System for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Stormwater management system upgrade and improvement for Carol Road, Audrey Terrace, Eleanor Terrace, Liberty Avenue, Lori Court, and Mount Vernon Road.
Hazard(s) Addressed:	Flood
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$900,000.00
Priority:	
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Township of Union OEM
Likely Funding Source(s):	
Target State Date:	2013
Timeline:	
Action Status:	Completed
Notes:	This action has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-02 Union, Township of

Describing the Action

Action Name:	Harden and Retrofit Police Department.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Hardening/retrofitting of Police Department.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$350,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union Police Chief
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	This action has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-03 Union, Township of

Describing the Action

Action Name:	Harden and Retrofit of Municipal Building.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Hardening/retrofitting of Municipal Building.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$350,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union Administrator
Likely Funding Source(s):	
Target State Date:	2012
Timeline:	
Action Status:	Completed
Notes:	This action has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-04 Union, Township of

Describing the Action

Action Name:	Harden and Retrofit the Department of Public Works.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Harden and retrofit the Department of Public Works (DPW) building to allow for continuity of operations during storm events.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The DPW Building is vulnerable to damage from storm events.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations at the DPW building during storm events.
Property Protection:	This action will reduce future storm damage to the DPW building.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$50,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	2015
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing from 2010 and 2016. Electrical System Upgrade Completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-05 Union, Township of

Describing the Action

Action Name:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Action Category:	Maintenance/Response/Recovery
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM
Likely Funding Source(s):	
Target State Date:	2015
Timeline:	
Action Status:	Completed
Notes:	This action has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-06 Union, Township of

Describing the Action

Action Name:	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct to improve flood control measures.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct are at risk of future flood damage.
Life Safety:	This action will protect lives and prevent injuries by improving flood control measures at the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.
Property Protection:	This action will reduce future flood damage in the areas around the Sanitary Sewer Pump Stations at Liberty Ave, Pinewood Ave, and Milltown Ct.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$250,000.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union DPW
Likely Funding Source(s):	FEMA HMA
Target State Date:	Jan 2014
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing from 2010 and 2016. Pump Stations elevated along Rahway River.

Union County Mitigation Action Worksheets

Community Action Number: 19-07 Union, Township of

Describing the Action

Action Name:	Purchase New Emergency Standby Generator for Firehouse Headquarters.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	New Emergency Standby Generator – Firehouse Headquarters
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$150,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union Fire Department
Likely Funding Source(s):	
Target State Date:	Mar 2014
Timeline:	
Action Status:	Completed
Notes:	This action has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-08 Union, Township of

Describing the Action

Action Name:	Purchase New Emergency Standby Generator for Senior Center.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	New Emergency Standby Generator – Senior Center
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of
Likely Funding Source(s):	
Target State Date:	July 2014
Timeline:	
Action Status:	Completed
Notes:	This action is now fully complete.

Union County Mitigation Action Worksheets

Community Action Number: 19-09 Union, Township of

Describing the Action

Action Name:	Purchase New Emergency Standby Generator for Police Department.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	New Emergency Standby Generator – Police Department
Hazard(s) Addressed:	High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$265,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union Police Department
Likely Funding Source(s):	
Target State Date:	Jan 2016
Timeline:	
Action Status:	Completed
Notes:	This action has been completed.

Union County Mitigation Action Worksheets

Community Action Number: 19-10 Union, Township of

Describing the Action

Action Name:	Repair Irvington Branch Retaining Wall.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Irvington Branch Retaining Wall Repairs
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$2,000,000.00
Priority:	
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Township of Union Engineering Dept
Likely Funding Source(s):	
Target State Date:	Jan 2016
Timeline:	
Action Status:	Completed
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 19-11 Union, Township of

Describing the Action

Action Name:	Implement the Flood Control Project on the West Branch of the Rahway River.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Implement the Flood Control Project on the West Branch of the Rahway River.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the West Branch of the Rahway River are at risk of future destruction due to flooding.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding along the West Branch of the Rahway River.
Property Protection:	This action will prevent future flood damage to structures and infrastructure along the West Branch of the Rahway River.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	USACE Funds
Responsible Party:	U.S. Army Corps of Engineers
Likely Funding Source(s):	U.S. Army Corps of Engineers
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Estimated cost: unknown Ongoing since 2016

Union County Mitigation Action Worksheets

Community Action Number: 19-12 Union, Township of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas Along Union Township's Borders with Hillside Township, Kenilworth Borough, and Springfield Township and Along the West Branch of the Elizabeth River, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Acquire or elevate structures that are listed as RL/SRL properties. Union Township will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas along the Township's borders with Hillside Township, Kenilworth Borough, and Springfield Township as well as along the West Branch of the Elizabeth River are at risk of future destruction and property loss due to repetitive flooding. Flood losses from RL properties are concentrated along a tributary of the Rahway River at the northern tip of the Township on Liberty Ave, Burnet Ave (CR 633) and Larchmont Road.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township of Union OEM, Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Funding Dependent
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	cost varies

Union County Mitigation Action Worksheets

Community Action Number: 19-13 Union, Township of

Describing the Action

Action Name:	Join CRS program
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Join CRS program
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Union Township does not currently participate in the CRS program. The Township is still vulnerable to flooding, and joining the CRS program would incentivize flood risk reduction in the community.
Life Safety:	This action will indirectly protect lives and prevent injuries by encouraging flood mitigation actions throughout the Township.
Property Protection:	This action will indirectly protect structures and infrastructure from future flood damage by encouraging flood mitigation actions throughout the Township.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action. It will likely also have public support because it lowers flood insurance premiums for homeowners.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group. This action would be especially beneficial for flood insurance policyholders.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	NFIP Administrator
Likely Funding Source(s):	Municipal Budget
Target State Date:	2015
Timeline:	1 year
Action Status:	Ongoing
Notes:	Cost: Staff time/minimal resources

Union County Mitigation Action Worksheets

Community Action Number: 19-14 Union, Township of

Describing the Action

Action Name:	Repair Retaining Walls on Various Streams Throughout the Township.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Repair retaining walls on various streams throughout the Township to ensuring they remain functional during future flood events.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Retaining walls on various streams throughout the Township are in need of repairs.
Life Safety:	This action will protect lives and prevent injuries by allowing retaining walls to continue to control riverine flooding.
Property Protection:	This action will protect structures and infrastructure near Township streams from future flood damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 19-15 Union, Township of

Describing the Action

Action Name:	Designate the Community Center/Senior Center as a Standby Public Shelter During Severe Weather Conditions.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Designate the Community Center/Senior Center as a standby public shelter during severe weather conditions.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Union Township would benefit from an additional standby public shelter.
Life Safety:	This action will protect lives and prevent injuries by creating a public shelter for those displaced by severe weather conditions.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 19-16 Union, Township of

Describing the Action

Action Name:	Create and Connect a Vegetated Buffer Along the Township's Rahway River Tributary and/or Create Stormwater and/or Floodplain Lots.
Action Category:	Mitigation - Risk Reduction
Action Type:	Natural Systems Protection
HMA Eligible:	Yes
Action Description:	Create and connect a vegetated buffer along the Township's Rahway River tributary and/or create stormwater and/or floodplain lots to mitigate flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The Township's wetlands, forested areas, FEMA Flood Zones and open space follow its borders with Hillside Township, Kenilworth Borough, and Springfield Township. Wetlands, forests, and FEMA Flood Zones also cut across the Township along the West Branch of the Elizabeth River. Flood losses are concentrated along a tributary of the Rahway River at the northern tip of the Township on Liberty Ave, Burnet Ave (CR 633) and Larchmont Road. RL properties exist just outside the park limits.
Life Safety:	This action will protect lives and prevent injuries by detaining and releasing more stormwater along the Rahway River tributary.
Property Protection:	This action will future damage to structures by detaining and releasing more stormwater along the Rahway River tributary.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts. Green infrastructure solutions are generally environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	Assistant Township Engineer
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 19-17 Union, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: ____City of Summit_____

Name: ___Deputy Chief Donald Nelson_____ Title: ___OEM Coordinator_____

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	No.
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	Our EOP does somewhat address resilience wit in the plan. Part of each ESF requires each function to establish continuity plans.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	Yes, partially, the plan inherently includes the mitigation of hazards with funding for road, storm and sanitary projects including resiliency for the City's building infrastructure.
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	The City has done an evaluation of risk to the City and attempted to address those risk in a prudent manner. Mitigation and resilience as well as continuity of ops are addressed in the plan.
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Yes	The City has a stormwater pollution prevention plan to address water quality related issues. Additionally, the City has a grading ordinance to mitigate the increase of

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
		impervious coverage on residential lots for projects that do not meet the definition of a major construction project.
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Yes	Every 5 years and more so as needed, LEPC meet to review responsibilities and Risk Analysis.
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	Yes	Summit FD has an ISO rating of 2. The FD has established a continuity plan based on the department leadership structure. An All hazards plan has been developed to a respond to or mitigate fire hazards or other hazards to the city.
Site Plan Review Requirements: Review of new development applications	Yes	Yes, every site plan that is proposed within the City goes through a rigorous review process.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Yes	The City has requirements included in Chapter 35 of the Development Regulation Ordinance (DRO) related to subdivision requirements and standards.
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	Yes	The City zoning regulations are included in chapter 35 of the general ordinance.
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	Yes	The City has incorporated the Chapter 27, Flood Prevention and Protection into the general ordinances.
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Yes	No mitigation issues but resilience measures. Public Safety agreements with other towns address needs.

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	Yes	The City recently approved a redevelopment plan for a specific area known as Broad Street West.
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	No	Not located in Coastal Zone
Community Wildfire Protection Plan: Allows local governments to create their own	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
community-specific wildfire risk reduction strategy		
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	No	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	Yes	The City has a riparian ordinance that protects the streambank buffer areas along all water bodies in Summit.
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	No	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	No	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	Yes	City Admin has in the past provided a path for permitting to be expedited to facilitate recovery. Nothing formal, on an as needed basis.
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	No	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	No	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	No	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	No	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
short- and long-term recovery either in advance of or after a disaster		
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	No	

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	yes	Summit Environmental Commission
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Yes	Summit uses various media outlets for disbursement of seasonal hazard precautions. For example, during Hurricane season info is sent out to citizens about securing out-door items, have a go bag, etc. Other seasonal information is distributed based on season.
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Yes	Summit Public Safety organizations participate in many Safety programs with the schools. Fire prevention week, Police visit schools, required drills , Police Youth Acad. Etc.
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	No	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	No	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	Yes	Silver Level with 640 points approved on Nov 1, 2019.

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	No	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Yes	Summit Planning Board and Summit Zoning Board; Yes, each board reviews development plans and includes the impact of hazards.
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	No	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Yes	The Environmental Commission includes the review of hazard impacts as necessary and when appropriate.
Economic Development Commission: Provides recommendations on economic development policies and issues	Yes	The committee focuses primarily on re-development and not hazards.
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	No	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Yes	Part Time
Engineer: a New Jersey licensed Professional Engineer	Yes	Full Time

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Code Enforcement: Evaluates private properties and public grounds against local codes	Yes	Full Time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Yes	Full Time
Floodplain Manager: a Certified Floodplain Manager	Yes	Full Time
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Yes	Part Time - Contracted
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Yes	In-house & Contracted

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Yes	Yes
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	No	N/A
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Yes	Fees are collected and used in the Budgeting process

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Impact fees for new development: Fees paid by a developer to the municipality	Yes	Fees are collected and used in the Budgeting process
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	Yes	Funds current projects for that specific bond
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	No	N/A

What capability would you like your community to gain in the next five to ten years?

Identify specific City properties that would require hazard mitigation.

UNION TOWNSHIP
FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

0 1,650 3,300 Feet

N

Source: FEMA; NJDEP; NJDOT;
NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

Michael Baker INTERNATIONAL

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Summit City

Essex County

Springfield Township

Hillside Township

Union Station

Mountainside Borough

Kenilworth Borough

Westfield Town

Cranford Township

Roselle Park Station

Roselle Park Borough

North Elizabeth Station

Elizabeth City

Elizabeth Station

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind. The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 20 TOWN OF WESTFIELD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment
- Flood Vulnerability Mapping

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Christopher Battiloro, Chief of Police

COMMUNITY PROFILE

The Town of Westfield has a total area of 6.73 square miles and is located in the south-central region of Union County, New Jersey. As of 2018, the population was estimated at 30,086. This is a 1.44 percent decrease in population at the time of the last plan update, which was estimated at 30,525 (2013). Westfield was settled in 1720, as part of the Elizabethtown Tract. It was incorporated as part of New Jersey's first 104 towns.

Flooding in Westfield most often occurs during extreme rain events. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes Nor'easters. There are four areas of flood concern in Westfield:

- Nomahegan Brook – this large flood area mostly affects Lenape and Echo Lake Parks but does touch a few residential properties located on Orenda Circle and Manitou Circle.
- Gallows Hill Road branch – mostly all of this small flood area is located within the Fairview Cemetery retention basin but affects some residential properties on Harding St. and Gallows Hill Rd.
- Brookside Place brook & retention basin – located on the border between Westfield and Garwood, this small flood area encompasses a small brook that runs behind some Cranford Avenue residential properties and empties into the retention basin in Garwood.
- Robinson's Branch of the Rahway River – this is the largest flood area in Westfield and affects multiple residential properties along Knollwood Terrace, Normandy Drive, Willow Grove Road and Lamberts Mill Road. Underground storm sewer drainage pipes discharge into a man-made concrete flume near Shackamaxon Place. This concrete structure, constructed in the 1970's, holds the waterway within its walls before opening up into a free-flowing stream in Tamaques Park and running into a large flood zone in Clark.

There are some repetitive loss structures in the Town, but these properties are not concentrated in a particular location, nor do they stem from a particular river or stream.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Westfield	
Number of Policies In-Force:	129
Total Losses:	31
Total Payments:	$204,866.10
Number of RL Properties:	2
Number of Mitigated RL Properties:	0
RL – Total Losses:	4
RL – Total Paid:	$37,674.13
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0

Westfield	
SRL – Total Losses:	0
SRL – Total Paid:	$0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, January 2021.

HAZARD IDENTIFICATION

Since the last Union County HMP, Westfield has experienced the following hazards:

Hazard Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
October 7, 2013	Thunderstorm Wind	N/A	N/A	Branches five-foot-long and of a medium size were reported down.
November 1, 2013	Thunderstorm Wind	N/A	N/A	Two large trees were reported down in town.
July 25, 2016	Thunderstorm Wind	N/A	N/A	A large tree was reported down on Knollwood Terrace east of Scotch Plains.
June 2, 2019	Thunderstorm Wind	N/A	N/A	A tree fell on a house on Lenox Avenue between St. Paul Street and S. Euclid Avenue.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
High Wind – Straight-Line Winds	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
Hazardous Release Material – Transportation	High
Extreme Temperature – Cold	High
Hazardous Release Material – Fixed Site	Medium
Flood	Medium
Severe Storm – Lightning	Medium
Drought	Low
Earthquake / Geological	Low
Erosion	Low
Extreme Temperature – Heat	Low
Hail	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Storm Surge	Low
Dam Failure	Low

Hazard	Priority
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	10.88	10.88	0.00%
Barren Land	15.72	14.95	-4.90%
Forest	257.01	255.70	-0.51%
Urban	3,966.72	3,968.80	0.05%
Water	25.35	25.35	0.00%
Wetlands	38.74	38.74	0.00%

Source: NJDEP Land Use/Land Cover, 2019

There have been some RL losses in the town, but they are not concentrated in a particular location, nor do they stem from a particular river or stream. There are flood-prone areas in along the Robinsons Branch Tributary and along the border with Springfield Township. They are not located near any open space or forested areas, either. The Township should consider green stormwater infrastructure along Clark St. and Talcott Rd.

FUTURE DEVELOPMENT

The Town of Westfield is not aware of any new development at this time, but certain areas have been designated as Areas in Need of Redevelopment and the whole town has been designated as an Area in Need of Rehabilitation.

The following resolutions were passed in 2020 designating Areas in Need of Redevelopment in Westfield:

- Resolution 64-2020 designated Block 3307, Lots 1 and 2; Block 4004, Lot 17; Block 4005, Lots 3 and 4 as an Area in Need of Redevelopment.

- Resolution 145-2020 designated eight municipal parking lots as Areas in Need of Redevelopment.
- Resolution 180-2020 designated the Lord & Taylor sites at Block 2502, Lot 14; Block 2506, Lot 1; and Block 2508, Lot 11 as Areas in Need of Redevelopment.
- Resolution 181-2020 designated the Rialto site at Block 3107, Lot 1 as an Area in Need of Redevelopment.

All designated Areas in Need of Redevelopment are located in and around downtown Westfield. At the time of the 2021 HMP Update, no action has been taken other than their designation. None of these areas are located in FEMA Flood Zones.

On October 13, 2020, the Town Council voted on Resolution 225-2020 to designate the entire Town as an Area in Need of Rehabilitation, which follows a detailed study prepared by Town Planner Don Sammet and Town Engineer Kris McAloon that was referred to and approved by the Planning Board. The Town of Westfield has areas within FEMA's Special Flood Hazard Area (SFHA) and therefore there are flood zones within the Area in Need of Rehabilitation. That said, only 2.37% of the Town of Westfield is in the SFHA by land area, so there is not a significant portion of the Town at risk by land area.

CRITICAL FACILITIES

The Town of Westfield has 59 critical facilities, with three facilities located within the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

There is one mitigation project that has been completed since the last plan update:

- 20-05: Backup generator for the Department of Public Works.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Town of Westfield has the following Planning & Regulatory capabilities not required in all communities:

- Green Development Checklist: All applications for preliminary and final major site plan approval shall submit a Green Development Checklist, which includes various green development and design strategies to guide and inform the dialogue between an applicant and the Town regarding smart growth and resource efficiency. The checklist includes Low-Impact Design (LID) design features that work to mitigate flooding, drought, and extreme heat.
- Redevelopment Plan/Study
- Watershed Management Plan
- Floodplain Management Plan
- The Town is also certified Silver by Sustainable Jersey as of December 18, 2020 and engages in public-private partnership initiatives addressing disaster related issues.

The complete Mitigation Strategy and Capability Assessment for the Town of Westfield is part of this appendix.

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
20-01	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination County OEM	Staff Resources	$0.00	1 year	Ongoing
20-02	Flood-proof the Police Building, Municipality Building, and Associated Data Storage to Reduce the Impact of Flooding on Public Facilities.	Flood-proof the police building, municipality building, and associated data storage to reduce the impact of flooding on public facilities.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Westfield Police Chief/OEM	FEMA HMA, Municipal Budget	$150,000.00	1 year	Ongoing
20-03	Retrofit the Fire Department Building on North Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	Retrofit of Fire Department on North Avenue to reduce the impacts of high wind and extreme weather on the structure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	High	Westfield Fire Chief	FEMA HMA, Municipal Budget	$0.00	1 year	Ongoing
20-04	Retrofit the Fire Department Building on Central Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	Retrofit of Fire Department on Central Avenue to reduce the impacts of high wind and extreme weather on the structure.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds	High	Westfield Fire Chief	FEMA HMA, Municipal Budget	$0.00	5 + years	Ongoing
20-05	Purchase and Install a Backup Generator for the Department of Public Works.	Backup generator for the Department of Public Works.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Westfield DPW		$100,000.00		Completed
20-06	Flood-proof the Genesis Elder Care: Senior Housing Building to Reduce the Impact of Flooding on Vulnerable Populations.	Flood-proof the Genesis Elder Care: Senior Housing to reduce the impact of flooding on vulnerable populations.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Westfield OEM	FEMA HMA, Municipal Budget	$180,000.00	1 year	Ongoing
20-07	Acquire, Elevate, Relocate or Otherwise Mitigate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) Properties.	Mitigate the 2 RL properties and future RL properties in the Town through acquisition, elevation, relocation, or nearby drainage improvements. Westfield Town will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Engineering, Affected homeowners	FEMA HMA	$0.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
20-08	Purchase and Install an Emergency Generator for Continuity of Operations at Westfield Memorial Pool Building and Complex.	Purchase and install an emergency generator for continuity of operations at Westfield Memorial Pool Building and Complex.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds, Hail,	Low	Town of Westfield	Future Municipal Government Capital Budget Expenditure	$0.00	1 - 5 years	New
20-09	Replace and Install a New Roof for Westfield Municipal Building and Police Department to Provide for Continuity of Operations During a Disaster.	Replace and install new roof for Westfield Municipal Building and Police Department to provide for continuity of operations during a disaster.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds, Hail,	High	Town of Westfield	Future Municipal Capital Budget Expenditure	$0.00	1 - 5 years	New
20-10	Replace and Install a New Roof for Westfield Department of Public Works (DPW) to Provide for Continuity of Operations During a Disaster.	Replace and install new roof for Westfield DPW to provide for continuity of operations during a disaster.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, 23, High Wind–Tornado, High Wind–Straight-Line Winds, Hail,	High	Town of Westfield	Future Municipal Capital Budget Expenditure	$0.00	1 - 5 years	New
20-11	Use the Town's Green Development Checklist to Identify Opportunities to Integrate Green Infrastructure into Redevelopment Plans, Especially in the Special Flood Hazard Area (SFHA).	All applications for preliminary and final major subdivision approval as well as preliminary and final major site plan approval shall submit a Green Development Checklist, which includes various green development and design strategies to guide and inform the dialogue between an applicant and the Town regarding smart growth and resource efficiency. The checklist includes Low-Impact Design (LID) design features that work to mitigate flooding, drought, and extreme heat.	Administrative	Local Plans and Regulations	Flood, Extreme Temperature, Drought	Low	Planning and Zoning Boards	Municipal Budget	$0.00	Ongoing	New
20-12	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Town Council	Municipal Budget	$0.00	1 year	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
20-13	Implement the Mitigation Actions from the Resiliency Guidelines prepared by the Center for Climate and Energy Solutions (C2ES) to Adapt to Future Extreme Heat and Flooding Hazards.	the Town will review the resiliency guidelines prepared by the Center for Climate and Energy Solutions (C2ES) and implement the mitigation actions to adapt to power outages, extreme heat, and flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	Medium	Westfield OEM	Sustainable Jersey, FEMA HMA, municipal budget depending on the action	$0.00	Ongoing	New

Union County Mitigation Action Worksheets

Community Action Number: 20-01 Westfield, Town of

Describing the Action

Action Name:	Conduct All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	The Town has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination County OEM
Likely Funding Source(s):	Staff Resources
Target State Date:	TBD
Timeline:	1 year
Action Status:	Ongoing
Notes:	This action is ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 20-02 Westfield, Town of

Describing the Action

Action Name:	Flood-proof the Police Building, Municipality Building, and Associated Data Storage to Reduce the Impact of Flooding on Public Facilities.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Flood-proof the police building, municipality building, and associated data storage to reduce the impact of flooding on public facilities.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	The police building, municipality building, and associated data storage house important public information and essential municipal services. It is critical that these facilities are protected from flooding.
Life Safety:	This action is not related to protecting lives and preventing injuries.
Property Protection:	This action will reduce damage to structures and infrastructure by ensuring essential municipal functions and data are not compromised by flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Town has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$150,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Westfield Police Chief/OEM
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing since 2016; pending funding. Additional related Mitigation Action project is proposed.

Union County Mitigation Action Worksheets

Community Action Number: 20-03 Westfield, Town of

Describing the Action

Action Name:	Retrofit the Fire Department Building on North Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Retrofit of Fire Department on North Avenue to reduce the impacts of high wind and extreme weather on the structure.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The Fire Department Building on North Avenue is vulnerable to high wind and other forms of extreme weather. Retrofitting is necessary to ensure the facility can continue its essential and life saving operations during a disaster.
Life Safety:	This action protects the lives of firefighters working in the North Avenue building, and also the Department to continue their life-saving work during a disaster.
Property Protection:	This action reduces the likelihood of damage to the North Avenue building by high winds and other forms of extreme weather.
Cost Effectiveness:	The cost effectiveness of this action is unknown.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Town has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Westfield Fire Chief
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	Ongoing
Notes:	Cost: To be determined by engineer & architect Ongoing from 2016; pending funding. Project is in research and planning stages.

Union County Mitigation Action Worksheets

Community Action Number: 20-04 Westfield, Town of

Describing the Action

Action Name:	Retrofit the Fire Department Building on Central Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Retrofit of Fire Department on Central Avenue to reduce the impacts of high wind and extreme weather on the structure.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The Fire Department Building on Central Avenue is vulnerable to high wind and other forms of extreme weather. Retrofitting is necessary to ensure the facility can continue its essential and life saving operations during a disaster.
Life Safety:	This action protects the lives of firefighters working in the Central Avenue building, and also the Department to continue their life-saving work during a disaster.
Property Protection:	This action reduces the likelihood of damage to the Central Avenue building by high winds and other forms of extreme weather.
Cost Effectiveness:	The cost effectiveness of this action is unknown.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Town has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Capital Improvement
Responsible Party:	Westfield Fire Chief
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	TBD
Timeline:	5 + years
Action Status:	Ongoing
Notes:	Estimated cost: To be determined by engineer & architect Ongoing from 2016; pending funding. Project is in research and planning stage.

Union County Mitigation Action Worksheets

Community Action Number: 20-05 Westfield, Town of

Describing the Action

Action Name:	Purchase and Install a Backup Generator for the Department of Public Works.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Backup generator for the Department of Public Works.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	
Local Planning Mechanism:	Capital Improvements
Responsible Party:	Westfield DPW
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Project completed

Union County Mitigation Action Worksheets

Community Action Number: 20-06 Westfield, Town of

Describing the Action

Action Name:	Flood-proof the Genesis Elder Care: Senior Housing Building to Reduce the Impact of Flooding on Vulnerable Populations.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Flood-proof the Genesis Elder Care: Senior Housing to reduce the impact of flooding on vulnerable populations.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Older adults are particularly vulnerable to the impacts of disasters. If flooding were to occur, the residents of the Senior Housing Building have a more difficult time evacuating due to age and the potential use of life-saving medical equipment.
Life Safety:	This action protects the lives of the Senior Housing Building residents by providing for the continuity of operations at the building during a flood.
Property Protection:	This action reduces the likelihood of flood damage to the Senior Housing Building.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Town has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	Older adults that are residents of the Senior Housing Building are considered a socially vulnerable population. This action directly benefits a socially vulnerable population.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$180,000.00
Priority:	High
Local Planning Mechanism:	Floodplain Management
Responsible Party:	Westfield OEM
Likely Funding Source(s):	FEMA HMA, Municipal Budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	Ongoing
Notes:	Status: pending funding. Ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 20-07 Westfield, Town of

Describing the Action

Action Name:	Acquire, Elevate, Relocate or Otherwise Mitigate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Mitigate the 2 RL properties and future RL properties in the Town through acquisition, elevation, relocation, or nearby drainage improvements. Westfield Town will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas in along the Robinsons Branch Tributary and along the border with Springfield Township are at risk of future destruction and property loss due to repetitive flooding. a.There have been some RL losses in the town, but they are not concentrated in a particular location, nor do they stem from a particular river or stream.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Town has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Floodplain management
Responsible Party:	Engineering, Affected homeowners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	This action is ongoing since 2016.

Union County Mitigation Action Worksheets

Community Action Number: 20-08 Westfield, Town of

Describing the Action

Action Name:	Purchase and Install an Emergency Generator for Continuity of Operations at Westfield Memorial Pool Building and Complex.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install an emergency generator for continuity of operations at Westfield Memorial Pool Building and Complex.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight
Goals:	3

Evaluating the Action

Risk Reduction:	The Westfield Memorial Pool Building and Complex provides necessary services (in the form of temporary shelter) to the community during a disaster. It is critical for these facilities to maintain emergency power until the primary power source is restored.
Life Safety:	This action will provide for the protection of lives by providing persons displaced by severe weather/disaster with temporary shelter from adverse weather conditions.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is political will to support this action.
Legal:	The Town of Westfield has full legal authority to implement this action.
Environmental:	There are no known significant environmental impacts of this action. Environmental regulations do not apply.
Social:	This action presents no known significant social impacts.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	Local Municipal Government
Other Community Objectives:	This project will provide support for the Local Emergency Operations/Disaster Plan.
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Town of Westfield
Likely Funding Source(s):	Future Municipal Government Capital Budget Expenditure
Target State Date:	TBD-based on availability of necessary funding
Timeline:	1 - 5 years
Action Status:	New
Notes:	Cost estimate: TBD

Union County Mitigation Action Worksheets

Community Action Number: 20-09 Westfield, Town of

Describing the Action

Action Name:	Replace and Install a New Roof for Westfield Municipal Building and Police Department to Provide for Continuity of Operations During a Disaster.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Replace and install new roof for Westfield Municipal Building and Police Department to provide for continuity of operations during a disaster.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight
Goals:	3

Evaluating the Action

Risk Reduction:	A new roof is necessary to protect the Westfield Municipal Building and Police Department, which are critical municipal facilities, and support the continuous delivery of local emergency service operations.
Life Safety:	This action provides for the protection of lives by providing protection for critical municipal facilities and supporting the continuous delivery of local emergency service operations.
Property Protection:	This project will provide for the protection of property by providing protection for critical municipal facilities and supporting the continuous delivery of local emergency service operations.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Town of Westfield has full legal authority to implement this action.
Environmental:	There are no known significant environmental impacts of this action.
Social:	This action presents no known significant social impacts.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	Town of Westfield
Other Community Objectives:	This project will provide support for the Local Emergency Operations/Disaster Plan.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Local Municipal Government
Responsible Party:	Town of Westfield
Likely Funding Source(s):	Future Municipal Capital Budget Expenditure
Target State Date:	TBD-based on availability of necessary funding
Timeline:	1 - 5 years
Action Status:	New
Notes:	Cost Estimate: TBD

Union County Mitigation Action Worksheets

Community Action Number: 20-10 Westfield, Town of

Describing the Action

Action Name:	Replace and Install a New Roof for Westfield Department of Public Works (DPW) to Provide for Continuity of Operations During a Disaster.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Replace and install new roof for Westfield DPW to provide for continuity of operations during a disaster.
Hazard(s) Addressed:	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, 23, High Wind–Tornado, High Wind–Strai
Goals:	3

Evaluating the Action

Risk Reduction:	A new roof is necessary to protect the Westfield DPW, which are critical municipal facilities, and support the continuous delivery of local emergency service operations.
Life Safety:	This action provides for the protection of lives by providing protection for critical municipal facilities and supporting the continuous delivery of local emergency service operations.
Property Protection:	This project will provide for the protection of property by providing protection for critical municipal facilities and supporting the continuous delivery of local emergency service operations.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The Town of Westfield has full legal authority to implement this action.
Environmental:	There are no known significant environmental impacts of this action.
Social:	This action presents no known significant social impacts.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	Town of Westfield
Other Community Objectives:	This project will provide support for the Local Emergency Operations/Disaster Plan.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Local Municipal Government
Responsible Party:	Town of Westfield
Likely Funding Source(s):	Future Municipal Capital Budget Expenditure
Target State Date:	TBD
Timeline:	1 - 5 years
Action Status:	New
Notes:	Cost Estimate: TBD

Union County Mitigation Action Worksheets

Community Action Number: 20-11 Westfield, Town of

Describing the Action

Action Name:	Use the Town's Green Development Checklist to Identify Opportunities to Integrate Green Infrastructure into Redevelopment Plans, Especially in the Special Flood Hazard Area (SFHA).
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	All applications for preliminary and final major subdivision approval as well as preliminary and final major site plan approval shall submit a Green Development Checklist, which includes various green development and design strategies to guide and inform the dialogue between an applicant and the Town regarding smart growth and resource efficiency. The checklist includes Low-Impact Design (LID) design features that work to mitigate flooding, drought, and extreme heat.
Hazard(s) Addressed:	Flood, Extreme Temperature, Drought
Goals:	3, 4

Evaluating the Action

Risk Reduction:	In 2020, the entire town of Westfield was designated as an Area in Need of Rehabilitation. Property improvements made as a result of this designation could affect stormwater drainage in flood-prone areas.
Life Safety:	This action will protect lives and prevent injuries by identifying stormwater control measures in new redevelopment areas.
Property Protection:	This action will ensure new structures and infrastructure are protected from future flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The Town has the authority control development through its Planning & Zoning Department.
Environmental:	By encouraging smart growth and green building practices, this action is environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	Planning and Zoning Boards
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Green Development Checklist
Responsible Party:	Planning and Zoning Boards
Likely Funding Source(s):	Municipal Budget
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 20-12 Westfield, Town of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Town has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Town Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 20-13 Westfield, Town of

Describing the Action

Action Name:	Implement the Mitigation Actions from the Resiliency Guidelines prepared by the Center for Climate and Energy Solutions (C2ES) to Adapt to Future Extreme Heat and Flooding Hazards.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	the Town will review the resiliency guidelines prepared by the Center for Climate and Energy Solutions (C2ES) and implement the mitigation actions to adapt to power outages, extreme heat, and flooding.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The Town is vulnerableexteme heat, flooding, and power failures.
Life Safety:	This action will protect lives and prevent injuries by reducing the risk of ingury from extreme heat and flooding.
Property Protection:	This action will protect properties from power failure and flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	Unknown at this time.
Legal:	The Town has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The Town has the personnel and administrative capabilities to implement this action.
Local Champion:	Westfield Green Team
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Sustainable Jersey
Responsible Party:	Westfield OEM
Likely Funding Source(s):	Sustainable Jersey, FEMA HMA, municipal budget depending on the action
Target State Date:	ASAP
Timeline:	Ongoing
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: WESTFIELD, TOWN OF

Name: CHIEF CHRISTOPHER BATTILOMO Title: OEM COORDINATOR

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	YES	MOST RECENT UNDER DEVELOPMENT
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	YES	
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	YES	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	YES	
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	YES	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	YES	
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	YES	
Site Plan Review Requirements: Review of new development applications	YES	All applications for preliminary and final major site plan approval shall submit a Green Development Checklist, which includes various green development and design strategies to guide and inform the dialogue between an applicant and the Town regarding smart growth and resource efficiency. See below for more info.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	YES	All applications for preliminary and final major subdivision approval shall submit a Green Development Checklist, which includes various green development and design strategies to guide and inform the dialogue between an applicant and the Town regarding smart growth and resource efficiency. The checklist includes Low-Impact Design (LID) design features that work to mitigate flooding, drought, and extreme heat.
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	YES	
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	YES	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	YES	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	YES	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	YES	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	NO	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to		

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	No	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	Yes	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	Yes	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters		
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	No	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	No	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	No	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	No	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	No	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	No	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations		
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	YES	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards		
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.		
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community		
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	NO	CERTIFICATION EXPECTED EARLY 2021
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	YES	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	YES	
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	NO	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	YES	
Economic Development Commission: Provides recommendations on economic development policies and issues	NO	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	YES	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	YES	
Engineer: a New Jersey licensed Professional Engineer	YES	
Code Enforcement: Evaluates private properties and public grounds against local codes	YES	
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	YES	
Floodplain Manager: a Certified Floodplain Manager	NO	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	NO	PRESENT STAFF WRITES CURRENT GRANTS
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	YES	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	YES	
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	NO	
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	NO	
Impact fees for new development: Fees paid by a developer to the municipality	YES	NO
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	YES	WE CAN

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program		

What capability would you like your community to gain in the next five to ten years?

WESTFIELD TOWN FLOOD VULNERABILITY

UNION COUNTY HAZARD MITIGATION PLAN

Parcel Classification

- Industrial
- Commercial
- Apartment
- Residential (four families or less)
- Farm
- Unclassified
- Civic/Public (Tax Exempt)
- Vacant
- Open Space

Springfield Township

Mountainside Borough

Cranford Township

Garwood Station

Garwood Borough

Westfield Station

Fanwood Borough

Scotch Plains Township

Clark Township

FEMA FLOOD HAZARD AREAS

1% Annual Chance Flood (SFHA)

- Regulatory Floodway
- Zone A, AE, AO, AH
- Zone VE

0.2% Annual Chance Flood

- Zone X

Undetermined

- Zone D

Flood Hazard Areas are a composite of Effective FIRMs (09/20/2006) and Preliminary FIRMs (2/3/2015 and 4/18/2016)

Michael Baker INTERNATIONAL

Source: FEMA; NJDEP; NJDOT; NJOIT-OGIS; Union County; U.S. Census Bureau

Projection: New Jersey State Plane, NAD 1983

N

0 1,375 2,750 Feet

This map was developed using the State of New Jersey Geographic Information System digital data. All data is provided, as is, without any representation or warranty of any kind.
The State of New Jersey makes great effort to provide secure, accurate, and complete data and metadata. However, portions of the data and metadata may be incorrect or not current.

APPENDICIES VOL I – 21 TOWNSHIP OF WINFIELD

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Municipal Narrative
- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment

MUNICIPAL NARRATIVE

2021 HMP Update Contact:
Frank Mazzarella, PD/OEM

COMMUNITY PROFILE

The Township of Winfield has a total area of 0.17 square miles and is located in central Union County, New Jersey. As of 2018, the population was estimated at 1,574. This is a 5 percent increase from the last plan update, which was estimated at 1,499 (2013). The Township of Winfield has a unique history. The township was incorporated from a section of Clark Township by an Act of the Legislature on August 6th, 1941 in response to the building of a 700-unit Mutual Ownership Defense Housing Project. Winfield Park, designed for the defense workers of Kearny Shipyards, was created to address a housing shortage for workers. Winfield Park would become the last of the Mutual Ownership Defense Housing Projects to be built and occupied and the only one to become its own Township. To date the boundaries have remained unchanged and the residences within the Township were originally part of Winfield Park.

The Winfield Park Mutual Housing Corporation purchased Winfield Park from the federal government in 1950. The company still owns the residences within the development and is responsible for taxes that support the municipal government. The Township is governed by a three-person committee that is elected by staggered partisan elections after three-year terms. The Township Mayor is selected by the committee each January. Winfield Township is not located within FEMA's Special Flood Hazard Area (SFHA) and at the time of this plan update, did not have any Repetitive Loss (RL) or Severe Repetitive Loss (SRL) properties.

1.1 NATIONAL FLOOD INSURANCE PROGRAM (NFIP) STATISTICS

Winfield	
Number of Policies In-Force:	0
Total Losses:	7
Total Payments:	$128,924
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	0
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	0

Source: FEMA Policy and Loss Data, July 2019 and Repetitive Loss and Severe Repetitive Loss Data, June 2018.

HAZARD IDENTIFICATION

Since the last Union County HMP, Winfield has experienced no hazard events.

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Township's hazard ranking. The full risk assessment for each hazard is located in Section 7.0.

Hazard	Priority
Extreme Temperature – Cold	High
Extreme Temperature – Heat	High
Severe Storm – Winter Weather (Includes Ice Storms)	High
Straight-Line Winds	High
Drought	Medium
Severe Storm – Lightning	Medium
Dam Failure	Low
Earthquake / Geological	Low
Erosion	Low
Flood	Low
Hail	Low
Hazardous Release Material – Fixed Site	Low
Hazardous Release Material – Transportation	Low
High Wind – Tornado	Low
Landslide (Non-Seismic)	Low
Storm Surge	Low
Wildfire	Low
Animal Disease	Low
Civil Unrest	Low
Cyber Attack	Low
Economic Collapse	Low
Nuclear Hazard	Low
Pandemic	Low
Terrorism	Low

CHANGES IN LAND USE/LAND COVER

NJDEP's 2012 Land Use/Land Cover was updated on February 17, 2015 and published in 2019. This data is formed using digital imagery and represents a snapshot in time of land cover. The following table reflects the changes in land cover from 2012 to 2015. The previous plan documented the change in land cover between 2002 and 2007. Within this appendix, there are also flood vulnerability maps which use the New Jersey Property Tax System, known as MOD VI data, to classify land use at the time the property was assessed. The flood vulnerability maps explore the relationship between land use and flood risk.

Land Use/Land Cover Classification	2012 (Acres)	2015 (Acres)	Percent Change
Agriculture	0.00	0.00	0.00%
Barren Land	0.00	0.00	0.00%
Forest	2.99	2.99	0.00%
Urban	111.93	111.93	0.00%
Water	0.00	0.00	0.00%
Wetlands	0.00	0.00	0.00%

Source: NJDEP Land Use/Land Cover, 2019

FUTURE DEVELOPMENT

The Township is completely built out; no new development or redevelopment is planned at the time of this plan update.

CRITICAL FACILITIES

The Township of Winfield has six critical facilities, none of which are located in the SFHA. The list of critical facilities is part of the confidential section of this HMP.

SUCCESSFUL PAST MITIGATION ACTIONS

The Township has completed one mitigation action since the last plan update:

- 21-02: Add NIXLE as an Emergency Messaging System to Enhance Emergency Communications Capabilities.

SUCCESSES IN MUNICIPAL CAPABILITIES

The Township of Winfield did not note any Planning & Regulatory capabilities beyond minimum Federal and State requirements.

The complete Mitigation Strategy and Capability Assessment for the Winfield Township is part of this appendix.

Winfield, Township of

Union County HMP Mitigation Action Summary

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
21-01	Conduct An All-hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.	Conduct an all- hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	Low	OEM Coordinator, in coordination with SCOEM	Municipal budget		1 year	Ongoing
21-02	Add NIXLE as an Emergency Messaging System to Enhance Emergency Communications Capabilities.	Add NIXLE as emergency messaging system to enhance emergency communications capabilities.	Administrative	Education and Awareness Programs	All Hazards		OEM		$0.00		Completed
21-03	Coordinate with Winfield Mutual Housing Corporation to Develop MOUs for Sheltering Options.	The shelters for consideration are the Winfield Mutual Housing Corporation building and the John Buckets building.	Administrative	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Low	OEM	Existing State and Federal Grants; Existing municipal resources	$0.00	2 years	Carried Forward
21-04	Purchase and Install a Generator for Community Center to Serve as a Potential Shelter.	Purchase and install a generator for the Community Center. A generator would allow the community center to serve as a temporary shelter during a disaster.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Medium	OEM	Existing State and Federal Grant Programs	$650,000.00	3 - 5 years	Carried Forward
21-05	Investigate Alternative Snow Removal Strategies to Ensure Roadway Safety During Winter Weather Events.	Investigate alternative snow removal strategies to ensure roadway safety during winter weather events.	Administrative	Local Plans and Regulations	Severe Storm–Winter Weather (Ice Storm)	Low	OEM	Existing municipal resources	$0.00	1 year	Carried Forward
21-06	Purchase and Install Generators or Provide Connections for Portable Generators for All Critical Facilities Identified in the Emergency Operations Plan (EOP) to Ensure Continuity of Operations During a Disaster.	Purchase and install generators or provide connections for portable generators for all critical facilities identified in the EOP to ensure continuity of operations during a disaster.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Medium	OEM	Existing State and Federal Grant Programs	$0.00	3 - 5 years	Carried Forward
21-07	Upgrade Facilities for Potential Heating and Cooling Centers to Protect Persons from Extreme Temperature Events.	Upgrade facilities for potential heating and cooling centers to protect persons from extreme temperature events. Facilities under consideration are the Senior Center and Community Center.	Mitigation - Continuity of Functional Use	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature	High	OEM	Existing State and Federal Grant Programs	$0.00	1 year	Carried Forward

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
21-08	Purchase and Install a Generator for Winfield Elementary School to Ensure Continuity of Operations During a Disaster.	Purchase and install a generator for Winfield Elementary School to ensure continuity of operations during a disaster.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Medium	OEM	Existing State and Federal Grant Programs	$650,000.00	3 - 5 years	Carried Forward
21-09	Install Back-Up Power Source for Communications Repeater.	Install back-up power source for communications repeater.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature		OEM		$200,000.00		Withdrawn
21-10	Join the National Flood Insurance Program (NFIP) to Strengthen Floodplain Management Practices.	Join the NFIP to strengthen floodplain management practices.	Administrative	Local Plans and Regulations	Flood	Low	OEM	Existing municipal resources	$0.00	1 - 3 years	Carried Forward
21-11	Improve Drainage in Low-Lying Areas along Passaic Dr. to Reduce Stormwater Flooding.	Improve drainage in low-lying areas along Passaic Dr. to reduce stormwater flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	OEM and Housing Corp	Existing State and Federal Grant Programs	$0.00	2 years	Ongoing
21-12	Target Harden the Town Hall Building (Police Department) and Fire Department Buildings with Surveillance Cameras	Purchase and install surveillance cameras at the Town Hall (Police Department) and Fire Department.	Maintenance/Response/Recovery	Structure and Infrastructure Project	Terrorism	Medium	OEM	Homeland Security grants, Municipal budget	$0.00	1 year	New
21-13	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	There are currently no RL or SRL properties in the Township; however, the Township realizes the floodplain changes over time and the risk is always present. If in the next five years properties become RL/SRL, the Township will coordinate with residents to mitigate properties through structure elevation, demolition to open space, or another type of mitigation.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township and Property Owners	FEMA HMA	$0.00	Ongoing	New
21-14	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.	Administrative	Local Plans and Regulations	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 year	New

Union County Mitigation Action Worksheets

Community Action Number: 21-01 Winfield, Township of

Describing the Action

Action Name:	Conduct An All-Hazards Public Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct an all- hazards public education and outreach program for hazard mitigation and preparedness.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	The general public's understanding of natural hazards and mitigation possibilities could be improved. The community's overall level of disaster resilience would increase if a greater number of households undertook low-cost or no-cost, small scale mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	This action is cost effective.
Technical:	This action is technically feasible.
Political:	There is public support for the mitigation action.
Legal:	The Township has the authority to implement the action.
Environmental:	There are no potential environmental impacts of the action.
Social:	The proposed action does not adversely affect one segment of the population.
Administrative:	The Township has the administrative capability to implement this action.
Local Champion:	Police/OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	
Priority:	Low
Local Planning Mechanism:	Emergency Management
Responsible Party:	OEM Coordinator, in coordination with SCOEM
Likely Funding Source(s):	Municipal budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Cost estimate: Staff time The Township continues to work with residents in response and preparation for storm events.

Union County Mitigation Action Worksheets

Community Action Number: 21-02 Winfield, Township of

Describing the Action

Action Name:	Add NIXLE as an Emergency Messaging System to Enhance Emergency Communications Capabilities.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Add NIXLE as emergency messaging system to enhance emergency communications capabilities.
Hazard(s) Addressed:	All Hazards
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Existing municipal resources
Responsible Party:	OEM
Likely Funding Source(s):	
Target State Date:	2016
Timeline:	
Action Status:	Completed
Notes:	Completed using municipal funds.

Union County Mitigation Action Worksheets

Community Action Number: 21-03 Winfield, Township of

Describing the Action

Action Name:	Coordinate with Winfield Mutual Housing Corporation to Develop MOUs for Sheltering Options.
Action Category:	Administrative
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	The shelters for consideration are the Winfield Mutual Housing Corporation building and the John Buckets building.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature
Goals:	3

Evaluating the Action

Risk Reduction:	Additional shelters are necessary to provide temporary shelter to displaced persons during a disaster.
Life Safety:	This action protects lives and prevents injuries by providing temporary shelter to displaced persons during a disaster.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township needs to work with the Winfield Mutual Housing Corporation since the company owns the residences within the Township.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Township needs to work with the Winfield Mutual Housing Corporation since the company owns the residences within the Township.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing State and Federal Grants; Existing municipal resources
Target State Date:	2020
Timeline:	2 years
Action Status:	Carried Forward
Notes:	This action is carried over from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-04 Winfield, Township of

Describing the Action

Action Name:	Purchase and Install a Generator for Community Center to Serve as a Potential Shelter.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator for the Community Center. A generator would allow the community center to serve as a temporary shelter during a disaster.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature
Goals:	4

Evaluating the Action

Risk Reduction:	The Community Center has the potential to be used as a temporary shelter for displaced persons during a disaster.
Life Safety:	This action protects lives and prevents injuries by providing for a new temporary shelter for displaced persons during a disaster.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$650,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing State and Federal Grant Programs
Target State Date:	2020
Timeline:	3 - 5 years
Action Status:	Carried Forward
Notes:	This action is carried over from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-05 Winfield, Township of

Describing the Action

Action Name:	Investigate Alternative Snow Removal Strategies to Ensure Roadway Safety During Winter Weather Events.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Investigate alternative snow removal strategies to ensure roadway safety during winter weather events.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm)
Goals:	3

Evaluating the Action

Risk Reduction:	Icy and snow-covered roads during storms create dangerous road conditions.
Life Safety:	Alternative snow removal strategies may create safer road conditions during winter weather events.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action.
Social:	This action will involve all segments of the population.
Administrative:	The Township may need to coordinate with the Winfield Mutual Housing Corporation since the company owns the residences within the Township. The Township may also need to coordinate with Union County if County roads are involved.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing municipal resources
Target State Date:	2020
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Estimated cost: staff time This action is carried over from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-06 Winfield, Township of

Describing the Action

Action Name:	Purchase and Install Generators or Provide Connections for Portable Generators for All Critical Facilities Identified in the Emergency Operations Plan (EOP) to Ensure Continuity of Operations During a Disaster.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install generators or provide connections for portable generators for all critical facilities identified in the EOP to ensure continuity of operations during a disaster.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature
Goals:	4

Evaluating the Action

Risk Reduction:	Critical facilities provide necessary services to the community during a disaster. It is critical for these facilities to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by ensuring the continuity of operations at critical facilities during a disaster despite a power outage.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will involve all segments of the population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing State and Federal Grant Programs
Target State Date:	2020
Timeline:	3 - 5 years
Action Status:	Carried Forward
Notes:	Estimated cost: varies This action is carried forward from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-07 Winfield, Township of

Describing the Action

Action Name:	Upgrade Facilities for Potential Heating and Cooling Centers to Protect Persons from Extreme Temperature Events.
Action Category:	Mitigation - Continuity of Functional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Upgrade facilities for potential heating and cooling centers to protect persons from extreme temperature events. Facilities under consideration are the Senior Center and Community Center.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature
Goals:	4

Evaluating the Action

Risk Reduction:	Adı itional heating and cooling centers in the Township are necessary to adequately protect persons from extreme heat and extreme cold events.
Life Safety:	This action protects lives by providing temporary shelter for persons exposed to potentially deadly extreme temperature conditions.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action.
Social:	This action will involve all segments of the population.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing State and Federal Grant Programs
Target State Date:	2020
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Estimated cost: Pending This action is carried forward from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-08 Winfield, Township of

Describing the Action

Action Name:	Purchase and Install a Generator for Winfield Elementary School to Ensure Continuity of Operations During a Disaster.
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a generator for Winfield Elementary School to ensure continuity of operations during a disaster.
Hazard(s) Addressed:	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature
Goals:	4

Evaluating the Action

Risk Reduction:	Winfield Elementary School provides necessary services to the community during a disaster. It is critical for this facility to maintain emergency power until the primary power source is restored.
Life Safety:	This action will protect lives and prevent injuries by ensuring that the school can remain operational during a disaster despite a power outage.
Property Protection:	This action is not related to property protection.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible; however, it is not a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township may need to coordinate with the Board of Education.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group, but it specifically benefits elementary school children. Children are considered to be a socially vulnerable population.
Administrative:	The Township may need to coordinate with the Board of Education.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$650,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing State and Federal Grant Programs
Target State Date:	2020
Timeline:	3 - 5 years
Action Status:	Carried Forward
Notes:	This action is carried forward from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-09 Winfield, Township of

Describing the Action

Action Name:	**Install Back-Up Power Source for Communications Repeater.**
Action Category:	**Maintenance/Response/Recovery**
Action Type:	**Structure and Infrastructure Project**
HMA Eligible:	
Action Description:	**Install back-up power source for communications repeater.**
Hazard(s) Addressed:	**Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature**
Goals:	

Evaluating the Action

Risk Reduction:	
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	**$200,000.00**
Priority:	
Local Planning Mechanism:	**Existing State and Federal Grant Programs**
Responsible Party:	**OEM**
Likely Funding Source(s):	
Target State Date:	**2016**
Timeline:	
Action Status:	**Withdrawn**
Notes:	**This action has been withdrawn. Communications now go through the County.**

Union County Mitigation Action Worksheets

Community Action Number: 21-10 Winfield, Township of

Describing the Action

Action Name:	Join the National Flood Insurance Program (NFIP) to Strengthen Floodplain Management Practices.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Join the NFIP to strengthen floodplain management practices.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	While Winfield Township is currently not located in a flood zone, this could change in the future.
Life Safety:	This action will protect lives and prevent injuries by increasing the floodplain management capacity of the Township.
Property Protection:	This action will allow Winfield Township residents to purchase NFIP flood insurance policies on their property.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Existing municipal resources
Target State Date:	2020
Timeline:	1 - 3 years
Action Status:	Carried Forward
Notes:	This action is carried forward from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-11 Winfield, Township of

Describing the Action

Action Name:	Improve Drainage in Low-Lying Areas along Passaic Dr. to Reduce Stormwater Flooding.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Improve drainage in low-lying areas along Passaic Dr. to reduce stormwater flooding.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Passaic Dr. will flood during extreme heavy events due to poor piping infrastructure.
Life Safety:	This action will reduce the potential for injuries and fatalities as a result of stormwater flooding on Passaic Dr.
Property Protection:	This action will reduce the potential for structural damage from stormwater flooding on Passaic Dr. It will also improve stormwater infrastructure in the community.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township must coordinate with Winfield Mutual Housing Corp.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township must coordinate with Winfield Mutual Housing Corp.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM and Housing Corp
Likely Funding Source(s):	Existing State and Federal Grant Programs
Target State Date:	2020
Timeline:	2 years
Action Status:	Ongoing
Notes:	Estimated cost: staff resources Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 21-12 Winfield, Township of

Describing the Action

Action Name:	Target Harden the Town Hall Building (Police Department) and Fire Department Buildings with Surveillance Cameras
Action Category:	Maintenance/Response/Recovery
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Purchase and install surveillance cameras at the Town Hall (Police Department) and Fire Department.
Hazard(s) Addressed:	Terrorism
Goals:	4

Evaluating the Action

Risk Reduction:	Winfield Township has noted an increased risk of terrorism in their community.
Life Safety:	This action will protect lives and prevent injuries by deterring acts of terrorism.
Property Protection:	This action will protect structures and infrastructure by deterring acts of terrorism.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	OEM
Likely Funding Source(s):	Homeland Security grants, Municipal budget
Target State Date:	TBD
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 21-13 Winfield, Township of

Describing the Action

Action Name:	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	There are currently no RL or SRL properties in the Township; however, the Township realizes the floodplain changes over time and the risk is always present. If in the next five years properties become RL/SRL, the Township will coordinate with residents to mitigate properties through structure elevation, demolition to open space, or another type of mitigation.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Although the Township does not currently have a FEMA-defined floodplain area, it may in the future.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminate their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The Township has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Township and Property Owners
Likely Funding Source(s):	FEMA HMA
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 21-14 Winfield, Township of

Describing the Action

Action Name:	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinance is located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Hazard(s) Addressed:	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	3

Evaluating the Action

Risk Reduction:	Stormwater management measures achieve flood control, groundwater recharge, and pollutant reduction. The new Stormwater Management Rules promote green infrastructure and low impact development, which reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution.
Life Safety:	This action will protect lives and prevent injuries by controlling flooding and reducing erosion.
Property Protection:	This action will prevent structure and infrastructure damage from future flooding and erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The Township has the authority to implement this action.
Environmental:	This action is environmentally beneficial. All environmental regulations will be followed.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	NJ OEM
Other Community Objectives:	Improve water quality
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Stormwater Control Ordinance
Responsible Party:	Township Council
Likely Funding Source(s):	Municipal Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Township of Winfield

Name: Frank D. Mazzarella Title: OEM Coordinator

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	N	
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Y	
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	N	
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Y	
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	Y	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Y	
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities		
Site Plan Review Requirements: Review of new development applications	N	
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	N	
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	N	
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	N	
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Y	

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	N	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	N	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	N	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
anticipate, increase awareness, plan for, build momentum and adapt to a changing climate		
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	N	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	N	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	N	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	N	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	N	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	N	
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	N	
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	N	
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	N	
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential	N	

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
buyers of the hazard vulnerability of their property and/or structure before the sale		

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	N	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Y	
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	N	
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	N	
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	N	
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	N	
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	N	

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	N	
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	N	
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	N	
Economic Development Commission: Provides recommendations on economic development policies and issues	N	
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	N	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	N	
Engineer: a New Jersey licensed Professional Engineer	Y	Part-Time
Code Enforcement: Evaluates private properties and public grounds against local codes	Y	Part-Time
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	Y	Part-Time
Floodplain Manager: a Certified Floodplain Manager	N	

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	N	
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	N	

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	N	N
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development Block Grants, US Department of Energy, US Department of Transportation, etc.	N	N
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	N	N
Impact fees for new development: Fees paid by a developer to the municipality	N	N
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	N	N

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	N	N

What capability would you like your community to gain in the next five to ten years?

APPENDICIES VOL I – 22 UNION COUNTY

This appendix includes the following documents specific to this jurisdiction that have been updated as part of the plan update process:

- Mitigation Action Summary
- Mitigation Action Worksheets
- Capability Assessment

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-01	Develop All Hazards Public and Municipal Official Education and Outreach Program for Hazard Mitigation and Preparedness.	Develop all hazards public and municipal official education and outreach program for hazard mitigation and preparedness. Reach out to municipal Floodplain Administrators and Departments of Planning, Public Works, Engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes. Conduct direct outreach and education to municipal OEMs and other potential participants in plan maintenance and future Plan updates. Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B). Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).	Administrative	Education and Awareness Programs	All Hazards	High	Union County and municipal OEMs	County Budget	$0.00	1 year	Ongoing
22-02	Conduct Evacuation Exercises with and for Local Office of Emergency Management (OEM) Personnel and Private Citizens.	Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens.	Administrative	Education and Awareness Programs	All Hazards	Medium	UC OEM	County Budget	$0.00	1 year	Ongoing
22-03	Conduct Yearly Workshops Related to FEMA Hazard Mitigation Grant Programs.	Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, BRIC, SRL, and RFC. Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects. Increase awareness that the Pre-Disaster Mitigation (PDM) program was replaced by the Building Resilient Communities and Infrastructure (BRIC) program in 2020 and what the new grant criteria are.	Administrative	Education and Awareness Programs	All Hazards	High	UCOEM, NJOEM	Existing State Assets, County Budget	$0.00	Ongoing	Ongoing
22-04	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.	Administrative	Education and Awareness Programs	All Hazards		UCOEM and municipal coordinators		$0.00		Withdrawn
22-05	Develop and Maintain Relationships with Organizations that Can Provide Technical Information and/or Assistance in the Areas of Hazard Identification and Risk Assessment.	Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment. As of February 2021, New Jersey Municipal Land Use Law now requires the inclusion of climate change-related hazard vulnerability assessments in the Land Use Plan Element of municipal Master Plans. Union County will ensure municipalities have the assistance they need to perform these assessments.	Administrative	Education and Awareness Programs	All Hazards	Medium	UCOEM, Rutgers University, New Jersey Geological Survey (NJGS), National Oceanic	County Budget	$0.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-06	Undertake Site-Specific Studies To Better Characterize Flood Risks to Areas With Extensive Flood Loss Histories.	Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories.	Administrative	Local Plans and Regulations	Flood	High	UCOEM	County Budget	$0.00	Ongoing	Ongoing
22-07	Coordinate with State Efforts to Undertake Detailed Vulnerability Assessments, Develop Mitigation Options for Critical Facilities in A and AE Zones, and Implement Mitigation Projects and Programs Intended To Reduce Risk To Critical Facilities.	Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation actions for County and State-owned Critical Facilities in FEMA's A and AE Flood Zones. Implement mitigation projects and programs intended to reduce risk to critical facilities.	Administrative	Local Plans and Regulations	Flood	Medium	Union County and municipal OEMs	County Budget	$0.00	1 - 5 years	Carried Forward
22-08	Use Best Possible Flood Data, including DFIRM and Map Mod Data, If Available, in Next Plan Update. Track Implementation of Risk MAP Initiative to Ensure Union County and Municipalities Gain Full Advantage of Opportunities Under This Program.	Use best possible flood data, including DFIRM and Map Mod data, if available, in next plan update. Track implementation of Risk MAP initiative to ensure Union County and municipalities gain full advantage of opportunities under this program.	Administrative	Local Plans and Regulations	Flood	High	Union County and municipal OEMs	County Budget	$0.00	3 years	Ongoing
22-09	Continuously Update and Verify Status of Repetitive Loss and Severe Repetitive Loss Lists from the NFIP and Work with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.	Continuously update and verify status of repetitive loss and severe repetitive loss lists from the NFIP. Encourage and support mitigation of RL/SRL properties through the use of cluster solutions and/or basin projects, as appropriate.	Administrative	Local Plans and Regulations	Flood	High	Union County and municipal OEMs	FEMA HMA, other Federal grants, Green Acres, other Open Space Funding	$0.00	Ongoing	Ongoing
22-10	Coordinate with State Effort to Survey Wind Vulnerabilities Using a Prioritized List of State, County, and Local Facilities and Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds.	Using a prioritized list of state, county, and local facilities, coordinate with state effort to survey wind vulnerabilities, based on criteria such as age of the facility, value of operations, proximity to the coast, etc. Conduct wind risk assessments on a limited number of high-priority facilities that appear to be vulnerable to high winds. Assessments will use standard FEMA guidelines, procedures, and software, including the wind hazard database.	Administrative	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds	Low	UCOEM, NJOEM, with cooperation of other agencies that own and/or operate the	County Budget	$0.00	1 year	Carried Forward

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-11	Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds. Assessments Will Use Standard FEMA Guidelines, Procedures, and Software, Including the Wind Hazard Database.	Conduct wind risk assessments on a limited number of high-priority facilities that appear to be vulnerable to high winds. Assessments will use standard FEMA guidelines, procedures, and software, including the wind hazard database.	Administrative	Structure and Infrastructure Project	High Wind–Tornado, High Wind–Straight-Line Winds		UCOEM, municipal OEMs		$0.00		Withdrawn
22-12	Coordinate with State Efforts to Conduct Wildfire Risk Assessments for Areas and Assets that are Determined to Have the Most Hazard (Fuel Load, etc.) Potential, and the Most Vulnerable Structures, Populations, or Operations.	Coordinate with state efforts to conduct wildfire risk assessments for areas and assets that are determined to have the most hazard (fuel load, etc.) potential, and the most vulnerable structures, populations, or operations.	Administrative	Local Plans and Regulations	Wildfire	Low	UCOEM, New Jersey Forest Fire Service, outside engineering consultants	County Budget, Potential FEMA grants to conduct studies as indicated	$0.00	Ongoing	Carried Forward
22-13	Collect Data on Hazardous Material Sites; Integrate with Most Current Information About Risk Factors; and Perform a GIS Analysis and Mapping of Potential Areas of Impact.	Maintain effective coordination and information sharing related to hazardous material sites with NJOEM and the Right to Know (RTK) Network. Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics. Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.	Administrative	Local Plans and Regulations	Hazardous Materials Release	Medium	UCOEM, RTK Network, NJOEM.	County Budget	$0.00	Ongoing	Ongoing
22-14	Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.	Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.	Administrative	Local Plans and Regulations	Hazardous Materials Release		UCOEM		$0.00		Withdrawn
22-15	Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics.	Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics.	Administrative	Local Plans and Regulations	Hazardous Materials Release		UCOEM, RTK Network, NJDEP, USEPA		$0.00		Withdrawn

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-16	Work with Appropriate Agencies to Identify Specific Areas that are Vulnerable to Storm Effects, Then Inventory Assets and Populations in These Areas as the Basis for a Risk Calculation.	Work with appropriate agencies to identify specific areas that are vulnerable to storm effects, then inventory assets and populations in these areas as the basis for a risk calculation.	Administrative	Local Plans and Regulations	All Hazards	Medium	UC OEM	County Budget	$0.00	3 years	Ongoing
22-17	Undertake More Detailed Engineering Study of Clark Reservoir Dam, Which May Pose a Risk Downstream.	Undertake more detailed engineering study of Clark Reservoir Dam, which may pose a risk downstream.	Administrative	Local Plans and Regulations	Dam Failure	Low	UCOEM with NJDEP, NJOEM	FEMA HHPD Funding	$75,000.00	Ongoing	Ongoing
22-18	Obtain Additional Information About Surge Hazards and the Assets, Populations, and Functions in Identified Surge Zones in Areas of Significant Risk.	In areas that are determined to have significant risk (based on preliminary study), initiate an effort to obtain additional information about (1) surge hazards, including modeling, to the extent that more information is needed and (2) the assets, populations, and functions in identified surge zones.	Administrative	Local Plans and Regulations	Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	UCOEM with cooperation from NJDEP and potentially USACE. Some	Projected Resources: Possibility of cooperation from state and federal agencies	$0.00	2 years	Ongoing
22-19	Identify and Map Erosion Hazard Zones Through Detailed Study.	Conduct detailed study to identify and map erosion hazard zones.	Administrative	Local Plans and Regulations	Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Union County and municipal OEMs	FEMA, NJDEP	$0.00	4 years	Ongoing
22-20	Participate in Training and Workshops.	Participate in training and workshops.	Administrative	Education and Awareness Programs	All Hazards	High	Union County and municipal OEMs, NJOEM, New Jersey Forest Fire Service	County Budget- not FEMA Funded	$0.00	Ongoing	Ongoing
22-21	Develop Critical Facilities Inventory Database and a Simple GIS Platform, or Build Upon an Existing Platform, to Maintain and Analyze Critical Facilities Inventories and Information about Hazards.	Develop a database inventory of critical facilities countywide (county-, local-, and privately-owned), including fire and police stations, medical facilities, major public buildings important for emergency response and recovery, and critical lifeline transportation and utility nodes such as bridges, water treatment plants, wastewater treatment plants, high voltage electric substations, and hazardous materials facilities. Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.	Administrative	Local Plans and Regulations	All Hazards	High	UCOEM	County Budget	$0.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-22	Offer Technical Support to Help Municipalities Meet FEMA HMA Requirements and Provide Current Information on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties to Encourage Making RL and SRL Property Mitigation a High Priority Among Municipalities.	Continue working with the State, as well as local jurisdictions, to encourage local cooperation in making Repetitive Loss (RL) and Severe Repetitive Loss (SRL) property mitigation a high priority, and to offer municipalities technical support in carrying out the requirements of FEMA mitigation programs as well as current information related to RL and SRL properties.	Administrative	Local Plans and Regulations	Flood	High	UCOEM	County Budget	$0.00	Ongoing	Ongoing
22-23	Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.	Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.	Administrative	Education and Awareness Programs	All Hazards		UCOEM, NJOEM, FEMA Region II	Existing Resources, Mitigation Grant	$0.00		Withdrawn
22-24	Conduct direct outreach and education to municipal OEMs and other potential participants in Plan Maintenance and future Plan updates	Conduct direct outreach and education to municipal OEMs and other potential participants in Plan Maintenance and future Plan updates	Administrative	Education and Awareness Programs	All Hazards		UCOEM	Existing Resources	$0.00		Withdrawn
22-25	Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B).	Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B).	Administrative	Education and Awareness Programs	Flood		Union County Economic Development Corporation / UCOEM	Existing Resources	$0.00		Withdrawn
22-26	Encourage Municipalities to Participate in the CRS Program, Including Potentially Setting Up CRS Site Visits and/or Workshops for Interested Jurisdictions.	Encourage municipalities to participate in the CRS program, including potentially setting up CRS site visits and/or workshops for interested jurisdictions.	Administrative	Education and Awareness Programs	Flood	High	UCOEM, NJOEM	Existing Resources	$0.00	2 years	Ongoing
22-27	Encourage Municipalities to Include Identification and Prioritization of Actions Related to Future Participation In and Compliance With the NFIP.	Encourage municipalities to include identification and prioritization of actions related to future participation in and compliance with the NFIP.	Administrative	Local Plans and Regulations	Flood	High	Union County and municipal OEMs	County Budget	$0.00	Ongoing	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-28	Encourage the Integration of Floodplain Management and Hazard Mitigation Practices with Zoning, Subdivision Ordinances, Comprehensive Planning, and Other Land Use Tools and the Municipal Level.	Encourage the integration of floodplain management and hazard mitigation practices with zoning, subdivision ordinances, comprehensive planning, and other land use tools at the municipal level. Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities.	Administrative	Local Plans and Regulations	Flood	High	Union County Economic Development Department/UCOEM	Existing resources and Federal grant funds (FEMA Community Assistance Program-State Support Services	$0.00	Ongoing	Ongoing
22-29	Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.	Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.	Administrative	Education and Awareness Programs	All Hazards		New Jersey League of Municipalities	Existing Staff	$0.00		Withdrawn
22-30	Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.	Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.	Administrative	Local Plans and Regulations	All Hazards	High	UCOEM in cooperation with state or county agencies	Existing resources and staff	$0.00	1 year	Withdrawn
22-31	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.	Administrative	Local Plans and Regulations	All Hazards	Medium	UCOEM	County Budget	$0.00	Ongoing	Ongoing
22-32	Increase Transparency of Plan Maintenance on County Website.	Provide regular summaries to neighboring communities about plan monitoring and update procedures as required. Post updates on Union County's website for public access to the plan update process.	Administrative	Local Plans and Regulations	All Hazards	Medium	UCOEM	County Budget	$0.00	Ongoing	Ongoing
22-33	Continue Working with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.	Encourage and support mitigation of RL/SRL properties through the use of cluster solutions and/or basin projects, as appropriate.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Union County, local municipalities			Ongoing	Withdrawn

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-34	Implement mitigation projects and programs intended to reduce risk to critical facilities.	See action plan within individual municipal appendices for further detail.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards		Varied	Federal grants, other state and local sources	$0.00		Withdrawn
22-35	Integrate Hazard Mitigation Priorities into Transportation Planning and Other Capital Planning.	Integrate hazard mitigation priorities into transportation planning and other capital planning.	Administrative	Local Plans and Regulations	All Hazards	Medium	UCOEM, County Engineering, County Economic Development Department	Existing County Resources	$0.00	Ongoing	Ongoing
22-36	Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).	Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).	Administrative	Education and Awareness Programs	All Hazards		Union County OEM	Union County OEM	$0.00		Withdrawn
22-37	Implement a Training for Using GIS Interface on Tablets in the Field.	Training for using GIS interface on tablets in the field.	Administrative	Education and Awareness Programs	All Hazards	High	Union County OEM	County Budget	$0.00	2 - 4 years	Ongoing
22-38	Inspect All Levees on County Property as Part of Dam Inspections.	Inspect all levees on county property as part of dam inspections.	Administrative	Local Plans and Regulations	Dam Failure	Medium	Union County Engineering	County Budget	$0.00	5 + years	Ongoing
22-39	Coordinate with Towns to Ensure Extended Care Facilities have Back-Up Power or Quick Connects.	Work with towns to ensure extended care facilities have back-up power or quick connects.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	All Hazards	Medium	Union County OEM/Engineering	County Budget	$0.00	1 year	Ongoing
22-40	Improve Options for Power Redundancy within Union County.	Improve options for power redundancy within Union County.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	Medium	Union County OEM/Engineering	County Budget	$0.00	5 + years	Ongoing
22-41	Purchase Portable Generators for Use During Power Failure.	Purchase portable generators for use during power failure.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	All Hazards	High	Union County OEM	County Budget	$0.00	2 years	Ongoing

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-42	Purchase and Install a Generator for the Public Works Building.	Purchase and Install a Generator for the Public Works Building.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	All Hazards	High	Department of Public Works		$0.00		Completed
22-43	Identify Suitable Shelter Venues to Temporarily House Displaced Persons and Store Disaster Aid Materials.	Identify suitable shelter venues to temporarily house displaced persons and store disaster aid materials. An example of a venue is the Emergency Center in Kearny that keeps disaster aid materials on hand. While the physical space is there to expand for other uses, the site is located in a floodplain (above BFE). Other venues outside of the floodplain need to be identified.	Administrative	Local Plans and Regulations	All Hazards	Medium	Union County OEM, Union County Department of Planning	Union County OEM	$0.00	2 years	Ongoing
22-44	Perform an Engineering Study to Determine the Feasibility and Cost of Siting a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	Perform an engineering study to determine the feasibility and cost of siting a Black start engine near the UCUA incinerator for power grid redundancy. One possible site for the engine is the nearby site of historic fill that would need to be removed for this project.	Administrative	Local Plans and Regulations	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Hazardous Materials Release	Low	Union County Utilities Authority	FEMA HMA (BRIC funding)	$0.00	1 - 5 years	New
22-45	Purchase and Install a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	Purchase and install a black start engine near the UCUA incinerator for power grid redundancy. One possible site for the engine is the nearby site of historic fill that would need to be removed for this project.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Hazardous Materials Release	High	Union County Utilities Authority	FEMA HMA (BRIC funding)	$0.00	1 - 5 years	New
22-46	Create a Stand Alone 9-1-1 Center to Support Police, Fire, and EMS Services Across the County.	Create either a back-up or full-time stand-alone 9-1-1 center to support countywide police, fire, and EMS services.	Mitigation - Risk Reduction	Structure and Infrastructure Project	All Hazards	High	Union County Public Safety and Police	FEMA HMA	$0.00	1 - 5 years	New
22-47	Purchase and Install a New Radio Tower and Communications Infrastructure.	Purchase a new radio tower and improve the communications infrastructure. Site improvements include a fire break, better access roads to the site, and at the very minimum improved security at the site. The tower was reinforced five years ago to bring it up to current specifications, but adding a new tower may be beneficial.	Mitigation - Continuity of Fuctional Use	Structure and Infrastructure Project	Power Failure, Wildfire, High Wind–Straight-Line Winds	High	Union County Public Safety and Police	Homeland Security grants	$0.00	1 - 5 years	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-48	Install a Fiber Loop Throughout Each Municipal Complex in Union County to Provide Enhanced Communication Between Government Facilities, Ensure Continuity of Operations During Power Failure and Enhance Security to Prevent Against a Cyber Attack.	Install a fiber loop throughout each municipal complex in Union County to provide enhanced communication between government facilities, ensure continuity of operations during power failure, and enhance security to prevent against a cyber attack.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Power Failure, Cyber Attack	High	Union County Public Safety and Police	FEMA HMA (BRIC funding)	$0.00	1 - 5 years	New
22-49	Implement the Findings of the Union County Truck Mobility Study to Ensure All Populations Can Safely Access Evacuation Routes.	Implement the findings of the Union County Truck Mobility Study to ensure all populations can safely access evacuation routes.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Union County Department of Planning	County Budget	$0.00	1 - 5 years	New
22-50	Consider Access and Mobility for Socially Vulnerable Populations and Disaster Resilience When Designing Transportation Infrastructure.	Consider access and mobility for socially vulnerable populations and disaster resilience when designing transportation infrastructure. Possible projects include integrating stormwater design as a part of complete streets, redesigning streets to accommodate pandemic precautions, mitigating flood risk to new transportation infrastructure, and improving paratransit.	Administrative	Local Plans and Regulations	All Hazards	Low	Union County Department of Planning	County Budget, NJEIT, NJTIB	$0.00	1 - 5 years	New
22-51	Implement Mitigation Actions from the Confidential Site Assessment Report by the New Jersey Office of Homeland Security and Preparedness (NJOHSP) for Union County Buildings.	Implement mitigation activities for four Union County buildings regarding updating and enhancing security measures. These mitigation activities were noted in a confidential site assessment report by the New Jersey Office of Homeland Security and Preparedness and cannot be publish in the plan.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Terrorism, Civil Unrest	High	Union County OEM	Homeland Security grants	$0.00	1 - 3 years	New
22-52	Digitize Municipal Zoning Maps to Assist the County with Understanding Potential New Development in Hazardous Areas.	Digitize municipal zoning codes to create a build out analysis to forecast if new development is at risk of flooding.	Administrative	Local Plans and Regulations	All Hazards	Low	Union County OEM	County Budget	$0.00	1 year	New
22-53	Geocode Building Permits to Assist the County with Understanding Potential New Development in Hazardous Areas.	Geocode building permits so the County can track which permits are within the Special Flood Hazard Area (SFHA).	Administrative	Local Plans and Regulations	All Hazards	Low	Union County OEM	County Budget	$0.00	1 year	New

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-54	Construct Flood Control Improvements and Replace the Culvert at Peach Orchard Brook.	Construct flood control improvements and replace the culvert at Peach Orchard Brook to reduce local flood limits and depths.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	City of Linden and County of Union	FEMA HMA, NJDOT Transportation Trust Fund Grant	$12,000,000.00	5 + years	New
22-55	Construct Flood Control Measures at Laurel Drive.	Construct flood control/flood reduction improvements as well as a flap gate to reduce backwater effects, flood frequency and flood severity.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township of Springfield and County of Union	FEMA HMA	$100,000.00	5 + years	New
22-56	Construct Drainage Improvements Near Nomahegan Park and Union County College (Cranford Phase 5).	Construct drainage improvements near Nomahegan Park and Union County College to reduce flood limits and depths (Cranford Phase 5).	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township of Cranford and County of Union	FEMA HMA	$5,000,000.00	5 + years	New
22-57	Dredge Clark Reservoir.	Dredge Clark Reservoir.	Maintenance/Response/Recovery	Natural Systems Protection	Flood	Medium	County of Union	County Budget	$20,000,000.00	5 + years	New
22-58	Construct Flood Control Improvements Along Branch 10-24 and the West Branch of the Elizabeth River.	Construct flood control improvements along Branch 10-24 and the West Branch of the Elizabeth River to reduce local flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township of Union and County of Union	FEMA HMA	$12,000,000.00	5 + years	New
22-59	Construct Flood Control Improvements Along Pumpkin Patch Brook, Upstream of Robinsons Branch.	Construct flood control improvements along Pumpkin Patch Brook, upstream of Robinsons Branch, to reduce local flooding.	Mitigation - Risk Reduction	Structure and Infrastructure Project	Flood	High	Township of Clark and County of Union	FEMA HMA	$4,000,000.00	5 + years	New
22-60	Conduct Hazard Mitigation Training and Education and Purchase Equipment at Union County Fire Training Academy.	Schedule and plan for training from both in-house instructors and outside contractors to educate and train all future and current Hazard Mitigation professionals. Purchase equipment for new facility.	Administrative	Education and Awareness Programs	All Hazards	Medium	Union County OEM	County Budget, Union County OEM, Federal grants, other state and local sources	$0.00	2 - 4 years	New

Union County Mitigation Action Worksheets

Community Action Number: 22-01 Union County

Describing the Action

Action Name:	Develop All Hazards Public and Municipal Official Education and Outreach Program for Hazard Mitigation and Preparedness.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Develop all hazards public and municipal official education and outreach program for hazard mitigation and preparedness. Reach out to municipal Floodplain Administrators and Departments of Planning, Public Works, Engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes. Conduct direct outreach and education to municipal OEMs and other potential participants in plan maintenance and future Plan updates. Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B). Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	A better informed populace creates a greater willingness and expectation to participate in mitigation actions.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	Increase Public Awareness and overall resiliency to emergency situations.
STAPLEE Evaluation:	11

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	1 year
Action Status:	Ongoing
Notes:	This action now combines Community Action numbers 22-04, 22-24, 22-25, and 22-36.

Union County Mitigation Action Worksheets

Community Action Number: 22-02 Union County

Describing the Action

Action Name:	Conduct Evacuation Exercises with and for Local Office of Emergency Management (OEM) Personnel and Private Citizens.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Public participation leads to more active emergency and preparedness response.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for evacuation.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UC OEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	1 year
Action Status:	Ongoing
Notes:	Ongoing action from 2010 and 2016. Projected resources: Union County and municipal OEM personnel, local business and 250 citizen groups

Union County Mitigation Action Worksheets

Community Action Number: 22-03 Union County

Describing the Action

Action Name:	Conduct Yearly Workshops Related to FEMA Hazard Mitigation Grant Programs.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, BRIC, SRL, and RFC. Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects. Increase awareness that the Pre-Disaster Mitigation (PDM) program was replaced by the Building Resilient Communities and Infrastructure (BRIC) program in 2020 and what the new grant criteria are.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Making local officials aware of federal grants thereby increases participation.
Life Safety:	This action will indirectly protect lives and prevent injuries by increasing awareness of and capability to apply for FEMA HMA funding.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by increasing awareness of and capability to apply for FEMA HMA funding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM, NJOEM
Likely Funding Source(s):	Existing State Assets, County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 3.A. Ongoing action from 2010 and 2016. Union County OEM has not conducted yearly workshops but has lead workshops after Irene and Sandy disaster declarations. OEM will continue to work with coordinators in the County to stay informed about mitigation funding opportunities. Ongoing effort as funding becomes available. Union County OEM supports the municipalities and provides assistance with developing Letters of Interest (LOI) and other funding opportunities.

Union County Mitigation Action Worksheets

Community Action Number: 22-04 Union County

Describing the Action

Action Name:	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Makes local officials aware of benefits of plan participation.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	Existing county and municipal resources
Responsible Party:	UCOEM and municipal coordinators
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with Action 22-01.

Union County Mitigation Action Worksheets

Community Action Number: 22-05 Union County

Describing the Action

Action Name:	Develop and Maintain Relationships with Organizations that Can Provide Technical Information and/or Assistance in the Areas of Hazard Identification and Risk Assessment.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment. As of February 2021, New Jersey Municipal Land Use Law now requires the inclusion of climate change-related hazard vulnerability assessments in the Land Use Plan Element of municipal Master Plans. Union County will ensure municipalities have the assistance they need to perform these assessments.
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	Provides the basis for making decisions about where to focus mitigation activities, including further study, and eventually mitigation projects.
Life Safety:	This action will indirectly protect lives and prevent injuries by increasing local capability to apply identify and assess risks from hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by increasing local capability to apply identify and assess risks from hazards.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM, Rutgers University, New Jersey Geological Survey (NJGS), National Oceanic and Atmospheric Administration
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Projected resources: Existing county staff, FEMA, NJOEM, Rutgers University, NJGWS, other State and Federal agencies including NOAA and USACE. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-06 Union County

Describing the Action

Action Name:	Undertake Site-Specific Studies To Better Characterize Flood Risks to Areas With Extensive Flood Loss Histories.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories.
Hazard(s) Addressed:	Flood
Goals:	2

Evaluating the Action

Risk Reduction:	Numerous areas within Union County are susceptible to localized flooding from excess rain events, stormwater runoff, local drainage problems, overbank flooding, and other sources. Major flood areas throughout Union County include the Rahway River, Green Brook Sub Basin, and Passaic River.
Life Safety:	This action will indirectly protect lives and prevent injuries by increasing understanding of areas highly vulnerable to flooding.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by increasing understanding of areas highly vulnerable to flooding.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM and Somerset County (for Green Brook)
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing action from 2010 and 2016. Projected Resources: Union County OEM staff, municipal staff

Union County Mitigation Action Worksheets

Community Action Number: 22-07 Union County

Describing the Action

Action Name:	Coordinate with State Efforts to Undertake Detailed Vulnerability Assessments, Develop Mitigation Options for Critical Facilities in A and AE Zones, and Implement Mitigation Projects and Programs Intended To Reduce Risk To Critical Facilities.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation actions for County and State-owned Critical Facilities in FEMA's A and AE Flood Zones. Implement mitigation projects and programs intended to reduce risk to critical facilities.
Hazard(s) Addressed:	Flood
Goals:	2

Evaluating the Action

Risk Reduction:	Step in process of securing grant funds to mitigate risks to these sites.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the vulnerability of critical facilities.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the vulnerability of critical facilities.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	1 - 5 years
Action Status:	Carried Forward
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016. Priority: Medium-High Projected Timeline: To be determined based on funding. Projected Resources: Existing staff

Union County Mitigation Action Worksheets

Community Action Number: 22-08 Union County

Describing the Action

Action Name:	Use Best Possible Flood Data, including DFIRM and Map Mod Data, If Available, in Next Plan Update. Track Implementation of Risk MAP Initiative to Ensure Union County and Municipalities Gain Full Advantage of Opportunities Under This Program.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Use best possible flood data, including DFIRM and Map Mod data, if available, in next plan update. Track implementation of Risk MAP initiative to ensure Union County and municipalities gain full advantage of opportunities under this program.
Hazard(s) Addressed:	Flood
Goals:	2

Evaluating the Action

Risk Reduction:	This is essential data for establishing flood risk.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the flood hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding flood hazards.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	3 years
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016. Projected resources: existing staff. 2021 Status: Flood data used in the 2021 Update is a composite of Effective FIRMS (9/20/2006) and Preliminary FIRMS (2/3/2015 and 4/18/2016). All Union County jurisdictions were revised and updated during the FEMA FIS study dated April 18, 2016. Union County is part of the FEMA Region II Coastal Restudy to re-examine flood hazards for coastal New York and New Jersey. To create revised flood maps for these coastal communities, FEMA is using new storm surge analysis and wave modeling. This coastal restudy is in response to New York City's 2015 appeal of the region's 2013-2015 preliminary FIRMS. New preliminary FIRMS for the region are anticipated for 2023.

Union County Mitigation Action Worksheets

Community Action Number: 22-09 Union County

Describing the Action

Action Name:	Continuously Update and Verify Status of Repetitive Loss and Severe Repetitive Loss Lists from the NFIP and Work with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	Yes
Action Description:	Continuously update and verify status of repetitive loss and severe repetitive loss lists from the NFIP. Encourage and support mitigation of RL/SRL properties through the use of cluster solutions and/or basin projects, as appropriate.
Hazard(s) Addressed:	Flood
Goals:	2, 4

Evaluating the Action

Risk Reduction:	Essential to continuing the county's efforts to reduce flood losses. Enables the county to appropriately prioritize its actions to mitigate repetitive loss and severe repetitive loss properties, in accordance with FEMA requirements (and contributes to qualifying the county and local jurisdictions for the 90:10 federal-local match under the SRL program).
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	The County has the authority to work with interested municipalities and homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The County has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs
Likely Funding Source(s):	FEMA HMA, other Federal grants, Green Acres, other Open Space Funding
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 2.A., 4.A. Ongoing action from 2010 and 2016.Projected Resources: Existing staff. 2021 Status: Completed RL/SRL update with this Plan Update. Effort is ongoing. Union County OEM provides support and technical assistance with mitigating RL and SRL properties to jurisdictions as needed.

Union County Mitigation Action Worksheets

Community Action Number: 22-10 Union County

Describing the Action

Action Name:	Coordinate with State Effort to Survey Wind Vulnerabilities Using a Prioritized List of State, County, and Local Facilities and Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds.
Action Category:	Administrative
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Using a prioritized list of state, county, and local facilities, coordinate with state effort to survey wind vulnerabilities, based on criteria such as age of the facility, value of operations, proximity to the coast, etc. Conduct wind risk assessments on a limited number of high-priority facilities that appear to be vulnerable to high winds. Assessments will use standard FEMA guidelines, procedures, and software, including the wind hazard database.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	2

Evaluating the Action

Risk Reduction:	Although wind is not as significant a risk to the county as some other hazards, there are likely some critical facilities that are quite vulnerable to wind hazards, and where these vulnerabilities may be relatively inexpensive to mitigate.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the vulnerability of high-priority facilities to wind damage.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the vulnerability of high-priority facilities to wind damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM, NJOEM, with cooperation of other agencies that own and/or operate the facilities; New Jersey
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	1 year
Action Status:	Carried Forward
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016. Projected Resources: Existing resources and staff

Union County Mitigation Action Worksheets

Community Action Number: 22-11 Union County

Describing the Action

Action Name:	Conduct Wind Risk Assessments on a Limited Number of High-Priority Facilities that Appear to be Vulnerable to High Winds. Assessments Will Use Standard FEMA Guidelines, Procedures, and Software, Including the Wind Hazard Database.
Action Category:	Administrative
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	Conduct wind risk assessments on a limited number of high-priority facilities that appear to be vulnerable to high winds. Assessments will use standard FEMA guidelines, procedures, and software, including the wind hazard database.
Hazard(s) Addressed:	High Wind–Tornado, High Wind–Straight-Line Winds
Goals:	2

Evaluating the Action

Risk Reduction:	Quantifies risk to most important facilities.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	UCOEM, municipal OEMs
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-10.

Union County Mitigation Action Worksheets

Community Action Number: 22-12 Union County

Describing the Action

Action Name:	Coordinate with State Efforts to Conduct Wildfire Risk Assessments for Areas and Assets that are Determined to Have the Most Hazard (Fuel Load, etc.) Potential, and the Most Vulnerable Structures, Populations, or Operations.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Coordinate with state efforts to conduct wildfire risk assessments for areas and assets that are determined to have the most hazard (fuel load, etc.) potential, and the most vulnerable structures, populations, or operations.
Hazard(s) Addressed:	Wildfire
Goals:	2

Evaluating the Action

Risk Reduction:	Quantifies which facilities are at most risk, and forms basis for determining where mitigation actions should be contemplated.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the vulnerability of assets to wildfire.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the vulnerability of assets to wildfire.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County may need assistance from outside engineering consultants.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM, New Jersey Forest Fire Service, outside engineering consultants
Likely Funding Source(s):	County Budget, Potential FEMA grants to conduct studies as indicated
Target State Date:	
Timeline:	Ongoing
Action Status:	Carried Forward
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-13 Union County

Describing the Action

Action Name:	Collect Data on Hazardous Material Sites; Integrate with Most Current Information About Risk Factors; and Perform a GIS Analysis and Mapping of Potential Areas of Impact.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Maintain effective coordination and information sharing related to hazardous material sites with NJOEM and the Right to Know (RTK) Network. Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics. Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.
Hazard(s) Addressed:	Hazardous Materials Release
Goals:	2

Evaluating the Action

Risk Reduction:	Provides a basis for prioritizing potential hazmat sites for further study and potential responses.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the vulnerability of assets to hazardous materials release.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the vulnerability of assets to hazardous materials release.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action. There has been ongoing coordination between UC OEM and NJDEP.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	
Responsible Party:	UCOEM, RTK Network, NJOEM.
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016. Projected Resources: Existing resources and staff

Union County Mitigation Action Worksheets

Community Action Number: 22-14 Union County

Describing the Action

Action Name:	Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.
Hazard(s) Addressed:	Hazardous Materials Release
Goals:	2

Evaluating the Action

Risk Reduction:	Provides a basis for prioritizing potential hazmat sites for further study and potential responses.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	UCOEM
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-13.

Union County Mitigation Action Worksheets

Community Action Number: 22-15 Union County

Describing the Action

Action Name:	Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics.
Hazard(s) Addressed:	Hazardous Materials Release
Goals:	2

Evaluating the Action

Risk Reduction:	Potentially allows integration of hazardous materials information with data related to natural hazards.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	UCOEM, RTK Network, NJDEP, USEPA
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-13.

Union County Mitigation Action Worksheets

Community Action Number: 22-16 Union County

Describing the Action

Action Name:	Work with Appropriate Agencies to Identify Specific Areas that are Vulnerable to Storm Effects, Then Inventory Assets and Populations in These Areas as the Basis for a Risk Calculation.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Work with appropriate agencies to identify specific areas that are vulnerable to storm effects, then inventory assets and populations in these areas as the basis for a risk calculation.
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	Provides a basis for determining if any further risk assessment action is warranted.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the vulnerability of assets to storms.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the vulnerability of assets to storms.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UC OEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	3 years
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016. Projected Resources: Existing resources and staff. 2021 Status: This effort is ongoing. NJDEP has initiated developing building footprint data within flood zones to further identify properties at risk. Asset identification completed as part of regional stakeholder outreach for this Plan Update.

Union County Mitigation Action Worksheets

Community Action Number: 22-17 Union County

Describing the Action

Action Name:	Undertake More Detailed Engineering Study of Clark Reservoir Dam, Which May Pose a Risk Downstream.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Undertake more detailed engineering study of Clark Reservoir Dam, which may pose a risk downstream.
Hazard(s) Addressed:	Dam Failure
Goals:	2

Evaluating the Action

Risk Reduction:	Provides a basis for additional work on risk assessment, or on specific mitigation actions, including modifications to structures, evacuation plans, or public information.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the risk posed by dam failure at the Clark Reservoir Dam.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the risk posed by dam failure at the Clark Reservoir Dam.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$75,000.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM with NJDEP, NJOEM
Likely Funding Source(s):	FEMA HHPD Funding
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-18 Union County

Describing the Action

Action Name:	Obtain Additional Information About Surge Hazards and the Assets, Populations, and Functions in Identified Surge Zones in Areas of Significant Risk.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	In areas that are determined to have significant risk (based on preliminary study), initiate an effort to obtain additional information about (1) surge hazards, including modeling, to the extent that more information is needed and (2) the assets, populations, and functions in identified surge zones.
Hazard(s) Addressed:	Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	2

Evaluating the Action

Risk Reduction:	This information provides the basis for detailed risk assessment, and will allow the county to determine if mitigation actions are warranted.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the risk posed by storm surge.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the risk posed by storm surge.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM with cooperation from NJDEP and potentially USACE. Some potential for FEMA to contribute.
Likely Funding Source(s):	Projected Resources: Possibility of cooperation from state and federal agencies
Target State Date:	
Timeline:	2 years
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-19 Union County

Describing the Action

Action Name:	Identify and Map Erosion Hazard Zones Through Detailed Study.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Conduct detailed study to identify and map erosion hazard zones.
Hazard(s) Addressed:	Erosion–Hurricane/Nor'easter/Coastal Storm
Goals:	2

Evaluating the Action

Risk Reduction:	Mapping and defining erosion hazard zones will be useful to future development decisions.
Life Safety:	This action will indirectly protect lives and prevent injuries by understanding the risk posed by erosion.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by understanding the risk posed by erosion.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs
Likely Funding Source(s):	FEMA, NJDEP
Target State Date:	
Timeline:	4 years
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-20 Union County

Describing the Action

Action Name:	Participate in Training and Workshops.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Participate in training and workshops.
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	Workshops and training are an important venue to promote and increase participation in hazard mitigation programs and reaches a wide variety of people and interests.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared residents.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs, NJOEM, New Jersey Forest Fire Service
Likely Funding Source(s):	County Budget- not FEMA Funded
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 2.B. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-21 Union County

Describing the Action

Action Name:	Develop Critical Facilities Inventory Database and a Simple GIS Platform, or Build Upon an Existing Platform, to Maintain and Analyze Critical Facilities Inventories and Information about Hazards.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Develop a database inventory of critical facilities countywide (county-, local-, and privately-owned), including fire and police stations, medical facilities, major public buildings important for emergency response and recovery, and critical lifeline transportation and utility nodes such as bridges, water treatment plants, wastewater treatment plants, high voltage electric substations, and hazardous materials facilities. Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	This action will allow the state to prioritize mitigation grant funds for reducing losses to critical facilities. Provides a basis for understanding risks and maintaining most current information; provides a good means of maintaining data for Hazard Mitigation Plan Updates; and (potentially) helps to identify promising sites, mitigation actions, and grant proposals.
Life Safety:	This action will indirectly protect lives and prevent injuries by maintaining data on critical facilities.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by maintaining data on critical facilities.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action. Consultants may be involved depending on funding availability.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 2.C. Ongoing action from 2010 and 2016. 2021 Status: Database compiled as part of 2021 Plan Update. Data must be maintained and updated for future Risk Assessments.

Union County Mitigation Action Worksheets

Community Action Number: 22-22 Union County

Describing the Action

Action Name:	Offer Technical Support to Help Municipalities Meet FEMA HMA Requirements and Provide Current Information on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties to Encourage Making RL and SRL Property Mitigation a High Priority Among Municipalities.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Continue working with the State, as well as local jurisdictions, to encourage local cooperation in making Repetitive Loss (RL) and Severe Repetitive Loss (SRL) property mitigation a high priority, and to offer municipalities technical support in carrying out the requirements of FEMA mitigation programs as well as current information related to RL and SRL properties.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	This represents a basic requirement to initiate and sustain program momentum for RL and SRL mitigation.
Life Safety:	This action will protect lives and prevent injuries by reducing exposure to repetitive flooding.
Property Protection:	This action will elevate, demolish or relocate structures, thereby eliminating their future damage by repetitive flooding.
Cost Effectiveness:	The cost effectiveness of this action is to be determined.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action.
Legal:	Union County has the authority to work with interested homeowners on mitigating their properties.
Environmental:	There are no known adverse environmental impacts. In fact, by decreasing the impervious surface cover of the lot, this action would be environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action with the support of the State.
Local Champion:	Affected homeowners, OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 3.A. Ongoing action from 2010 and 2016. Ongoing effort as funding becomes available. Union County OEM supports the municipalities and provides assistance with developing Letters of Interest (LOI) and other funding opportunities.

Union County Mitigation Action Worksheets

Community Action Number: 22-23 Union County

Describing the Action

Action Name:	Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Expanding the number of hazard mitigation projects will improve the county's resistance to hazards and reduce the impact of hazard events on its municipalities.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	UCOEM, NJOEM, FEMA Region II
Likely Funding Source(s):	Existing Resources, Mitigation Grant
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-03

Union County Mitigation Action Worksheets

Community Action Number: 22-24 Union County

Describing the Action

Action Name:	Conduct direct outreach and education to municipal OEMs and other potential participants in Plan Maintenance and future Plan updates
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Conduct direct outreach and education to municipal OEMs and other potential participants in Plan Maintenance and future Plan updates
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Increases efficacy and participation in hazard mitigation planning
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	UCOEM
Likely Funding Source(s):	Existing Resources
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-01.

Union County Mitigation Action Worksheets

Community Action Number: 22-25 Union County

Describing the Action

Action Name:	Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B).
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B).
Hazard(s) Addressed:	Flood
Goals:	1

Evaluating the Action

Risk Reduction:	This action encourages participation in the program, so that flood losses will be insured and covered, and it allows eligibility in the FMA program.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Union County Economic Development Corporation / UCOEM
Likely Funding Source(s):	Existing Resources
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-01.

Union County Mitigation Action Worksheets

Community Action Number: 22-26 Union County

Describing the Action

Action Name:	Encourage Municipalities to Participate in the CRS Program, Including Potentially Setting Up CRS Site Visits and/or Workshops for Interested Jurisdictions.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Encourage municipalities to participate in the CRS program, including potentially setting up CRS site visits and/or workshops for interested jurisdictions.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Encourages participation in the CRS program so that NFIP premiums can be reduced and floodplain management improved.
Life Safety:	This action will indirectly protect lives and prevent injuries by encouraging flood mitigation actions throughout the County.
Property Protection:	This action will indirectly protect structures and infrastructure from future flood damage by encouraging flood mitigation actions throughout the County.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action. It will likely also have public support because it lowers flood insurance premiums for homeowners.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group. This action would be especially beneficial for flood insurance policyholders.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM, NJOEM
Likely Funding Source(s):	Existing Resources
Target State Date:	
Timeline:	2 years
Action Status:	Ongoing
Notes:	Objective: 3.B. Ongoing action from 2010 and 2016. 2021 Update: Added actions for municipalities that were once in the CRS program to rejoin.

Union County Mitigation Action Worksheets

Community Action Number: 22-27 Union County

Describing the Action

Action Name:	Encourage Municipalities to Include Identification and Prioritization of Actions Related to Future Participation In and Compliance With the NFIP.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Encourage municipalities to include identification and prioritization of actions related to future participation in and compliance with the NFIP.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Encourages participation in the CRS program so that NFIP premiums can be reduced and floodplain management improved
Life Safety:	This action will indirectly protect lives and prevent injuries by encouraging flood mitigation actions throughout the County.
Property Protection:	This action will indirectly protect structures and infrastructure from future flood damage by encouraging flood mitigation actions throughout the County.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is both technically feasible and a long-term solution.
Political:	There is political will in favor of this action. It will likely also have public support because it insures homeowners.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known adverse environmental impacts.
Social:	This action does not adversely affect any particular social group. This action would be especially beneficial for flood insurance policyholders.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County and municipal OEMs
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 3.B. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-28 Union County

Describing the Action

Action Name:	Encourage the Integration of Floodplain Management and Hazard Mitigation Practices with Zoning, Subdivision Ordinances, Comprehensive Planning, and Other Land Use Tools and the Municipal Level.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Encourage the integration of floodplain management and hazard mitigation practices with zoning, subdivision ordinances, comprehensive planning, and other land use tools at the municipal level. Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Guides communities in a more effective control and use of floodplains.
Life Safety:	This action protects lives and prevents injuries by potentially regulating development in hazard areas.
Property Protection:	This action reduces damage to structures and infrastructure by potentially regulating development in hazard areas.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Municipalities have authority over zoning, land use, and development applications.
Environmental:	There are no known environmental impacts of this action. Potentially regulating development in hazard areas is environmentally beneficial.
Social:	This action does not adversely affect any particular social group.
Administrative:	The Township has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	
Responsible Party:	Union County Economic Development Department/UCOEM
Likely Funding Source(s):	Existing resources and Federal grant funds (FEMA Community Assistance Program-State Support Services Element)
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 3.C. Ongoing action from 2010 and 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-29 Union County

Describing the Action

Action Name:	Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Advances all goals in the Plan by increasing preparedness and knowledge of citizens, and law and policymakers.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	New Jersey League of Municipalities
Likely Funding Source(s):	Existing Staff
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with Community Action # 22-27.

Union County Mitigation Action Worksheets

Community Action Number: 22-30 Union County

Describing the Action

Action Name:	Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Provides a basis for understanding risks and maintaining most current information; provides a good means of maintaining data needed for period updates to the Hazard Mitigation Plan; and (potentially) helps to identify promising sites, mitigation actions, and grant proposals.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	
Responsible Party:	UCOEM in cooperation with state or county agencies
Likely Funding Source(s):	Existing resources and staff
Target State Date:	
Timeline:	1 year
Action Status:	Withdrawn
Notes:	Combined with 22-21.

Union County Mitigation Action Worksheets

Community Action Number: 22-31 Union County

Describing the Action

Action Name:	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	This could help support, coordinate, and consolidate hazard mitigation capabilities.
Life Safety:	This action will protect lives and prevent injuries by increasing mitigation
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-32 Union County

Describing the Action

Action Name:	Increase Transparency of Plan Maintenance on County Website.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	
Action Description:	Provide regular summaries to neighboring communities about plan monitoring and update procedures as required. Post updates on Union County's website for public access to the plan update process.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	This will help Union County meet plan update requirements as well as provide a mechanism for identifying possible cooperative efforts for neighboring communities.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of plan monitoring and update procedures.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action does not adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 3.G. Ongoing action from 2010 and 2016. 2021 Status: The 2016 plan was updated as needed in response to severe storm events, information about these activities was posted and distributed through the website and other means to stakeholders. The plan maintenance procedures have been reviewed as part of this update.

Union County Mitigation Action Worksheets

Community Action Number: 22-33 Union County

Describing the Action

Action Name:	Continue Working with Local Jurisdictions and Regional Stakeholders to Encourage and Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support in Carrying Out the Requirements of FEMA Mitigation Programs.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Encourage and support mitigation of RL/SRL properties through the use of cluster solutions and/or basin projects, as appropriate.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Flood-prone areas throughout the County are at risk of future flooding and property loss due to repetitive flooding. This action initiates a long-term process to protect property from effects of repetitive flooding.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	
Priority:	High
Local Planning Mechanism:	
Responsible Party:	Union County, local municipalities
Likely Funding Source(s):	
Target State Date:	Ongoing
Timeline:	Ongoing
Action Status:	Withdrawn
Notes:	Combined with 22-09.

Union County Mitigation Action Worksheets

Community Action Number: 22-34 Union County

Describing the Action

Action Name:	Implement mitigation projects and programs intended to reduce risk to critical facilities.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	
Action Description:	See action plan within individual municipal appendices for further detail.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Reduces exposure and risk to critical facilities.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Varied
Likely Funding Source(s):	Federal grants, other state and local sources
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-07.

Union County Mitigation Action Worksheets

Community Action Number: 22-35 Union County

Describing the Action

Action Name:	Integrate Hazard Mitigation Priorities into Transportation Planning and Other Capital Planning.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Integrate hazard mitigation priorities into transportation planning and other capital planning.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	Advances all goals in the plan by ensuring consistency of major investments with mitigation priorities.
Life Safety:	This action protects lives and prevents injuries by potentially regulating development in hazard areas.
Property Protection:	This action reduces damage to structures and infrastructure by potentially regulating development in hazard areas.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will in favor of this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Potentially regulating development in hazard areas is environmentally beneficial.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	UCOEM, County Engineering, County Economic Development Department
Likely Funding Source(s):	Existing County Resources
Target State Date:	Likely commenced in 2016.
Timeline:	Ongoing
Action Status:	Ongoing
Notes:	Objective: 4.B. Ongoing action from 2010 and 2016. 2021 Update: As a planning consideration, there is no funding amount necessary. No expenditure is required to incorporate this integration.

Union County Mitigation Action Worksheets

Community Action Number: 22-36 Union County

Describing the Action

Action Name:	Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	
Action Description:	Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also Action Plan within the municipal appendices).
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Improved ability to evacuate populations quickly can save lives.
Life Safety:	
Property Protection:	
Cost Effectiveness:	
Technical:	
Political:	
Legal:	
Environmental:	
Social:	
Administrative:	
Local Champion:	
Other Community Objectives:	
STAPLEE Evaluation:	

Implementing the Action

Cost Estimate:	$0.00
Priority:	
Local Planning Mechanism:	
Responsible Party:	Union County OEM
Likely Funding Source(s):	Union County OEM
Target State Date:	
Timeline:	
Action Status:	Withdrawn
Notes:	Combined with 22-01.

Union County Mitigation Action Worksheets

Community Action Number: 22-37 Union County

Describing the Action

Action Name:	Implement a Training for Using GIS Interface on Tablets in the Field.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Training for using GIS interface on tablets in the field.
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	Allows “real-time” access to GIS data while working in the field.
Life Safety:	This action will indirectly protect lives and prevent injuries by allowing "real-time" access to GIS data in the field.
Property Protection:	This action will indirectly reduce damage to structures and infrastructure by allowing "real-time" access to GIS data in the field.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	2 - 4 years
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-38 Union County

Describing the Action

Action Name:	Inspect All Levees on County Property as Part of Dam Inspections.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Inspect all levees on county property as part of dam inspections.
Hazard(s) Addressed:	Dam Failure
Goals:	2

Evaluating the Action

Risk Reduction:	Provides additional inspections to ensure continued dam safety.
Life Safety:	This action will protect lives and prevent injuries by ensuring continued dam safety.
Property Protection:	This action will prevent damage to structures and infrastructure by ensuring continued dam safety.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Engineering
Likely Funding Source(s):	County Budget
Target State Date:	2016
Timeline:	5 + years
Action Status:	Ongoing
Notes:	Objective: 2.A. Ongoing action from 2016. 2021 Update: Funding has not kept pace with potential work sites. The County periodically inspects dams and levees, the frequency is typically mandated by NJDEP, depending on the classification of the dam and whether loss of life is possible as a result of dam failure.

Union County Mitigation Action Worksheets

Community Action Number: 22-39 Union County

Describing the Action

Action Name:	Coordinate with Towns to Ensure Extended Care Facilities have Back-Up Power or Quick Connects.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Work with towns to ensure extended care facilities have back-up power or quick connects.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Facilities that require special evacuation needs are a high priority to allow them to shelter in place.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations for facilities that house vulnerable populations during a disaster despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action allows vulnerable populations to shelter in place.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM/Engineering
Likely Funding Source(s):	County Budget
Target State Date:	Ongoing
Timeline:	1 year
Action Status:	Ongoing
Notes:	Objective: 3.A. Ongoing action from 2016. 2021 Update: The County does not control local municipalities and zoning decisions regarding new or expanded Extended care facilities. This task has no hard costs, but rather soft costs are determined on a case by case basis.

Union County Mitigation Action Worksheets

Community Action Number: 22-40 Union County

Describing the Action

Action Name:	Improve Options for Power Redundancy within Union County.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Improve options for power redundancy within Union County.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Much of the public and private expense from Sandy within the County was a result of power loss. Improving power duplicity would improve emergency response and free resources to address mitigation needs.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations during a disaster despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM/Engineering
Likely Funding Source(s):	County Budget
Target State Date:	Ongoing
Timeline:	5 + years
Action Status:	Ongoing
Notes:	Objective: 3.A. Ongoing action from 2016. 2021 Update: This task is also a case by case determination.

Union County Mitigation Action Worksheets

Community Action Number: 22-41 Union County

Describing the Action

Action Name:	Purchase Portable Generators for Use During Power Failure.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase portable generators for use during power failure.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Previous storms have demonstrated that having additional mobile generators on hand will help
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations during a disaster despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM
Likely Funding Source(s):	County Budget
Target State Date:	
Timeline:	2 years
Action Status:	Ongoing
Notes:	Objective: 3.A. Ongoing action from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-42 Union County

Describing the Action

Action Name:	Purchase and Install a Generator for the Public Works Building.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and Install a Generator for the Public Works Building.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Its purpose is to maintain and repair the counties infrastructure in regards to roads and traffic signals, debris removal, storm sewers, dams and flood control. Additionally, it is a primary fuel source for all of the counties road crews and some surrounding municipalities.
Life Safety:	This action will protect lives and prevent injuries by ensuring continuity of operations during a disaster despite a power outage.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is public support and political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	UC OEM
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Department of Public Works
Likely Funding Source(s):	
Target State Date:	
Timeline:	
Action Status:	Completed
Notes:	Funded through the HMGP Energy Allocation Initiative, HMGP Local Resiliency Projects, $705,000.

Union County Mitigation Action Worksheets

Community Action Number: 22-43 Union County

Describing the Action

Action Name:	Identify Suitable Shelter Venues to Temporarily House Displaced Persons and Store Disaster Aid Materials.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Identify suitable shelter venues to temporarily house displaced persons and store disaster aid materials. An example of a venue is the Emergency Center in Kearny that keeps disaster aid materials on hand. While the physical space is there to expand for other uses, the site is located in a floodplain (above BFE). Other venues outside of the floodplain need to be identified.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	The County needs a central location for emergency operations and distribution to communities. The OEM's location is insufficient for the purpose. It is difficult to find space for a shelter. There are no large venues, and it is hard to find the room to accommodate large populations. The County already is tight with space, and tries to get inventory out within 24 hours, but its hard to sort/store PPE, ventilators, test kits, etc.
Life Safety:	This action will protect lives and prevent injuries by identifying venues to shelter temporarily displaced persons.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is public support and political will to support this action.
Legal:	The County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action will enhance sheltering capabilities to better protect all segments of the population.
Administrative:	The County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County Department of Planning
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM, Union County Department of Planning
Likely Funding Source(s):	Union County OEM
Target State Date:	
Timeline:	2 years
Action Status:	Ongoing
Notes:	Objective: 3.A. Ongoing from 2016.

Union County Mitigation Action Worksheets

Community Action Number: 22-44 Union County

Describing the Action

Action Name:	Perform an Engineering Study to Determine the Feasibility and Cost of Siting a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	Yes
Action Description:	Perform an engineering study to determine the feasibility and cost of siting a Black start engine near the UCUA incinerator for power grid redundancy. One possible site for the engine is the nearby site of historic fill that would need to be removed for this project.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Hazardous Materials Release
Goals:	3, 4

Evaluating the Action

Risk Reduction:	If there is a surge in the grid at the Union (Rahway) Plant, the UCUA needs to disconnect from the grid if its unstable. While the plant can operate on island mode and reconnect to the grid when its stable again, if the UCUA can't disconnect in time, the grid shuts down. A Black start engine is necessary to ensure redundancy in the power grid so that UCUA can continue to function during an outage. Further, there is a historic landfill nearby that could be used as the site of the engine. The soil is possibly contaminated and would need to be removed.
Life Safety:	This action will protect lives and prevent injuries by planning for continuity of function at the UCUA incinerator.
Property Protection:	This action will plan for continuity of operations at the incinerator during power failure.
Cost Effectiveness:	Unknown at this time.
Technical:	This action is technically feasible.
Political:	Unknown at this time.
Legal:	The study itself is within the authority of the UCUA.
Environmental:	The study itself does not have any adverse environmental impacts.
Social:	The study itself does not have any adverse social impacts.
Administrative:	The Union County Utilities Authority may need to contract engineering services.
Local Champion:	Union County Utilities Authority
Other Community Objectives:	A benefit is that it need not be only used during an emergency; if power is needed in the grid for any reason, the engine can be turned on. If UCUA were to use the Black start Engine for additional power outside of emergency situations, and it was powered by natural gas, it could be used as a base fuel to supplement the grid if UCUA were to increase their renewable energy supply. This would be in line with the State's greenhouse gas reduction goals.
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Utilities Authority
Likely Funding Source(s):	FEMA HMA (BRIC funding)
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-45 Union County

Describing the Action

Action Name:	Purchase and Install a Black Start Engine Near the Union County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase and install a black start engine near the UCUA incinerator for power grid redundancy. One possible site for the engine is the nearby site of historic fill that would need to be removed for this project.
Hazard(s) Addressed:	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Hazardous Materials Release
Goals:	3, 4

Evaluating the Action

Risk Reduction:	If there is a surge in the grid at the Union (Rahway) Plant, the UCUA needs to disconnect from the grid if its unstable. While the plant can operate on island mode and reconnect to the grid when its stable again, if the UCUA can't disconnect in time, the grid shuts down. A Black start engine is necessary to ensure redundancy in the power grid so that UCUA can continue to function during an outage. Further, there is a historic landfill nearby that could be used as the site of the engine. The soil is possibly contaminated and would need to be removed.
Life Safety:	This action will protect lives and prevent injuries by allowing the UCUA incinerator to continue functioning during power failure.
Property Protection:	This action will allow the UCUA incinerator to continue functioning during power failure.
Cost Effectiveness:	Unknown at this time.
Technical:	Unknown at this time.
Political:	Unknown at this time.
Legal:	Coordination with NJDEP may be necessary to remove historic fill.
Environmental:	The engine site may incorporate natural stormwater detention and other natural flood mitigation measures.
Social:	There are no know adverse social impacts.
Administrative:	The Union County Utilities Authority may need to contract engineering services.
Local Champion:	Union County Utilities Authority
Other Community Objectives:	A benefit is that it need not be only used during an emergency; if power is needed in the grid for any reason, the engine can be turned on. If UCUA were to use the Black start Engine for additional power outside of emergency situations, and it was powered by natural gas, it could be used as a base fuel to supplement the grid if UCUA were to increase their renewable energy supply. This would be in line with the State's greenhouse gas reduction goals.
STAPLEE Evaluation:	6

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Utilities Authority
Likely Funding Source(s):	FEMA HMA (BRIC funding)
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-46 Union County

Describing the Action

Action Name:	Create a Stand Alone 9-1-1 Center to Support Police, Fire, and EMS Services Across the County.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Create either a back-up or full-time stand-alone 9-1-1 center to support countywide police, fire, and EMS services.
Hazard(s) Addressed:	All Hazards
Goals:	4

Evaluating the Action

Risk Reduction:	The current regional dispatch center is enclosed in the County Police Headquarters. The current center is getting large and a backup facility is required. This center supports administrative services in the other municipalities and stands up a number of Police/Fire/EMS functions in the municipalities that have been expanding and will expand in the future. The dispatch center can cover 50-60% of the County's municipalities within the next 1-2 years.
Life Safety:	This action will protect lives and prevent injuries by ensuring the 9-1-1 dispatch center remains operational as it expands and supports more municipalities.
Property Protection:	This action will allow for the continuity of operations at the 9-1-1 dispatch center as it continues to expand and support the municipalities.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Public Safety and Police
Likely Funding Source(s):	FEMA HMA
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-47 Union County

Describing the Action

Action Name:	Purchase and Install a New Radio Tower and Communications Infrastructure.
Action Category:	Mitigation - Continuity of Fuctional Use
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Purchase a new radio tower and improve the communications infrastructure. Site improvements include a fire break, better access roads to the site, and at the very minimum improved security at the site. The tower was reinforced five years ago to bring it up to current specifications, but adding a new tower may be beneficial.
Hazard(s) Addressed:	Power Failure, Wildfire, High Wind–Straight-Line Winds
Goals:	4

Evaluating the Action

Risk Reduction:	The current radio tower is in a wooded area with a lot of vegetation. Whenever the County gets a decent storm, there is a potential of power failure or a tree falling on the generator or the shack itself. There is also risk of wildfire to the site.
Life Safety:	This action will indirectly protect lives and prevent injuries by mitigating wildfire and enhancing security at the radio tower.
Property Protection:	This action will prevent potential damage to the radio tower.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The County has the authority to implement this action.
Environmental:	There are no negative environmental impacts of this action. A fire break will protect vegetation from wildfire. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County Police and Public Safety
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Public Safety and Police
Likely Funding Source(s):	Homeland Security grants
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-48 Union County

Describing the Action

Action Name:	Install a Fiber Loop Throughout Each Municipal Complex in Union County to Provide Enhanced Communication Between Government Facilities, Ensure Continuity of Operations During Power Failure and Enhance Security to Prevent Against a Cyber Attack.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Install a fiber loop throughout each municipal complex in Union County to provide enhanced communication between government facilities, ensure continuity of operations during power failure, and enhance security to prevent against a cyber attack.
Hazard(s) Addressed:	Power Failure, Cyber Attack
Goals:	3, 4

Evaluating the Action

Risk Reduction:	Currently, the county relies on communication service providers to restore operations during a power outage. A fiber loop would allow for quicker restoration of services at essential government facilities during a disaster.
Life Safety:	This action will protect lives and prevent injuries by providing for enhanced communicationbetween government facilities, ensuring continuity of operations during power failure, and enhancing security to prevent against a cyber
Property Protection:	This action will provide for continuity of operations at municipal facilities despite power failure and enhance security to prevent against a cyber attack.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help may be necessary.
Local Champion:	Union County Police and Public Safety
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Public Safety and Police
Likely Funding Source(s):	FEMA HMA (BRIC funding)
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-49 Union County

Describing the Action

Action Name:	Implement the Findings of the Union County Truck Mobility Study to Ensure All Populations Can Safely Access Evacuation Routes.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Implement the findings of the Union County Truck Mobility Study to ensure all populations can safely access evacuation routes.
Hazard(s) Addressed:	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm
Goals:	3

Evaluating the Action

Risk Reduction:	The Union County Truck Mobility Study identified barriers to efficient and safe regional freight movement on truck routes on county roads and recommended potential strategies to address those barriers.
Life Safety:	This action will protect lives and prevent injuries by ensuring freight movement does not interfere with evacuation routes.
Property Protection:	This action does not relate to structure and infrastructure damage.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	The County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County Planning Department
Other Community Objectives:	
STAPLEE Evaluation:	9

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Department of Planning
Likely Funding Source(s):	County Budget
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-50 Union County

Describing the Action

Action Name:	Consider Access and Mobility for Socially Vulnerable Populations and Disaster Resilience When Designing Transportation Infrastructure.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Consider access and mobility for socially vulnerable populations and disaster resilience when designing transportation infrastructure. Possible projects include integrating stormwater design as a part of complete streets, redesigning streets to accommodate pandemic precautions, mitigating flood risk to new transportation infrastructure, and improving paratransit.
Hazard(s) Addressed:	All Hazards
Goals:	3

Evaluating the Action

Risk Reduction:	Union County communities had to accommodate outdoor seating and social distancing in response to the COVID-19 pandemic. There is opportunity for the integration of hazard mitigation into future transportation design projects.
Life Safety:	This action will protect lives and prevent injuries by enhancing resilience through transportation design.
Property Protection:	his action will reduce damage to structures and infrastructure by enhancing resilience through transportation design.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible.
Political:	There is political will to support this action.
Legal:	The County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. All environmental regulations will be followed.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	The County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County Department of Planning
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County Department of Planning
Likely Funding Source(s):	County Budget, NJEIT, NJTIB
Target State Date:	2021
Timeline:	1 - 5 years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-51 Union County

Describing the Action

Action Name:	Implement Mitigation Actions from the Confidential Site Assessment Report by the New Jersey Office of Homeland Security and Preparedness (NJOHSP) for Union County Buildings.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	No
Action Description:	Implement mitigation activities for four Union County buildings regarding updating and enhancing security measures. These mitigation activities were noted in a confidential site assessment report by the New Jersey Office of Homeland Security and Preparedness and cannot be publish in the plan.
Hazard(s) Addressed:	Terrorism, Civil Unrest
Goals:	4

Evaluating the Action

Risk Reduction:	A confidential site assessment report by the NJOHSP deemed that all public safety buildings including those mentioned in the assessment, have been and will be a target for terrorism and vandalism.
Life Safety:	This action will protect the people of Union County from terrorism or vandalism.
Property Protection:	This action will prevent damage to Union County buildings from terrorism or vandalism.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	High
Local Planning Mechanism:	NJOHSP Confidential Site Assessment Report
Responsible Party:	Union County OEM
Likely Funding Source(s):	Homeland Security grants
Target State Date:	2021
Timeline:	1 - 3 years
Action Status:	New
Notes:	The Union County Division of Emergency Services has the list of Union County buildings (confidential).

Union County Mitigation Action Worksheets

Community Action Number: 22-52 Union County

Describing the Action

Action Name:	Digitize Municipal Zoning Maps to Assist the County with Understanding Potential New Development in Hazardous Areas.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Digitize municipal zoning codes to create a build out analysis to forecast if new development is at risk of flooding.
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	By creating these data sets, the County will be able to better understand potential new development in hazardous areas and therefore mitigate these areas from flooding.
Life Safety:	This action will indirectly protect lives and prevent injuries by helping the County understand development in hazard areas.
Property Protection:	This action will indirectly prevent damage to structures and infrastructure by helping the County understand development in hazard areas.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM
Likely Funding Source(s):	County Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-53 Union County

Describing the Action

Action Name:	Geocode Building Permits to Assist the County with Understanding Potential New Development in Hazardous Areas.
Action Category:	Administrative
Action Type:	Local Plans and Regulations
HMA Eligible:	No
Action Description:	Geocode building permits so the County can track which permits are within the Special Flood Hazard Area (SFHA).
Hazard(s) Addressed:	All Hazards
Goals:	2

Evaluating the Action

Risk Reduction:	By creating these data sets, the County will be able to better understand potential new development in hazardous areas and therefore mitigate these areas from flooding.
Life Safety:	This action will indirectly protect lives and prevent injuries by helping the County understand development in hazard areas.
Property Protection:	This action will indirectly prevent damage to structures and infrastructure by helping the County understand development in hazard areas.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Low
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM
Likely Funding Source(s):	County Budget
Target State Date:	2021
Timeline:	1 year
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-54 Union County

Describing the Action

Action Name:	Construct Flood Control Improvements and Replace the Culvert at Peach Orchard Brook.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct flood control improvements and replace the culvert at Peach Orchard Brook to reduce local flood limits and depths.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Local flooding impacts vehicular access for emergency vehicles. Flooding from Peach Orchard Brook causes repetitive losses.
Life Safety:	This action will be effective at reducing injuries through flood control. It will reduce the frequency of emergency response requests.
Property Protection:	This action will result in significant flood damage reduction.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution with long term benefits.
Political:	The City of Linden supports this action.
Legal:	Union County has the authority to implement this action with proper permits.
Environmental:	Flood Hazard Area and Wetlands Permits are required.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help will be necessary to construct improvements.
Local Champion:	Linden City Council
Other Community Objectives:	Advances capital improvement, economic impact and reduces/eliminates flood insurance requirement for many property owners
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$12,000,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Previous Studies
Responsible Party:	City of Linden and County of Union
Likely Funding Source(s):	FEMA HMA, NJDOT Transportation Trust Fund Grant
Target State Date:	2025
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-55 Union County

Describing the Action

Action Name:	Construct Flood Control Measures at Laurel Drive.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct flood control/flood reduction improvements as well as a flap gate to reduce backwater effects, flood frequency and flood severity.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Local flooding impacts vehicular access for emergency vehicles. Flooding along Laurel Drive causes repetitive losses.
Life Safety:	This action will be effective at reducing injuries through flood control. It will reduce the frequency of emergency response requests.
Property Protection:	This action will result in significant flood damage reduction.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution with long term benefits.
Political:	The Township of Springfield supports this action.
Legal:	Union County has the authority to implement this action with proper permits for the Branch of the Rahway River.
Environmental:	Flood Hazard Area and Wetlands Permits are required.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help will be necessary to construct improvements.
Local Champion:	Springfield Engineering
Other Community Objectives:	Advances capital improvement, economic impact and reduces frequency of emergency response.
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$100,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan. Additional studies/permits are required.
Responsible Party:	Township of Springfield and County of Union
Likely Funding Source(s):	FEMA HMA
Target State Date:	2025
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-56 Union County

Describing the Action

Action Name:	Construct Drainage Improvements Near Nomahegan Park and Union County College (Cranford Phase 5).
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct drainage improvements near Nomahegan Park and Union County College to reduce flood limits and depths (Cranford Phase 5).
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Local flooding impacts vehicular access for emergency vehicles. Flooding near Nomahegan Park and Union County College causes repetitive losses.
Life Safety:	This action will be effective at reducing injuries through flood control. It will reduce the frequency of emergency response requests.
Property Protection:	This action will result in significant flood damage reduction.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long-term solution with long term benefits.
Political:	The Township of Cranford supports this action.
Legal:	Union County has the authority to implement this action with proper permits.
Environmental:	Flood Hazard Area and Wetlands Permits may be required.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help will be necessary to construct improvements.
Local Champion:	Cranford Council and Mayor's Council for the Rahway River
Other Community Objectives:	Advances capital improvement, economic impact and reduces/eliminates flood insurance requirement for many property owners
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$5,000,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Previous Studies
Responsible Party:	Township of Cranford and County of Union
Likely Funding Source(s):	FEMA HMA
Target State Date:	2025
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-57 Union County

Describing the Action

Action Name:	Dredge Clark Reservoir.
Action Category:	Maintenance/Response/Recovery
Action Type:	Natural Systems Protection
HMA Eligible:	No
Action Description:	Dredge Clark Reservoir.
Hazard(s) Addressed:	Flood
Goals:	3

Evaluating the Action

Risk Reduction:	Local flooding impacts vehicular access for emergency vehicles. Flooding from Clark Reservoir causes repetitive losses.
Life Safety:	This action will be effective at reducing injuries through flood control. It will reduce the frequency of emergency response requests.
Property Protection:	This action will result in potential flood damage reduction.
Cost Effectiveness:	Cost-effectiveness is unknown at this time.
Technical:	This action is technically feasible and a short-mid-long term solution.
Political:	The Township of Clark supports this action.
Legal:	Union County has the authority to implement this action with proper permits.
Environmental:	This action will improve water quality and environmental conditions without the waterway. Flood Hazard Area and Wetlands Permits are required.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help will be necessary to construct improvements.
Local Champion:	Clark Council and County Watershed Officials
Other Community Objectives:	Advances capital improvement, economic impact and reduces flooding impacts.
STAPLEE Evaluation:	7

Implementing the Action

Cost Estimate:	$20,000,000.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan, Previous Permits
Responsible Party:	County of Union
Likely Funding Source(s):	County Budget
Target State Date:	2025
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-58 Union County

Describing the Action

Action Name:	Construct Flood Control Improvements Along Branch 10-24 and the West Branch of the Elizabeth River.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct flood control improvements along Branch 10-24 and the West Branch of the Elizabeth River to reduce local flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Local flooding impacts vehicular access for emergency vehicles and causes repetitive flood losses.
Life Safety:	This action will be effective at reducing injuries through flood control. It will reduce the frequency of emergency response requests.
Property Protection:	This action will result in significant flood damage reduction.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long term solution with long term benefits.
Political:	The Township of Union and County of Union support this action.
Legal:	Union County has the authority to implement this action with proper permits.
Environmental:	Flood Hazard Area and Wetlands Permits are required.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help will be necessary to construct improvements.
Local Champion:	Union Council and Union County Commissioners
Other Community Objectives:	Advances capital improvement, economic impact and reduces/eliminates flood insurance requirement for many property owners
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$12,000,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan, Study Underway
Responsible Party:	Township of Union and County of Union
Likely Funding Source(s):	FEMA HMA
Target State Date:	2025
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-59 Union County

Describing the Action

Action Name:	Construct Flood Control Improvements Along Pumpkin Patch Brook, Upstream of Robinsons Branch.
Action Category:	Mitigation - Risk Reduction
Action Type:	Structure and Infrastructure Project
HMA Eligible:	Yes
Action Description:	Construct flood control improvements along Pumpkin Patch Brook, upstream of Robinsons Branch, to reduce local flooding.
Hazard(s) Addressed:	Flood
Goals:	4

Evaluating the Action

Risk Reduction:	Local flooding impacts vehicular access for emergency vehicles and causes repetitive flood losses.
Life Safety:	This action will be effective at reducing injuries through flood control. It will reduce the frequency of emergency response requests.
Property Protection:	This action will result in significant flood damage reduction.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible and a long term solution with long term benefits.
Political:	The Township of Clark supports this action.
Legal:	Union County has the authority to implement this action with proper permits.
Environmental:	Flood Hazard Area and Wetlands Permits are required.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Outside help will be necessary to construct improvements.
Local Champion:	Union Council and Union County Commissioners
Other Community Objectives:	Advances capital improvement, economic impact and reduces/eliminates flood insurance requirement for many property owners
STAPLEE Evaluation:	8

Implementing the Action

Cost Estimate:	$4,000,000.00
Priority:	High
Local Planning Mechanism:	Hazard Mitigation Plan. Study is required.
Responsible Party:	Township of Clark and County of Union
Likely Funding Source(s):	FEMA HMA
Target State Date:	2025
Timeline:	5 + years
Action Status:	New
Notes:	

Union County Mitigation Action Worksheets

Community Action Number: 22-60 Union County

Describing the Action

Action Name:	Conduct Hazard Mitigation Training and Education and Purchase Equipment at Union County Fire Training Academy.
Action Category:	Administrative
Action Type:	Education and Awareness Programs
HMA Eligible:	No
Action Description:	Schedule and plan for training from both in-house instructors and outside contractors to educate and train all future and current Hazard Mitigation professionals. Purchase equipment for new facility.
Hazard(s) Addressed:	All Hazards
Goals:	1

Evaluating the Action

Risk Reduction:	Hazard mitigation professionals' understanding of natural hazards and mitigation possibilities can be improved.
Life Safety:	This action will protect lives and prevent injuries by increasing awareness of and preparation for natural and man-made hazards.
Property Protection:	This action will indirectly reduce damage to structure and infrastructure by creating more aware and prepared hazard mitigation professionals.
Cost Effectiveness:	The costs to implement this initiative are commensurate with the benefits achieved.
Technical:	This action is technically feasible. It is an ongoing initiative.
Political:	There is political will to support this action.
Legal:	Union County has the authority to implement this action.
Environmental:	There are no known environmental impacts of this action. Environmental regulations do not apply.
Social:	This action is not known to adversely affect any particular social group.
Administrative:	Union County has the personnel and administrative capabilities to implement this action.
Local Champion:	Union County OEM
Other Community Objectives:	
STAPLEE Evaluation:	10

Implementing the Action

Cost Estimate:	$0.00
Priority:	Medium
Local Planning Mechanism:	Hazard Mitigation Plan
Responsible Party:	Union County OEM
Likely Funding Source(s):	County Budget, Union County OEM, Federal grants, other state and local sources
Target State Date:	
Timeline:	2 - 4 years
Action Status:	New
Notes:	

Local Capability Assessment Worksheet

Jurisdiction: Union County

Name: William Kane Title: Deputy Director, Union County Division of Emergency Services

Local Mitigation Capabilities are existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities. The purpose of this worksheet is to review and document your local mitigation capabilities.

There are four sections of this worksheet:

- Planning & Regulatory
- Education & Outreach
- Administrative & Technical
- Financial

1. Planning & Regulatory

Planning & Regulatory Capabilities are the plans, policies, codes, ordinances, and studies that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Required Planning & Regulatory Capabilities

Note: Building Codes are standardized by the State Department of Community Affairs. The current Building Subcode adopted by the State is the International Building Code/2018, NJ ed. Adopted September 3, 2019.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Comprehensive/Master Plan: Overall policy guide for future community growth and development	Yes	The Union County Master Plan mentions Hazardous Materials Release from industrial areas. The Union County Transportation Master Plan Goal #8 integrates resilient transportation infrastructure: "To prepare for and adapt to changing conditions and withstand, respond to and recover rapidly from disruption." The climate resilience of Union County's existing transportation infrastructure was considered during the planning process and is described in Section F. Climate Resilience of the Union County Transportation Master Plan. This section directly references the 2016 Union County HMP Update and the mitigation strategy.
Emergency Operations Plan: Organizational structure and processes to respond to and initially recover from an emergency	Yes	The County is required by state Statute to update its Emergency Operations Plan every four years.
Capital Improvements Plan: Coordinates the location, timing, and financing of capital improvements over a multi-year period	Yes	Drainage projects and improvements to roads, bridges, and county facilities receive annual appropriations in the budget which are important projects in terms of hazard mitigation.

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Local Emergency Operations Plan/Continuity of Operations Plan: Identifies possible hazards experienced by a community and inventory the resources to respond to such hazards. The Continuity of Operations Plan may also be an element within the EOP	Yes	
Stormwater Management: Addresses stormwater-related water quality, groundwater recharge and water quantity impacts	No	Municipalities enforce their own stormwater management ordinances.
Emergency Response Plan: Outlines the parties responsible for and the procedures necessary for emergency response	Yes	
Fire Department ISO Rating: Ratings for fire departments and their surrounding communities	No	Enforced by NJ Department of Community Affairs.
Site Plan Review Requirements: Review of new development applications	Yes	The Division of Planning and Community Development is responsible for reviewing Subdivision and Site Plan Applications to determine whether county roads/property and or drainage facilities would be adversely affected. The objective with this is to reduce hazards to the general public caused by unsafe traffic conditions and or flooding. The county also encourages municipalities to coordinate large development projects with them to address any transportation, wastewater, and storm drainage issues that may arise.
Subdivision Regulations: Subdivision regulations control development when land is subdivided into buildable lots for sale or future development	Yes	
Zoning Ordinance: Rules that define how property in specific geographic zones can be used	No	Municipalities enforce their own zoning ordinances.
Floodplain Ordinance: Minimum floodplain management regulations for compliance with the National Flood Insurance Program (NFIP) that must be met by NFIP participating communities once FEMA provides flood hazard information, to ensure participating communities consider flood hazards, to the extent that they are known, in all official actions relating to land management and use	No	Municipalities enforce their own floodplain ordinances.
Mutual Aid Agreements: Establish the terms under which assistance is provided between two or more jurisdictions	Yes	Union County has a Fire Mutual Aid Headquarters with one Fire Coordinator and 10 Deputy Fire Coordinators and an EMS Unit to provide assistance when needed. The County was awarded a $104,500 grant in 2010 from the DCA that enabled the creation of the Shared Services Committee. The committee explored more than 60 areas to share services, and agreed to pursue mutual opportunities in several areas, including Information Technologies, Emergency Communications/911 dispatching, and Animal Control.

Optional Planning & Regulatory Capabilities

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
Redevelopment Plan/Study: Facilitates development in specific geographic areas	No	
Coastal Zone Management Program: Protects natural resources, development in high-hazard areas, public assess, and water-dependent uses	No	
Community Wildfire Protection Plan: Allows local governments to create their own community-specific wildfire risk reduction strategy	No	
Climate Adaptation Plan: Vulnerability assessment across the broad range of government services and action plan to anticipate, increase awareness, plan for, build momentum and adapt to a changing climate	No	
Streambank Buffer Protection Program: Combination of conservation easements, vegetation management, and landscape restoration of vegetative buffers for streams and waterways to attenuate stormwater runoff quantity and quality issues, decrease streambank erosion, and increase habitat value of the waterway	No	
Watershed Management Plan: NJDEP-supported plans for the reduction of nonpoint source water pollution	No	
Floodplain Management Plan: Strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards	No	
Post-Disaster Recovery Plan: Manages post-disaster recovery and reconstruction by outlining processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by disasters	No	
Transfer of Development Rights: Designating high-risk or preservation areas as "sending areas," from which the potential to develop land is transferred to low-risk or growth areas called "receiving areas" for compensation	No	
Land Acquisition for Open Space and Public Recreation Uses: Purchasing high-risk areas to remain as open space/public recreation	Yes	Union County Farmland Preservation, Open Space, Parks and Recreation Trust Fund Plan. While hazard mitigation may not formally be expressed as such in this process, much of the acquired land has been adjacent to bodies of

Plan/Regulation	Do you have this? (Y/N)	Does the plan/policy integrate hazard mitigation or resilience? If so, how?
		water, wetlands, or part of existing county parklands and therefore reducing exposure.
Growth Management Ordinance: Controls and often limits development within certain areas and encourages open space protection the purposes of environmental protection and limiting sprawl	No	Municipalities enforce their own growth management ordinances.
Natural Hazard Ordinance: Zoning ordinance that dictates specific standards for development in hazard-prone areas	No	Municipalities enforce their own natural hazard ordinances.
Post-Disaster Recovery Ordinance: outlines a foundation for local strategic action by which a community can organize to efficiently manage short- and long-term recovery either in advance of or after a disaster	No	Municipalities enforce their own disaster recovery ordinances.
Real Estate Disclosure Requirement: Requires those selling real estate to inform potential buyers of the hazard vulnerability of their property and/or structure before the sale	No	
Other:	Yes	Sustainable Development in Union County: A Livability Guide (2015) Union County Strategic Recovery Planning Report (2014)

2. Education & Outreach

Education & Outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information

Education & Outreach Capabilities

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
Local Citizen Groups or Non-Profit Organizations: Focuses on environmental protection, emergency preparedness, access and functional needs populations	No	
Seasonal Emergency Management and Mitigation Outreach: Seasonal outreach, e.g., in advance of hurricane season or in anticipation of winter weather, including information regarding preparedness and mitigation measures that individuals can undertake for their own risk reduction	Yes	The County has a webpage titled "Be Informed. Be Prepared. Be Involve." with a UC First Alert, a free service that enables residents to receive emergency updates by text or email via their mobile devices. The County also offers emergency response trainings.
Disaster/Safety Related School Programs: Programs to teach the youth about safety related to hazards	Yes	There is ongoing safety shooter training and planning.

Program/Organization	Do you have this? (Y/N)?	Has the program / method been used in the past for hazard mitigation? If so, for what type of activities?
StormReady Certification: National Weather Service program that helps arm America's communities with communication and safety skills needed to save lives and property--before, during and after the event.	No	Certification occurs at the municipal level.
Firewise USA Certification: Provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community	No	Certification occurs at the municipal level.
Sustainable Jersey Certification: Certification awards to municipalities that have documented meeting a set of rigorous sustainable standards	No	Certification occurs at the municipal level.
Public-Private Partnership Initiatives Addressing Disaster Related Issues: Involves government(s) and business(es) that work together to complete a project and/or to provide services to the population	Yes	The Union County Alliance is a bi-partisan consortium of government, business and civic leaders whose principal missions are to position the County as a better place to live and work, and to advance the County's interests on key development issues.

3. Administrative & Technical

Administrative & Technical capabilities include boards, commissions, departments, staff, and consulting services along with the related skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administrative & Technical Capabilities

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Planning Commission: Reviews most applications for development including site plan, subdivision, and conditional use applications	Yes	
Mitigation Planning Committee: Works to enhance and promote effective multi-hazard mitigation planning at all levels of government	Yes	Union County has a Local Emergency Planning Committee (CEPC)
Environmental Commission: Works on open space preservation, smart growth, wetlands and water resource protection, green infrastructure, recycling and litter, environmental cleanups, wildlife habitat, energy efficiency, conservation and transportation	Yes	
Economic Development Commission: Provides recommendations on economic development policies and issues	No	

Administration	Do you have this? (Y/N)	Does the Board /Commission address hazard impacts? If so, how and which hazards?
Maintenance Programs to Reduce Risk: Ongoing programs such as tree trimming, clearing drainage systems	Yes	

Technical Staffing Capabilities

Staff	Do you have this position filled? (Y/N?)	Is this a full-time or part-time position?
Planner: a New Jersey licensed Professional Planner	Yes	Full-time position.
Engineer: a New Jersey licensed Professional Engineer	Yes	Full-time position.
Code Enforcement: Evaluates private properties and public grounds against local codes	No	Regulated at the municipal level.
Chief Building Official: Responsible for evaluating private properties and public grounds against local codes, answering citizen questions about the codes, and issuing citations for code violations	No	Regulated NJ Department of Community Affairs.
Floodplain Manager: a Certified Floodplain Manager	No	
Grant Writer: In-house or contracted staff familiar with and capable of successfully applying for FEMA HMA Grant Programs as well as other non-FEMA funding sources	Yes	Internal County staff apply for grants.
Geographic Information Systems (GIS) Specialist: In-house or contracted staff that can use GIS to manage hazard and community asset data	Yes	Full-time position.

4. Financial

Financial capabilities include access to or eligibility to use funding resources for hazard mitigation.

Financial Capabilities

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Capital Improvements Program: A short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan	Yes	
Federal Funding programs (non-FEMA): Grant programs administered by federal agencies other than FEMA with potential to fund mitigation actions, e.g., US Department of Housing and Urban Development Community Development	Yes	

Funding Opportunity	Has the funding resource been used in the past for hazard mitigation projects?	Are you targeting this resource for future mitigation projects?
Block Grants, US Department of Energy, US Department of Transportation, etc.		
Utility fees for stormwater, water, sewer, gas, or electric services: Fee levied by the jurisdiction, in addition to cost of service provided, for use in funding related capital programs, e.g., non-federal share for mitigation actions	Yes	
Impact fees for new development: Fees paid by a developer to the municipality	No	
General Obligation Bonds and/or Special Tax Bonds: Debt obligations issued by public entities that use the loans to fund public projects	No	
Community Development Block Grants (CDBG): Post-disaster funding opportunities exist, including CDBG-Disaster Recovery Program and the new CDBG-Mitigation Program	Yes	

What capability would you like your community to gain in the next five to ten years?

APPENDIX VOL II - A. HAZUS REPORT

FEMA’s Hazus MH was used to perform an analysis as part of the Union County Hazard Mitigation Plan update. This version of Hazus utilizes 2010 Census Data.

Totals only reflect data for those census tracts/blocks included in the user's study region. The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood. These results can be improved by using enhanced inventory data and flood hazard information.

Hazus: Flood Global Risk Report

Region Name: UnionCounty_NJ

Flood Scenario: 1-pct Flood

Print Date: Thursday, June 24, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.

FEMA

RiskMAP
Increasing Resilience Together

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- New Jersey

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is approximately 104 square miles and contains 7,557 census blocks. The region contains over 188 thousand households and has a total population of 536,499 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 151,668 buildings in the region with a total building replacement value (excluding contents) of 79,128 million dollars. Approximately 89.34% of the buildings (and 73.27% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 151,668 buildings in the region which have an aggregate total replacement value of 79,128 million dollars. Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure ($1000)	Percent of Total
Residential	57,974,781	73.3%
Commercial	14,065,008	17.8%
Industrial	4,267,604	5.4%
Agricultural	157,396	0.2%
Religion	1,139,836	1.4%
Government	260,335	0.3%
Education	1,263,517	1.6%
Total	**79,128,477**	**100%**

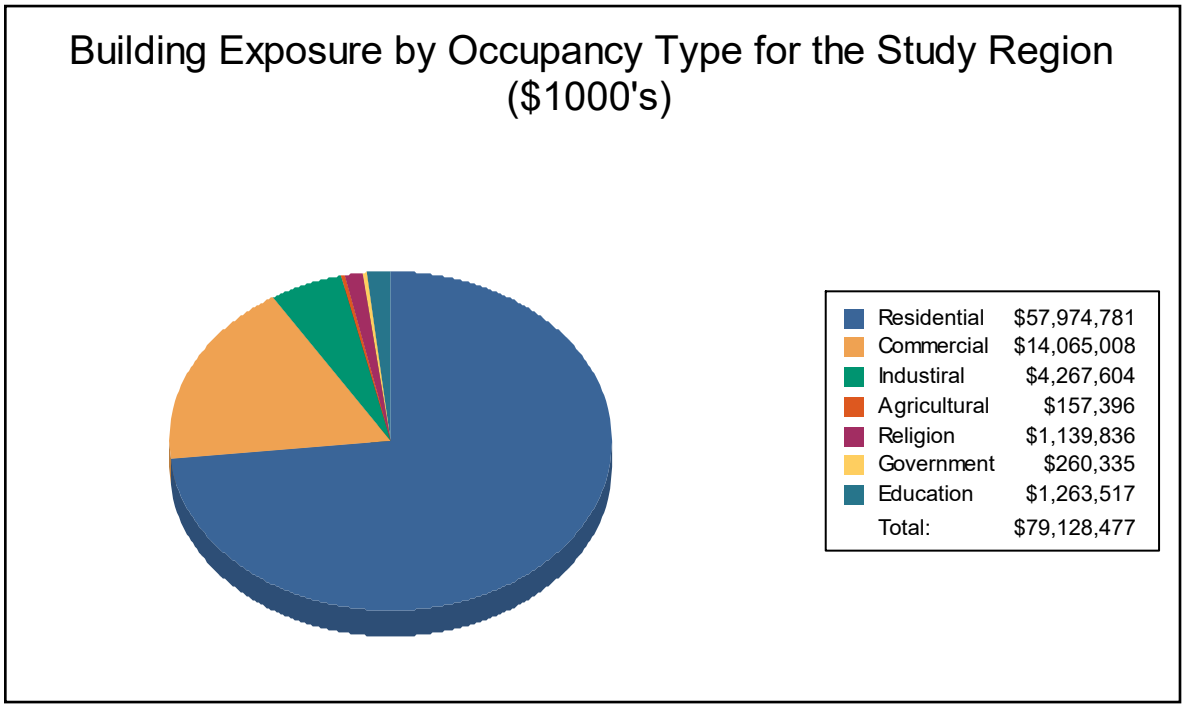
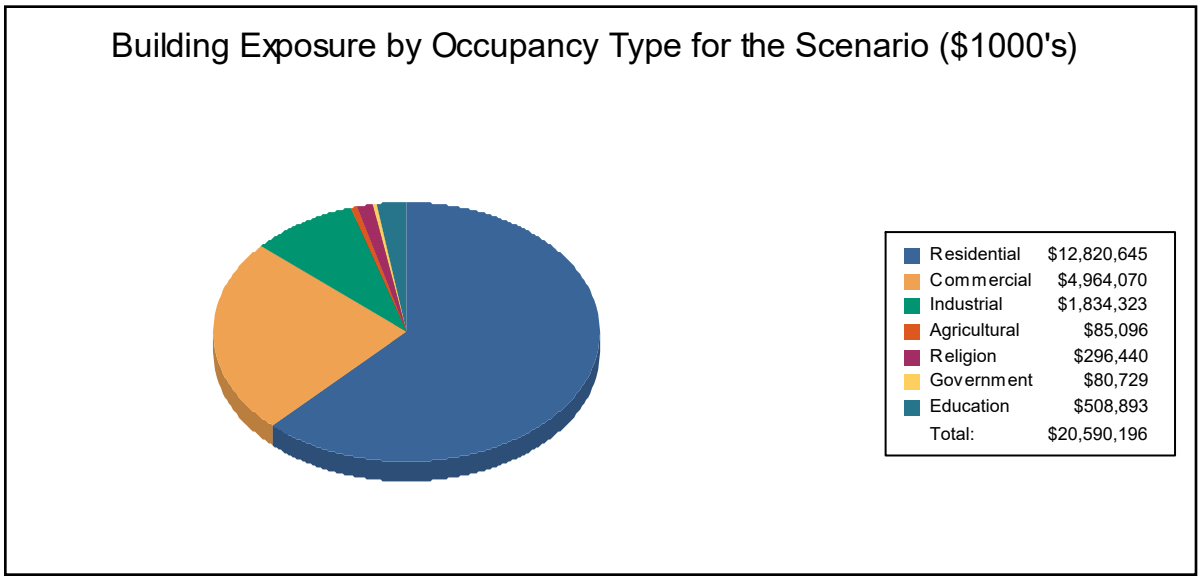


Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure ($1000)	Percent of Total
Residential	12,820,645	62.3%
Commercial	4,964,070	24.1%
Industrial	1,834,323	8.9%
Agricultural	85,096	0.4%
Religion	296,440	1.4%
Government	80,729	0.4%
Education	508,893	2.5%
Total	**20,590,196**	**100%**



Essential Facility Inventory

For essential facilities, there are 118 hospitals in the region with a total bed capacity of no beds.
There are 472 schools, 39 fire stations, 28 police stations and 2 emergency operation centers.

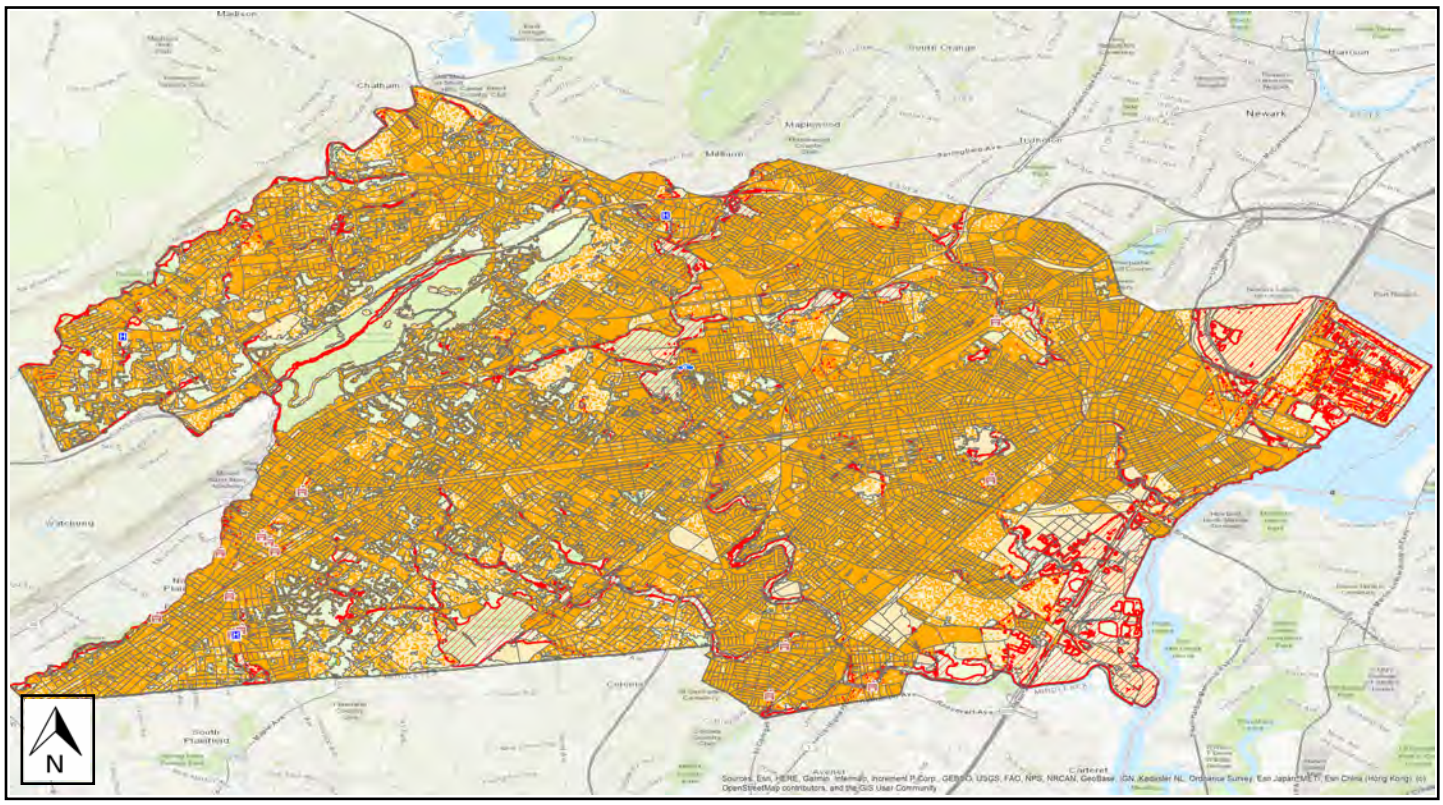
Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	UnionCounty_NJ
Scenario Name:	1-pct Flood
Return Period Analyzed:	Mix0
Analysis Options Analyzed:	No What-Ifs

Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure



Building Damage

General Building Stock Damage

Hazus estimates that about 2,184 buildings will be at least moderately damaged. This is over 90% of the total number of buildings in the scenario. There are an estimated 4 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Total Economic Loss (1 dot = $300K) Overview Map

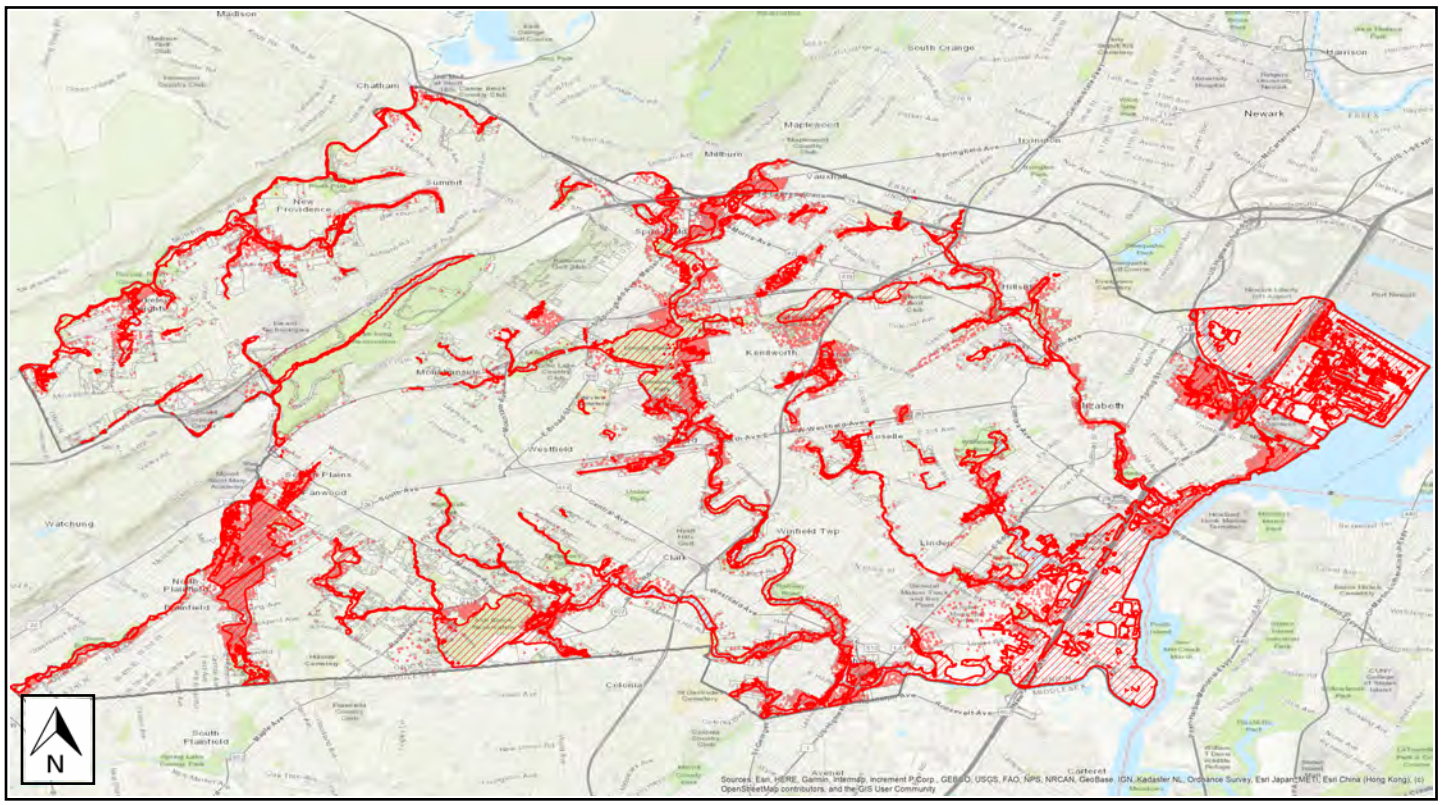


Table 3: Expected Building Damage by Occupancy

	1-10		11-20		21-30		31-40		41-50		>50	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	16	46	17	49	0	0	1	3	1	3	0	0
Education	2	100	0	0	0	0	0	0	0	0	0	0
Government	1	100	0	0	0	0	0	0	0	0	0	0
Industrial	1	7	13	93	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	1,316	38	1,808	52	242	7	74	2	24	1	4	0
Total	**1,336**		**1,838**		**242**		**75**		**25**		**4**	

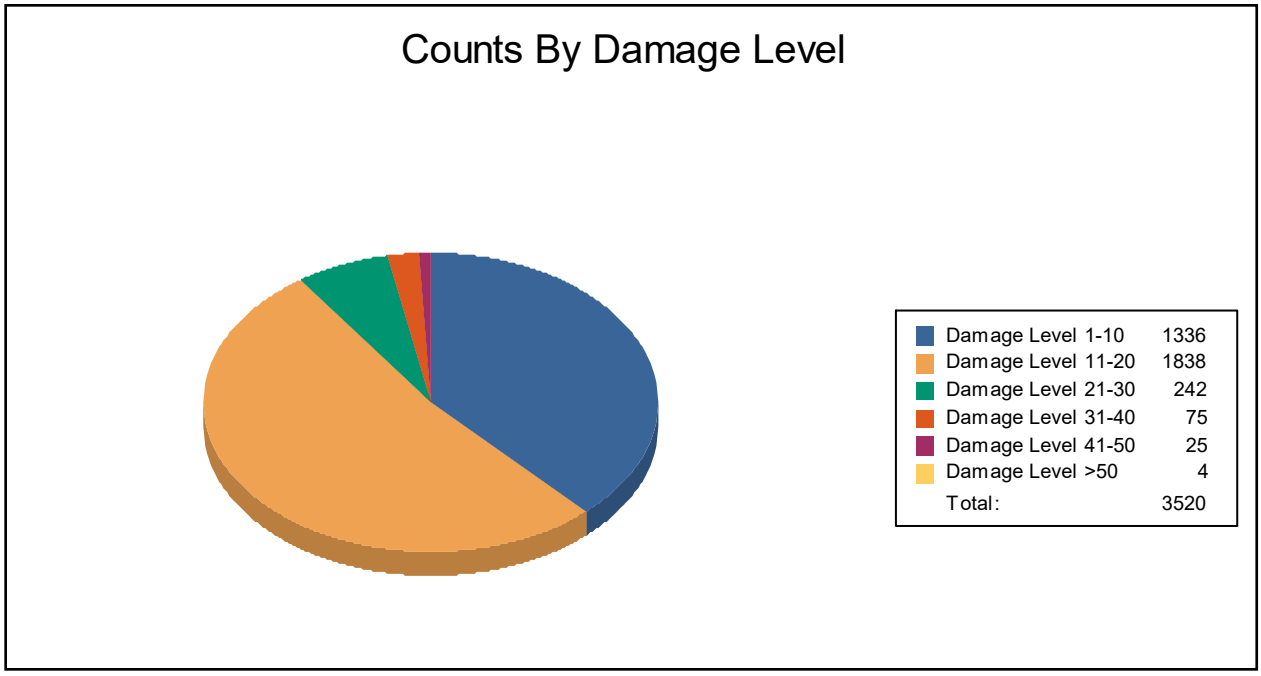


Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1	50	1	50	0	0	0	0	0	0	0	0
ManufHousing	0	0	0	0	0	0	0	0	0	0	0	0
Masonry	141	51	126	46	8	3	0	0	0	0	0	0
Steel	15	50	15	50	0	0	0	0	0	0	0	0
Wood	1,157	36	1,686	53	232	7	74	2	24	1	4	0

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 0 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	2	0	0	0
Fire Stations	39	0	0	0
Hospitals	118	3	0	1
Police Stations	28	1	0	1
Schools	472	17	0	13

If this report displays all zeros or is blank, two possibilities can explain this.

(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.

(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

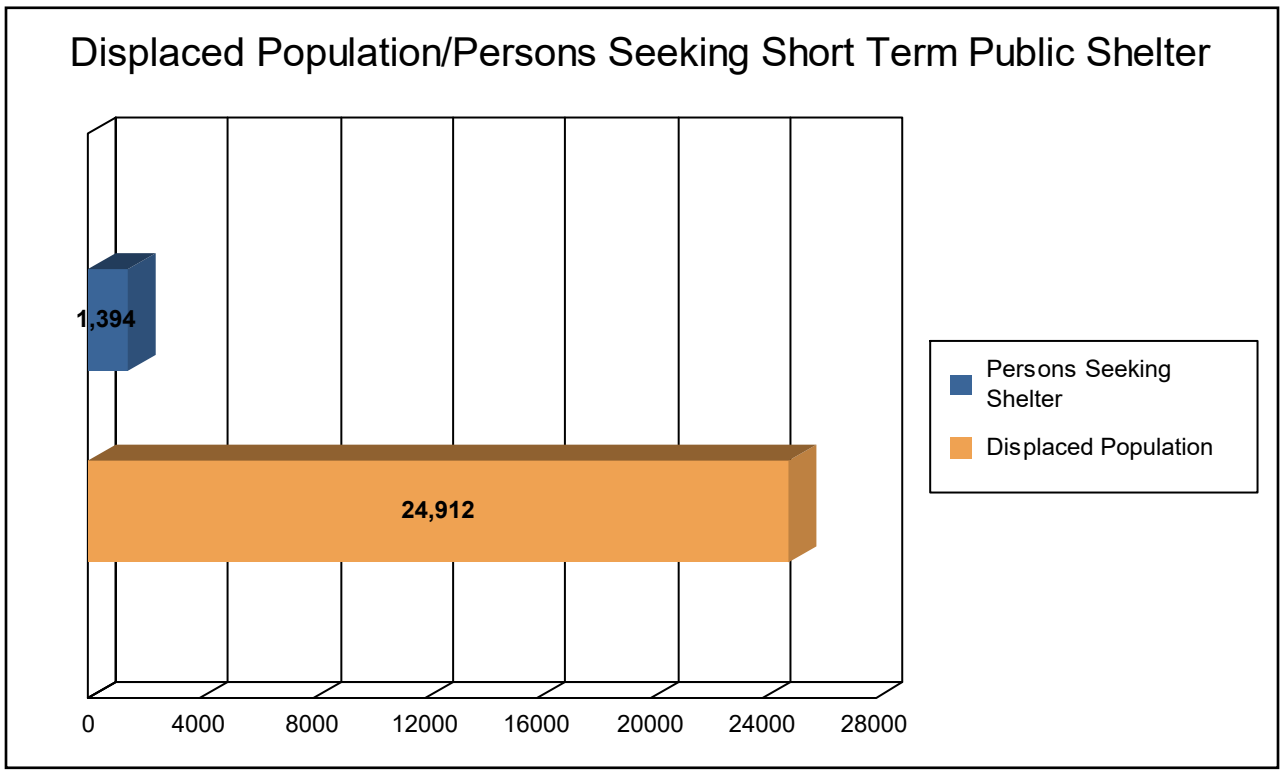
Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

Analysis has not been performed for this Scenario.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 8,304 households (or 24,912 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 1,394 people (out of a total population of 536,499) will seek temporary shelter in public shelters.



Economic Loss

The total economic loss estimated for the flood is 2,167.06 million dollars, which represents 10.52 % of the total replacement value of the scenario buildings.

Building-Related Losses

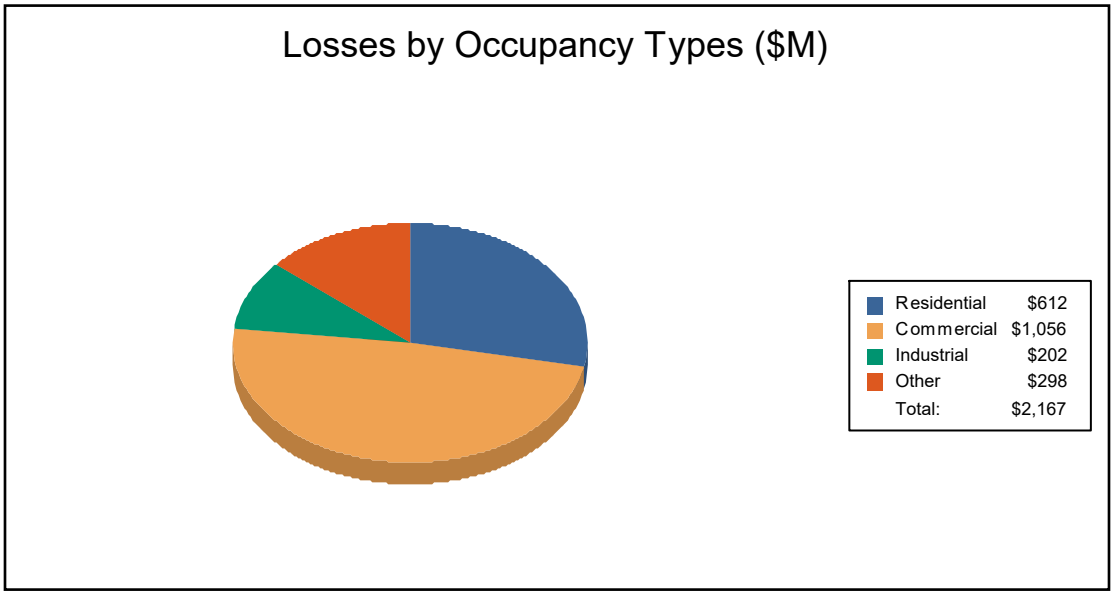
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,156.66 million dollars. 47% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 28.23% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	306.86	124.95	47.37	11.53	490.70
	Content	156.69	290.45	122.79	73.74	643.67
	Inventory	0.00	6.33	15.79	0.16	22.29
	Subtotal	**463.55**	**421.73**	**185.95**	**85.43**	**1,156.66**
Business Interruption						
	Income	4.84	270.57	4.33	35.88	315.61
	Relocation	86.08	81.54	4.69	16.66	188.97
	Rental Income	45.80	60.93	1.05	1.91	109.69
	Wage	11.45	221.00	6.00	157.69	396.13
	Subtotal	**148.16**	**634.04**	**16.07**	**212.14**	**1,010.40**
ALL	**Total**	**611.71**	**1,055.77**	**202.02**	**297.56**	**2,167.06**



Appendix A: County Listing for the Region

New Jersey

- Union

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
New Jersey				
Union	536,499	57,974,781	21,153,696	79,128,477
Total	**536,499**	**57,974,781**	**21,153,696**	**79,128,477**
Total Study Region	**536,499**	**57,974,781**	**21,153,696**	**79,128,477**

APPENDIX II - B. ANNUAL HMP MONITORING TOOLS

UNION COUNTY HAZARD MITIGATION PLAN
JURISDICTIONAL ANNUAL PROGRESS REPORT

Date:

Jurisdiction:

Contact Name/Title:

Agency/Department:

Contact Email:

Contact Phone:

1. Projects Underway or Completed with Mitigation Grant funding - Quarterly Reports on file with NJSP OEM Mitigation Unit:
   (Brief Project Description)

2. Which Projects listed in HMP are still valid and to be considered for funding:

3. Projects underway or completed using funding other than Mitigation Grants:
   (Brief Project Description)

APPENDIX II - C. MEETING MATERIALS

This appendix contains the meeting materials, meeting minutes, and sign in sheets for all meetings held during the planning process. The list of meetings is included below:

Meeting	Date
Steering Committee Meeting #1	October 21, 2020
Steering Committee Meeting #2	December 4, 2020
Regional Municipal Meeting #1	October 14, 2020
Regional Municipal Meeting #2	October 15, 2020
Regional Municipal Meeting #3	October 22, 2020
Regional Municipal Meeting #4	October 23, 2020
Union County Coordination Meeting #1 – Division of Engineering	October 26, 2020
Union County Coordination Meeting #2 – Division of Engineering	December 16, 2020
Union County Coordination Meeting #3 - Division of Strategic Planning and Intergovernmental Relations, Bureau of Transportation Planning	December 16, 2020
Union County Coordination Meeting #4 - Union County Utility Authority	December 22, 2020
Union County Coordination Meeting #5-Public Safety and Police Departments	December 22, 2020
Union County Coordination Meeting #6: Division of Engineering, Bureau of Geographic Information Systems	January 5, 2021
Regional Stakeholder Meeting #1 – Somerset County	January 5, 2021
Regional Stakeholder Meeting #2 – Wakefern Food Corporation	January 22, 2021
Regional Stakeholder Meeting #3 - PANYNJ	February 2, 2021

MEETING NOTES

Topic: Union County Steering Committee Meeting #1/Kickoff

Date: October 21, 2020

Time: 11:00 am – 12:00 pm

Location: Virtual via Microsoft Teams

Drafted by: Brittany Ashman

Introductions:

William Kane, Union County Office of Emergency Services, welcomed the Steering Committee.

Michael Yaffe, the Project Manager for Michael Baker International, asked everyone to introduce themselves and gave an overview of the hazard mitigation planning process.

Mitigation Plan Update Overview (Presentation):

Brittany Ashman, the Deputy Project Manager for Michael Baker, introduced what is new for this plan update including:

- New Standard Operating Procedure Updates from the 2019 State HMP
- Outreach directly with local public staff in each municipality to engage municipal officials, staff & vested stakeholders
- Regional coordination with nearby counties, regional planning agencies, major employers, and colleges/universities
- The creation of a public project website for public review and comment on the plan

Brittany explained the 11-month Planning Process for the HMP Update. The planning process includes the following steps:

1. Gather Input from Stakeholders
2. Update Risk & Vulnerability Assessment
3. Review and Update Capability Assessment
4. Review and Update Mitigation Strategy
5. Determine Plan Maintenance Process
6. Obtain Mitigation Plan Approval & Adoption

Brittany explained FEMA's recent Guides to Expanding Mitigation and how they can be integrated into this plan update.

Steering Committee Input:
Brittany described the Steering Committee's role in the planning process, which includes the following:

- Consider Goals and Hazards for this update
- Provide input and feedback on the project direction and work products
- Help identify regional stakeholders
- Participate and help encourage community engagement
- Complete data requests in a timely manner

A worksheet was distributed to the Steering Committee to collect responses on the goals, objectives, and hazards to include in the plan update.

Mitigation Strategy Goals and Objectives
The Steering Committee decided to carry over all the Goals and Objectives from the 2016 HMP while adding a new goal and objective to address High Hazard-Potential Dams (in red below).

Goal	Objective(s)
Goal 1: **Improve education and outreach** efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.	**Objective 1.A:** Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials **Objective 1.B:** Increase local government official awareness regarding funding opportunities for mitigation. **Objective 1.C:** Increase local government official awareness regarding opportunities for participation in and contributing to future Plan updates.
Goal 2: **Improve data collection, use, and sharing** to reduce the impact of hazards.	**Objective 2.A:** Improve availability of the county and participating municipalities to collect data related to all relevant hazards for use in future planning efforts. **Objective 2.B:** Provide government officials and local practitioners with educational opportunities and information regarding best practices for hazard mitigation planning, project identification, and implementation **Objective 2.C:** Acquire and maintain detailed data regarding critical facilities such that these sites can be prioritized and risk-assessed for possible mitigation actions
Goal 3: **Improve capabilities, coordination, and opportunities** at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities.	**Objective 3.A:** Continue support of hazard mitigation planning, project identification, and implementation at the municipal and county level. **Objective 3.B:** Support increased NFIP/CRS participation **Objective 3.C:** Support increased integration of municipal/county hazard mitigation planning and floodplain management with effective municipal/ county zoning regulation, subdivision regulation, and comprehensive planning. **Objective 3.D:** Elicit and support efforts to address shortcomings in existing laws, programs, and administrative rules related to hazard mitigation. **Objective 3.E:** Provide for user-friendly hazard-data accessibility for

Goal	Objective(s)
	mitigation and other planning efforts and for private citizens **Objective 3.F:** Provide direct support, where possible, to municipal mitigation programs. **Objective 3.G:** Provide opportunities for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the plan update process
Goal 4: **Pursue opportunities to mitigate** repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities.	**Objective 4.A:** Facilitate development and timely submittal of project applications meeting state and federal guidelines for funding (1) for RL and SRL properties and (2) for hardening/ retrofitting infrastructure and critical facilities with highest vulnerability ratings. **Objective 4.B:** Maintain and enhance local planning and regulatory standards related to future development and investments.
Goal 5: **Mitigate High Hazard-Potential Dams** within the County.	**Objective 5.A:** Repair and rehabilitate high hazard-potential dams.

Hazards Identified

The Steering Committee carried over all the hazards profiled in the 2016 HMP, while adding eight human-based hazards. The hazard crosswalk between the 2016 HMP and this Plan update is listed below. The new items are listed in red. Impacts from Climate Change and Sea Level Rise will be addressed in each applicable hazard.

2016 Hazards Profiled	2021 Hazards Profiled
Dam Failure	Dam Failure
Drought	Drought
Earthquake/Geological	Earthquake/Geological
Erosion – Hurricane/Nor'easter/Coastal Storm	Erosion – Hurricane/Nor'easter/Coastal Storm
Extreme Temperature – Cold	Extreme Temperature – Cold
Extreme Temperature – Heat	Extreme Temperature – Heat
Flood	Flood
Hail	Hail
Hazardous Materials Release – Fixed Site	Hazardous Materials Release – Fixed Site
Hazardous Materials Release – Transportation	Hazardous Materials Release – Transportation
High Wind – Straight-Line Winds	High Wind – Straight-Line Winds

2016 Hazards Profiled	2021 Hazards Profiled
High Wind – Tornado	High Wind – Tornado
Ice Storm	*Combined with Severe Storm – Winter Weather*
Landslide (non-seismic)	Landslide (non-seismic)
Severe Storm – Lightning	Severe Storm – Lightning
Severe Storm – Winter Weather	Severe Storm – Winter Weather (Including Ice Storm)
Storm Surge –Hurricane/Nor'easter/Tropical Storm	Storm Surge –Hurricane/Nor'easter/Tropical Storm
Wildfire	Wildfire
Human-based Hazards	
--	Animal Disease
--	Civil Unrest
--	Cyber Attack
--	Economic Collapse
--	Nuclear Hazards
--	Pandemic
--	Power Failure
--	Terrorism

Michael Yaffe concluded the meeting by giving an overview of what is occurring at the State with regards to Executive Order 89 and new FEMA HMA funding (Building Resilient Infrastructure and Communities- BRIC).

Chris Testa, NJOEM, gave an update on the State's priorities in funding mitigation projects. He also provided suggestions of regional stakeholders to bring into the planning process. Those include:

- Port Authority of NYNJ
- NJTPA, NJTA, NJDOT
- Hospitals
- Major Employers
- Municipal Utility Authorities

Michael and Brittany discussed data needs with the County in order to update the plan based on recent FEMA guidance, the preferred outreach strategy, dates for the next meeting, and next steps, which are listed below:

- MB Team will Submit Data Requests
- MB Team will set up a second Steering Committee meeting after all the municipal meetings are held.

STEERING COMMITTEE KICK-OFF MEETING

AGENDA

Virtual Meeting: 10/21/2020: 10:00 - 11:00 am

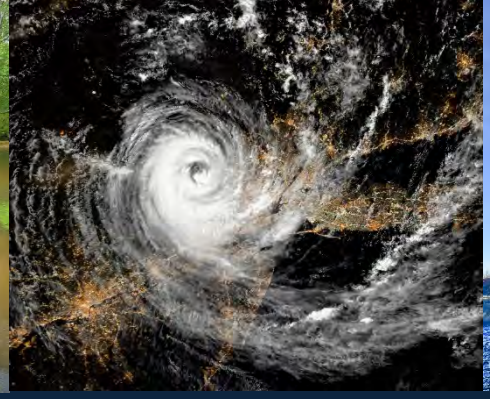
Microsoft Teams (*link to meeting above*)

- **Introductions:**
    - Union County Department of Public Safety
    - Michael Baker International, Inc. Team Members

      Michael Yaffe, AICP, PP, GISP, ENV SP
      Project Manager
      300 American Metro Boulevard, Hamilton, NJ 08619
      [O] 609-807-9683 | [M] 609-346-8405
      Michael.Yaffe@mbakerintl.com

      Brittany Ashman, AICP, LEED GA
      Deputy Project Manager
      300 American Metro Boulevard, Hamilton, NJ 08619
      [O] 609-807-9556| [M] 513-652-3772
      Brittany.Ashman@mbakerintl.com

- **Mitigation Plan Update Overview** ***(Presentation)***
- **Roundtable Discussion:**
    - Update Mitigation Strategy Goals and Hazard Identification
    - Discuss Data Needs
    - Set Dates for Next Meetings
- **Next Steps:**
    - MB will submit data requests to the County
    - MB Team will continue to coordinate with municipalities on updating their capability assessment, mitigation actions, and local risk mapping



Union County Hazard Mitigation Plan Update

Virtual Steering Committee Meeting

October 21, 2020: 10:00 – 11:00 am

Hazard Mitigation

What is Hazard Mitigation?

Hazard mitigation is the **effort to reduce loss of life and property** by **lessening the impact** of disasters.

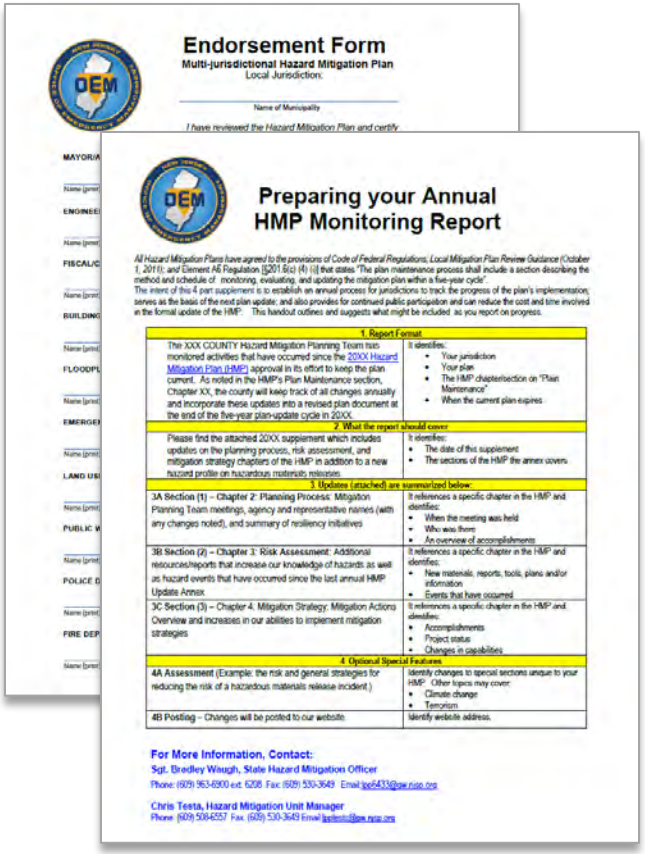
What is a Mitigation Plan?

State, tribal, and local governments engage in hazard mitigation planning to **identify risks and vulnerabilities** associated with natural disasters and **develop long-term strategies** for protecting people and property from future hazard events.

Cranford Township, NJ

New Standard Operating Procedure Updates from the State HMP

- Specific actions that mitigate RL/SRL properties for each jurisdiction
- Easily accessible Municipal Appendices
- Local Jurisdictional Plan Endorsement Form
- Electronic Submission
- Plan Maintenance Procedures



Endorsement Form
Multi-jurisdictional Hazard Mitigation Plan
Local Jurisdiction:

Name of Municipality

I have reviewed the Hazard Mitigation Plan and certify

Preparing your Annual HMP Monitoring Report

All Hazard Mitigation Plans have agreed to the provisions of Code of Federal Regulations, Local Mitigation Plan Review Guidance (October 1, 2011), and Element A6 Regulation, §201.6(c) (4) (i) that states "The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle".
The intent of this 4 part supplement is to establish an annual process for jurisdictions to track the progress of the plan's implementation, serves as the basis of the next plan update, and also provides for continued public participation and can reduce the cost and time involved in the formal update of the HMP. This handout outlines and suggests what might be included as you report on progress.

1. Report Format	
The XXX COUNTY Hazard Mitigation Planning Team has monitored activities that have occurred since the 20XX Hazard Mitigation Plan (HMP) approval in its effort to keep the plan current. As noted in the HMP's Plan Maintenance section, Chapter XX, the county will keep track of all changes annually and incorporate these updates into a revised plan document at the end of the five-year plan-update cycle in 20XX.	It identifies: • Your jurisdiction • Your plan • The HMP chapter/section on "Plan Maintenance" • When the current plan expires
2. What the report should cover	
Please find the attached 20XX supplement which includes updates on the planning process, risk assessment, and mitigation strategy chapters of the HMP in addition to a new hazard profile on hazardous materials releases.	It identifies: • The date of this supplement • The sections of the HMP the annex covers
3. Updates (attached) are summarized below:	
3A Section (1) – Chapter 2: Planning Process: Mitigation Planning Team meetings, agency and representative names (with any changes noted), and summary of resiliency initiatives	It references a specific chapter in the HMP and identifies: • When the meeting was held • Who was there • An overview of accomplishments
3B Section (2) – Chapter 3: Risk Assessment: Additional resources/reports that increase our knowledge of hazards as well as hazard events that have occurred since the last annual HMP Update Annex	It references a specific chapter in the HMP and identifies: • New materials, reports, tools, plans and/or information • Events that have occurred
3C Section (3) – Chapter 4: Mitigation Strategy: Mitigation Actions Overview and increases in our abilities to implement mitigation strategies	It references a specific chapter in the HMP and identifies: • Accomplishments • Project status • Changes in capabilities
4. Optional Special Features	
4A Assessment (Example: the risk and general strategies for reducing the risk of a hazardous materials release incident.)	Identify changes to special sections unique to your HMP. Other topics may cover: • Climate change • Terrorism
4B Posting – Changes will be posted to our website.	Identify website address.

For More Information, Contact:
Sgt. Bradley Waugh, State Hazard Mitigation Officer
Phone: (609) 963-6900 ext. 6208 Fax: (609) 530-3649 Email:bpo6433@gw.njsp.org

Chris Testa, Hazard Mitigation Unit Manager
Phone: (609) 584-6557 Fax: (609) 530-3649 Email:[illegible]@gw.njsp.org

Six Step Planning Process to Update an HMP

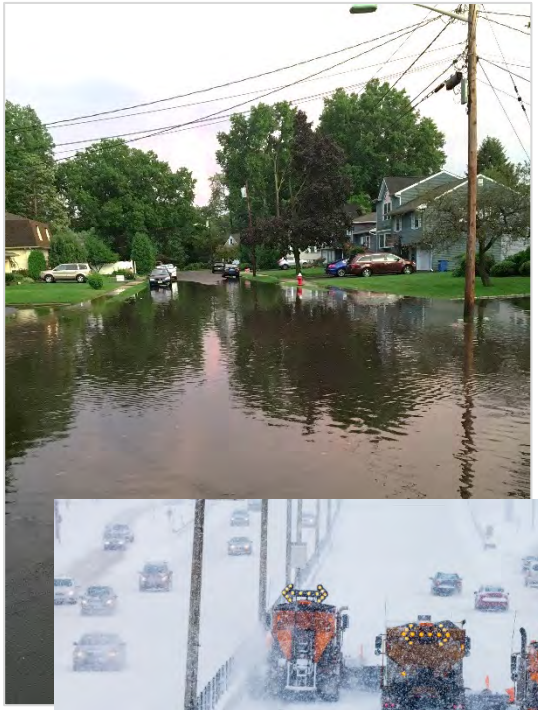
1. Gather Input from Stakeholders
2. Update Risk & Vulnerability Assessment
3. Review and Update Capability Assessment
4. Review and Update Mitigation Strategy
5. Determine Plan Maintenance Process
6. Obtain Mitigation Plan Approval & Adoption

Planning Process

- In progress of **Municipal Meeting Coordination**
- Coordination with **Regional Stakeholders**
- **Project Website** will be active throughout the entire planning process.

www.unionhmp.com

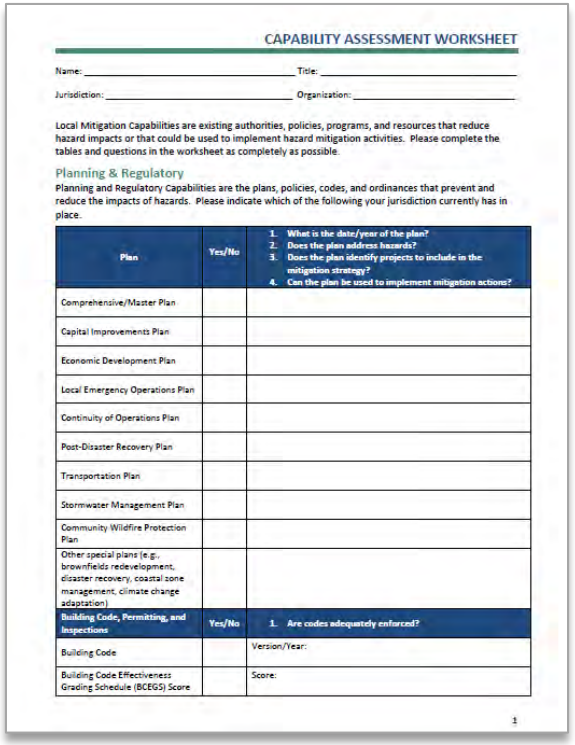
Risk & Vulnerability Assessment



- Disaster Occurrences Since 2016
- FEMA's HAZUS Software
- Potential Effects of Climate Change
- Update Risk Mapping

Capability Assessment

- Each municipality will conduct a capability assessment
- Purpose:
  - Identify **strengths that could reduce losses and reduce risks** in the community.
  - Examines the **integration of existing planning mechanisms** and the Hazard Mitigation Plan.



CAPABILITY ASSESSMENT WORKSHEET

Name: _____ Title: _____

Jurisdiction: _____ Organization: _____

Local Mitigation Capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning & Regulatory

Planning and Regulatory Capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Plan	Yes/No	1. What is the date/year of the plan? 2. Does the plan address hazards? 3. Does the plan identify projects to include in the mitigation strategy? 4. Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan		
Capital Improvements Plan		
Economic Development Plan		
Local Emergency Operations Plan		
Continuity of Operations Plan		
Post-Disaster Recovery Plan		
Transportation Plan		
Stormwater Management Plan		
Community Wildfire Protection Plan		
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)		
Building Code, Permitting, and Inspections	**Yes/No**	**1. Are codes adequately enforced?**
Building Code		Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score		Score:

1

Mitigation Strategy

Union County has 251 Mitigation Actions in Total:

- **175** Actions for **Structure and Infrastructure Projects**
- **38** Actions for **Education and Awareness Programs**
- **35** Actions for **Local Plans and Regulations**
- **3** Actions for **Natural Systems Protection**

44 Mitigation Actions specific to Union County

Mitigation Strategy

Union County — **Union County HMP Mitigation Action Summary**

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-01	Develop All Hazards public education and outreach program for hazard mitigation and preparedness.	Develop All Hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	High	Union County and municipal OEMs		$0.00	1 year	Ongoing
22-02	Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens.	Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens.	Administrative	Education and Awareness Programs	All Hazards	Medium	UC OEM		$0.00	1 year	Ongoing
22-03	Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC (coordinated with Action 22-02)	Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC (coordinated with Action 22-02).	Administrative	Education and Awareness Programs	All Hazards	High	UCOEM, NJOEM	Existing state assets and federal grants	$0.00		Ongoing
22-04	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes	Administrative	Education and Awareness Programs	All Hazards	High	UCOEM and municipal coordinators		$0.00	5 + years	Ongoing
22-05	Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment , e.g., incorporate information re: implementation of Risk MAP initiative as source of improved information re: flood risk in participating municipalities.	Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment , e.g., incorporate information re: implementation of Risk MAP initiative as source of improved information re: flood risk in participating municipalities.	Administrative	Education and Awareness Programs	All Hazards	Medium	UCOEM, Rutgers University, New Jersey Geological Survey (NJGS).		$0.00		Ongoing
22-06	Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories	Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories	Administrative	Local Plans and Regulations	Flood	High	UCOEM		$0.00	Ongoing	Ongoing
22-07	Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation options for critical facilities in A and AE zones.	Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation options for critical facilities in A and AE zones.	Administrative	Local Plans and Regulations	Flood	Medium	Union County and municipal OEMs		$0.00		Ongoing

FEMA's Guides to Expanding Mitigation

- FEMA recently released a new series of guides to highlight emerging partnerships for mitigation.
- Recent guides include how to connect mitigation with:
  - Equity
  - Electric Power
  - Municipal Financing
  - Transportation
  - Public Health
  - Agriculture
  - Arts and Culture

Click Here for Guides to Expanding Mitigation

FEMA Hazard Mitigation Assistance

Hazard Mitigation Assistance Funding Opportunities

1. Hazard Mitigation Grant Program **(HMGP)**
2. Flood Mitigation Assistance **(FMA)**
3. Building Resilient Infrastructure and Communities **(BRIC)**

BRIC Application Period: Sep. 30, 2020 – January 29, 2021

Rehabilitation of High Hazard Dams

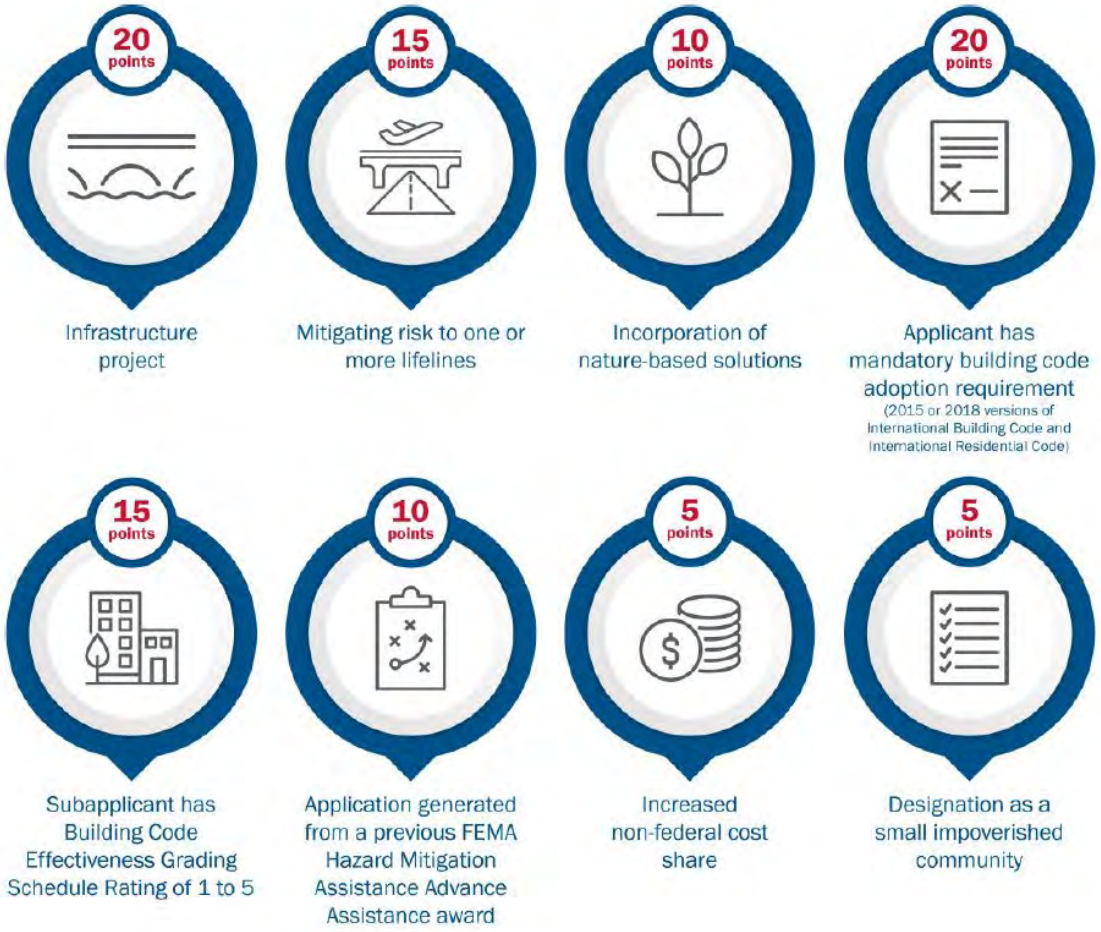
1. Rehabilitation of High Hazard Potential Dam (HHPD) Grant Program

BRIC Project Evaluation Criteria

Qualitive Criteria

BRIC Project Evaluation Criteria

Technical Criteria



Committee Role in the Update Process

- Consider Goals and Hazards for this update
- Provide input and feedback on the project direction and work products
- Help identify regional stakeholders
- Participate and help encourage community engagement
- Complete data requests in a timely manner

Union County HMP Goals

- **Goal 1: Improve education and outreach** efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.
- **Goal 2: Improve data collection, use, and sharing** to reduce the impact of hazards
- **Goal 3: Improve capabilities, coordination, and opportunities** at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities.
- **Goal 4: Pursue opportunities to mitigate** repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities.
- **Goal 5: Mitigate High Hazard-Potential Dams** within the County *(New)*

2016 Plan Hazards Carried Forward

- Dam Failure
- Drought
- Earthquake/Geological
- Erosion—Hurricane/Nor'easter/Coastal Storm
- **Extreme Temperature – Cold**
- **Extreme Temperature – Heat**
- **Flood**
- Hail
- **Hazardous Materials Release – Fixed Site**
- **Hazardous Materials Release – Transportation**
- **High Wind – Straight-line Winds**
- High Wind – Tornado
- Landslide (non-seismic)
- Severe Storm – Lightning
- **Severe Storm – Winter Weather (includes Ice Storm*)**
- **Storm Surge – Hurricane/Nor'easter/Tropical Storm**
- Wildfire

**Impacts from Climate Change and Sea-level Rise will be addressed in each applicable hazard.*

New Hazards to this Plan Update

- Animal Disease
- Civil Unrest
- Cyber Attack
- Economic Collapse
- Nuclear Hazards
- Pandemic
- Power Failure
- Terrorism

Thank You.

Project Website:
www.unionhmp.com

Michael Yaffe AICP, PP, GISP, ENV SP
Project Manger
609-807-9683
michael.yaffe@mbakerintl.com

Brittany Ashman, AICP, LEED GA
Deputy Project Manger
609-807-9556
brittany.ashman@mbakerintl.com

Hazards to Profile in Hazard Mitigation Plan Update

Name Elizabeth Stamler/Bill Kane **Title** Procurement Specialist/OEM Coordinator

Organization Union County Emergency Services **Date** 10-06-2020

Review this entire handout and check all hazards that apply or should be profiled in the plan update.

Hazards Included in 2016 Union County HMP:

2016 Union County HMP Hazards	Include in Update (✓)	Comment
Dam Failure	Yes – medium risk	Low annual probability based on historical data, but impacts potentially significant in site-specific areas
Drought	Yes- medium risk	High annual probability, but impacts generally limited
Earthquake/Geological	Yes – low risk	Very low probability
Erosion – Hurricane/Nor'easter/Coastal Storm	Yes – medium risk	Relatively high annual probability, but impacts are limited to northeastern coastal areas
Extreme Temperature – Cold	Yes – high risk	Relatively high annual probability, but impacts are limited
Extreme Temperature – Heat	Yes – high risk	Relatively high annual probability, but impacts are limited
Flood	Yes – high risk	Widespread impacts, history of occurrences in UC, significant annual damages
Hail	Yes – medium risk	High annual probability but impacts are limited in severity and area
Hazardous Materials Release – Fixed Site	Yes – high risk	High annual probability with impacts potentially severe in site-specific areas
Hazardous Materials Release – Transportation	Yes – high risk	Moderate to high annual probability, but impacts limited in severity and area
High Wind – Straight-Line Winds	Yes – high risk	Hurricanes: relatively low historic probability; potential for widespread impacts; tropical storms: low to moderate probability; potential for widespread impacts
High Wind – Tornado	Yes – medium risk	Moderate to high annual probability, widespread impacts, but losses generally limited except in most extreme events
Ice Storm	Combine with Severe Storm – Winter Weather	Severe impacts; combine with Sever Storm – Winter Weather
Landslide (non-seismic)	Yes – low risk	Low probability with losses typically limited
Severe Storm – Lightning	Yes – low risk	High annual probability, but impacts generally limited
Severe Storm – Winter Weather	Yes (combine with Ice Storm) – high risk	High annual probability, widespread impacts, but losses generally limited
Storm Surge – Hurricane/Nor'easter/Tropical Storm	Yes – high risk	Moderate probability, potential for significant impacts to eastern coastal areas; high hurricane/nor'easter/tropical storm
Wildfire	Yes – low risk	High annual probability of site-specific events, but impacts generally limited

Human-based Hazards Profiled in the State HMP, but Not Included the 2016 Union County HMP:

Human-based Hazard	Include in Update (✓)	Comment
Animal Disease	Yes	
Civil Unrest	Yes	
Crop Failure	No	I would say no, we do not have large farms
Cyber Attack	Yes	
Economic Collapse	Yes	
Fishing Failure	No	I would say no, we are not like other states
Nuclear Hazards	Yes	We do not have a large plant, smaller sources
Pandemic	Yes	
Power Failure	Yes	
Terrorism	Yes	

Are there additional hazards that should be profiled in the Union County HMP that are not listed above? If yes, please identify, and explain why below.

_____

_____

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Hazards to Profile in Hazard Mitigation Plan Update

Name_____Philip Kandl_____**Title**_ Director, Division of Strategic Planning_____

Organization _County of Union _____ **Date**____10/29/2020_____

2016 Union County Hazards:

- Dam Failure
- Drought
- Earthquake/Geological
- Erosion – Hurricane/Nor'easter/Coastal Storm
- Extreme Temperature – Cold
- Extreme Temperature – Heat
- Flood
- Hail
- Hazardous Materials Release – Fixed Site
- Hazardous Materials Release – Transportation
- High Wind – Straight-Line Winds
- High Wind – Tornado
- Ice Storm
- Landslide (non-seismic)
- Severe Storm – Lightning
- Severe Storm – Winter Weather
- Storm Surge –Hurricane/Nor'easter/Tropical Storm
- Wildfire

Please review and provide comments on the County's initial decision regarding hazards to carry forward and add to the plan update.

Hazards Considered for 2021 Union County HMP:

Hazard	Initial Decision to Include Hazard and Hazard Rank	Comment
Dam Failure	Yes – Medium Risk	
Drought	Yes- Medium Risk	
Earthquake/Geological	Yes – Low Risk	
Erosion – Hurricane/Nor'easter/Coastal Storm	Yes – Medium Risk	
Extreme Temperature – Cold	Yes – High Risk	
Extreme Temperature – Heat	Yes – High Risk	
Flood	Yes – High Risk	
Hail	Yes – Medium Risk	

Hazard	Initial Decision to Include Hazard and Hazard Rank	Comment
Hazardous Materials Release – Fixed Site	Yes – High Risk	
Hazardous Materials Release – Transportation	Yes – High Risk	
High Wind – Straight-Line Winds	Yes – High Risk	
High Wind – Tornado	Yes – Medium Risk	
Ice Storm	Combine with Severe Storm – Winter Weather	
Landslide (non-seismic)	Yes – Low Risk	
Severe Storm – Lightning	Yes – Low Risk	
Severe Storm – Winter Weather	Yes (Combine with Ice Storm) – High Risk	
Storm Surge – Hurricane/Nor'easter/Tropical Storm	Yes – High Risk	
Wildfire	Yes – Low Risk	

New Hazards to this Plan Update	
Hazard	**Comment**
Animal Disease	Yes – Low Risk No animal farms or zoos in Union County and only 1 stable
Civil Unrest	Yes – Medium Risk Need to have a coordinated municipal/county response
Cyber Attack	Yes – High Risk Government, business, & individual networks are susceptible
Economic Collapse	Yes - Medium Risk Need to Provide a Safety Net
Nuclear Hazards	Yes – Medium Risk
Pandemic	Yes – High Risk Need to have a coordinated municipal/county response. Need to periodically assess the adequate supply of PPE and hospital capacity.
Power Failure	Yes – High Risk Especially in winter. Need a coordinated plan for people on oxygen and other medical equipment
Terrorism	Yes – High Risk Being geographically located close to NYC – a terrorist target

Hazards Profiled for 2019 State of New Jersey HMP but not included in this HMP Update:

- Fishing Failure
- Crop Failure

Are there additional hazards that should be profiled in the Union County HMP that are not listed above? If yes, please identify, and explain why below.

_____

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Meeting Name: Steering Committee Meeting #1 **Date:** 10/21/2020

Location: Virtual via Microsoft Teams **Meeting Type**: Virtual

First Name	Last Name	Title	Organization	E-mail
Michael	Yaffe	Michael Baker	Baker	Michael.Yaffe@mbakerintl.com
Brittany	Ashman	Michael Baker	Baker	Brittany.Ashman@mbakerintl.com
Chris	Testa	NJOEM	NJOEM	lpptestc@gw.njsp.org
Phil	Kandl	Union County Economic Development and Planning	Union County	pkandl@ucnj.org
William	Kane	Union County Emergency Services	Union County	WKANE@UCNJ.ORG
Elizabeth	Stamler	Union County Emergency Services	Union County	estamler@ucnj.org
Tom	Mineo	Union County Engineer	Union County	tmineo@ucnj.org
Fred	Fretz	Union County Fire Mutual Aid Coordinator	Union County	ffretz@ucnj.org
Annie	McNair	Union County Health	Union County	amcnair@ucnj.org
Jessica	Cohen	Union County Manager's Office	Union County	jessica.cohen@ucnj.org
Chris	Debbie	Union County Police Chief	Union County	cdebbie@ucnj.org
Andrew	Moran	Union County Public Safety Director	Union County	amoran@ucnj.org
Carol	Bianchi	JCP&L	Utility	cbianchi@firstenergycorp.com

MEETING NOTES

Topic: Union County Steering Committee Meeting #2

Date: December 4, 2020

Time: 2:00 – 3:30 pm

Location: Microsoft Teams (Virtual)

Drafted by: Brittany Ashman

1. Introductions

- Union County Department of Public Safety, Division of Emergency Services
  - Elizabeth Stamler
  - William Hunt
- Michael Baker International, Inc. Team Members
  - Michael Yaffe, PP, AICP, GISP, ENV SP
  - Brittany Ashman, AICP, LEED GA
- Roll Call of participants
  - See sign-in sheet.

2. Update to Overall HMP Progress

- Municipal Meeting Findings:
  - Brittany Ashman updated the Steering Committee that approximately 50% of the local mitigation action strategies have been returned to the Project Team
  - Michael Baker is in the process of conducting individual follow-up with each municipality to strengthen their mitigation strategy, gather information about future development (and if it's in a flood zone), and to review their municipal appendices.
  - Reviewed regional mapping of flood vulnerability showing critical facilities and RL/SRL properties location in relation to FEMA's SFHA to start the discussion of possible new mitigation actions for the County. These maps are a part of the confidential appendices.
- Risk and Vulnerability Analysis
  - Michael Yaffe provided an update on how Michael Baker is working with FEMA and DEP to confirm updates to High Hazard Potential Dam Data and RL/SRL data
- Outreach to Regional Stakeholders
  - Michael described that Michael Baker is in the process of coordinating meetings with regional stakeholders, as required by NJOEM.
  - Regional stakeholders include adjoining counties, PANYNJ, NJTA, USACE, and major employers.

3. Review Local Mitigation Actions

- Summary of Regional and Common Municipal Mitigation Actions
    - Brittany summarized regional mitigation actions that have appeared during the local outreach and common municipal mitigation actions by hazard. These are listed below:
- Regional Mitigation Actions
    - Support the Army Corp of Engineers Projects
        - Green Brook Sub Basin (Scotch Plains Township, Somerset County and Middlesex County municipalities)
        - Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford (Rahway City, Linden City, Middlesex County municipalities) and Rahway Basin
    - Cranford wants to coordinate with the County on improving drainage through nature-based solutions at Nomahegan Park.
    - Armor and improve Riverside Dike and Belmere Dike along the Rahway River to reduce flooding.
- Summary of Common Municipal Mitigation Actions
    - Flood-related Hazards
        - Elevate, acquire, or floodproof RL and SRL properties in neighborhoods that experience repetitive flooding.
        - Upgrade and improve stormwater drainage infrastructure that also incorporate nature-based solutions.
        - Improve and retrofit stormwater inlets to reduce pollution and runoff from flooding and storms into waterbodies.
        - Join NFIP or CRS, especially municipalities that receded their participation.
        - Dry-or wet-floodproof critical facilities in SFHA.
        - Adopt stricter ordinances to manage stormwater direction/flood damage prevention ordinances.
        - Elevate emergency evacuation routes above the BFE and incorporate traffic safety measures to reduce the risk of accidents and hazardous materials release.
    - High Wind – Straight-Line Winds
        - Retrofit critical facilities to reduce the impacts of high wind and extreme weather on the structure.
        - Identify High Risk Trees through the Tree Management Program.
    - Power Failure
        - Purchase and install generators at critical facilities, shelters, and housing for vulnerable populations (senior citizens, people with disabilities).
    - Dam Failure
        - Repair, remove, or rehabilitate High Hazard-potential dams.
    - Terrorism

        - Target harden critical facilities by installing surveillance cameras, an access control system, security personnel, and/or bulletproof glass.
    - Cyber Attack
        - Purchase and install a secondary server and data backups for municipal facilities to prevent a cyber-attack.
        - Acquire off-site data storage and complete digitization of critical records.

4. Review County Capabilities and Mitigation Strategy

- Identity New Mitigation Actions
    - Discussed possible new actions for Union County as part of this plan update
    - Going to meet with other County departments to discuss possible new actions
- Review Previous Plan's Mitigation Actions
    - Reviewed previous mitigation actions identified by the County.
    - Project Team will work further with the County Division of Emergency Services to condense and update their actions
- Update Previous Plan's Capability Assessment
    - Reviewed existing plans, policies, programs, and resources that reduce hazard impacts, build resilience, or could be used to implement hazard mitigation activities

Next Steps

- Scheduling meeting with regional stakeholders
- Individual meetings with other County Departments to update the County's mitigation strategy.

STEERING COMMITTEE MEETING #2 AGENDA

Virtual Meeting: December 4, 2020, 2:00 – 3:00 PM

Link to Teams Meeting

- **Introductions**
- **Update to Overall HMP Progress**
    - Municipal Meeting Findings
    - Risk and Vulnerability Analysis
        - Working with FEMA and DEP to confirm updates to High Hazard Potential Dam Data and RL/SRL data
    - Outreach to Regional Stakeholders
        - Adjoining counties, PANYNJ, NJTA, USACE
        - Major employers
- **Review Local Mitigation Actions**
    - Summary of Regional and Common Municipal Mitigation Actions
- **Review County Capabilities and Mitigation Strategy**
    - Identity New Mitigation Actions
    - Review Previous Plan's Mitigation Actions
    - Update Previous Plan's Capability Assessment
- **Next Steps**
    - Scheduling meeting with regional stakeholders

300 American Metro Blvd., Suite 154 | Hamilton, NJ 08619
Office: 609.807.9500 | Fax: 609.807.9550

Regional Mitigation Actions

- Support the Army Corp of Engineers Projects
  - Green Brook Sub Basin (Scotch Plains Township, Somerset County and Middlesex County municipalities)
  - Improvements to Rahway River, including 15,500 linear feet of channel improvements through Cranford (Rahway City, Linden City, Middlesex County municipalities) and Rahway Basin
- Cranford wants to coordinate with the County on improving drainage through nature-based solutions at Nomahegan Park; several RL/SRL properties adjacent to park.
- Armor and improve Riverside Dike and Belmere Dike along the Rahway River to reduce flooding.

Summary of Common Municipal Mitigation Actions

- **Flood-related Hazards**
  - Elevate, acquire, or floodproof RL and SRL properties in neighborhoods that experience repetitive flooding.
  - Upgrade and improve stormwater drainage infrastructure that also incorporate nature-based solutions.
  - Improve and retrofit stormwater inlets to reduce pollution and runoff from flooding and storms into waterbodies.
  - Join NFIP or CRS, especially municipalities that receded their participation.
  - Dry-or wet-floodproof critical facilities in SFHA.
  - Adopt stricter ordinances to manage stormwater direction/flood damage prevention ordinances.
  - Elevate emergency evacuation routes above the BFE and incorporate traffic safety measures to reduce the risk of accidents and hazardous materials release.
- **High Wind – Straight-Line Winds**
  - Retrofit critical facilities to reduce the impacts of high wind and extreme weather on the structure.
  - Identify High Risk Trees through the Tree Management Program.
- **Power Failure**
  - Purchase and install generators at critical facilities, shelters, and housing for vulnerable populations (senior citizens, people with disabilities).
- **Dam Failure**
  - Repair, remove, or rehabilitate High Hazard-potential dams.
- **Terrorism**
  - Target harden critical facilities by installing surveillance cameras, an access control system, security personnel, and/or bulletproof glass.
- **Cyber Attack**
  - Purchase and install a secondary server and data backups for municipal facilities to prevent a cyber-attack.
  - Acquire off-site data storage and complete digitization of critical records.

Meeting Name: Union County Steering Committee Meeting #2 **Date:** 12-04-20

Location: Conference Call **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Michael	Yaffe	Planner	MBI	Michael.Yaffe@mbakerintl.com
Howard	Wolf	Plan Reviewer	NJOEM	howardjwolf@yahoo.com
Phil	Kandl	Director, Division of Strategic Planning	Union County	pkandl@ucnj.org
Annie	McNair	Health Department	Union County	amcnair@ucnj.org
Carol	Bianchi		JCP&L	cbianchi@firstenergycorp.com

MEETING NOTES

Topic: Regional Municipal Meeting #1

Date: October 14, 2020

Time: 2:00 – 3:00 pm

Location: Microsoft Teams (Virtual)

Drafted by: Carrie Martin and Brittany Ashman

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members
- Roll Call of participants
- Michael Yaffe introduces Michael Baker International
    - Consultant chosen to update HMP; had updated State HMP
    - Michael Yaffe as PM
    - Brittany as Deputy PM
- Baker can work with municipalities one-on-one; this meeting is like a kick-off
- Trying to make the process simple for everyone
- Who participated in previous update?
    - Two people out of 10 raised their hands

2. Mitigation Plan Update Overview (Presentation by Brittany Ashman)

- What is Hazard Mitigation Planning?
    - Definition of hazard mitigation and mitigation plan
- New to this plan update
    - Review Union County HMP Goals
    - Review 2016 Plan Hazards carried forward; new hazards added to the plan includes human-based hazards including pandemic, cyber attack, etc.
- Planning Process
    - Gather Input from Stakeholders
        - Public Project Website available
        - Regional stakeholders will be involved in this plan update
        - Will have draft plan posted for comments after County approval
        - Links to more resources, such as mitigation action portfolio
    - Update Risk & Vulnerability Assessment

        - Updating damage assessments and changes in the last 5 years
        - Municipalities to review RL & SRL maps, Critical Facilities Maps
    - Review and Update Capability Assessment
        - Municipalities to update their capabilities in worksheet
    - Review and Update Mitigation Strategy
        - Meat & Potatoes of the document
        - Need to put projects in plan to get FEMA funding
        - Review of current actions
    - CRS points earned from plan update process will be included
- FEMA Hazard Mitigation Assistance Funding
    - HMGP, FMA, and BRIC funding
    - Can apply for BRIC funding now
    - HHPD Grant-State wants an action for High Hazard Dams in the county for funding purposes
    - BRIC Project Evaluation Criteria
        - Highest area of points-risk reduction/resiliency effectiveness
        - Stressing the importance of infrastructure projects, nature-based solutions, mitigation related to community lifelines
        - Prioritize regional risk reduction related to infrastructure projects
        - When submitting for funding, need to go through both State and Federal review and so have to align with State and Federal priorities
    - Examples of Mitigation Projects
        - Available in the FEMA Mitigation Action Portfolio
        - Ex. Northwest Resiliency Park in Hoboken
- Next Steps
    - Meet with other local officials that work with hazard mitigation (e.g. engineer, code enforcer, city planner, administration) and fill out sign-in form to document who is involved
    - Return information on critical facilities, capability assessment, and mitigation strategy to Baker by October 30, 2020
    - Baker can be on individual municipal meetings if preferred
    - Mitigation Actions
        - If Ongoing, Carried Forward, or Withdrawn, FEMA wants to know the reason
        - Baker updated actions from previous plan; if municipalities have any questions on wording, Baker can update
        - Since Team added additional human-based hazards, should include projects related to those hazards as they apply to Homeland Security funding
            - Example actions include target hardening for municipal facilities like bollards, security cameras, etc.

- Looking for new, innovative projects for funding rather than just generators
- Aligning actions with hazards important for FEMA approval

3. Questions

- Joe DiLorenzo- Are there risk reduction projects that also include nature-based solutions?
  - Michael Yaffe-Ex. Northwest Resiliency Park, ecosystem restoration, living shorelines
    - Michael Baker has worked with FEMA on creating guidance as part of Resilience Action Partners
    - Review Nature-Based Solutions document on project website
    - Baker can point to successful cases studies, but has been unfunded in the past
- Joe DiLorenzo-hard to get a good BCA result with nature-based project
  - Michael Yaffe-recommended larger regional solution with nature-based solution integrated into it
- Joe DiLorenzo-Thanks for having the meeting in advance of CRS deadline. When do the forms need to be in?
  - Michael Yaffe-Baker will provide forms to municipalities with forms by the end of the week
    - Please return forms to Baker by the end of the month
- Michael Yaffe-Please meet administrator, planner, engineer, etc. to review the form
- Michael Yaffe-Baker happy to jump on a call and walk you through the forms
- Bill-tomorrow is a repeat of today's session, so if you attended today, you need not attend tomorrow's session.

VIRTUAL MUNICIPAL MEETINGS

AGENDA

Meeting #1: 10/14/2020: 2:00 – 3:00 pm

Meeting #2: 10/15/2020: 10:00 – 11:00 am

Microsoft Teams (*links to meetings above*)

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members

2. Mitigation Plan Update Overview (Presentation)

- What is Hazard Mitigation Planning?
- Project Milestones
- Planning Process
- FEMA Hazard Mitigation Assistance Funding
- Union County Goals and Hazards

3. Questions

4. Next Steps

- Individual Coordination: Brittany Ashman (Michael Baker) will coordinate with each municipality's point of contact on updating each local mitigation strategy, capability assessment, and local risk maps.

The Michael Baker Project Team's Contact Information:

Michael Yaffe, AICP, PP, GISP, ENV SP
Project Manager
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Email: michael.yaffe@mbakerintl.com

Brittany Ashman, AICP, LEED GA
Deputy Project Manager
Phone: 609-807-9556
E-mail: brittany.ashman@mbakerintl.com

Union County Hazard Mitigation Plan Update

Virtual Municipal Meetings

October 14, 2020: 2:00 - 3:00 pm
October 15, 2020: 10:00 – 11:00 am
October 22, 2020: 1:30 – 2:30 pm
October 23, 2020: 10:00 – 11:00 am

Michael Baker INTERNATIONAL

Hazard Mitigation

What is Hazard Mitigation?

Hazard mitigation is the **effort to reduce loss of life and property** by **lessening the impact** of disasters.

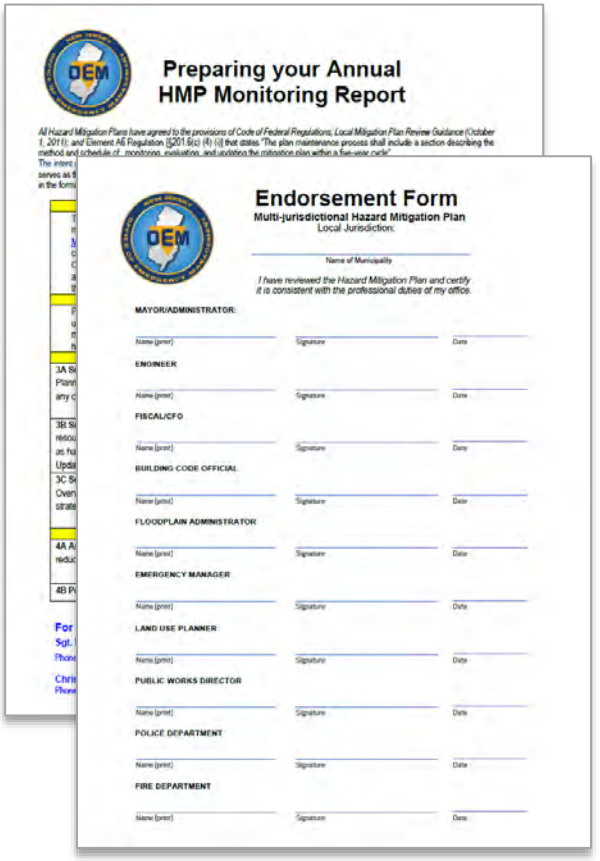
What is a Mitigation Plan?

State, tribal, and local governments engage in hazard mitigation planning to **identify risks and vulnerabilities** associated with natural disasters and **develop long-term strategies** for protecting people and property from future hazard events.

Cranford Township, NJ

New Standard Operating Procedure Updates from the State HMP

- Specific actions that mitigate RL/SRL properties for each jurisdiction
- Easily accessible Municipal Appendices
- Local Jurisdictional Plan Endorsement Form
- Electronic Submission
- Plan Maintenance Procedures



Union County HMP Goals

- **Goal 1: Improve education and outreach** efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.
- **Goal 2: Improve data collection, use, and sharing** to reduce the impact of hazards
- **Goal 3: Improve capabilities, coordination, and opportunities** at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities.
- **Goal 4: Pursue opportunities to mitigate** repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities.
- **Goal 5: Mitigate High Hazard-Potential Dams** within the County *(New)*

2016 Plan Hazards Carried Forward

- Dam Failure
- Drought
- Earthquake/Geological
- Erosion—Hurricane/Nor'easter/Coastal Storm
- **Extreme Temperature – Cold**
- **Extreme Temperature – Heat**
- **Flood**
- Hail
- **Hazardous Materials Release – Fixed Site**
- **Hazardous Materials Release – Transportation**
- **High Wind – Straight-line Winds**
- High Wind – Tornado
- Landslide (non-seismic)
- Severe Storm – Lightning
- **Severe Storm – Winter Weather (includes Ice Storm*)**
- **Storm Surge – Hurricane/Nor'easter/Tropical Storm**
- Wildfire

**Impacts from Climate Change and Sea-level Rise will be addressed in each applicable hazard.*

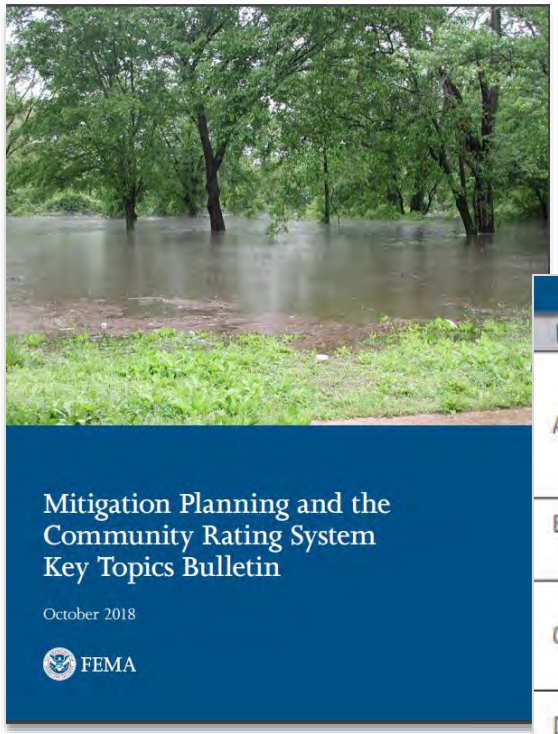
New Hazards to this Plan Update

- Animal Disease
- Civil Unrest
- Cyber Attack
- Economic Collapse
- Nuclear Hazards
- Pandemic
- Power Failure
- Terrorism

Six Step Planning Process to Update an HMP

1. Gather Input from Stakeholders
2. Update Risk & Vulnerability Assessment
3. Review and Update Capability Assessment
4. Review and Update Mitigation Strategy
5. Determine Plan Maintenance Process
6. Obtain Mitigation Plan Approval & Adoption

Integration of HMP and CRS



- Your municipality can earn CRS points for participating in the HMP update planning process

Table 3. Comparison of the Planning Processes

Mitigation Planning Elements*	CRS Planning Steps**	Max Points	Average
A. Planning Process	1. Organize to prepare the plan	15	10
	2. Involve the public	120	34
	3. Coordinate	35	10
	10. Implement, evaluate, revise	26	5
B. Hazard Identification and Risk Assessment	4. Assess the hazard	35	25
	5. Assess the problem	52	29
C. Mitigation Strategy	6. Set goals	2	2
	7. Review possible activities	35	20
	8. Draft an action plan	60	42
D. Plan Update	10. Implement, evaluate, revise 5-year update	*See Element A*	
E. Plan Adoption	9. Adopt the plan	2	2
		382	171

* The planning elements are per Local Mitigation Plan Review Guide and its Plan Review Tool

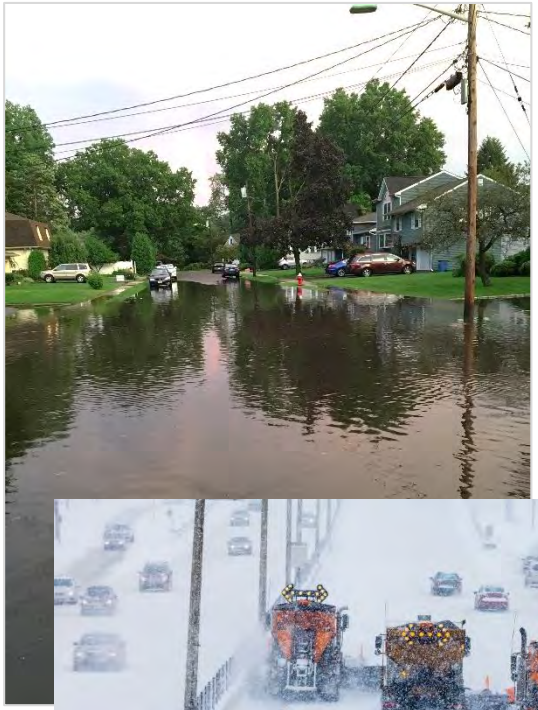
** The 10 steps are detailed in Activity 510, Section 512.a, Floodplain Management Planning (FMP) in the CRS Coordinator's Manual

Planning Process

- Notification and coordination of **Municipal Meetings**
- Coordination with **Regional Stakeholders**
- **Project Website** will be active throughout the entire planning process.

www.unionhmp.com

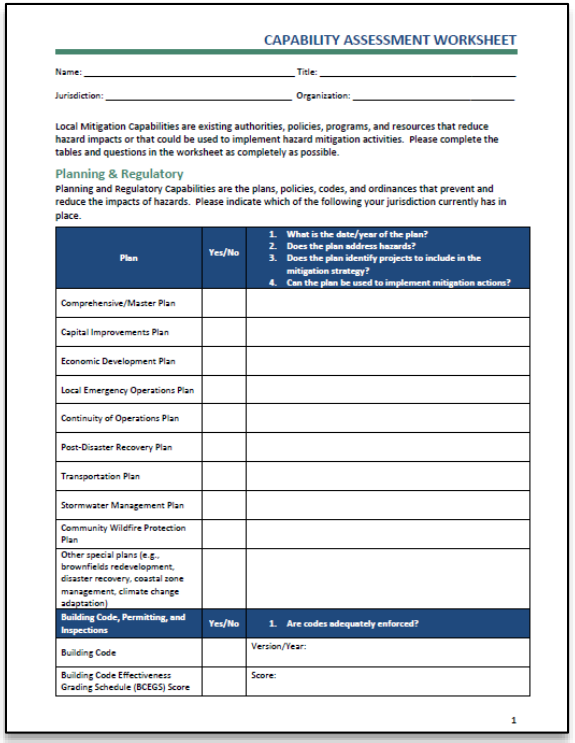
Risk & Vulnerability Assessment



- Previous Disaster Occurrences
- FEMA's HAZUS Software
- Potential Effects of Climate Change
- Local Risk Mapping

Capability Assessment

- Each municipality will conduct a capability assessment
- Purpose:
  - Identify **strengths that could reduce losses and reduce risks** in the community.
  - Examines the **integration of existing planning mechanisms** and the Hazard Mitigation Plan.



CAPABILITY ASSESSMENT WORKSHEET

Name: _____ Title: _____

Jurisdiction: _____ Organization: _____

Local Mitigation Capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning & Regulatory

Planning and Regulatory Capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction currently has in place.

Plan	Yes/No	1. What is the date/year of the plan? 2. Does the plan address hazards? 3. Does the plan identify projects to include in the mitigation strategy? 4. Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan		
Capital Improvements Plan		
Economic Development Plan		
Local Emergency Operations Plan		
Continuity of Operations Plan		
Post-Disaster Recovery Plan		
Transportation Plan		
Stormwater Management Plan		
Community Wildfire Protection Plan		
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)		
Building Code, Permitting, and Inspections	**Yes/No**	**1. Are codes adequately enforced?**
Building Code		Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score		Score:

1

Mitigation Strategy

Union County has 251 Mitigation Actions in Total:

- **175** Actions for **Structure and Infrastructure Projects**
- **38** Actions for **Education and Awareness Programs**
- **35** Actions for **Local Plans and Regulations**
- **3** Actions for **Natural Systems Protection**

Mitigation Strategy

Union County — **Union County HMP Mitigation Action Summary**

Community Action #	Action Name	Action Description	Action Category	Action Type	Hazard(s) Addressed	Priority	Responsible Party	Potential Funding Sources	Cost Estimate	Timeline	Action Status
22-01	Develop All Hazards public education and outreach program for hazard mitigation and preparedness.	Develop All Hazards public education and outreach program for hazard mitigation and preparedness.	Administrative	Education and Awareness Programs	All Hazards	High	Union County and municipal OEMs		$0.00	1 year	Ongoing
22-02	Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens.	Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens.	Administrative	Education and Awareness Programs	All Hazards	Medium	UC OEM		$0.00	1 year	Ongoing
22-03	Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC (coordinated with Action 22-02)	Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC (coordinated with Action 22-02).	Administrative	Education and Awareness Programs	All Hazards	High	UCOEM, NJOEM	Existing state assets and federal grants	$0.00		Ongoing
22-04	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes	Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes	Administrative	Education and Awareness Programs	All Hazards	High	UCOEM and municipal coordinators		$0.00	5 + years	Ongoing
22-05	Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment , e.g., incorporate information re: implementation of Risk MAP initiative as source of improved information re: flood risk in participating municipalities.	Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment , e.g., incorporate information re: implementation of Risk MAP initiative as source of improved information re: flood risk in participating municipalities.	Administrative	Education and Awareness Programs	All Hazards	Medium	UCOEM, Rutgers University, New Jersey Geological Survey (NJGS).		$0.00		Ongoing
22-06	Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories	Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories	Administrative	Local Plans and Regulations	Flood	High	UCOEM		$0.00	Ongoing	Ongoing
22-07	Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation options for critical facilities in A and AE zones.	Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation options for critical facilities in A and AE zones.	Administrative	Local Plans and Regulations	Flood	Medium	Union County and municipal OEMs		$0.00		Ongoing

FEMA Hazard Mitigation Assistance

Hazard Mitigation Assistance Funding Opportunities

1. Hazard Mitigation Grant Program **(HMGP)**
2. Flood Mitigation Assistance **(FMA)**
3. Building Resilient Infrastructure and Communities **(BRIC)**

BRIC Application Period: Sep. 30, 2020 – January 29, 2021

Rehabilitation of High Hazard Dams

1. Rehabilitation of High Hazard Potential Dam (HHPD) Grant Program

BRIC Project Evaluation Criteria

Qualitive Criteria

BRIC Project Evaluation Criteria

Technical Criteria

Examples of Mitigation Projects

- Innovation stormwater detention or retention solutions that incorporate community amenities (e.g. Northwest Resiliency Park)
- Nature-based solutions for stormwater
- Retrofitting critical facilities in a “hurricane-resistant “shell
- Communication Infrastructure Upgrades
- Utility Grid Resilience: smart grid technologies and raising flood barriers around key assets

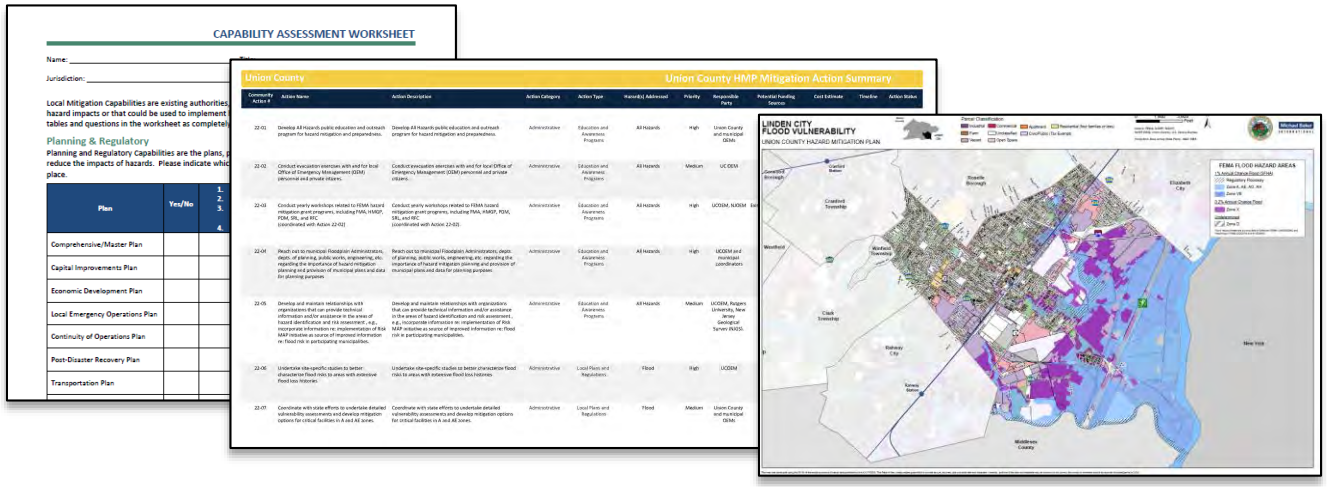
Link to FEMA’s Mitigation Action Profile

Link to FEMA’s Mitigation Ideas

Next Steps

Michael Baker will contact each municipal POC to:

- Review Critical Facilities and RL/SRL properties for Local Risk Mapping
- Update Capability Assessment
- Update Mitigation Strategy



Return documents to Baker by November 6, 2020

Thank You.

Project Website:
www.unionhmp.com

Michael Yaffe AICP, PP, GISP, ENV SP
Project Manger
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michael.yaffe@mbakerintl.com

Brittany Ashman, AICP, LEED GA
Deputy Project Manger
609-807-9556
brittany.ashman@mbakerintl.com

Meeting Name: Regional Municipal Meeting #1 **Date:** 10/14/2020

Location: Virtual via Microsoft Teams **Meeting Type**: Virtual

First Name	Last Name	Title	Organization	Email Address
Don	Loomis	City Engineer	Elizabeth City	DLoomis@ElizabethNJ.org
John	Papetti	Director, Public Works	Elizabeth City	JPapetti@ElizabethNJ.org
Joe	DiLorenzo	CRS Coordinator	Rahway City	Dilorenzo@najarian.com
Rich	Cocca	Detective Sgt., PD	Roselle Park Borough	rcocca@roselleparkpd.org
Michael	Disko	Director, Engineering	Springfield Township	michael.disko@springfield-nj.us
Jennifer	Sherman	OEM Coordinator	Springfield Township	jennifer.sherman@springfield-nj.us
Frederic	Fretz	OEM Coordinator	Union Township	ffretz@uniontownship.com
Frank	Mazzarella	Lt., OEM/PD	Winfield Township	fmazzarella29@gmail.com
Kris	McAloon	Town Engineer	Westfield Town	engineer@westfieldnj.gov
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Michael	Yaffe	Planner	MBI	michael.yaffe@mbakerintl.com
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Carrie	Martin	Planner	MBI	caroline.martin@mbakerintl.com

MEETING NOTES

Topic: Regional Municipal Meeting #2

Date: October 15, 2020

Time: 10:00 – 11:00 am

Location: Microsoft Teams (Virtual)

Drafted by: Carrie Martin and Brittany Ashman

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members
- Roll Call of participants
- Michael Yaffe introduces Michael Baker International
    - Consultant chosen to update HMP
    - Michael Yaffe as PM
    - Brittany as Deputy PM
- Baker can work with municipalities one-on-one; this meeting like a kick-off
- Trying to make the process simple for everyone; just a few forms

2. Mitigation Plan Update Overview (Presentation by Brittany Ashman)

- What is Hazard Mitigation Planning?
    - Definition of hazard mitigation and mitigation plan
- New to this plan update
    - Review Union County HMP Goals
    - Review 2016 Plan Hazards carried forward; new hazards added to the plan includes human-based hazards including pandemic, cyber attack, etc.
- Planning Process
    - Gather Input from Stakeholders
        - Public Project Website available
        - Regional stakeholders will be involved in this plan update
        - Will have draft plan posted for comments after County approval
        - Links to more resources, such as mitigation action portfolio
    - Update Risk & Vulnerability Assessment
        - Updating damage assessments and changes in the last 5 years
        - Municipalities to review RL & SRL maps, Critical Facilities Maps
    - Review and Update Capability Assessment

        - Municipalities to update their capabilities in worksheet
    - Review and Update Mitigation Strategy
        - Meat & Potatoes of the document
        - Need to put projects in plan to get FEMA funding
        - Review of current actions
    - CRS points earned from plan update process will be included
- FEMA Hazard Mitigation Assistance Funding
    - HMGP, FMA, and BRIC funding
    - Can apply for BRIC funding now
    - HHPD Grant-State wants an action for High Hazard Dams in the county for funding purposes
    - BRIC Project Evaluation Criteria
        - Highest area of points-risk reduction/resiliency effectiveness
        - Stressing the importance of infrastructure projects, nature-based solutions, mitigation related to community lifelines
        - Prioritize regional risk reduction related to infrastructure projects
        - When submitting for funding, need to go through both State and Federal review and so have to align with State and Federal priorities
    - Examples of Mitigation Projects
        - Available in the FEMA Mitigation Action Portfolio
        - Ex. Northwest Resiliency Park in Hoboken
- Next Steps
    - Meet with other local officials that work with hazard mitigation (e.g. engineer, code enforcer, city planner, administration) and fill out sign-in form to document who is involved
    - Return information on critical facilities, capability assessment, and mitigation strategy to Baker by October 30, 2020
    - Baker can be on individual municipal meetings if preferred
    - Mitigation Actions
        - If Ongoing, Carried Forward, or Withdrawn, FEMA wants to know the reason
        - Baker updated actions from previous plan; if municipalities have any questions on wording, Baker can update
        - Since Team added additional human-based hazards, should include projects related to those hazards as they apply to Homeland Security funding
            - Example actions include target hardening for municipal facilities like bollards, security cameras, etc.
        - Looking for new, innovative projects for funding rather than just generators
        - Aligning actions with hazards important for FEMA approval
- Will include sign-in sheets for when the towns meet internally

- Reviewed the Union County project website (www.unionhmp.com)

3. Questions

- No questions were asked.

VIRTUAL MUNICIPAL MEETINGS

AGENDA

Meeting #1: 10/14/2020: 2:00 – 3:00 pm

Meeting #2: 10/15/2020: 10:00 – 11:00 am

Microsoft Teams (*links to meetings above*)

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members

2. Mitigation Plan Update Overview (Presentation)

- What is Hazard Mitigation Planning?
- Project Milestones
- Planning Process
- FEMA Hazard Mitigation Assistance Funding
- Union County Goals and Hazards

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- Individual Coordination: Brittany Ashman (Michael Baker) will coordinate with each municipality's point of contact on updating each local mitigation strategy, capability assessment, and local risk maps.

The Michael Baker Project Team's Contact Information:

Michael Yaffe, AICP, PP, GISP, ENV SP
Project Manager
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Brittany Ashman, AICP, LEED GA
Deputy Project Manager
Phone: 609-807-9556
E-mail: brittany.ashman@mbakerintl.com

Meeting Name: Regional Municipal Meeting #2 **Date:** 10/15/2020

Location: Virtual via Microsoft Teams **Meeting Type**: Virtual

First Name	Last Name	Title	Organization	Email Address
Anthony	Padovano	OEM Coordinator	Berkeley Heights Township	apadovano513@verizon.net; apadovano@berkeleyheightsfire.com
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Matthew	Lubin	Fire Official / Administrative Officer	Cranford Township	M-Lubin@cranfordnj.org
Guy	Patterson	OEM Coordinator	Cranford Township	g-patterson@cranfordnj.org
Frederick	Tomkins	Acting Borough Administrator	Fanwood Borough	ftomkins@fanwoodnj.org
John	Piccola	Chief, Fire Department	Fanwood Borough	jwpiccola@gmail.com
Douglas	Ferrigno	Hillside FD	Hillside Township	dferrigno@hillsidefire.org
Michael	Scuderi	Deputy Chief, Kenilworth Fire Dept./OEM	Kenilworth Borough	oem@kenilworthnj.org
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Kathy	Colgan	Secretary, Fire Prevention, Public Safety	Linden City	kcolgan@oem.lindenes-nj.org
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Ralph	Parlapiano	Manager, Public Works	New Providence Borough	
Theresa	Gazaway	Chief of Police	New Providence Borough	tgazaway@nppolice.org
Susan	DeLuise	Deputy OEM Coordinator	New Providence Borough	tristen614@gmail.com
Georgia	Marino	CRS Coordinator	Rahway City	Georgia@najarian.com

Cesar	Perez	OEM Coordinator	Roselle Borough	
Al	Mirabella	Township Manager	Scotch Plains Township	amirabella@ucnj.org
Dennis	VanNatta	OEM Coordinator	Scotch Plains Township	dvannatta@scotchplainsnj.com
Christopher	Battiloro	Chief of Police	Westfield Town	cbattiloro@wpdnj.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Michael	Yaffe	Planner	MBI	michael.yaffe@mbakerintl.com
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Carrie	Martin	Planner	MBI	caroline.martin@mbakerintl.com
Anna	Marshall	Intern	MBI	anna.marshall@mbakerintl.com

MEETING NOTES

Topic: Municipal Regional Meeting #3

Date: October 22, 2020

Time: 1:30 – 2:45 pm

Location: Microsoft Teams (Virtual)

Drafted by: Brittany Ashman

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members
- Roll Call of participants
- Brittany Ashman introduces Michael Baker International
    - Consultant chosen to update HMP
    - Michael Yaffe as PM
    - Brittany as Deputy PM
- Baker can work with municipalities one-on-one; this meeting like a kick-off
- Trying to make the process simple for everyone; just a few forms

2. Mitigation Plan Update Overview (Presentation by Brittany Ashman)

- What is Hazard Mitigation Planning?
    - Definition of hazard mitigation and mitigation plan
- Changes since last plan update:
    - Review Union County HMP Goals
    - Review 2016 Plan Hazards carried forward; new hazards added to the plan includes human-based hazards including pandemic, cyber attack, etc.
    - Review the new Standard Operating Procedure Updates from the State HMP
        - Specific actions that mitigate RL/SRL properties for each jurisdiction
        - Easily accessible Municipal Appendices
        - Local Jurisdictional Plan Endorsement Form
        - Electronic Submission
        - Plan Maintenance Procedures
- Planning Process
    - Gather Input from Stakeholders
        - Public Project Website available

        - Regional stakeholders will be contacted during the planning process
        - Will have draft plan posted for comments after County approval
        - Links to more resources, such as mitigation action portfolio
    - Update Risk & Vulnerability Assessment
        - Updating damage assessments and changes in the last 5 years
        - Municipalities to review RL & SRL maps, Critical Facilities Maps
    - Review and Update Capability Assessment
        - Municipalities to update their capabilities in worksheet
    - Review and Update Mitigation Strategy
        - Meat & Potatoes of the document
        - Need to put projects in plan to get FEMA funding
        - Review of current actions
    - CRS points earned from plan update process will be included
- FEMA Hazard Mitigation Assistance Funding
    - HMGP, FMA, and BRIC funding
    - Can apply for BRIC funding now
    - HHPD Grant-State wants an action for High Hazard Dams in the county for funding purposes
    - BRIC Project Evaluation Criteria
        - Highest area of points-risk reduction/resiliency effectiveness
        - Stressing the importance of infrastructure projects, nature-based solutions, mitigation related to community lifelines
        - Prioritize regional risk reduction related to infrastructure projects
        - When submitting for funding, need to go through both State and Federal review and so have to align with State and Federal priorities
    - Examples of Mitigation Projects
        - Available in the FEMA Mitigation Action Portfolio
    - Ex. Northwest Resiliency Park in Hoboken
- Reviewed the Union County project website (www.unionhmp.com)

- Next Steps
    - Meet with other local officials that work with hazard mitigation (e.g. engineer, code enforcer, city planner, administration) and fill out sign-in form to document who is involved
    - Return information on critical facilities, capability assessment, and mitigation strategy to Baker by November 6, 2020
    - Baker can be on individual municipal meetings if preferred
    - Mitigation Actions
        - If Ongoing, Carried Forward, or Withdrawn, FEMA wants to know the reason
        - Baker updated actions from previous plan; if municipalities have any questions on wording, Baker can update

- Since Team added additional human-based hazards, should include projects related to those hazards as they apply to Homeland Security funding
    - Example actions include target hardening for municipal facilities like bollards, security cameras, etc.
- Looking for new, innovative projects for funding rather than just generators
- Aligning actions with hazards important for FEMA approval

- Will include sign-in sheets for when the towns meet internally

3. Questions

- Both Ken Capobianco (Garwood) and William Nierstedt (Plainfield) wanted to review their 2016 mitigation strategy
    - Discussed who previously worked on 2016 HMP
    - Brittany provided suggestions on new mitigation actions and reviewed FEMA's Mitigation Action Portfolio and Mitigation Ideas document with attendees
- William Nierstedt discussed where within Plainfield the risk of flooding is the highest.
- Ken Capobianco discussed flooding issues from the Garwood Brook which impacts the railroad, roads, and parts of Cranfield.

VIRTUAL MUNICIPAL MEETINGS

AGENDA

Meeting #3: October 22, 2020 1:30 - 2:30 pm

Microsoft Teams (*links to meeting above*)

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members

2. Mitigation Plan Update Overview (Presentation)

- What is Hazard Mitigation Planning?
- Project Milestones
- Planning Process
- FEMA Hazard Mitigation Assistance Funding
- Union County Goals and Hazards

3. Questions

4. Next Steps

- Individual Coordination: Brittany Ashman (Michael Baker) will coordinate with each municipality's point of contact on updating each local mitigation strategy, capability assessment, and local risk maps.

The Michael Baker Project Team's Contact Information:

Michael Yaffe, AICP, PP, GISP, ENV SP
Project Manager
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Email: michael.yaffe@mbakerintl.com

Brittany Ashman, AICP, LEED GA
Deputy Project Manager
Phone: 609-807-9556
E-mail: brittany.ashman@mbakerintl.com

Meeting Name: Regional Municipal Meeting #3 **Date:** 10/22/2020

Location: Virtual via Microsoft Teams **Meeting Type**: Virtual

First Name	Last Name	Title	Organization	Email Address
William	Nierstedt	Director of Planning	Plainfield	william.nierstedt@plainfieldnj.gov
Ken	Capobianco	OEM Coordinator	Garwood	OEMGarwood@Garwood.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com

MEETING NOTES

Topic: Municipal Regional Meeting #4

Date: October 23, 2020

Time: 10:00am – 11:00 am

Location: Microsoft Teams (Virtual)

Drafted by: Brittany Ashman

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members
- Roll Call of participants
- Brittany Ashman introduces Michael Baker International
    - Consultant chosen to update HMP
    - Michael Yaffe as PM
    - Brittany as Deputy PM
- Baker can work with municipalities one-on-one; this meeting like a kick-off
- Trying to make the process simple for everyone; just a few forms

2. Mitigation Plan Update Overview (Presentation by Brittany Ashman)

- What is Hazard Mitigation Planning?
    - Definition of hazard mitigation and mitigation plan
- Changes since last plan update:
    - Review Union County HMP Goals
    - Review 2016 Plan Hazards carried forward; new hazards added to the plan includes human-based hazards including pandemic, cyber attack, etc.
    - Review the new Standard Operating Procedure Updates from the State HMP
        - Specific actions that mitigate RL/SRL properties for each jurisdiction
        - Easily accessible Municipal Appendices
        - Local Jurisdictional Plan Endorsement Form
        - Electronic Submission
        - Plan Maintenance Procedures
- Planning Process
    - Gather Input from Stakeholders
        - Public Project Website available

        - Will have draft plan posted for comments after County approval
        - Links to more resources, such as mitigation action portfolio
    - Update Risk & Vulnerability Assessment
        - Updating damage assessments and changes in the last 5 years
        - Municipalities to review RL & SRL maps, Critical Facilities Maps
    - Review and Update Capability Assessment
        - Municipalities to update their capabilities in worksheet
    - Review and Update Mitigation Strategy
        - Meat & Potatoes of the document
        - Need to put projects in plan to get FEMA funding
        - Review of current actions
    - CRS points earned from plan update process will be included
- FEMA Hazard Mitigation Assistance Funding
    - HMGP, FMA, and BRIC funding
    - Can apply for BRIC funding now
    - HHPD Grant-State wants an action for High Hazard Dams in the county for funding purposes
    - BRIC Project Evaluation Criteria
        - Highest area of points-risk reduction/resiliency effectiveness
        - Stressing the importance of infrastructure projects, nature-based solutions, mitigation related to community lifelines
        - Prioritize regional risk reduction related to infrastructure projects
        - When submitting for funding, need to go through both State and Federal review and so have to align with State and Federal priorities
    - Examples of Mitigation Projects
        - Available in the FEMA Mitigation Action Portfolio
        - Ex. Northwest Resiliency Park in Hoboken
    - Reviewed the Union County project website (www.unionhmp.com)
- Next Steps
    - Meet with other local officials that work with hazard mitigation (e.g. engineer, code enforcer, city planner, administration) and fill out sign-in form to document who is involved
    - Return information on critical facilities, capability assessment, and mitigation strategy to Baker by November 6, 2020
    - Baker can be on individual municipal meetings if preferred
    - Mitigation Actions
        - If Ongoing, Carried Forward, or Withdrawn, FEMA wants to know the reason
        - Baker updated actions from previous plan; if municipalities have any questions on wording, Baker can update

    - Since Team added additional human-based hazards, should include projects related to those hazards as they apply to Homeland Security funding
        - Example actions include target hardening for municipal facilities like bollards, security cameras, etc.
    - Looking for new, innovative projects for funding rather than just generators
    - Aligning actions with hazards important for FEMA approval
- Will include sign-in sheets for when the towns meet internally

3. Questions

- Director Childress (Plainfield): What is the immediate timeline?
    - Brittany: two weeks to meet internally and then send me back the documents. I can attend the local meeting if you would like.
- Oren Dabney (Plainfield): can you send me a copy of this presentation?
    - Brittany: Yes, it is also available on the project website (www.unionhmp.com)

VIRTUAL MUNICIPAL MEETINGS

AGENDA

Meeting #4 October 23, 2020: 10:00 – 11:00 am

Microsoft Teams (*links to meeting above*)

1. Introductions

- Union County Department of Public Safety
- Michael Baker International, Inc. Team Members

2. Mitigation Plan Update Overview (Presentation)

- What is Hazard Mitigation Planning?
- Project Milestones
- Planning Process
- FEMA Hazard Mitigation Assistance Funding
- Union County Goals and Hazards

3. Questions

4. Next Steps

- Individual Coordination: Brittany Ashman (Michael Baker) will coordinate with each municipality's point of contact on updating each local mitigation strategy, capability assessment, and local risk maps.

The Michael Baker Project Team's Contact Information:

Michael Yaffe, AICP, PP, GISP, ENV SP
Project Manager
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Email: michael.yaffe@mbakerintl.com

Brittany Ashman, AICP, LEED GA
Deputy Project Manager
Phone: 609-807-9556
E-mail: brittany.ashman@mbakerintl.com

Meeting Name: Regional Municipal Meeting #4 **Date:** 10/23/2020

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Matthew	DeAnna	Director Public Works	Mountainside	mdeanna@mountainside-nj.com
Keith	Turner	OEM Coordinator	Mountainside	kturner@mountainside-nj.com
Oren	Dabney	Public Works	Plainfield	ok.dabneysr@plainfieldnj.gov
Kenneth	Childress	Fire Director	Plainfield	Kenneth.Childress@plainfieldnj.gov
Aaron	Schrager	City Engineer	Summit	aschrager@cityofsummit.org
Donald	Nelson	OEM Coordinator	Summit	DNelson@cityofsummit.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com

MEETING NOTES

Topic: Union County Meeting #1 – Division of Engineering Coordination

Date: October 26, 2020

Time: 11:30 am – 12:30 pm

Location: Microsoft Teams (Virtual)

Drafted by: Brittany Ashman

- Introductions
  - Union County Division of Emergency Services
  - Union County Division of Engineering
  - Michael Baker International, Inc. Team Members

- High-Hazard Potential Dams
  - FEMA's National Dam Safety Program – High-Hazard Potential Dam (HHPD) Grant Program funding opportunities
  - To be eligible for HHPD funding, a dam must:
    - Be located in a State with a State dam safety program
    - Be classified as "high hazard potential" by the State dam safety program
    - Have an Emergency Action Plan (EAP) approved State dam safety program
    - Fail to meet minimum State dam safety standards and pose a unacceptable risk to the public (as determined by the State)
  - Discussed potential mitigation actions for the reservoir dam in Clark Township since it is owned by the County
    - Reservoir needs to be dredged
    - Conducts inspection by DEP every two years
    - Mostly just issues with overgrown vegetation
    - Replaced the bridge across reservoir after Superstorm Sandy
    - There is a residential development that would be impacted by dam failure
    - Discussed possible beneficial reuse of dredging material
  - Discussed other High-Hazard Potential Dams in the County that will need mitigation actions

- Union County 2016 Mitigation Strategy
  - Reviewed previous mitigation strategy for the County

- Next Steps:
  - Have a second meeting to review each mitigation action with Union County Division of Engineering

Meeting Name: Union County Coordination Meeting #1 **Date:** 10/26/2020

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Thomas	Mineo	Director, Division of Engineering	Union County	tmineo@ucnj.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Michael	Yaffe	Planner	MBI	Michael.Yaffe@mbakerintl.com

MEETING NOTES

Topic: Union County Coordination Meeting #2- Engineering Division Coordination

Date: December 16, 2020

Time: 11:00 am – 12:00 pm

Location: Microsoft Teams (Virtual)

Drafted by: Carrie Martin

- County Engineering
    - Possible Flood Control Projects
        - Peach Orchard Brook in Linden, NJ
            - Stream through residential neighborhood of approximately 10 blocks
            - Floods at lower frequency of rain and causes basement flooding
        - Pumpkin Patch Brook in Clark, NJ
            - Near former Oak Ridge Golf Course
            - Has issues with flooding, runoff from development of the park
        - Clark Reservoir in Clark, NJ
            - Under GSP
            - Class I Dam breach would cause damage
            - Possible dredging project
        - Cranford
            - Flooding issues
            - Preliminary studies done 10+ years ago
            - Want to improve storm drainage, pump station into Rahway River
            - By Mohawk Park, Rahway River floods and causes water accumulation
        - Springfield
            - Laurel Ave along Rahway River
            - When it rains, the backyards get water
        - Berkeley Heights
            - Flooding from streams to the Passaic River leads to the closure of Roosevelt Ave.
        - Working with USACE for Rahway River Basin project
            - Focus on Cranford for flood control
            - Need BCA > 1

        - Can create complimentary projects as a County Engineering
    - Rahway
        - Bridge on E. Hazelwood Ave.
        - Need to erect flood gate on bridge because the levee is higher than the bridge
        - Raise the bridge?
        - Flood gate prevents passage of vehicles
        - Flood gate held during Hurricane Sandy
        - USACE looked at it and said the flood wall worked so did not want to get involved
- Michael Yaffe (Michael Baker)
    - Projects are perfect
    - Ideally, we would like to capture these projects in our forms
    - Can include additional people via email chain
- County Engineering
    - Asked about specifics on the mitigation actions
- Michael Yaffe (Michael Baker)
    - Descriptions can be broad
    - We can assist and identify potential funding sources
    - Need a ballpark estimate of project costs
- County Engineering
    - Can write blurbs about potential projects, with descriptions and their locations
    - Can have Michael Yaffe Disko review
- Michael Yaffe (Michael Baker)
    - We are performing outreach to regional stakeholders
    - Coordination with USACE, Turnpike Authority, and Port Authority of NY/NJ
    - What should we discuss with these stakeholders for alignment between the County Engineering and these entities?
- County Engineering
    - Union County Utilities Authority runs an incinerator near the port. There is a walkway in the back of the plant that is impacted by storms.
    - County Engineering doesn't own much near the port, besides some bridges
    - Bridges may need to be upgraded
    - Dredging in channel doesn't really affect the County Engineering that much
    - New Tremely Point Road will change traffic flow
        - Going to build bridge over the marsh
        - Will take traffic off of Rt. 1
        - Unsure if its NJTA or NJDOT project
- Michael Yaffe (Michael Baker)
    - Port Authority has their own design guidelines for SLR
    - State of NJ may issue own guidelines soon

    - Bridges may be affected by State of NJ guidelines
- County Engineering
    - USACE study on surge after Sandy influenced projects in Linden, Rahway, and Elizabeth
    - County Engineering hasn't gotten feedback on this
    - Bill Kane may be interested if it impacts emergency services
- Michael Yaffe (Michael Baker)
    - Bridges may be at risk
    - Ownership of bridges may be in question
    - Does Union County have any orphan bridges at risk?
- County Engineering
    - Bridges along central railroad are orphan bridges but not sure if they are impacted by storms
    - State has been maintaining these structures
    - County Engineering is sponsoring Gordon St. Bridge project in Roselle
- Michael Yaffe (Michael Baker)
    - May be issues with flooding and evacuation routes involving orphan bridges
- County Engineering
    - All bridges seem to be accounted for, not sure there is a flooding issue with orphan bridges
    - Each town knows their at-risk bridges
    - Mike Disko may have a better insight; he may add to this list
- Michael Yaffe (Michael Baker)
    - When we reach out to NJTA, we will talk to their resilience team, which just moved from Maintenance and Operations to Engineering
- County Engineering
    - NJTA doing projects on the Turnpike and GSP
    - County Engineering has GIS system and digitizes stormwater control
- Michael Yaffe (Michael Baker)
    - These are a capability of the County Engineering
    - Improvements to GIS and asset management systems can also be mitigation actions
- County Engineering
    - We will talk to our expert in this field for ideas
- Michael Yaffe (Michael Baker)
    - Let's quickly run through the priorities for BRIC funding. This may trigger new ideas.
- Brittany Ashman (Michael Baker)
    - I put these together while looking through the Mitigation Portfolio
- Michael Yaffe
    - To clarify, the Mitigation Portfolio was something we put together as part of the Kick-Off; newest guidance from FEMA on BRIC funding

    - We created list of projects that were implemented and could be FEMA funded under BRIC
- Brittany Ashman (Michael Baker)
    - Pulled out high level projects
    - Drainage improvements: upsize culverts, increase flow capacity, create detention basins, create new upsized bulk culverts
- County Engineering
    - Peach Orchard Project involves upsizing 9 separate culverts
    - The most problematic culvert is the one under the railroad tracks
- Brittany Ashman (Michael Baker)
    - [Continuation of BRIC Priorities] Nature-based solutions include increases in flood water storage, creating floodplain and stormwater lots
- County Engineering
    - Our parks already fit that category
    - Project to rehab dam whose sole function is to keep water in the park and keep water from adjacent towns
    - Not easy because you change water flow
    - Laurel Ave. in Springfield-dike was designed but never built
- Brittany Ashman (Michael Baker)
    - [Continuation of BRIC Priorities] projects that increase community amenities, like walking trails, greenways, etc.
- County Engineering
    - Built Lenape Bike Trail on top of dam
    - Springfield project could be combined with off-road bike trail
    - Will talk to Parks Dept. to find projects like this
- Brittany Ashman (Michael Baker)
    - [Continuation of BRIC Priorities] Earthen dam, detention pond in densely populated areas
- County Engineering
    - Clark Reservoir might be a good project for this; we have a number of dams that can be improved and hold more water
- Brittany Ashman (Michael Baker)
    - [Continuation of BRIC Priorities] one project widened a creek and installed water diversion structures to help with flow of creek and included amenities like a kayak-launching area
    - Can create more open space post-pandemic
- County Engineering
    - I'll work on this list of projects with Mike Disko, and put in everything we think will be useful for the County Engineering
- Brittany Ashman (Michael Baker)
    - It's a wish list, can put all the projects you want on the list
- County Engineering

    - Projects may or may not have support from local entities and other County Engineering agencies-need to coordinate
- Brittany Ashman (Michael Baker)
    - We would be happy to coordinate with the Parks Department
- County Engineering
    - May be another project in Union
    - May need more time
- Brittany Ashman (Michael Baker)
    - Continuation of BRIC Priorities] Other projects: roadway elevations with nature-based solutions
    - I identified County Roads near Repetitive Loss properties. Highest risk was Springfield Ave in Cranford.
- County Engineering
    - Pump station project in Cranford is along Springfield Ave
    - Cranford has a number of studies that we can refer to
    - Cranford has its own municipal projects in addition to County coordination and USACE projects
- Brittany Ashman (Michael Baker)
    - Cranford mentioned to me when I met with them that they want to coordinate with the County Engineering on flood control in that area
    - Would suggest creating a mitigation project to control flooding in this area
- County Engineering
    - Want to create reservoir at the top of the river in long-term, but there are short term solutions we can do now

Meeting Name: Union County Coordination Meeting #2 **Date:** 12/16/2020

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Thomas	Mineo	Director of Engineering Division	Union County	tmineo@ucnj.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Michael	Yaffe	Planner	MBI	Michael.Yaffe@mbakerintl.com

MEETING NOTES

Topic: Union County Coordination Meeting #3- Division of Strategic Planning and Intergovernmental Relations, Bureau of Transportation Planning

Date: December 16, 2020

Time: 3:00 – 4:00 pm

Location: Microsoft Teams (Virtual)

Drafted by: Anna Marshall

- Electric Car Planning Study – 2-year study starting in July 2021 until July 2023
- Charging Stations: FEMA defines resilience as getting critical lifelines up after a disaster
- Meeting with Public Health – transportation and pandemics, moving forward?
    - More guidance along these lines
    - Guidelines with transit – route 22 safety shuttle
- County initiative: center island section, including part of Union, Kenilworth, Springfield. Big shopping district. There is no traffic light on route 22, coming from Newark, until you reach New Providence. Bus #95 drops people on the north side of route 22, and the shuttle picks them up and drives them to the other side of the road. It is free to the passengers, 7 days schedule. Allows people to reach their places of employment.
- Electric Charging Stations – not looking at autonomous vehicles as part of the study. Staying with conventional vehicles.
- FEMA funding – looks primarily for mitigation actions related to flood risk reduction and incorporation of nature-based solutions. There could be opportunities for transportation studies to integrate stormwater design as a part of complete streets.
    - These types of improvements are usually popular for main streets, etc. But maybe for the planning study/design guidelines with the County these types of projects can be considered.
- What types of projects is the County looking for?
    - As far as transportation planning is considered, multi-modal transportation. Shipping terminals, and everything else. Trucks, cars, bikes, pedestrian oriented downtowns. Make sure one doesn't preclude the other. In terms of resiliency, this is a relatively new element coming into play.
    - In county government, more of an emphasis on the impact of county roads and drainage.

    - Local government might have more ability to expand the review about resiliency.
- Urban Street Stormwater guide, NACTO.
    - Has good examples to include nature-based solutions.
    - Health and transportation: how to redesign a street to accommodate a pandemic
- County is interested in looking at complete streets
- US DOT infrastructure grants, NJDOT. Source of funding for things like freight studies, hazardous materials
    - Union get most funding for studies from North Jersey Transportation Planning Authority – Regional Studies
    - **Union County Truck Mobility Study** will be finished by end of June.
    - A mitigation action could be to implement the findings from this study.
- Social Vulnerability aspect – evacuation routes and mobility
- Building codes and charging stations
    - Communities are looking at the approval process for these charging stations. Do they need to amend their building codes? Because this technology is relatively new.
    - FEMA's BRIC funding is looking at updating building codes nationally. The NJ dept of community affairs is hesitant to go above this code.
    - Cities like Hoboken have adopted design guidelines about how to make buildings more resilient and elevated from flooding, but not diminish the streetscape.
    - Union County could look into investigating what Hoboken did, and the county can use that as a model. Many times, these guides rely on local community character.
- Pandemic response
    - Meeting with health department to discuss in detail
    - What should be included in the pandemic response?
        - Complete streets, and how to react to pandemic response. Generally, how can the county be better prepared to roll out this response.
        - A lot of times, it will be a Statewide response to pandemics, but this is a learning opportunity about how local counties and municipalities can better communicate with the state.
- Emergency planning
    - Hard to find space for a shelter, no large venues, and hard to find the room to accommodate large populations. The County already is tight with space, and tries to get inventory out within 24 hours, but its hard to sort/store PPE, ventilators, test kits, etc.
    - An example of a venue is the Emergency Center in Kearny. They keep materials on hand for disasters like flooding. The physical space is there to expand for other uses.

    - However, this site is unfortunately in a floodplain! It was built above the flood elevation line though
    - Quarry site in Union County – make language vague in the HMP.
- Airport issues with the pandemic?
    - Issue would be if people were stranded at airport and they must be sheltered.
- Anything else?
    - Light rail? There is work looking at a light rail between Crawford and Elizabeth.
    - Bus rapid transit system between Plainfield and Crawford and then off road between Cranford and Elizabeth. Unused right of way is invaluable. Current effort underway to turn it into a bicycle facility.
    - Light rail is most expensive choice, but most likely to happen.
- What is the flood risk involved?
    - Cranford has flood risk, and design might have to consider best ways to mitigate that risk
- Paratransit
    - Bus system. All must be wheelchair accessible. Not sure if they need larger buses.
    - South to North storm – the south would use up the resources first.

Meeting Name: Union County Coordination Meeting #3 **Date:** 12/16/2020

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Phil	Kandl	Director of Strategic Planning and Intergovernmental Relations Division	Union County	pkandl@ucnj.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Michael	Yaffe	Planner	MBI	Michael.Yaffe@mbakerintl.com
Liza	Betz	Chief of Transportation Planning Bureau	Union County	ebetz@ucnj.org

MEETING NOTES

Topic: Union County Coordination Meeting #4 – Union County Utility Authority Coordination

Date: December 22, 2020

Time: 10:00 am – 11:00 am

Location: Microsoft Teams (Virtual)

Drafted by: Carrie Martin

- UCUA
  - The Union (Rahway) Plant is able to operate, but if there is a surge in the grid and we don't catch it right away, we need to disconnect from grid if its unstable. Can operate on island mode and reconnect to the grid when its stable. If we can't disconnect in time, the grid shuts down.
  - Black start Engine
    - Not currently at the Union Plant
    - Could be considered for the HMP
    - Provides redundancy if the plant goes down
  - Incinerator processes about 1500 tons per day
  - After Sandy, plant was able to stay online but Newark plant was down for 10 days
- Brittany Ashman (Michael Baker)
  - FEMA is interested in nature-based solutions and green infrastructure. Is there any way to incorporate this into power grid redundancy at the plant?
- UCUA
  - The location of the engine can be integrated with landscaping, solar power maybe.
- Brittany Ashman (Michael Baker)
  - FEMA is interested in creating spaces for natural infiltration, like plantings near riverbanks, a stormwater detention network, etc. FEMA is also interested in tying in mitigation to community amenities like Parks & Recreation.
  - A possible mitigation action can be power grid redundancy as well as creating natural stormwater management around the plant to protect offices from flooding.
- William Kane (Union County Emergency Services)
  - Do you own property on the other side of the Rahway creek that goes to the marina?

- UCUA
  - No, we do not. Nearby parcels include a vehicle reclamation company and a local park…there is a detention basin at a nearby property as well. Historic fill nearby can also be removed and can be the location of a Black start engine. This area may still be monitored by NJDEP as it is a historic landfill but can be removed.
- William Kane (Union County Emergency Services)
  - The mound you are referring to may be contaminated with PCBs or oil; cost may be prohibitive to remove the materials.
  - Are there any environmental benefits to the Black start engine?
- UCUA
  - It would be powered by natural gas. A benefit is that it need not be only used during an emergency; if power is needed in the grid for any reason, the engine can be turned on.
  - If we were to use solar power, a lot of it would be needed to get the plant going.
- Brittany Ashman (Michael Baker)
  - It doesn't have to be solar. If the engine is powered by natural gas and the project will include more detention/stormwater management, it can create a more competitive application.
- UCUA
  - Engines are several million dollars. What is the size of the grant?
- Brittany Ashman (Michael Baker)
  - BRIC funding is tied to 6% of disaster aid funding; not up to Congressional appropriations. Match of 75/25.
  - Mitigation action worksheets include technical, legal and environmental impacts to evaluate the feasibility of the project. Risk reduction is the most important-what will be saved if this project is implemented?
- UCUA
  - There needs to be engineering and site plan work. This is the initial phase of the project.
- Brittany Ashman (Michael Baker)
  - There is funding available for planning and engineering studies under the BRIC program (Project Scoping).
- William Kane (Union County Emergency Services)
  - UCUA is an eligible applicant based on their tax status; would be their own applicant under the BRIC funding
- William Kane (Union County Emergency Services)
  - East side of the plant (Riverwalk)-are the doors waterproof? I think this is where the infiltration came from during Hurricane Sandy. There could be a mitigation action for floodproofing the doors. Are there any other utilities that feed the

plant that can be elevate? A few projects in other localities are to elevate infrastructure. Can any other utilities operate cleaner and safer?

- UCUA
  - What about solar panels on the offices? May be something to consider.
- Brittany Ashman (Michael Baker)
  - $446 million is available for competitive mitigation project funding in FY 2020. May change next year. Application period from 9/30/20-1/29/21. Another grant window will open next fall. These projects are more for next year's grant window. 75 federal/25 applicant split.
  - Infrastructure projects, incorporation of nature-based solutions, and the resilience of lifelines earn points in the evaluation of BRIC grant applications.
  - Projects have to be in HMP update to get funding.
- William Kane (Union County Emergency Services)
  - Have you talked to Rahway Valley Sewerage Authority? Because they are only a half a mile or so from us on the river. What kind of redundancy do they have? If I remember right, they may have some engines to keep them going if the plant shuts down. If we tie this project in with them, it could be a huge environmental benefit.
- UCUA
  - We don't usually coordinate with them, but a coordinated effort sounds smart.
- Brittany Ashman (Michael Baker)
  - FEMA likes coordination with adjacent counties and regional stakeholders. They are not part of this effort yet, but I'm on board if we want to bring them in.
  - Is the incinerator site the only facility in a flood zone?
- William Kane (Union County Emergency Services)
  - There are some smaller buildings owned by the County in the flood zone-like the Meals on Wheels building. The County spent a lot of money after hurricanes Sandy and Irene on this building. Can ask Matt (GIS Specialist) to give you a layer of all the facilities in the flood zone.
- Brittany Ashman (Michael Baker)
  - Getting lifelines up and running after storms is a priority for FEMA. We may need to create a mitigation action for Meals on Wheels building.
  - We don't have county facilities layer, but in terms of UCUA, are there any other buildings at risk?
- UCUA
  - The incinerator is the only facility under our jurisdiction. Would be interested in coordinating with Rahway Valley Sewerage Authority.
- Brittany Ashman (Michael Baker)
  - I will provide you with blank forms. Please let me know about the Hurricane Sandy project and if you reach out to any other stakeholders.

- UCUA
  - We can create a mitigation action for a Project Scoping grant for an engineering study to deal with historic fill, Black start engine.
- Brittany Ashman (Michael Baker)
  - You can list the project and note that you will need a study as well.
- UCUA
  - We aren't aware of the expense.
- Brittany Ashman (Michael Baker)
  - That's fine. You can create separate actions for Scoping and the Project itself.
- William Kane (Union County Emergency Services)
  - This plan is for 5 years. Do you ever plan to expand facility? Do we want to identify mitigation actions now in case we need money later?
- Brittany Ashman (Michael Baker)
  - You do have a chance to submit new projects every year as part of Plan Maintenance.
- William Kane (Union County Emergency Services)
  - I have a contact at Rahway Valley Sewerage Authority; we need to see if they are an eligible applicant.

Meeting Name: Union County Coordination Meeting #4 **Date:** 12/22/2020

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Linda	Stender	Director of Planning and Projects for UCUA	Union County Utility Authority	LStender@ucua.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Jack	Bernardino	Asset Manager	Union County Utility Authority /Covanta	JBernardino@covanta.com

MEETING NOTES

Topic: Union County Coordination Meeting #5 –Public Safety and Police Coordination

Date: December 22, 2020

Time: 1:00 pm – 2:30 pm

Location: Microsoft Teams (Virtual)

Drafted by: Carrie Martin

This meeting discussed confidential information and therefore the meeting minutes are located in the confidential version of this HMP update.

Meeting Name: Union County Coordination Meeting #5 **Date:** 12/22/2020

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Gareth	Williams	County 911 Coordinator	Union County	gareth.williams@ucnjps.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Chief	Debbie	Chief of Police	Union County	cdebbie@ucnj.org

MEETING NOTES

Topic: Union County Coordination Meeting #6 – Division of Engineering, Bureau of Geographic Information Systems

Date: January 5, 2021

Time: 11:00 am – 12:00 pm

Location: Microsoft Teams (Virtual)

Drafted by: Brittany Ashman

- Introductions and HMP Updates
  - Brittany Ashman and Michael Yaffe (Michael Baker) gave Matthew Mathan and Daniel Lozano (Union County Bureau of Geographic Information Systems) an update on where the HMP is in the planning process and how they are using GIS to update the risk assessment.

- GIS Critical Facility and Infrastructure Dataset
  - Brittany and Michael asked Matthew and Daniel when they last updated the County and municipal critical facility dataset; the answer was three years ago.
  - Michael Baker is in the process of meeting with each individual municipality to review and update their list of critical facilities from the last plan, which was updated with recent state data. Michael Baker will send the updated shapefile of municipal critical facilities to the County once all the outreach is concluded.
  - Matthew and Daniel update the MOD VI property data every six months and will send the updated property dataset to Michael Baker.
  - Michael Baker and the County discussed the new dataset from the New Jersey Office of GIS – Statewide Address Points Database for New Jersey (Next Generation 9-1-1 Format).
  - Michael Baker asked the County GIS for the County critical facility shapefile to access if any county facilities are at risk of flooding.

- Next Steps
  - Union County GIS will send Michael Baker the following shapefiles:
    - Updated MOD VI properties; and
    - List of County critical facilities.

- Once municipal outreach is complete, Michael Baker will send Union County GIS the updated municipal critical facility database.

Meeting Name: Union County Coordination Meeting #6 **Date:** 01/05/2021

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Daniel	Lozano	GIS Specialist, Division of Engineering Department of Public Works	Union County	dlozano@ucnj.org
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Michael	Yaffe	Planner	MBI	michael.yaffe@mbakerintl.com
Matthew	Mathan	Bureau Chief, Division of Engineering, Bureau of Geographic Information Systems	Union County	mmathan@ucnj.org

REGIONAL STAKEHOLDER MEETINGS

Through stakeholder identification and outreach with the Steering Committee, the Project Team provided opportunities for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as other interests to be involved in planning process. The Project Team contacted several regional stakeholders (listed below) to notify them of this HMP update and provided announcements throughout the planning process on the status of the HMP update. The County offered to formally meet to discuss any regional mitigation projects and actions that should be included in the Union County HMP update. Stakeholders were provided links to the 2016 Union County HMP as well as the 2021 Union County HMP project website. Additional information on hazard mitigation planning and the planning process were included in a formal letter attached to each email.

The Project Team engaged with the following regional stakeholders:

Neighboring Counties

- Essex County
- Hudson County
- Middlesex County
- Morris County
- Somerset County
- New York City: Richmond County

Major Employers

- Merck
- Overlook Medical Center
- Phillips 66 Refinery
- Robert Wood Johnson University Hospital Rahway
- Wakefern Food Corporation (Shoprite)
- Trinitas Regional Medical Center

Regional Planning Organizations

- New Jersey Turnpike Authority
- Port Authority of New York and New Jersey
- U.S. Army Corps of Engineers

The following lists the stakeholders that requested a meeting with Union County.

- Somerset County: January 5, 2021
- Wakefern Food Corporation (Shoprite): January 22, 2021
- Port Authority of NY and NJ: February 2, 2021

MEETING NOTES

Topic: Union County Regional Stakeholder Meeting #1 – Somerset County

Date: January 6, 2021

Time: 2:00 – 2:30 pm

Location: Microsoft Teams (Virtual)

Drafted by: Anna Marshall

- **Introductions**
  - Somerset and Union Counties
  - Michael Baker International, Inc. (Michael Baker)

- **Regional Coordination and Mitigation Strategy**
  - Brittany Ashman (Michael Baker) analyzed 2018 and 2019 actions from Somerset County's HMP for Greenbrook, North Plainfield, Watchung, and Warren which are adjoining municipalities to Union County
    - Action SC 26: Greenbrook flood control project action with Army Corps. Support completion of flood control project. Scotch Plains Twp. (Union County) had this in their mitigation strategy.
  - Question: Has there been any regional coordination between Somerset and Union County?
  - Answer: Not aside from the USACE work
  - Question: How does Union County collaborate with Army Corps?
  - Answer: Union County can look and go back over, but they are not involved with this project at the moment.
  - Michael Baker has reached out to Army Corps in NY district too to discuss their projects.
  - Are there any actions that both Somerset and Union Counties can come together and support that might be worth putting in the mitigation actions?
    - Other regional project is SC 9: this action is something Michael Baker is trying to encourage municipalities to put into their plans.
    - Support development of Green Infrastructure at regional/watershed level that can get completed in phases
  - Question: Maybe Michael Baker can bring mitigation actions in for the regional planning effort?
  - Rutgers University: installation of rain gardens all over Union County for storm water management purposes and Duke Farms. Professor: Chris Obrupta

- He runs a Green infrastructure champions program.
- FEMA Summer Engagement series: MB is contracted nationally for communication outreach.
- Regional Risk: Chris is trying to set us up with a hydrological study with NJIT, Dr. Chu.
- Flood way from FEMA risk maps. Dr. Chu was looking at soil and hydrology – zones within this region.
- Question: Is this from a watershed approach?
- Answer, yes the Raritan River is the focus with flooding

- Greenbrook – projects? This might be highest risk of flooding among the two counties.
- Discussed biological risks – emerald ash borer and spotted lantern flies. And coordination with DEP and forest management
- Question by Somerset County: Are there any unique mitigation actions for ash borer? Not yet for Union County.
- With DEP there is new funding available from FEMA with high hazard dams. To be eligible to submit these grants, the state must update the risk assessment, and counties have to update their plan to point to this risk assessment. Hopefully an easy action.
- Discussed possible regional mitigation actions for future pandemics. Michael Baker largely points to state hazard mitigation plan, mitigation actions for future pandemic response.

Meeting Name: Union County Regional Stakeholder Meeting #1 **Date:** 01/06/2021

Location: Virtual via Microsoft Teams **Meeting Type:** Virtual

First Name	Last Name	Title	Organization	Email Address
Michael	Yaffe	Planner	MBI	Michael.yaffe@mbakerintl.com
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Thomas J.	Scialo	Emergency Support Specialist	Somerset County	Scialo@co.somerset.nj.us
Kayla	Pipas-Keller	Emergency Support Specialist	Somerset County	Keller@co.somerset.nj.us

MEETING NOTES

Topic: Union County Regional Stakeholder Meeting #2 – Wakefern Food Corporation

Date: January 22, 2021

Time: 1:00 – 1:30 pm

Location: Webex (Virtual)

Drafted by: Carrie Martin

- Introductions
- Brittany Ashman
  - Explanation of the Planning Process
- Wakefern
  - Planners assessed the two main facilities in Elizabeth and came up with options for consideration.
  - Have created crisis action plans for the facilities
  - Looking to fill in the gaps in the crisis action plans
  - Elizabeth facilities are above the floodplain
  - Site assessment visit is on file at the county. Wakefern can share. Engineering was completed then.
- Brittany Ashman
  - Has anything been done since the plan was created?
- Wakefern
  - After the site assessment visit, we implemented many of the options for consideration and integrated them into our plan.
  - Russ Lefkis, Senior Supervisor captured options for consideration into plan
- Wakefern
  - Focused on the security for facilities
  - How can private facilities improve?
- Brittany Ashman
  - Funding is available under Homeland Security for target hardening of facilities including cameras, fencing, bollards, etc.
- Wakefern
  - In Elizabeth, one of our facilities is a perishable food warehouse. One of our biggest fears is bioterrorism and food safety. Whatever is at the facility, if contaminated, could be in 9 states.
  - Physical, chemical, and biological agents could contaminate food

- Brittany Ashman
  - We profile crop failure, animal disease, and hazardous materials release. Any projects from your assessment can be included.
- Wakefern
  - We have USDA/USDC inspecting our facilities, but we think about it often
  - We weren't part of the planning per se, but as a recognized CIKR as part of the Exit 14 Planning Strategy, as part of the Food and Agriculture heading, we were identified within planning structure.
- Bill Kane
  - I believe that was done through the Prosecutor's Office and addresses some of the issues that you have discussed. One thing that may be of interest, is do you have redundant power to that facility, and do you have redundant exit points for trucking?
  - We consider you a lifeline for our area, so in that regard, what can the County do in partnership with you to stay operating?
- Wakefern
  - That's a great question because part of our crisis action plan are those ingress and egress points, traffic control points, on-site/off-site collection areas.
  - Our Engineers don't use GIS and perhaps the County and the City could provide that for us.
  - To answer your question, we do have redundant inbound and outbound lanes
- Bill Kane
  - I don't see GIS as an issue, could be a shared service similar to what we do with the towns.
- Brittany Ashman
  - Restoring the lifelines is really something that FEMA considers as important to resilience. If there are any projects that you could benefit from to get up and running again…Generators are what people usually think of, but FEMA is trying to get more proactive ways to not lose power.
- Wakefern
  - What about softer platforms? Superstorm Sandy was a bellweather for us. Within in 72 hours, we were up and running and providing goods and services to 300 stores because of an EOC program within our division. What we could use to enhance our EOC activities is some sort of web-based program for tracking resources and requests because we need to track across state lines.
- Brittany Ashman
  - Yeah that's exactly the kinds of projects we can include in this. We can take a first pass and include under the county and list you as the Responsible Party, so you can work with the County or State to secure funding.
- Bill Kane
  - We are going to switch to an ESRI platform and we have GIS people on staff.
- Wakefern

    - We agree that ESRI is a good platform. Some of the platform are pretty expensive that serve public sector. We have to worry about the bottom line in the private sector. It would be good figure out a collaboration.
    - Does ESRI go across multiple counties? We have other facilities in other counties. Will there be a Statewide platform?
- Bill Kane
    - Can you provide us with one of the platforms that you liked?
- Wakefern
    - We didn't like any of them. FEMA provided us with options but they were disappointing.
- Bill Kane
    - Do you have any choke points due to the railroads over there in Elizabeth ?
- Wakefern
    - The only place is off Division but we don't use that route to access any of the areas we need to get to.
- Bill Kane
    - And even though you are above the floodplain, do you have any wetland encroachment?
- Wakefern
    - Not that I know of. Underground pipes and corrosion may be a problem.
- Bill Kane
    - May be good to include that so Elizabeth is aware of that issue. In Elizabeth, the stormwater infrastructure is aging, and if Elizabeth is planning on doing any upgrades to their system, we ask that they keep Wakefern in mind when doing those upgrades so that they can benefit from it.
- Brittany Ashman
    - Do you serve any vulnerable populations? Do you do anything to get food to more impoverished areas?
- Wakefern
    - A good number of our service areas are in food deserts and in urbanized areas, so yes, to answer your question, yes. Our stores are located in some very impoverished areas.
- Brittany Ashman
    - That's great to know, because FEMA likes to prioritize funding to impoverished areas, so if there are any projects that can help assist you during a storm, or on a daily basis, that might be something to consider.
- Bill Kane
    - Do you support the Food Bank or Salvation Army in our County?
- Wakefern
    - Correct me if I'm wrong, but we may be one of the founders of that Food Bank here in the Union County area. It's constant that we are there.
    - Wakefern and our member institutions support the food bank in the County.

- Brittany Ashman
    - Next steps-I can send out blank forms if you guys want to fill them out. Do you have any questions for us?
    - Explains the timeline for the rest of the planning process and the annual plan review process.
    - I can also send you an example from the County.

Meeting Name: Union County Regional Stakeholder Meeting #2 **Date:** 01/22/2021

Location: Virtual via Webex **Meeting Type**: Virtual

First Name	Last Name	Title	Organization	Email Address
Nancy	Pike	Executive Admin. to Steve Hoptay	Wakefern Food Corporation	Nancy.Pike@wakefern.com
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Steve	Hoptay	Vice President - Asset Protection	Wakefern Food Corporation	Steve.Hoptay@wakefern.com
Derrick	Price	Director - Asset Protection	Wakefern Food Corporation	Derrick.Price@wakefern.com
Russ	Lefkus	Senior Supervisor - Asset Protection	Wakefern Food Corporation	Russ.Lefkus@wakefern.com

MEETING NOTES

Topic: Union County Regional Stakeholder Meeting #3 – PANYNJ

Date: February 2, 2021

Time: 1:30 – 2:00 pm

Location: Webex (Virtual)

Drafted by: Anna Marshall

- Introductions

Michael Yaffe, the Project Manager for Michael Baker International, started the meeting with a brief overview of the agenda and meeting goals, and started the round of introductions of everyone on the WebEx call. The call was to coordinate mitigation actions with Union County, specifically Elizabeth City, The Port Authority, and Michael Baker for the Union County hazard mitigation plan update.

- Michael Yaffe, MBI,
- Brittany Ashman, MBI
- Bill Kane, OEM Office Union County, Deputy Director
- Elizabeth Stamler OEM Office Union County
- Dan, City Engineer for Elizabeth
- Tiffany Chapman, Manager for Mitigation at the Port Authority
- Josh DeFlorio, Chief of Resiliency and Sustainability at the Port Authority

Stakeholder Coordination

An important part of the HMP update is to reach out to Port Authority to discuss County or local actions to help support short and long-term goals of PANYNJ. Three main hubs in Union County:

- Newark Airport
- Elizabeth Marine terminal
- Goethals Bridge
    - Have there been any additional capabilities adopted since last plan update?
        - Now there is the State resiliency goals to consider
    - Are there any local actions to consider for this HMP update that can help the County, local municipalities, and the Port Authority?

Brittany Ashman shared maps about Port Authority's assets at the county scale and local scale, from the FEMA effective Flood Insurance Rate Map (FIRM) from 2016.

- Union County is in broken into 4 groups, and Port Authority has assets in Groups 2 and 3: Critical facility data with FEMA flood zones
- Question: Are there any local or county roads connecting these Critical Facilities? Michael Baker wants to identify these in the plan for future resiliency efforts
    - *Coordination efforts will happen by email to follow up on this question*
- Port Authority said that FEMA sent them a memo/letter showing remapping efforts and it looks more like the effective FIRM instead of PFIRM
    - *During the call, this was sent via email to the participants*

Brittany Ashman then discussed Mitigation Actions about Union County from the State HMP, which are primarily about improving flooding conditions.

- Newark Airport, improving areas subject to flooding.
- Tide gate pumping
- Heating/refrigeration plant
- Climate resiliency guidelines
- Manmade hazards: security upgrades at the airport

Question about climate resilience guidelines from Mike Yaffe to Port Authority:

- How does the local infrastructure get impacted by new elevations from federal funding?
- Answer: All Port Authority projects are required to get NJDEP flood hazard permit. We develop mitigations that don't increase potential of flooding on our neighbors. Standards are applied to facilities with little or no connection outside of Port Authority facility boundaries.
    - An example is Newark Terminal One. Access roadways meet Design Flood Elevation so they correspond with the design of the terminal itself.

County or Local Mitigation Actions to support PANYNJ Operations

- Roadways, surface infrastructure that supports these facilities. Often times, access roads are outside of the Port Authority's immediate or direct control.
- Access infrastructure is important to include, something they are looking at from the New York Side right now.
- At the county side, Michael Baker can add mitigation actions for improvements, but also feasibility studies about how to reduce risk moving forward
    - BRIC funding can provide opportunities

The Marine Terminal and Resiliency Plans

- Mitigating Coastal hazards at the port

- Building 260, Building 11, equipment,
- Human based hazard at security updates over the next 17 years
- These are relatively recent plans, from 2019, so there are not many updates about progress.
- Building 260 and Building 11 are part of FEMA funded reconstruction. Bureaucratic halting at the moment.

Goethals Bridge

- No projects specific to Goethals bridge in the State HMP
- Someone mentioned that there are houses near bridge, damaged by Hurricane.
- Large warehouse as a RL property which has addressed flooding issues

Question from Union County:

Is the tank form? (Fuel form) in a flood zone? And is there adequate fire suppression maintenance?

- *Tiffany from Port Authority will reach out the confirm.*
- *Michael Baker is looking at human caused hazards for the HMP update too.*

Another question: On the northeast corridor, there is a road owned by city of Elizabeth. Is there a signal for emergency services access?

- *Tiffany will check.*

Next Steps

- Michael Baker will do an more analysis of areas of flooding, specifically looking to identify routes for mitigation strategies.
  - Roads with high traffic counts can pass a VCA.
- Newark Avenue east is a main throughfare out of the Marine terminal.
  - 50 person traffic engineer team with Elizabeth? Or Port Authority?
- Michael Baker has access to everything online so far, and is there anything else to be aware of that hasn't been discussed?
  - Tiffany: PANYNJ is embarking on a tropical cyclone risk assessment to cover the next year, 18th months. Michael Baker can note this capability in the HMP update.
- Plan for any coordination to check in?
  - Always a good idea to have coordination and communication with partners.
  - Elizabeth and Bill from Union County can be the lead on this to capture mitigation projects.
- Bill asked a question: Are there any exposed pipelines in between runway and turnpike? Any easement?

- *Josh from Port Authority: probably no, but we will confirm*

Meeting Name: Union County Regional Stakeholder Meeting #3 - PANYNJ **Date:** 02/02/2021

Location: Virtual via Webex **Meeting Type**: Virtual

First Name	Last Name	Title	Organization	Email
Joshua	DeFlorio	Chief of Resilience and Sustainability	PANYNJ	jdeflorio@panynj.gov
William	Kane	Deputy Director, Division of Emergency Services	Union County	wkane@ucnj.org
Elizabeth	Stamler	Procurement Specialist, Division of Emergency Services	Union County	estamler@ucnj.org
Brittany	Ashman	Planner	MBI	brittany.ashman@mbakerintl.com
Michael	Yaffe	Planner	MBI	Michael.Yaffe@mbakerintl.com
Tiffany	Chapman	Mitigation Manager	PANYNJ	tachapman@panynj.gov

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:03 PM
To: Essexoem@essexsheriff.com
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Essex County.pdf

Good Afternoon Sheriff Fontoura,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Essex County.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Local risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below. More information regarding the Union County HMP update is in the attached letter.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Brittany Ashman, AICP, LEED GA

Deputy Project Manager | Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9556 | [M] 513-652-3772
brittany.ashman@mbakerintl.com | www.mbakerintl.com

Michael Baker
INTERNATIONAL

80 YEARS Making a Difference

December 30, 2020

Sheriff Armando Fontoura
OEM Coordinator
Essex County Sheriff's Office
560 Northfield Ave.
West Orange, NJ 07052

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Sheriff Fontoura,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Essex County.** The goal of this meeting is to discuss any regional mitigation actions that should be discussed or included in the Union County HMP.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Regional risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

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Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683
michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:01 PM
To: Bill.johnson@co.middlesex.nj.us
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Middlesex County.pdf

Good Afternoon Bill,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Middlesex County.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

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Thank you,

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Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Brittany Ashman, AICP, LEED GA
Deputy Project Manager | Associate
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brittany.ashman@mbakerintl.com | www.mbakerintl.com

Deputy Project Manager | Associate
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brittany.ashman@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL

80 YEARS Making a Difference

December 30, 2020

Bill Johnson
OEM Coordinator, Emergency Services Center
County of Middlesex
1001 Fire Academy Dr
Sayreville, NJ 08872

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. Johnson,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Middlesex County.** The goal of this meeting is to discuss any regional mitigation actions that should be discussed or included in the Union County HMP.

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CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:06 PM
To: angelal@dep.nyc.gov
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County, NJ HMP Coordination
Attachments: Union County HMP Coordination NYC.pdf

Good Afternoon Angela,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Richmond County/New York City Department of Environmental Protection.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

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Thank you,

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Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

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Brittany Ashman, AICP, LEED GA

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300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9556 | [M] 513-652-3772
brittany.ashman@mbakerintl.com | www.mbakerintl.com

December 30, 2020

Angela Licata
Deputy Commissioner of Sustainability
NYC Department of Environmental Protection
Flushing, NY

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Ms. Licata,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

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CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:08 PM
To: jwoods@hcnj.us
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Hudson County.pdf

Good Afternoon Jim,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Hudson County.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

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Thank you,

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Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

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Michael Baker INTERNATIONAL

80 YEARS Making a Difference

December 30, 2020

Jim Woods
OEM Coordinator, Office of Emergency Management
County of Hudson
830 Bergen Ave.
Jersey City, NJ 07306

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. Woods,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

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CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 1:57 PM
To: sdigiralomo@co.morris.nj.us
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Morris County.pdf

Good Afternoon Scott,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

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Thank you,

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Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Brittany Ashman, AICP, LEED GA

Deputy Project Manager | Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9556 | [M] 513-652-3772
brittany.ashman@mbakerintl.com | www.mbakerintl.com

December 30, 2020

Scott DiGiralomo
OEM Coordinator
County of Morris
500 West Hanover Ave
Parsippany, NJ 07054

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. DiGiralomo,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

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CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:23 PM
To: tmccarthy@rwjuhr.com
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination RWJ Rahway.pdf

Good Afternoon Terrence,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

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brittany.ashman@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL

80 YEARS Making a Difference

December 30, 2020

Terrence McCarthy
Director, Clinical Services
Robert Wood Johnson University Hospital Rahway
65 Stone St.
Rahway, NJ 07065

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. McCarthy,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

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michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Solomon, Philip <Psolomon@trinitas.org>
Sent: Thursday, January 14, 2021 3:52 PM
To: Ashman, Brittany
Cc: Yaffe, Michael; Bill Kane; Elizabeth Stamler
Subject: EXTERNAL: RE: Union County HMP Coordination

Brittany,

We reviewed the HMP and have no comments at this time. We do not wish a virtual meeting, but acknowledge the opportunity to participate in the process with thanks.

Philip E. Solomon
Safety Officer / Emergency Preparedness Coordinator
Trinitas Regional Medical Center
225 Williamson Street
Elizabeth NJ 07207
phone - 908-994-8257
fax - 908-232-5157
cell - 908-296-7770

From: Ashman, Brittany [mailto:Brittany.Ashman@mbakerintl.com]
Sent: Wednesday, December 30, 2020 2:21 PM
To: Solomon, Philip
Cc: Yaffe, Michael; Bill Kane; Elizabeth Stamler
Subject: Union County HMP Coordination

Good Afternoon Phil,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Trinitas Regional Medical Center.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

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Thank you,

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. . . . . .

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December 30, 2020

Steve Hoptay
Vice President - Asset Protection
Wakefern Food Corporation
505 Division St.
Elizabeth, NJ 07201

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. Hoptay,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

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Technical Project Manager | Senior Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683
michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:21 PM
To: psolomon@trinitas.org
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Trinitas .pdf

Good Afternoon Phil,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Trinitas Regional Medical Center.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Local risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below. More information regarding the Union County HMP update is in the attached letter.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Brittany Ashman, AICP, LEED GA

Deputy Project Manager | Associate
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brittany.ashman@mbakerintl.com | www.mbakerintl.com

December 30, 2020

Phil Solomon
Safety Officer and Emergency Preparedness Coordinator
Trinitas Regional Medical Center
225 Williamson St.
Elizabeth, NJ 0720

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. Solomon,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Trinitas Regional Medical Center.** The goal of this meeting is to discuss any regional mitigation actions that should be discussed or included in the Union County HMP.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Regional risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com**) to schedule a meeting**. Should you have any questions regarding this project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed at the end of this letter.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683
michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:11 PM
To: richard_a_davis@merck.com
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Merck.pdf

Good Afternoon Rick,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Merck.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Local risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below. More information regarding the Union County HMP update is in the attached letter.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
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Michael Baker INTERNATIONAL 80 YEARS Making a Difference

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brittany.ashman@mbakerintl.com | www.mbakerintl.com

December 30, 2020

Rick Davis
Director, Compliance and Risk Management
Merck
2000 Galloping Hill Rd.
Kenilworth, NJ 07033

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. Davis,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Merck.** The goal of this meeting is to discuss any regional mitigation actions that should be discussed or included in the Union County HMP.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Regional risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com**) to schedule a meeting**. Should you have any questions regarding this project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed at the end of this letter.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
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michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:19 PM
To: timothy.cummings@atlantichealth.org
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Overlook.pdf

Good Afternoon Tim,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Overlook Medical Center.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

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- Mitigation actions to add to this plan update; and
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If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below. More information regarding the Union County HMP update is in the attached letter.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Brittany Ashman, AICP, LEED GA

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brittany.ashman@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL

80 YEARS Making a Difference

December 30, 2020

Tim Cummings
Security Manager
Overlook Medical Center
99 Beauvoir Ave.
Summit, NJ 07901

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Mr. Cummings,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Overlook Medical Center.** The goal of this meeting is to discuss any regional mitigation actions that should be discussed or included in the Union County HMP.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Regional risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com**) to schedule a meeting**. Should you have any questions regarding this project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed at the end of this letter.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683
michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, December 30, 2020 2:17 PM
To: nancy.p.sadlon@p66.com
Subject: Union County HMP Coordination
Attachments: Union County HMP Coordination Refinery.pdf

Good Afternoon Nancy,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016.

In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Phillips 66 Refinery.** The goal of this meeting is to discuss any regional mitigation projects and actions that should be included in the Union County HMP update.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Local risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below. More information regarding the Union County HMP update is in the attached letter.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Brittany Ashman, AICP, LEED GA
Deputy Project Manager | Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9556 | [M] 513-652-3772
brittany.ashman@mbakerintl.com | www.mbakerintl.com

December 30, 2020

Nancy Sadlon
Manager of Public Affairs
Phillips 66 Refinery
1400 Park Ave.
Linden, NJ 07036

Re: Regional Stakeholder Outreach for the Union County Hazard Mitigation Plan

Dear Ms. Sadlon,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to update the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with Phillips 66 Refinery.** The goal of this meeting is to discuss any regional mitigation actions that should be discussed or included in the Union County HMP.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. The topics of conversation may include the following:

- Regional risk mapping;
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com**) to schedule a meeting**. Should you have any questions regarding this project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed at the end of this letter.

The 2016 Union County HMP is located here. The 2021 Union County HMP project website (www.unionhmp.com) will be used throughout the planning process to post information, collect comments, announce meetings, and to post draft documents and materials.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683
michael.yaffe@mbakerintl.com | www.mbakerintl.com

CC: Mr. William Kane, Union County Divison of Emergency Services, Deputy Director
Ms. Elizabeth Stamler, Union County Divison of Emergency Services, Procurement Specialist
Ms. Brittany Ashman, Michael Baker, Deputy Project Manager

Ashman, Brittany

From: Yaffe, Michael
Sent: Monday, December 28, 2020 4:12 PM
To: Hesslein, Daniel
Cc: Miller, Regan; Ashman, Brittany
Subject: FW: Union County HMP - Regional Coordination with NJTA
Attachments: 2019_NJ_State_HMP_Mitigation_Strategy_NJTA.pdf

Hi Dan,

Brittany kindly sent this meeting request out based on a meeting with Union County and NJOEM. Chris Testa asked Union County to coordinate with NJTA as a stakeholder for the update to the County's Hazard Mitigation Plan (we were selected to update their plan). Hopefully this is an easy meeting were Baker can connect the dots for the County and NJTA. Essentially looking for projects to add to the County plan that may help NJTA and vice versa.

Call me if you have any questions. Also heard this is movement at DEP. NJTA will likely be contacted soon on the Strategy.

-Mike

From: Ashman, Brittany <Brittany.Ashman@mbakerintl.com>
Sent: Monday, December 28, 2020 2:25 PM
To: Fischer@njta.com; hesslein@njta.com
Cc: Yaffe, Michael <Michael.Yaffe@mbakerintl.com>; Bill Kane <wkane@ucnj.org>; Elizabeth Stamler <estamler@ucnj.org>
Subject: Union County HMP - Regional Coordination with NJTA

Good Afternoon,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to assist in updating the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with your office**. The goal of this meeting is to understanding any flood reduction projects currently underway within Union County, discuss any local projects and mitigation actions that the County and its local municipalities might be interested in pursuing, and NJTA's mitigation actions identified in the 2019 New Jersey State HMP that align with the Union County HMP (attached). Additionally, Michael Baker would like to discuss harmonizing the Union County HMP with NJTA's future plans and endeavors for designing future resilient infrastructure.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. Based on the targeted discussion, participants attending the roundtable discussion may include the following offices. Please forward to others who may be able to contribute to this discussion.

- Engineering
- Operations
- Community & Government Relations

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the planning process, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information is listed below.

Michael Yaffe AICP, PP, GISP, ENV SP
Deputy Department Manager | Planning Lead | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

Brittany Ashman, AICP, LEED GA
Senior Planner | Associate
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brittany.ashman@mbakerintl.com | www.mbakerintl.com

Ashman, Brittany

From: Yaffe, Michael
Sent: Monday, December 28, 2020 3:32 PM
To: Ashman, Brittany; jdeflorio@panynj.gov; tachapman@panynj.gov
Cc: Bill Kane; Elizabeth Stamler
Subject: RE: Union County HMP - Regional Coordination with PANYNJ

Tiffany and Josh,

Hope you are doing well and are having a Happy Holidays. We last spoke during the Update to the New Jersey State Hazard Mitigation Plan that Michael Baker International updated for the New Jersey Office of Emergency Management (NJOEM). We are currently assisting Bill and Elizabeth on updating Union County's Hazard Mitigation Plan. During our Steering committee meeting, NJOEM asked the County to coordinate with PANYNJ as a stakeholder. That is why Brittany is kindly reaching out below.

Elizabeth City has also expressed an interest in joining any future meetings to discuss potential mitigation actions. Historically they have had their own Hazard Mitigation Plan, but will be rolling there plan into the County's plan.

Happy to discuss further if you have any questions.

Best,

Mike

Michael Yaffe AICP, PP, GISP, ENV SP
Deputy Department Manager | Planning Lead | Senior Associate
Environmental Resources, Water, and Community Planning Department
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9683 | [M] 609-346-8405
michael.yaffe@mbakerintl.com | www.mbakerintl.com

From: Ashman, Brittany <Brittany.Ashman@mbakerintl.com>
Sent: Monday, December 28, 2020 2:28 PM
To: jdeflorio@panynj.gov; tachapman@panynj.gov
Cc: Yaffe, Michael <Michael.Yaffe@mbakerintl.com>; Bill Kane <wkane@ucnj.org>; Elizabeth Stamler <estamler@ucnj.org>
Subject: Union County HMP - Regional Coordination with PANYNJ

Good Afternoon Josh and Tiffany,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to assist in updating the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. The Disaster Mitigation Act of 2000 (DMA 2000) established a requirement that in order for local jurisdictions to remain eligible for Federal disaster assistance and grant funds, they must develop and adopt a Federal Emergency Management Agency (FEMA)-approved HMP and update that plan every five years.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with your office**. The goal of this meeting is to understand current hazard mitigation planning efforts in relation to your recent plans, including the Port Master Plan 2050 and the Climate Resilience Design Guidelines. Michael Baker would also like to review the PANYNJ's mitigation actions identified in the 2019 New Jersey State HMP that align with the Union County HMP (attached) and discuss local projects and mitigation actions that the County and its local municipalities are interested in pursuing and how they may harmonize with the PANYNJ's future plans and endeavors for designing future resilient infrastructure.

Virtual meetings are targeted for anytime between Monday, January 4th through Monday, January 25, 2021. Based on the targeted discussion, participants attending the roundtable discussion may include the following offices. Please forward to others who may be able to contribute to this discussion.

- Sandy Mitigation and Resiliency
- Resilience & Sustainability

If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the planning process, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below:

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brittany.ashman@mbakerintl.com | www.mbakerintl.com

Michael Baker 80 YEARS Making

Ashman, Brittany

From: Ashman, Brittany
Sent: Wednesday, January 6, 2021 12:58 PM
To: joseph.j.seebode@nan02.usace.army.mil; peter.m.weppler@usace.army.mil; bryce.w.wisemiller@usace.army.mil
Cc: Yaffe, Michael; William Kane; Elizabeth Stamler; Veraart, Niek; Barone, Daniel
Subject: Union County HMP - Regional Coordination with USACE

Good Afternoon,

The Union County Division of Emergency Services has contracted Michael Baker International, Inc. (Michael Baker) to assist in updating the Union County Multi-Jurisdictional Hazard Mitigation Plan (HMP), last updated in 2016. This HMP is required by state and federal agencies in order for communities in Union County to be eligible for certain types of state and federal hazard mitigation and disaster relief funds.

Union County is currently conducting local and regional outreach to identify risks and vulnerabilities associated with natural and human-based disasters and develop long-term mitigation strategies to reduce that risk. In an effort to reach more regional stakeholders, gather more input and data, and build a more comprehensive County HMP, **members from the Michael Baker project team would like to hold a virtual meeting with your office**. The goal of this meeting is to coordinate with USACE on any local mitigation actions or coordination actions that may be beneficial to your agency.

Virtual meetings are targeted for anytime between Monday, January 11th through Friday, January 29, 2021. Based on the targeted discussion, participants attending the roundtable discussion may include personnel located within the New York District that handle emergency operations, civil works projects, and flood mitigation. Please forward to others who may be able to contribute to this discussion.

The topics of conversation include the following:

- Current USACE projects within Union County (Raritan River Basin, Green Brook Sub-basin projects)
- Mitigation actions to add to this plan update; and
- Identify any key stakeholders that may want support moving forward.

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If you would like to attend a meeting to discuss the Union County HMP update, please provide your preferred meeting date/time directly to Brittany Ashman (Brittany.Ashman@mbakerintl.com) to schedule a meeting. Should you have any questions regarding the project, you may contact Michael Yaffe at 609-807-9683. Both Michael and Brittany's contact information are listed below.

Thank you,

Michael Yaffe AICP, PP, GISP, ENV SP
Technical Project Manager | Senior Associate
Environmental Resources, Water, and Community Planning Department
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LOCAL MITIGATION PLAN REVIEW TOOL 2019

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

<table>
<tr><td>Jurisdiction: Union County</td><td>Title of Plan: Union County Hazard Mitigation Plan Update</td><td>Date of Plan: 2021</td></tr>
<tr><td colspan="2">Local Point of Contact: William Kane</td><td rowspan="3">Address:
Union County Division of Emergency Services
300 North Ave East
Westfield, NJ 07090</td></tr>
<tr><td colspan="2">Title: Deputy OEM Coordinator</td></tr>
<tr><td colspan="2">Agency: Union County Division of Emergency Services</td></tr>
<tr><td colspan="2">Phone Number: 908-654-9881</td><td>E-Mail: wkane@ucnj.org</td></tr>
</table>

State Reviewer: **Christopher Testa** **Howard Wolf**	**Title:** **Mitigation Manager** **Planner**	**Date:** **September 30, 2021**

FEMA Reviewer: **Gary Monitz**	**Title:** **Hazard Mitigation Planner**	**Date:** **November 17, 2021**
Date Received in FEMA Region ***(insert #)***		
Plan Not Approved		
Plan Approvable Pending Adoption	11/17/2021	
Plan Approved		

SECTION 1:

REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))		X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))		X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))		X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))		X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))		X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))		X	
ELEMENT A: REQUIRED REVISIONS All requirements have been met.			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))		X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))		X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))		X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))		X	
ELEMENT B: REQUIRED REVISIONS All requirements have been met. Please see Opportunities for Improvement, below.			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))		X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))		X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))		X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))		X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))		X	
ELEMENT C: REQUIRED REVISIONS All requirements have been met. Please see Opportunities for Improvement, below.			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))		X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))		X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))		X	
ELEMENT D: REQUIRED REVISIONS All requirements have been met.			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))			NA
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			NA
ELEMENT E: REQUIRED REVISIONS This requirement will be met once the plan is adopted by the local governing bodies.			
OPTIONAL: HIGH HAZARD POTENTIAL DAM RISKS			
HHPD1. Did Element A4 (planning process) describe the incorporation of existing plans, studies, reports, and technical information for high hazard potential dams?		X	
HHPD2. Did Element B3 (risk assessment) address HHPDs?		X	
HHPD3. Did Element C3 (mitigation goals) include mitigation goals to reduce long-term vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public?		X	
HHPD4. Did Element C4-C5 (mitigation actions) address HHPDs prioritize mitigation actions to reduce vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public?		X	
NOTES HHPD1: Note that this requirement is met in Section 7.3.7 of the Risk Assessment.			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

General

Overall, this plan is comprehensive and well-organized. Union County and its participating municipalities have demonstrated a clear understanding and awareness of their risks and have developed targeted mitigation strategies to address them. It is encouraging to see all the completed mitigation projects since the previous plan, which indicates a commitment at the local level towards achieving greater overall resilience.

Element A: Planning Process

Strengths

The Planning Process is clearly laid out and includes a wide range of stakeholders. Well done.

Element B: Hazard Identification and Risk Assessment

Strengths

The risk assessment is thorough and organized. All hazards are clearly described and their risks to the jurisdictions are well-demonstrated.

Opportunities For Improvement

TABLE 7.5-1 FIVE MOST RECENT EARTHQUAKES WITHIN A 25-MILE BUFFER OF UNION COUNTY, 2017-2020: Online search indicates that the 9/9/2020 earthquake near Freehold was a magnitude 3.1, not a 5.0 as listed. Confirm that this figure is accurate as this is a significant difference in magnitude.

Element C: Mitigation Strategy

Strengths

The mitigation actions are comprehensive and thorough. The actions are presented in multiple sections, including in Section 2 where they are broken down according to status (new, carryover, completed, ongoing) which is very useful for the reviewers/readers in terms of understanding where the jurisdictions currently stand in terms of implementing their strategies.

Table 5.6.1 Ongoing Planned Municipal Integration Activities in the Capability Assessment is a good addition, clearly demonstrating how mitigation is being integrated into other activities for each municipality.

Opportunities for Improvement

While it's great to see completed actions included in the plan, they should not be included as part of the current mitigation strategy. These will not be counted as fundable actions due to the fact that they are already completed. Similarly, withdrawn actions should not be included within the current strategy. They should be listed in a separate table with an explanation provided as to why they were withdrawn (for example, no longer a priority due to lack of additional funding, or risk has already been mitigated from a different project).

A number of actions listed in the mitigation strategy are either preparedness, response, or ongoing maintenance (such as purchasing equipment or emergency response vehicles or tree trimming). An action such as "Build a new EOC" is not a mitigation action unless it describes how long-term risk will be reduced (for example "build a new EOC out of the SFHA retrofitted against high winds and seismic hazards" would be a good action). While these actions are encouraged as part of a comprehensive strategy to reduce overall risk, note that they will not count as mitigation actions and thus are not eligible for mitigation funding.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Strengths

Table 2.2.2 New and Future Development in Union County provides an excellent snapshot of all development in each jurisdiction, including any occurring within the SFHA.

The plan clearly delineates which actions are new, carryover, ongoing, and completed. The quantity of completed actions indicates significant progress in local mitigation efforts.

Technical

Section 2.2.1 New and Future Development, first paragraph: Change "Hudson County" to "Union County"

Table 7.8-4 Reported Extreme Heat Events, Union County, 2014-2020: Table is not visible.

Section 3.2.2 UNION COUNTY HMP GOALS AND OBJECTIVES reference to Table 2.2-1 HMP Goals and Objectives should be referencing Table 2.3-1.

B. Resources for Implementing Your Approved Plan

FEMA Publications

Integrating Hazard Mitigation Into Local Planning–Case Studies and Tools for Community Officials, FEMA (March 1, 2013).

Local Mitigation Planning Handbook, FEMA (March 2013).
Mitigation Ideas– A Resource for Reducing Risk to Natural Hazards, FEMA (January 2013).

National Flood Insurance Program Community Rating System–A Local Official's Guide to Saving Lives, Preventing Property Damage and Reducing the Cost of Flood Insurance, FEMA B 573 (2018).

Planning for Radon Mitigation – How to Address Radon in Your Hazard Mitigation Plan. FEMA Region 2 Fact Sheet (2020).

Protecting Your Home and Property from Flood Damage: Mitigations Ideas for Reducing Flood Loss, FEMA (October 2010).

American Planning Association Publications

Mowry, Molly, Anna Read, Kelly Johnson, and Tareq Wafaie. 2019. *Planning the Wildland-Urban Interface*, PAS Report 594, Chicago, IL, American Planning Association.

Schwab, James. *Hazard Mitigation: Integrating Best Practices into Planning,* American Planning Association PAS Report No. 560 (2010).
Schwab, James, Stuart Meck, and Jamie Simone. 2005. *Planning for Wildfires,* PAS Report 529/530, Chicago IL, American Planning Association.

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET													
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	Berkeley Heights	Township					Y	Y	Y	Y		
2	Clark	Township					Y	Y	Y	Y		
3	Cranford	Township					Y	Y	Y	Y		
4	Elizabeth	City					Y	Y	Y	Y		
5	Fanwood	Borough					Y	Y	Y	Y		
6	Garwood	Borough					Y	Y	Y	Y		
7	Hillside	Township					Y	Y	Y	Y		
8	Kenilworth	Borough					Y	Y	Y	Y		
9	Linden	City					Y	Y	Y	Y		

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
10	Mountainside	Borough					Y	Y	Y	Y		
11	New Providence	Borough					Y	Y	Y	Y		
12	Plainfield	City					Y	Y	Y	Y		
13	Rahway	City					Y	Y	Y	Y		
14	Roselle	Borough					Y	Y	Y	Y		
15	Roselle Park	Borough					Y	Y	Y	Y		
16	Scotch Plains	Township					Y	Y	Y	Y		
17	Springfield	Township					Y	Y	Y	Y		
18	Summit	City					Y	Y	Y	Y		
19	Union	County					Y	Y	Y	Y		
20	Union	Township					Y	Y	Y	Y		
21	Westfield	Town					Y	Y	Y	Y		
22	Winfield	Township					Y	Y	Y	Y		

CRS Crosswalk

Community: **Union County**

Union County HMP Update

511.a Floodplain Management Planning (FMP)

Credit Points: *Enter the section or page number of the plan where each credited item can be found.*

CRS Step	Section/Page	Item Score	Step Total
1. Organize to prepare the plan. (max:15)			
a. Involvement of Office Responsible for Community Planning (4)	Section 4.1 (page 88)	4	
b. Planning committee of department staff (9)	Section 4.2 (page 91-92)	9	
c. Process formally created by the community's governing board (2)	N/A	0	**13**
2. Involve the public. (max: 120)			
a. Planning process conducted through a planning committee (60)	Section 4.2 (pg. 91-92)	30	
b. Public meetings held at the beginning of the planning process (15)	N/A	0	
c. Public meeting held on draft plan (15)	N/A	0	
d. Other public information activities to encourage input (Up to 30)	Section 4.4 (pg. 104), Section 9.6 (pg. 367)	20	**50**
3. Coordinate with other agencies. (max: 35)			
a. Review of existing studies and plans [REQUIRED] (5)	Section 5.2 (pg. 108-124) and Section 5.6 (pg. 133-140)	5	
b. Coordinating with communities and other agencies (Up to 30)	Section 4.3.4 (pg. 102-104)	30	**35**
4. Assess the hazard. (max: 35)			
a. Plan includes an assessment of the flood hazard [REQUIRED] with:			
(1) A map of known flood hazards (5)	Section 7.9.2 (pg. 224-228)	5	
(2) A description of known flood hazard (5)	Section 7.9.1-7.9.3 (pg. 220-232), Appendix Vol II. HAZUS Report	5	
(3) A discussion of past floods (5)	Section 7.9.4 (pg. 233-239)	5	
b. Plan includes assessment of less frequent floods (10)	Section 7.3 (pg. 180-189) and Section 7.9 (pg. 220-255)	8	
c. Plan includes assessment of areas likely to flood (5)	Section 7.9.5-7.9.6 (pg. 240-243), Appendix Vol. 1	5	
d. The plan describes other natural hazards [REQUIRED FOR DMA] (5)	Section 7.3 through 7.27 (pg. 180-390)	5	**33**
5. Assess the problem. (max: 52)			
a. Summary of each hazard identified in the hazard assessment and their community impact [REQUIRED] (2)	Section 7.3 through 7.27 (pg. 180-390)	2	
b. Description of the impact of the hazards on: (max: 25)			
(1) Life, safety, health, procedures for warning and evacuation (5)	N/A	0	

(2) Public health including health hazards to floodwaters/mold (5)	Section 7.9.6 (pg. 242-243)	5	
(3) Critical facilities and infrastructure (5)	Section 7.9.7 (pg. 251-255), Appendix Volume I, Appendix Vol II. HAZUS Report	5	
(4) The community's economy and tax base (5)	N/A	0	
(5) Number and type of affected buildings (5)	N/A	0	
c. Review of all damaged buildings/flood insurance claims (5)	Section 7.9.7 (pg. 251-255), Appendix Volume I, Appendix Vol II. HAZUS Report	5	
d. Areas the provide natural floodplain functions (5)	N/A	0	
e. Development/redevelopment/Population Trends (7)	Section 6.3 (pg. 145- 154) and Appendix Volume I	7	
f. Impact of future flooding conditions outline in Step 4, item c (8)	Section 7.9.6 (pg. 242-243) and Appendix Vol. 1	8	**32**
6. Set goals. [REQUIRED] (2)	2.3 (pg. 14)	2	**2**
7. Review possible activities. (max: 35)			
a. Preventive activities (5)	Section 5.2 (pg. 108-124)	5	
b. Floodplain Management Regulatory/current & future conditions (5)	Section 5.2.7 (pg. 122)	5	
c. Property protection activities (5)	Section 3.4.2 (41- 61)	5	
d. Natural resource protection activities (5)	Section 3.4.2 (41- 61)	5	
e. Emergency services activities (5)	Section 3.4.2 (41- 61)	5	
f. Structural projects (5)	Section 3.4.2 (41- 61)	5	
g. Public information activities (5)	Section 3.4.2 (41- 61)	5	**35**
8. Draft an action plan. (max: 60)			
a. Actions must be prioritized [REQUIRED]			
(1) Recommendations for activities from two of the six categories (10)			
(2) Recommendations for activities from three of the six categories (20)			
(3) Recommendations for activities from four of the six categories (30)			
(4) Recommendations for activities from five of the six categories (45)	Section 3.4.3 (pg. 61- 86)	45	
b. Post-disaster mitigation policies and procedures (10)	N/A	0	
c. Action items for mitigation of other hazards (5)	Section 3.4.2 (41- 61)	5	**50**
9. Adopt the plan. (2)	Section 8 (pg. 362)	2	**2**
10. Implement, evaluate and revise. (max: 26)			
a. Procedures to monitor and recommend revisions [REQUIRED] (2)	Section 9.3 (pg.365)	2	
b. Same planning committee or successor committee that qualifies under Section 511.a.2 (a) does the evaluation (24)	Section 9.3 (pg.365)	24	**26**
Maximum Credit for 510 FMP = 382	**Plan Total:**		**278**

APPENDIX II - F. PUBLIC COMMENTS

The following comments were sent to the Project Team during the public comment period. The Black text is the comments from the public and the red text is the County's response to the comment.

8/9/21: Tim Van Epp, Co-Chair, Westfield Green Team

“The Westfield appendix looks very well thought out, well organized, detailed and complete. The Green Team certainly appreciates that the introduction mentions our Sustainable Jersey (SJ) Silver Certification (and Rookie of the Year Award!) and the recommendation for application of the Green Development Checklist which you may know is an SJ action.

Assuming there will be an opportunity to address public comments, we recommend that the Town review the adaptation and resiliency resources provided to us via our recent membership in ICLEI. These resources were not available in late 2020 when Westfield provided its inputs to the County HMP. They include resiliency guidelines prepared by the Center for Climate and Energy Solutions (C2ES) providing an expanded range of possible actions to adapt to power outages, extreme heat, and flooding. There are undoubtedly other similar resources available online addressing other municipal hazard issues.”

The County added an action for the Town of Westfield to implement the resiliency guidelines prepared by the Center for Climate and Energy Solutions (C2ES) providing an expanded range of possible actions to adapt to power outages, extreme heat, and flooding.

APPENDIX II - E. PLAN ADOPTION RESOLUTIONS

APPENDIX VOL II - H. CITY OF ELIZABETH'S FINAL DRAFT 2020 PRE-DISASTER HAZARD MITIGATION PLAN

This appendix includes the Final Draft 2020 City of Elizabeth Pre-Disaster Hazard Mitigation Plan, prepared by the City of Elizabeth, which was incorporated throughout this Union County HMP update.

MOTT MACDONALD

City of Elizabeth Pre-Disaster Hazard Mitigation Plan

City Hall - Winfield Scott Plaza
Elizabeth, NJ 07201

November 2, 2020 Update

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City of Elizabeth Pre-Disaster Hazard Mitigation Plan

City Hall - Winfield Scott Plaza
Elizabeth, NJ 07201

November 2, 2020 Update

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
0	8/27/19	RSL	KEK	KEK	Draft
1	2/17/20	RSL	KEK	KEK	Final Draft
2	11/02/20	RSL	KEK	KEK	Final

Document: 507100051

Information class: Standard

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Executive summary

The Hazard Mitigation Plan (HMP or Plan) for the City of Elizabeth (City), Union County, New Jersey is a single jurisdiction local mitigation plan that has been developed through collaborative efforts of its governing body. This dynamic Plan represents the continuing effort by the City to reduce risk and vulnerability by implementing pre-disaster mitigation actions. This updated Plan documents revised assessments, implementation of new mitigation projects, monitoring, and evaluation of mitigation effectiveness. This Plan represents the 2020 update, as required by FEMA and reflects mitigation actions that have been and will be implemented to reduce risk and vulnerability of its communities.

The City has experienced unpredictable natural disasters for many decades, including Presidential-declared disasters ranging from significant snowstorms, hurricanes and flooding events from many weather related conditions. Given the lower geographic location and coastal waterfront area, the City is more vulnerable to certain natural hazards which have the potential to result in loss of life as well as to severe economic hardship. To serve the people of the City in the most effective and efficient mitigative processes, the City remains independent but welcomes hazard mitigation discussions with Union County and local municipalities. The City will continue to update their local Plan and be eligible for certain FEMA hazard mitigation tools and grant funding.

This Plan establishes broad vision with strategic objectives to continue the reduction of risks and vulnerabilities to the City, which is pre-dominantly flooding and power outages induced by severe natural hazards, such as wind and rain from tropical storms, hurricanes, and Nor'easters. The purpose of pre-disaster mitigation planning is to mitigate known and potential hazards as identified in this Plan; thereby, protecting human life, private and public properties, and reducing future expenditures and economic losses with faster recovery. This Plan incorporates hazard mitigation principles and practices into local government policies, ordinances/codes, and programs to protect people and their properties through best appropriate and available mitigation practices to advance severe weather resiliency in unprecedented times of climate change and sea level rise. This Plan is a living document and mitigation actions shall be continually implemented and monitored so to stay ahead of climate change (extreme weather) and sea level rise.

The primary objectives of the Plan are:

- To protect human life, safety and property by reducing future risks and potential of harm;
- To reduce or eliminate future damages and economic hardships resulting from natural hazards;
- To enhance recovery and redevelopment following a disaster or hazard event;
- To maintain critical facilities in functioning order; and
- To qualify for grant funding to minimize both pre-disaster and post-disaster conditions.

This Plan evaluates and characterizes many natural hazards that may impact the City. The City evaluates mitigation actions and re-prioritizes mitigation projects to receive the most value for the money used to minimize natural hazard impacts for the unpredictable future. The Plan utilizes a comprehensive hazard risk analysis developed as part of a pre-disaster mitigation process to attain mitigation goals with viable funding/mitigative strategies. This Plan establishes a process for implementing, reviewing and monitoring to ensure that the Plan remains relevant and addresses changing conditions of the City. This Plan is a significant effort to continue implementation of pre-disaster mitigation and continues a successful progression as a living document that will require contribution of time and effort from members of the City's Pre-Disaster Mitigation (PDM) Planning Committee. The City also welcomes the public to participate and comment on the Plan and even provide comments for local mitigation projects. This Plan demonstrates the City's ongoing commitment to reducing risks to lives and properties from natural hazard events.

1 Introduction

This updated Plan is through a collaborative effort of its governing body that has worked hard to minimize impacts from many potential natural hazards that appear to be increasing in frequency and intensity. The City has tried to invite the public to participate through means including public newspaper notices, postings in public areas like libraries and at City Hall and mail individual invitations to updated stakeholders for participation/commenting on the HMP. The current update to this Plan represents a continuing effort to perform and implement pre-disaster hazard mitigation as its primary duty to the people of the City and has provided engaging information that the public should find interesting.

1.1 Background

The City of Elizabeth is the fourth largest city in New Jersey. It is 12.32 square miles (7,885 acres) of aging developed urban communities located in the eastern portion of Union County, New Jersey. Elizabeth serves as the County Seat and contains several critical governmental facilities, including the Union County Administration Building, Union County College, Union County Courthouse, and the Union County Department of Corrections and Jail. Elizabeth also contains major international transportation facilities - the Newark Liberty International Airport and the Port Elizabeth/Newark Marine Terminals.

The following Figures shown the geographic location of the City of Elizabeth: Figure 1-1 provides the location of the City within Union County and within the State of New Jersey; Figure 1-2 is an aerial map showing the developed nature of the City and the coastal waterfront area.

The City continues to be characterized by a mix of suburban and urban areas that has a well-developed land and waterway transportation system with both residential and substantial commercial and industrial businesses. The City has experienced varying disasters, including Presidential-declared disasters, and in recent years ranging from significant snowstorms, wind and rain from tropical storms (Cindy/Gordon/Sandy), hurricanes (remnants of Hurricane Isaias and 2018 Michael), to other Nor'easters impacts. Given the nature and character of the City, it has high risks and is vulnerable to natural disasters. Major storm related weather events have the potential to result in a loss of life as well as to cause economic hardship in the City. As a result, the City believes they can provide better local mitigation projects addressing the specific needs of their communities and remains independent of Union County. The City and County will work together to maximized positive impacts of hazard mitigation for the County and all municipalities. The City has developed, adopted and will continue to update this Plan to deem the City eligible for certain future FEMA hazard mitigation grant funding.

Figure 1-1 City of Elizabeth – State and County View[1]
(Source: Wikimedia Commons)

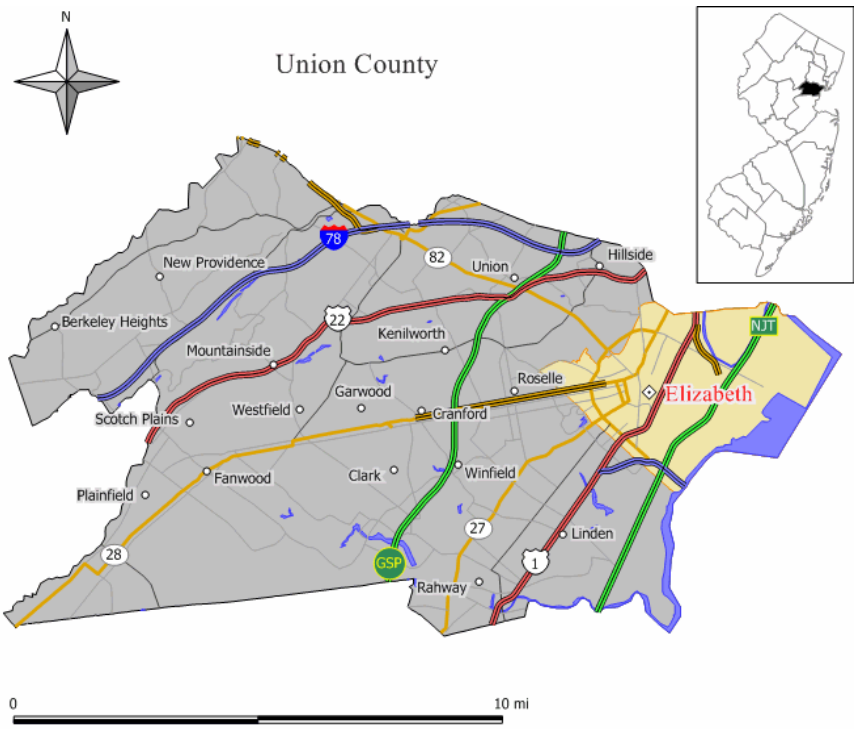


Figure 1-2 Aerial Map of Elizabeth
Source: Google Aerial (2018)

1.2 Purpose

Updating this Plan every 5-years is a continuing resolve by the City to implement mitigative actions to reduce the effects of potential natural hazards that will continue to impact the City; thereby, being pro-active in protecting human life and property and reducing future expenditures by shortening recovery in the event of natural diasters. On January 11, 2018, the National Institute of Building Sciences released *Natural Hazard Mitigation Saves: 2017 Interim Report*, an updated version of their 2005 study. The original study showed that $1 spent on pre-disaster mitigation saves society an average of $4 in future disaster costs. With the inclusion of updated data and analyses, the 2017 Interim Report shows that the return is higher than $4 and may be closer to $6 for every dollar spent depending on the mitigation strategy implemented.

A potential mitigation return of greater than $4 for every $1 spent is an important reason for the City to commit to updating and implementing this Plan. This above cost benefit analysis is key to making every dollar spent on hazard mitigation count for improving the City's resiliency and continual reduction of natural hazard risk and vulnerability. The primary objectives of the Plan are:

- To protect human life, safety and property by reducing future risks and potential of harm;
- To reduce or eliminate future damages and economic hardships resulting from natural hazards;
- To enhance recovery and redevelopment following a disaster or hazard event;
- To maintain critical facilities in functioning order; and
- To qualify for grant funding to minimize both pre-disaster and post-disaster conditions.

This updated Plan has been developed in accordance with FEMA regulations and in cooperation with both FEMA and NJOEM. FEMA's regulations and procedures require a continuing evaluation of natural hazards which was re-assessed in an 11 month period from July 2017 thru June 2018. Once approved, the 2020 updated HMP Adoption Resolution will be placed in Appendix F.

2 Organization of Document

This Plan has been developed on behalf of the City and is organized into ten (10) Sections with each Section providing the information necessary to accomplish the overall purpose of the updated Plan.

Section 1 Including the Executive Summary, Section 1 provides the background and purpose for the preparation and continuing update of this Plan. Section 1 also presents a key cost benefit reason for implementing the Plan, FEMA authority and main objectives of natural hazard mitigation.

Section 2 explains the organization of the Plan and provides a short summary of the type of information presented in each Section. This Section is intended to facilitate review and/or consultation of this document by a wide-variety of readers.

Section 3 provides a description of the overall planning process including the implementation and development of the Pre-Disaster Mitigation and provides updated Planning Committee members. This Section also provides a discussion of public/community involvement as well as the efforts that were undertaken to include identified stakeholders. Further, this Section identifies how the public/community an

key stakeholders that were given the opportunity to comment on the Plan updates, through public postings, presentations, newspaper notices, and letters.

Section 4 presents a profile information of the City and briefly established existing conditions. This Section provides information ranging from history to demographics, to existing land use and infrastructure, and provides a full characterization of the City as a whole as well as the individual nature of each Ward and community within the City.

Section 5 identifies and describes potential natural hazards that would likely continue to impact the City. The natural hazard identification and re-evaluated rankings are the foundation for the risk and vulnerability assessments and allows for continuing development of effective mitigation. This Section documents the sources used to identify hazards and updating hazard rankings in 2017-2018, with comparison of past rankings, which is used to address weather related natural hazards that have recently come to the forefront. These hazards include flooding, coastal storms/coastal erosion, Nor'easter/hurricane and extreme temperatures – cold and heat, severe winter storms and wind hazards. Both the risk assessment and mitigation action plan sections reflect this emphasis, which was the result of careful consideration and assessment by the City.

Section 6 describes the vulnerability of the City to each of the identified hazards through an assessment of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas. These impact tables/numbers are updated every 5 years using the most current FEMA HAZUS program. To the extent possible, the updated Plan describes potential financial impacts to identified vulnerable structures and facilities.

Section 7 presents and discusses the capabilities of the City to implement mitigation actions. The Plan includes an assessment as part of overall preparedness and to ensure the development of a comprehensive mitigation strategy. As per FEMA's guidance, the Capability Assessment includes the identification of existing municipal mitigation activities, regulatory standards and planned mitigation projects, resulting in the integration of mitigation strategies with planning and capital improvement programs that are always evolving.

Section 8 presents past, present and proposed mitigation projects through the risk and vulnerability assessments to avoid or reduce vulnerabilities to identified hazards. This Section provides a general list of completed, existing and future mitigation projects, their ranking and costs, and further breaks down mitigation projects by the six (6) Wards that have been impacted.

Section 9 sets forth the Plan Maintenance Program, which includes the mid-term (2017-2018) HMP Questionnaire evaluation/survey by the Planning Committee. The Plan Maintenance Program is established to ensure that the Plan remains up-to-date and addresses changing priorities as well as to facilitate incorporation of the Plan into municipal planning documents (i.e., Master Plan update in 2016), programs, ordinances, codes and strategies.

Section 10 documents the Plan adoption.

3 Planning and Implementation

Section 3 provides planning and implementation information to update the Plan based on changing priorities, developments, hazard risks and vulnerabilities of the City. As part of the City's ongoing planning, implementation and monitoring process, the City updated their Master Plan in 2016, which reflects their most recent planning strategies for the City's future developments. The City has also adopted a number of new HMP related ordinances since 2015 and received NJDEP Temporary Debris Management Area Pre-Approval for cleaning up the City. Refer to Appendix D to review new 2015 - 2020 HMP related capital ordinances.

With a plethora of guides available to the City, such as FEMA 386-1 (the 1st guide in the Mitigation Planning How-To Series) that initiated and organized Plan resources, FEMA 386-2 used to perform their risk and vulnerability assessments, FEMA 386-3 used for developing mitigation strategies and documenting the planning process, and Mitigation Planning How-To Guide 4 (FEMA 386-4) "*Bringing the Plan to Life"*, used for implementing, assessing and monitoring the Plan, the City has a library of FEMA resources. FEMA's How-To #4 (FEMA 386-4) with FEMA's Tool's Element D was recently added and will assist the City for "*Plan Review, Evaluation and Implementation"* in future years.

These Guides are used to assist the City in focusing actions necessary to establish and maintain the effectiveness of the Plan to continually reduce hazard risk and vulnerability.

The City follows this simple four step process for planning, updating and to continue mitigation action.

- Organize planning resources and use update FEMA guides
- Prioritize risk and vulnerability to get the most value from available funding
- Adjust mitigation strategies and update mitigation actions as needed
- Continue to implement, evaluate/monitor mitigation actions

3.1 Determining the Effectiveness of Mitigation Projects or Actions

The City utilizes FEMA's How-To Guides as noted above to frame mitigative actions and to determine the effectiveness of implemented mitigation projects. For this Plan update, the City has reviewed their previous mitigation projects, closed those that are completed, evaluated their successes and failures. There have been no reported mitigation failures, but some mitigation actions have not yet been tested after implementation, to include many new back-up generators that work in practice and are expected to function as designed. The City continues to implement current and future mitigation projects as listed in Section 8.

3.2 The City of Elizabeth Planning Committee

Table 3-1 below identifies the City's updated Planning Committee members as of 2020 along with updated governmental departments and titles. The Planning Committee consists of authorities that regulate, implement, expand, improve and monitor the HMP. HMP policies, programs and resources have been recently updated, such as the expanded HMP related ordinances and the 2016 updated Master Plan. These plans, codes and ordinances, to include the New Jersey Municipal Land Use Laws (MLUL) are key elements that guide the City to establish, implement, improve and adopt mitigation goals that lead to the City's ongoing and successful mitigation actions. Between 2015 to 2020, the City had passed 23 new HMP related ordinances and updated their HMP. The Planning Committee has also obtained a NJDEP Temporary Debris Management Area Pre-Approval for cleaning up the City before and after a natural hazard. Both documents are located in Appendix D. Examples of the City's Mitigation Project Worksheet Documentation are located in Appendix E.

The City had decided that one (1) scheduled mid-term (about 2.5 years after adoption) Questionnaire for Plan re-evaluation/assessment is adequate and annual reviews of the Plan by the Planning Committee would not be necessary. The Planning Committee performed a mid-term review of the Plan and revised their hazard priorities, including re-ranking severe winter storms and thunderstorms to the forefront passed flooding. This Questionnaire included key staff listed below and the Questionnaire began in July 2017. The City completed their final Questionnaire evaluation/survey in June 2018. Considering the close working relationship of these members, any additional Plan meetings can easily be initiated when necessary by any department. This mid-term HMP Questionnaire evaluation/survey was completed in June 2018 and the City's Questionnaire Report can be found in Appendix A.

As part of the City's planning element, the City Engineer and Director of Public Works participated in a Union County HMP kick-off meeting on October 14, 2020. Follow-up conversation resulted in Union County and the City to agree to communicate on future HMP issues.

Table 3-1 Updated List of the Planning Committee Members

Name	Title	Department
John F. Papetti Jr.	Director of Public Works	Public Works
Daniel J. Loomis	City Engineer	Public Works - Engineering
Albeiro Hincapie Jr.	Superintendent of Public Buildings	Public Works
Eduardo Rodriguez	Director	Planning & Community Development
Raywant Sarran	Construction Official/Floodplain Administrator	Planning & Community Development
Bridget Anderson	Business Administrator	Administration
Steven P. Rinaldi	City Land Surveyor/Supervising Engineer	Public Works - Engineering
Mark Colicchio	Health Officer	Department of Health
Krishna Garlic	Director	Department of Health
Giacomo Sacca	Chief of Police	Police
Patrick Byrnes	Fire Director	Fire
Daniel Campbell	Deputy Chief	Fire
Timothy Stapfer	Emergency Operations Coordinator	Police

The Planning Committee established the following elements of the overall process:

- Schedule of Planning meetings are on an as-needed basis and at a minimum of one (1) mid-term Plan review. For a single HMP jurisdiction, the City implemented a mid-term Planning Committee Questionnaire evaluation/survey beginning in July 2017 and the Final Report was completed in June 2018 (please refer to Appendix A). Should any future major natural hazard impact the City, committee meetings will be setup to evaluate the disaster and determine how mitigation projects performed and what new mitigation projects may be implemented to further reduce impacts after the City and shorten the recovery time of future similar natural hazard events.
- The City has evaluated projects completed and changes in developments since 2015. The City has identified new projects to mitigate future hazards based on their most recent risk and vulnerability continuing assessments. Section 8 shows all the mitigation projects completed, on-going and to be completed to improve the resiliency of the City.

3.3 Plan Preparation and Updates

The primary person implementing and updating the Plan is the City Engineer, Daniel Loomis. Mr. Loomis is highly qualified engineer and has recently passed the Certified Floodplain Manager (CFM) examination and earned his ASFPM CFM designation. Mr. Loomis and the City's Construction Official/Floodplain Administrator work together regularly to address the City's flooding problems, which is only one of several major natural hazards addressed by the City. After the City attended a Union County HMP kick-off meeting on October 14, 2020, the City has also agreed to communicate with the County (and in effect with adjacent municipalities) in the future on HMP discussions.

The Plan is updated through the City's consultant, Mott MacDonald, who has added more references to FEMA How-to-Guides for City and public references. Mott MacDonald has also updated tables and figures, such as the HAZUS-MH data, and re-evaluated current and future mitigation projects to address future hazard risks and vulnerabilities. Mott MacDonald has assisted the City with informative PowerPoint presentations during the COVID-19 public meeting period. This Plan has also been re-formatted to represent an updated living-document moving forward in reducing risks to the City from natural hazards.

3.4 Public/Community Involvement

The City mailed out certified letters to identified stakeholders, including but not limited to educational facilities, utility and transportation authorities/companies. The City also provided public notices in two (2) local newpapers, and posted invitations for two (2) public meetings on their website and public notices were also placed on bulletin boards in libraries and City Hall. The public is also welcome to participate in monthly public meetings and may initiated HMP discussions at any time.

A public and stakeholder meeting/presentation was initially scheduled for March 31, 2020 at City Hall. The presentation was to provide the public and stakeholders an updated overview of the Hazard Mitigation Plan and an opportunity to submit questions and or comments. Updated stakeholders (14) were personally notified by the City through certified mail. The public notification process also included newspaper announcements in the Star-ledger, Union County Local Source and La Voz. Public notices were also posted on the City's main web page and at public libraries. The City has established a dedicated web page for the HMP. The HMP webpage included the most recent draft of the Plan and a copy of the previously approved Plans with other pertinent information and presentations. Public notice link:

https://www.elizabethnj.org/DocumentCenter/View/1915/2nd-Public-Notice-Hazard-Mitigation-Plan--ENGLISH-?bidId=

Link in City HMP Webpage: https://www.elizabethnj.org/444/Hazard-Mitigation

Unfortunately, the March 31st public meeting at City Hall had to be cancelled due to the Governor Murphy's direction on prohibiting gatherings of any kind due to COVID-19. Given the stringent directives of the Governor on COVID-19 and with an unknown time frame they would be in place, FEMA was contacted in early April to discuss how the City could accomplish public and stakeholder participation other than in person. Contact with FEMA was initially through email exchanges using the FEMA Map Information eXchange (FMIX #2862398). Through contact with the State Police Emergency Management Office, the City was informed to contact the NJ State Police Hazard Mitigation Team. Following emails and phone conversations with the State Police office, there was no clear resolution on how public presentation were to proceed during COVID-19. The City was informed that FEMA would come out with guidelines, but the City had to decide on how to proceed in the interim. To comply with the public notice and public and stakeholder participation, and to make sure everyone stayed safe with no face to face contact, the City completed the public and stakeholder participation and commenting requirement by using two (2) PowerPoint presentations (in English with voiceover and a Spanish version as a PDF), first presentation posted on the City's website on May 4th and second presentation on September 14th. The two public presentations can be seen on YouTube. The public notifications still included letters to stakeholders and legal notices published in the Star-ledger Union County Local and La Voz for both occasions informing all parties of the City's HMP webpage. Also, key staff at GroundWork Elizabeth (http://groundworkelizabeth.org/) was also invited through email to view and comment on the PowerPoint presentations and the 2019 draft HMP. No comments have been received as of date and the documentation of the City's Public Notices of Presentations to stakeholders and the general public in newspapers are placed in Appendix B.

3.5 Stakeholders Involvement

The Planning Committee had determined that certain key stakeholders will be notified in the overall planning process during the development of the 2020 Plan. Key stakeholders included utility companies, hospitals, educational facilities and other local authorities as noted below. The following stakeholders list includes key facilities that were sent certifed letters to participate and comment on the Plan, the two (2) PowerPoint presentations and to provide comments directly to the City. These stakeholders are updated and noted below:

- Trinitas Hospital (Critical Facility)
- NJ Transit
- The Port Authority of New York and New Jersey
- PSE&G
- Verizon
- Liberty Water Company
- E'town Services, LLC
- Elizabethtown Gas Company
- Elizabeth Development Company
- Elizabeth Board of Education
- Joint Meeting of Essex and Union Counties
- Kean University
- Union County College
- The Mills at Jersey Gardens
- Housing Authority
- Parking Authority

Note that due to COVID-19 in March of 2020, the public participation/meetings were completed through alternative methods indicared above in Section 3.4. Stakeholders were notified directly to view HMP information on the City's website and could also call the City to discuss and submit comments as needed.

3.6 Use of Existing Information in Plan Preparation and Planning Process

Within 44 CFR Part 201.6(b), it states that the planning process shall include the review and incorporation, if appropriate, of plans, studies, reports, and technical information. The Planning Committee has utilized existing information for review of individual hazard occurrences and post impact conditions. The following represents a list of available information for the City or public to utilize:

- FEMA's "How-To" Series (FEMA 386-1, 386-2,386-3, 386-4, and 386-7). Note that FEMA Mitigation Planning How-To Guide 4 (FEMA 386-4) "*Bringing the Plan to Life"* also refers to "*implementing the hazard mitigation plan."*
- FEMA's Mitigation Guidance and Addendum, both dated February 27, 2016
- FEMA's Tool's Element D (located in Local Mitigation Plan Review Guide, October 1, 2011) provide guidance to "*Plan Review, Evaluation and Implementation*."
- FEMA's Using Hazus-MH for Risk Assessment (FEMA 433)
- Hazard and event information posted on the following agency/organization web sites (includes hazard-specific fact sheets and information circulars):
    - Federal Emergency Management Agency (FEMA - https://www.fema.gov/)
    - New Jersey Office of Emergency Management (NJOEM - http://www.ready.nj.gov/)
    - Northeast States Emergency Consortium (NESEC - http://nesec.org/)
    - U.S. Forest Service National Avalanche Center (https://avalanche.org/national-avalanche-center/)
    - The National Drought Mitigation Center (NDMC - https://drought.unl.edu/)
    - New Jersey Geological Survey (NJGS - https://www.state.nj.us/dep/njgs/)
    - U.S. Department of Agriculture (USDA - https://www.fs.fed.us/) Forest Service
    - New Jersey Department of Environmental Protection (NJDEP - https://www.nj.gov/dep/)
    - National Interagency Fire Center (https://www.nifc.gov/)
    - New Jersey Forest Fire Service (https://www.state.nj.us/dep/parksandforests/fire/)
    - U.S. Army Corps of Engineers (USACE - https://www.usace.army.mil/)
    - Office of the New Jersey State Climatologist (NJSC - https://climate.rutgers.edu/stateclim/) at Rutgers University
    - Northeast Regional Climate Center (NRCC - http://www.nrcc.cornell.edu/) at Cornell University
    - National Oceanic and Atmospheric Administration (NOAA - https://www.noaa.gov/)
    - Atlantic Oceanographic and Meteorological Laboratory (AOML - https://www.aoml.noaa.gov/)
    - National Weather Service (NWS - https://www.weather.gov/erh/) Eastern Region Headquarters
    - National Hurricane Center (https://www.nhc.noaa.gov/)
    - Drought Information Center (https://www.weather.gov/ilm/drought)
    - Center Center for Disease Control (https://www.cdc.gov/)
    - U.S. Department of Defense – Audit of the DoD's Preparation for Natural Disasters, May 16, 2019 (https://www.dodig.mil/Reports/Audits-and-Evaluations/Article/1850764/audit-of-the-dods-preparation-for-natural-disasters-dodig-2019-086/)

- ***U.S. Geological Survey (USGS) Documents***
    - "An Overview of Coastal Land Loss: With Emphasis on the Southeastern United States," USGS Open File Report 03-337, by: Robert A. Morton
    - "National Assessment of Coastal Vulnerability to Sea-Level Rise: Preliminary Results for the U.S. Atlantic Coast " by E. Robert Thieler and Erika S. Hammar-Klose (1999)
    - "Coastal Vulnerability Assessment of Cape Cod National Seashore (CACO) to Sea-Level Rise," USGS Open File Report 02–233, by: Erika S. Hammar-Klose, Elizabeth A. Pendleton, E. Robert Thieler, S. Jeffress Williams
    - "Land Subsidence in the United States," by Devin Galloway, David R. Jones, and S.E. Ingebritsen (U.S. Geological Survey Circular 1182)

- Bush, D.M. and Young, R., 2009 Coastal Features and Processes; Young, R, and Norby, L., Geological Monitoring: Boulder, CO., Geological Society of America, p. 47-67, 11/30/2009.

- ***U.S. Army Corps of Engineers (USACE) Documents Reviewed***
  - "*North Atlantic Coast Comprehensive Study (NACCS)"* – State and District of Columbia Analyses, North Atlantic Coast Comprehensive Study: Resilient Adaption to Increasing Risk – D-6 State of New Jersey, January 2015
  - "*New Jersey Shore Protection Study – Great Egg Harbor Inlet to Townsends Inlet - Feasibility Report - Integrated Environmental Impact Statement*," September 2001
  - "Ice Engineering" – "Ice Jams, Winter 1999-2000", September 2001
  - Report No. A-2016-0128-IEE, "*U.S. Army Corps of Engineers Hurricane Sandy Recovery Program: Internal Controls (Contract Award Process*)," August 18, 2016

- ***Elizabeth Government Information***
  - 2016 Updated Master Plan and Land Use Plan Element
  - City of Elizabeth Emergency Operations Plan
  - City of Elizabeth Land Development Code
  - Union County HMP (The City attended the Union County HMP virtual public meeting on October 14, 2020 and may attend future meetings/workshops)

4 City of Elizabeth Profile

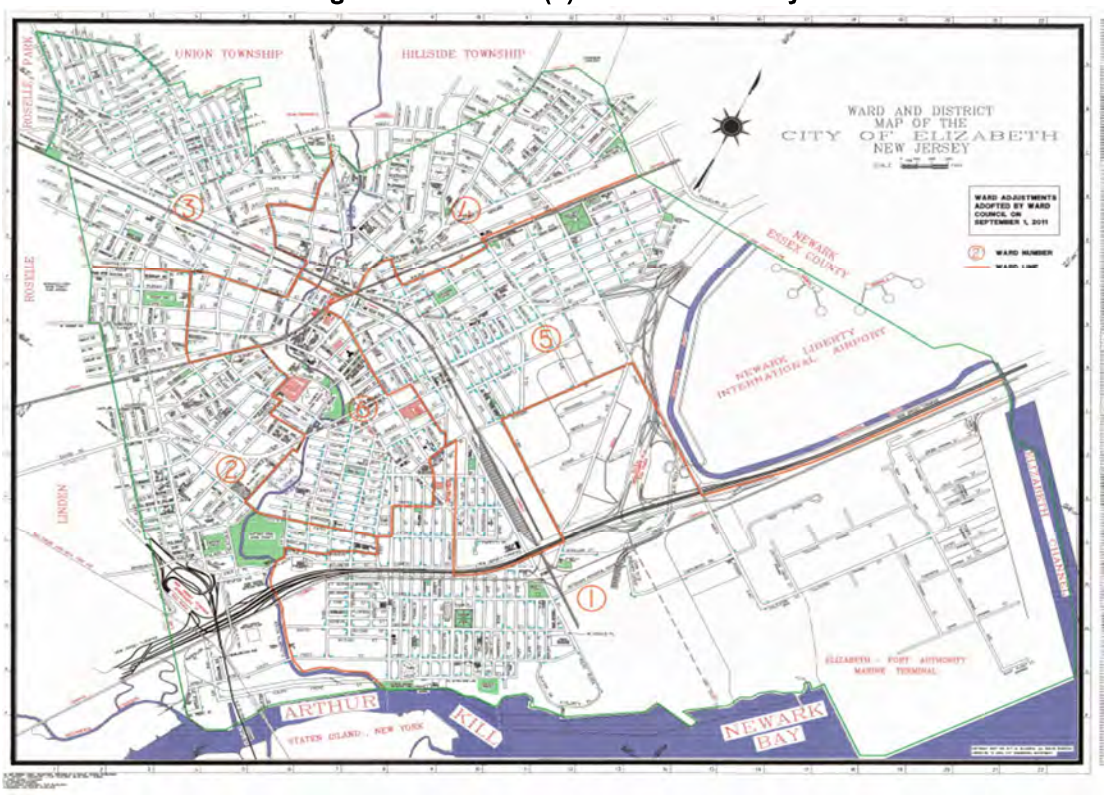
The City of Elizabeth Planning Area consists of six (6) sections known as Wards, encompassing a total of approximately 12.32 square miles (Source: U.S. Census Bureau, July 2018) with a total population of 129,216. Elizabeth is New Jersey's fourth most populated City and has approximately 10,488 persons per square mile. Elizabeth's economy continues to grow due to an incentive sales tax cut pulling in over 1,000 businesses, including retail giants like IKEA. The UEZ (Urban Enterprise Zone) Program is responsible for over 1.5 billion dollars in new economic development since its incorporation into Elizabeth. In addition to the City's corporate giants and growing economy, the Port Authority Marine Terminal which is the largest container port on the east coast, the Jersey Gardens Mall which is the largest outlet mall in New Jersey and Newark Liberty International Airport which is the fourteenth (14th) busiest international airport, all within the City (https://www.tripsavvy.com/busiest-airports-in-the-usa-3301020).

4.1 Wards

The First Ward is located on the eastern side of the City bordering Newark Bay and the Arthur Kill inlet. A large percentage of the First Ward is occupied by the Port Authority Marine Terminal, which is the largest container port on the east coast and the third largest in the country. Located off the New Jersey Turnpike, the Jersey Gardens Mall is the largest outlet mall in New Jersey, occupying most of the commercial section in the First Ward. Surrounding this commercial areas are mostly two-family and multi-family residential homes. The Second Ward is located just to the southwest of the First Ward and is mainly comprised of two-family and multifamily residential homes, light to medium industrial and light to medium commercial. The Third Ward is located directly west of the Second Ward and consists of mostly single-family residential houses and community commercial. The Fourth Ward is located directly north of the Second and Third Wards. This area has single family, two-family and multifamily residential dwellings along with community and some central commercial uses. The Fifth Ward is in the northeast section of Elizabeth. The Fifth Ward contains a dense area of manufacturing and research facilities. Newark Liberty International Airport occupies most of this Ward and is the fourteenth (14th) busiest airport in the United States. The Sixth Ward

is in the center of Elizabeth. It is surrounded by the other Wards and has a greater percentage of commercial land use as compared to residential uses. The boundaries of these Wards were re-adjusted by the Ward Council on September 1, 2011 and mitigation projects completed and existing within each Ward are described in Section 8. The Wards are shown below in Figure 4-1.

Figure 4-1 The Six (6) Wards of the City



4.2 Climate

Elizabeth experiences a temperate climate, including four seasons. Average annual high temperature is approximately 63.3° F, average annual low temperature is approximately 46.5° F and the average annual temperature is 54.9° F (U.S. Climate data, April 2019). The average annual rainfall is 46.24 inches and the average annual snowfall is 28 inches (U.S. Climate data, April 2019).

4.3 Population Overview

The 2018 U.S. Census Bureau shows that the City has grown by 3,916 additional people between 2010 and 2018. Compared to other cities in New Jersey ranks as the fourth largest by population and largest in Union County. Please see Table 4-1 below.

Table 4-1 Population Trend
Sources: U.S. Census Bureau, 2017 and 2018

Municipality	Current Census Years	2010	2000	Population increase since 2010	% Growth since 2010
Elizabeth	129,216 (2019)	124,969	120,568	4,247	3.4%
Union County	563,892 (2017)	536,499	522,541	27,393	5.1%
New Jersey	8,908,520 (2018)	8,791,894	8,414,350	116,626	1.3%

4.4 Demographic Data

The City consists of approximately 22 percent of Union County's populations and approximatley 1.45 percent of the State's population. Insight of the City's race and ethinicity composition have been obtained by reviewing race data from the 2019 U.S. Census Bureau. Table 4-2 below is from the 2019 U.S. Census Bureau (https://www.census.gov/quickfacts/elizabethcitynewjersey#qf-headnote-b)

Table 4-2 Population by Race and Ethnicity

Categories for Race and Ethnicity	2019 Census Total	% Share of City Total
White	58.2.1k	45.0%
Black/African American	24.1k	18.6%
American Indian & Alaska Native	0.65k	0.5%
Asian	2.6k	2.0%
Two or More Races	4.6k	3.6%
Hispanic Origin*	83.3k	64.5%

Based on an estimated population of 129,216 people in 2019 Census (note that people can report as being of 2 or more race and ethnicity, therefore the total is more than 100% of actual census population.

4.4.1 Gender

Per the 2019 U.S. Census Bureau, Elizabeth's population is generally split equally between genders. Amongst the approximate 129,216citizens living in Elizabeth in 201, 49.7% of the total population where females and 50.3% of the total population where males.

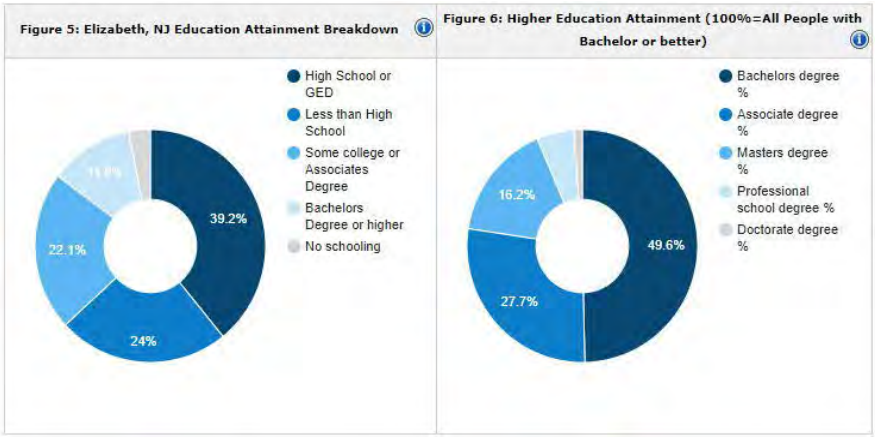
4.4.2 Age Groups

The median resident age of the population in Elizabeth was 33.9 years in 2017 (Source: DataUSA.com) as compared to NJ median age of 39.5 years. Based on the 2019 U.S. Census Bureau, Elizabeth has 9,820 people under 5 years old, 34,371 people under 18 year old, and 12,793 people over 65 year old. This mean that the City has a potential working class of 82,052 people between 18 and 65 years old.

4.4.3 Education

The following education pie charts (Figure 4-2) below illustrates the proportion of educational attainment by large categories of achievevement. Elizabeth has the largest proportion of people in the Couhty with less than a high school education and with a dropout rate of 27% (similar to Newark, NJ) and is the most of all places in the local area (data from TownCharts - 2017 American Community Survey data - https://www.towncharts.com/New-Jersey/Education/Elizabeth-city-NJ-Education-data.html).

Figure 4-2 – Pie Charts of Educational Achievement

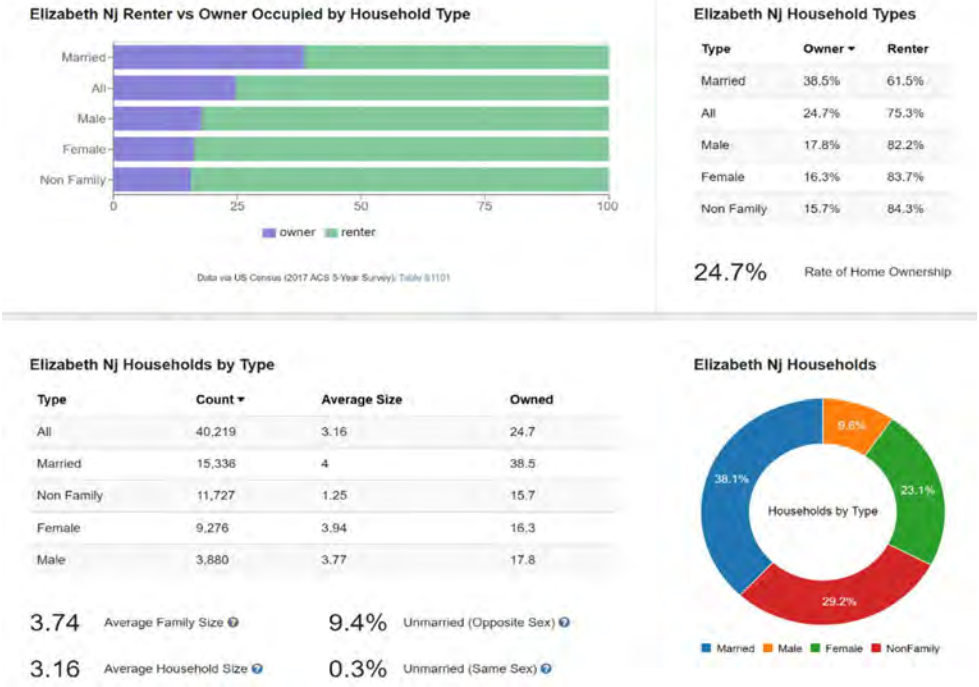


Elizabeth has one (1) college - Union County College and three (3) early childhood centers. Based on the number of students, the City maintains a substantial public education system including 26 elementary and middle schools and seven (7) high schools. The Elizabeth School District is one of the largest in New Jersey. For the school year 2018-2019, there are 7 top private schools in Elizabeth serving 1,671 students. Minority enrollment is 62% and the student-teacher ratio is ~12:1 (Source: privateschoolreview.com).

4.4.4 Households

There were 40,219 households (compared to Union County 187,916) of all types based on the 2017 U.S. Census Bureau. The rate of ownership was 24.7% and the average household size was 3.16 and the average family size was 3.74. The graphs below in Figure 4-3 povide the most current U.S. Census Bureau 2017 Household data.

Figure 4-3 – Charts of Household Data (20)



4.5 Updated Economy

Based on available updated information of the City's economy, twelve (12) sectors of employment are used and divided as follows: 1) Transportation and Warehousing; 2) Retail Trade; 3) Health Care and Social Assistance; 4) Industries; 5) Information; 6) Public Administration/Education; 7) Real Estate, Rental and Leasing; 8) Professional, Scientific and Technical Services; 9) Waste Management and Remediation Services; 10) Arts, Entertainment and Recreation; 11) Accommodation and food services; and 12) Manufacturing.

According to DataUSA (2017), the City employs 62.4k people. The largest industries are Transportation and Warehousing (9,096 people), Retail Trade (7,381 people), and Health Care and Social Assistance (7,084 people). The highest paying sectors are Industries are Utilties ($52,917), Information ($52,328) and Public Administration ($48,906).

4.5.1 Household Income

The 2017 U.S. Census Bureau's survey also showed that the median household income was $45,186, up from $43,770 in 2010. Approximately 18.1% are considered in poverty and about 38% of the households own one car with 14% that do not own a car for transporatation (DataUSA-2017). The graphs below in Figure 4-4 povide the current 2017 U.S. Census Bureau Household Income data.

Figure 4-4 – U.S. Census Bureau Household Income Data (2017)

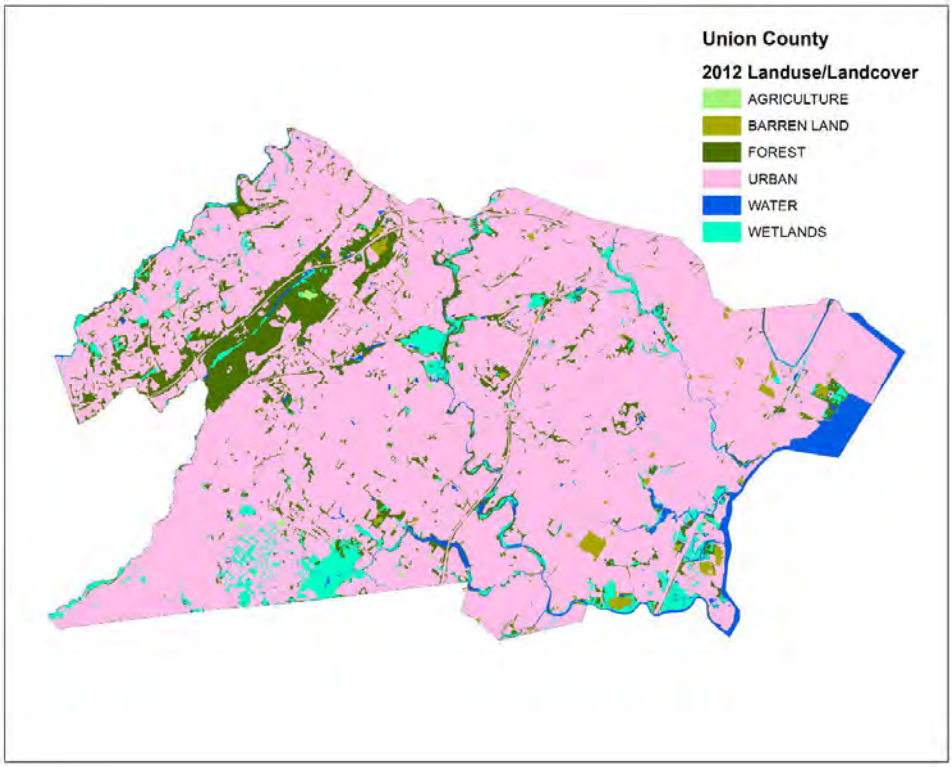
The 2019 U.S. Census Bureau estimated population is approximately 129,216 people (similar to the 2017 Census) with a median age of 33.9 and a median household income of $46.975. Between 2016 and 2017

the population of Elizabeth grew from 128,042 to 129,363 (interim U.S. Census Bureau survey) and then dropped back to 129,216 people by the middle of 2019. The median household income grew from $43,831 to $46,975, a 7.2% increase. The population of Elizabeth is 64.5% Hispanic or Latino, 18.6% Black or African American Alone, and 45% White alone. 75.5% of the people in Elizabeth speak a non-English language, and 72.9% are U.S. citizens. The median property value in Elizabeth, NJ is $268,700, and the homeownership rate is 24.7%. People that have cars commute by driving alone and the average commute time is 25.7 minutes. The average car ownership in Elizabeth, NJ is 1 car per household. (https://datausa.io/profile/geo/elizabeth-nj/#housing and https://www.census.gov/quickfacts/elizabethcitynewjersey#qf-headnote-b)

4.6 Updated Land Use and Infrastructure

The majority of Elizabeth is urban (color pink), aside from a few dispersed wetlands and barren land parcels. Figure 4-5 below shows NJDEP updated (2012) land use and land cover GIS layers in Union County with the City located to the furthest east-northeast along Newark Bay (dark blue). As described further in this section, additional data sources were reviewed to fully describe the land use and infrastructure of Elizabeth.

Figure 4-5 Land Use and Land Cover GIS Layers, Union County
Source: 2012 NJ GIS Database



The 2012 Land Use/Land Cover dataset is the fifth such data set that the NJDEP has produced and is the latest available based on photography captured in the spring of 2012. Land use in the City is predominantly residential in character, both in number of parcels and the total area of parcels. The City has historically provided both housing and industry; however, the City is experiencing a trend toward an increasing number of residential parcels, and a decrease in the number of commercial and industrial parcels.

5 Hazard Identification Risk Assessment

This Section addresses hazard identification and risk assessment portion of the Plan. Once a natural hazards are identified, the hazards are profiled to assess the potential damage to the City, or the risks to the City. A risk assessment is a process to identify potential hazards and analyze what could happen if the hazard occurs within the City. There are numerous hazards to consider. For each hazard there are many possible scenarios that could unfold depending on timing, magnitude and location of the hazard and the potential for a hazard to occur is dynamic. This means that the City will need to continually assess these hazards and re-prioritized them with the mitigation action plan (MAP).

5.1 Hazard Identification

The City is vulnerable to a wide array of natural hazards that threaten life and property. These FEMA listed natural hazards have been assessed and the bolded natural hazards below are currently the most prevalent as of date to cause major damage to the City:

- **Coastal Storm, Nor'easter and Hurricane**
- **Flooding**
- **Severe Thunderstorm**
- **Severe Winters/Extreme Cold**
- **Extreme Heat**
- **Tornado**
- **COVID-19 Pandemic**

Some major hazards are interconnected (i.e., hurricanes can cause flooding and/or wind damage), and some contain elements that are not listed separately (i.e., severe thunderstorms can have damaging lightning strikes, hail, high wind and flooding). Some hazards, such as thunderstorm may cover a large area without causing much damage, but other hazards, such as a tornado (expected to be rare in the City), may impact only a small area and cause extensive damage. This section provides a general description of the hazards listed above, including a discussion of their destructive characteristics.

Many different sources of information were used to assemble these descriptions. Such statistics are usually available on a national or state level, but seldom on the local level. Tables 5-1 identifies New Jersey's storms and disaster history over the last 10 years with other incidents being officially declared a State disaster or emergency.

Table 5-1 - New Jersey Storm and Disaster History
Source: FEMA and Wikipedia

Year	Date	Emergency or Disaster Type	Disaster Number(s)
2020	08/04	Remnants of Hurricane Isaias	
2019	08/07	EF-0 Tornado in Springfield, NJ	
2019	7/17-18	Remnants of Hurricane Barry (Storm/Wind)	
2018	10/11-12	Remnants of Hurricane Michael (Flooding)	
2018	9/17	Remnants of Hurricane Florence (Flooding)	
2018	9/8-10	Remnants of Tropical Storm Gordon (Two EF-0 Tornados)	
2018	03/06	NJ Severe Winter Storm	4368
2017	10/29	Remnants of post-Tropical Storm Phillippe	

Year	Date	Emergency or Disaster Type	Disaster Number(s)
2017	06/24	Remnants of Tropical Storm Cindy (Flooding)	
2016	01/22-24	NJ Severe Winter Storm Jonas (~28" in NYC)	4264
2015	03/06-07	NJ Severe Winter Storm	4231
2015	01/26	NJ Severe Winter Storm Juno	Near miss
2012	10/26-11/08	Super Storm Sandy	3354/4086
2012	06/30	Severe Storms and Straight-Line Winds	4070
2011	11/30	Severe Storm	
2011	10/14	Remnants of Tropical Storm Lee	4048
2011	9/15	Severe Storms and Flooding	4039
2011	08/27-09/05	Hurricane Irene	3332/4021
2010	12/26-27	Severe Winter Storm and Snowstorm	1954
2010	03/12-15	Severe Winter Storm and Snowstorm	1897
2010	02/05	Severe Winter Storm and Snowstorm	1889

Data Sources:

- **American Society of Civil Engineers (ASCE), "Windstorm Impact Mitigation"**
  Web site: https://www.asce.org/issues-and-advocacy/public-policy/policy-statement-530—windstorm-impact-mitigation/
- **Federal Emergency Management Agency (FEMA)**
  Web site: https://www.usfa.fema.gov/training/imt/
- **National Climatic Data Center (NCDC),** U.S. Department of Commerce, National Oceanic and Atmospheric Administration
  Web site: https://www.ncdc.noaa.gov/
- **National Integrated Drought Information System (NIDIS)**
- Web site: https://www.drought.gov/drought/
- **Severe Storms Laboratory (NSSL),** U.S. Department of Commerce, National Oceanic and Atmospheric Administration
  Web site: https://www.nssl.noaa.gov/
- **National Weather Service (NWS),** U.S. Department of Commerce, National Oceanic and Atmospheric Administration
  Web site: https://www.weather.gov/
- **Storm Prediction Center (SPC**), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service
  Web site: https://www.spc.noaa.gov/
- **The Tornado Project**, St. Johnsbury, Vermont
  Web site: http://www.tornadoproject.com/
- **United States Army Corps of Engineers**
  Web site: https://www.usace.army.mil/ and
  https://www.usace.army.mil/National-Levee-Safety/About-Levees/Levees-and-Communities/
- **The Disaster Center New Jersey**
- Web sites: http://disastercenter.com/newjrsy/newjersy.htm and
  http://www.avalanche.org/~nac/

5.2 Natural Hazards Profiles

A natural hazard is an unexpected or uncontrollable natural event of unusual magnitude that threatens the daily activities of people and people themselves. A natural disaster is a hazard event that actually resulted in widespread destruction of property and/or causes injury and/or death. Natural hazards are usually classified based on where they occur on the Earth as compared to atmospheric hazards are most often weather-related events. For the purpose of this Plan, a natural hazard is defined as natural events that threaten lives, property, and other assets. This Section discuss probable hazards that may impact the City.

5.2.1 Hurricane, Tropical/Coastal Storm, Nor'easter

Hurricanes, tropical and coastal storms, nor'easters are all different varieties of a cyclone, which is the generic term for a low-pressure system that generally forms in the tropics, and features closed circulation. A typical cyclone is accompanied by thunderstorms, and in the Northern Hemisphere, a counterclockwise rotation of winds near the earth's surface, around the low-pressure core.

Storms may develop as a "*Tropical Depression*", which is a system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph (33 knots) or less. If sustained storm winds increase to 39 to 73 mph (34-63 knots), the system is designated as a "*Tropical Storm",* given a name by the National Weather Service, and is closely monitored by the National Hurricane Center in Miami, Florida. Once sustained winds reach or exceed 74 miles per hour, the storm is classified as a "Hurricane."

The City is also vulnerable to Nor'easters. Nor'easters, named for the strong northeasterly winds blowing in ahead of the storm, are also referred to as extratropical cyclones, mid-latitude storms, or Great Lake storms. These storms can occur at any time of the year, but are most frequent and most violent between September and April because of the temperature differences of the converging air masses: the cold air is colder, and the warm air drawn up from the south and from the ocean is still quite warm. The storms usually develop where the Gulf Stream comes closest to the continent of North America within 100 miles east or west of the coastline and progress generally northward to northeastward typically attaining maximum intensity near New England and the Maritime Provinces. Nor'easters generally include precipitation, winds of gale force, rough seas, and coastal flooding to the affected regions. Impacts from a nor'easter can include the following: flooding, high winds, damage to utility lines, building damage from flood waters and wind-driven water, business interruption, emergency personal dispatch, vehicular and transit corridor disruptions.

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating system based on sustained wind speeds. This scale estimates potential property damage. Hurricanes or Nor'easaters reaching Category 3 and higher are considered major hazards because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures The Saffir- Simpson Hurricane Wind Scale is shown in Table 5-2, below.

Table 5-2 Saffir-Simpson Hurricane Wind Scale

Source: NOAA – National Hurricane Center

Saffir-Simpson Hurricane Scale			
Scale Number (Category)	**Sustained Winds (MPH)**	**Damage**	**Storm Surge**
1	74-95	**Minor:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap, and	4-5 feet

		shallowly rooted trees may be toppled. Extensive damage to power lines and pole likely will result in power outages that could last a few days to several days.	
2	96-110	**Extensive:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks	6-8 feet
3	111-1129	**Devastating**: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.	9-12 feet
4	131-156	**Catastrophic**: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or up rooted, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.	13-18 feet
5	More than 157	**Catastrophic:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.	Greater than 18 feet

Hurricanes can cause catastrophic damage up to several hundred miles inland from the coastline. There are three major mechanisms by which hurricanes can cause damage: storm surge, high winds, and heavy rains/floods. Significant hurricanes to impact the City include Hurricane Floyd in September 1999, Hurricane Irene August 2011 and SuperStorm Sandy in October 2012. Given the history of natural hazard impacts by these three storms including other Nor'easters (Winter Storm Jonas on the City, 2016), coastal storms, nor'easters and hurricanes are a potential hazard for the City especially considering climate change and sea level rise trends. The City is aware that mitigation actions that are effective today may not be as effective 10 years from now with climate change causing rising sea levels, extreme weather, extreme heat and cold. The City plans to monitor and assess completed projects continually to decide when such projects may need to be improved to keep up with increasing threats and vunerability.

SuperStorm Sandy in October 2012 impacted the City with extreme wind and was considered a wind storm that caused extended power outages and fuel shortages, as many facilities did not have backup generators. Immediate action by the City was taken to minimize future severe wind impacts too electrical systems. The City incorporated mitigation projects after Sandy to improve resiliency through minimization of utility power outages and fuel shortages experienced during Sandy. These mitigation actions were

namely installation of natural gas emergency generators at critical facilities, like police and fire stations, community centers and flood control pump stations. The Trenton Avenue Pump Station also had their window wells raised above flood levels and constructed a floodwall with removeable stop logs around the Mattano Park Pump Station right after Sandy. Joint Meeting is now in final design for a floodwall around the entire wastewater treatment plant.

The Port Authority bought a number of flood prone City residential properties in order to construct the Goethals Bridge along Bayway and Krakow Street between Rockefeller Street and Amboy Avenue. Other mitigation improvements were coordinated within Planning Committee members that included installing generator quick connection points at major intersections for traffic signals. Many of the generator installations have now been completed as presented in Section 8 of this HMP update.

5.2.2 Flooding

On August 4, 2004, FEMA released a statement declaring that flooding is New Jersey's #1 natural hazard. This statement holds true for the City and is identified as a major potential hazard for the City. According to NOAA, the term "flooding" is defined as "*the inundation of a normally dry area caused by high flow, or overflow of water in an established watercourse, such as a river, stream, or drainage ditch; or ponding of water at or near the point where the rain fell.*"

Besides precipitation and weather patterns, other characteristics such as river basin topography; recent soil moisture conditions; and the degree of vegetative land cover in the basin, can affect the severity of floods. Flooding is more common in urbanized areas like the City where a high percentage of the ground is covered by impervious surfaces, which decreases the ability of the soil to absorb and retain surface water runoff.

Riverine Flooding

Riverine flooding poses a serious threat to the City. Heavy rainfall events can cause flash flooding which closes roads, damages infrastructure and endangers lives. Water rescues from vehicles are sometimes required during flash flood events. As a result, the City must divert municipal resources to evacuation and rescue efforts.

Coastal Flooding

FEMA defines a coastal zone as any coastal area that includes coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines and land extending inward to the extent necessary to control shorelines. A coastal zone includes islands, beaches, transitional and intertidal areas, and salt marshes. The effects of coastal flooding during significant storm can affect the coastal zone of the City, as well as the other inland neighborhoods which share a boundary with the Elizabeth River. The head waters from the Elizabeth River empty into the Arthur Kill and also experience some tidal fluctuations. Newark Liberty International Airport is located less than two (2) miles from the defined coast line. In addition, many of the large industrial storage facilities associated with marine businesses are located in or adjacent to the City's coastal area including Port Elizabeth.

Flood areas have been documented within the City. The 100-year and 500-year FEMA HAZUS flood zones are identified and mapped in Section 6. Flooding is considered a severe hazard across the entire jurisdiction.

5.2.3 Severe Thunderstorm

A thunderstorm is a form of weather characterized by the presence of lightning and associated thunder. Thunderstorms are usually produced from a cumulonimbus cloud and typically produce heavy precipitation.

Thunderstorms frequently produce strong winds, and can also spawn hail and tornadoes. Thunderstorms form when three ingredients are present: 1) significant atmospheric moisture, 2) a mass of warm unstable air, and 3) a source of energy to lift the warm, moist air mass rapidly upward. Lifting can be caused by the following: unequal warming of the Earth's surface; orographic lifting due to a topographic obstruction, such as when an air mass is forced up the slope of a mountain range; and, mechanical lifting along a frontal zone.

The NWS identifies four main types of thunderstorms: single-cell, multi-cell, squall line and super-cell. The storm type depends on the instability and relative wind conditions at different layers of the atmosphere ("wind shear"). A severe thunderstorm is a generic term that is typically taken to mean a thunderstorm with damaging winds (58 mph or greater), ¾ inch or larger hail, or one which may generate funnel clouds or tornadoes. These storms may contain frequent cloud-to-ground lightning and heavy downpours which can lead to localized flooding. A microburst thunderstorm is a localized column of sinking air within a thunderstorm and is usually less then 2.5 miles in diameter. However, a microburst can cuase severe damage to infrastructure and can be life-threatening. As such, thunderstorms are a potential hazard to the City.

5.2.4 Severe Winter Storm

There is some overlap between this particular hazard and several others being considered by this Plan, namely Extreme Cold futher explained below. Severe winter storms can also combine the effects of hurricane-force winds, and coastal flooding while simultaneously paralyzing an entire region with heavy snow or ice accumulations. Winter storms can be large enough to affect several states, but may affect individual communities more than others. Winter storms may include snow, sleet, freezing rain, or a mix of precipitation types. As such, severe winter storms are a potential hazard to the City.

Snow is white or translucent ice crystals that fall in soft, white flakes. NOAA classifies snowfalls as follows:

- Flurries - Light snow falling for short durations. No accumulation or light dusting is expected.
- Showers - Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- Squalls - Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls most frequently occur in the Great Lakes region.
- Blowing Snow - Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.
- Blizzard - Winds over 35 mph with snow and blowing snow which reduces visibility to near zero.

Extreme Cold

Extreme cold is often associated with severe winters. Prolonged periods of extremely cold weather can be caused by abnormal wind patterns that bring arctic air masses from northern latitudes, below normal humidity levels which allow solar radiation to escape from the atmosphere, and variations in the amount of solar energy reaching the surface of the earth.

Generally, weather forecasts will provide advance notice of extreme cold events allowing individuals, governments, and industries to prepare for the onset of such temperatures. There are many potential effects of prolonged periods of cold weather. These effects include:

- Human injury and death due to exposure (frostbite, hypothermia);
- Fire caused by an increased usage of space heaters and/or fireplaces;

- Carbon Monoxide poisoning caused by an increased usage of space heaters and/or fireplaces;
- Flooding due to ice jams in rivers;
- Loss of commerce caused by freezing of ports and rivers;
- Loss of commerce caused by failure of automobiles/buses to start;
- Potential for water lines and sewers of insufficient burial depth (i.e. above the frost-line) to become damaged due to freezing; and,
- Damage to structures and infrastructure due to brittleness.

In early 2015, from February 13 – 20, the average daily temperature was 25.4 degrees and the low temperature was 1 degree. During the winter of 2015-2016, the average high temperature recorded at Newark Liberty International Airport between December 25 and January 2, 2016 was 22.6 degrees. The temperature did not get past 28 degrees until January 3rd and the low temperature in this period was 1 degree. Given this recent history of cold weather events, extreme cold is considered a potential hazard to the City.

5.2.5 Extreme Heat

Because of New Jersey's geographic location, temperatures can vary greatly throughout the calendar year. Excessive summer heat is often denoted through counts of days with maximum temperatures greater than or equal to 90°F and greater than or equal to 100°F. Interior lowlands of the state have the largest number of such days; on average these areas have 20-30 days of greater than or equal to 90°F. Fewer than 10 such days occur each summer along the coast and at higher elevations. Days with temperatures above 100°F are rare throughout New Jersey, averaging one (1) day or less per year statewide. However, the best chance of experiencing such a day lies in urban locations such as the City of Elizabeth.

Extreme heat events impact the entire City. Often times, extreme temperature events can be directly related to other hazard events such as drought. An increased hazard risk caused by extreme temperature events often has the most significance effect on cities like Elizabeth with large urban areas that maintain multi-floor office buildings and residential structures. A municipality's ability to supply a moderating temperature to a multi-floor structure filled with occupants becomes significantly multiplied by the number of persons located within each building. The City has developed extreme heat plans within their local programming, which supply the public with available resources during an extreme heat event. However, these extreme heat plans are only a successful practice when the public is aware of the program and the availability of assistance and resources.

According to the NOAA-National Weather Service, 63 heat-related fatalities were reported in the United States in 2019, with a 10-year running average of 103 per year (Figure 5-1). Due to the lack of historical economic loss information, no specific dollar damages have been calculated for this hazard. With respect to future development, it is reasonable to assume that the cost of damage will rise incrementally based upon any increase in development and population density across the City.

5.2.6 Tornado

The American Meteorological Society defines a tornado as a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to higher than 300 mph. Tornadoes are often generated by thunderstorms, but can also result from hurricanes and other coastal storms. Anytime cool, dry air overrides a layer of warm, moist air forces the warm air to rise rapidly, and can tornadoes can form.

Tornado damage is a result of the high wind velocity and wind-blown debris. Lightning and large hail can accompany tornadoes. The Enhanced Fujita Tornado Scale (or the "EF Scale"), described in Table 5-3

below, has become the commonly used scale for estimating wind speeds of tornadoes based upon the damage done to structures. The National Weather Service uses it in investigating tornadoes (all tornadoes are now assigned an EF scale number). Springfield NJ recently experienced a confirmed EF-0 tornado on August 7, 2017.

Table 5-3 Enhanced Fujita Tornado Scale (Wind Estimates based on Wind Damage)
Source: NOAA

Class	Wind Speed	Damage Indicator
EF-0	**65-85 mph**	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF-0.
EF-1	**86-110 mph**	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2	**111-135 mph**	Considerable damage. Roofs torn off from well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3	**136-165 mph**	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF-4	**166-200 mph**	Devastating damage. Well-constructed and whole frame house completely leveled; some frame homes may be swept away; cars and other large objects thrown, and small missiles generated.
EF-5	**Over 200 mph**	Incredible damage. Strong-framed, well-built houses leveled off foundations and swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; cars, trucks, and trains can be thrown approximately 1 mile (1.6 km).

5.2.7 COVID-19 PANDEMIC

A pandemic is defined as "*an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people*" (from *Bulletin of the World Health Organization* 2011;89:540-541. doi: 10.2471/BLT.11.088815).

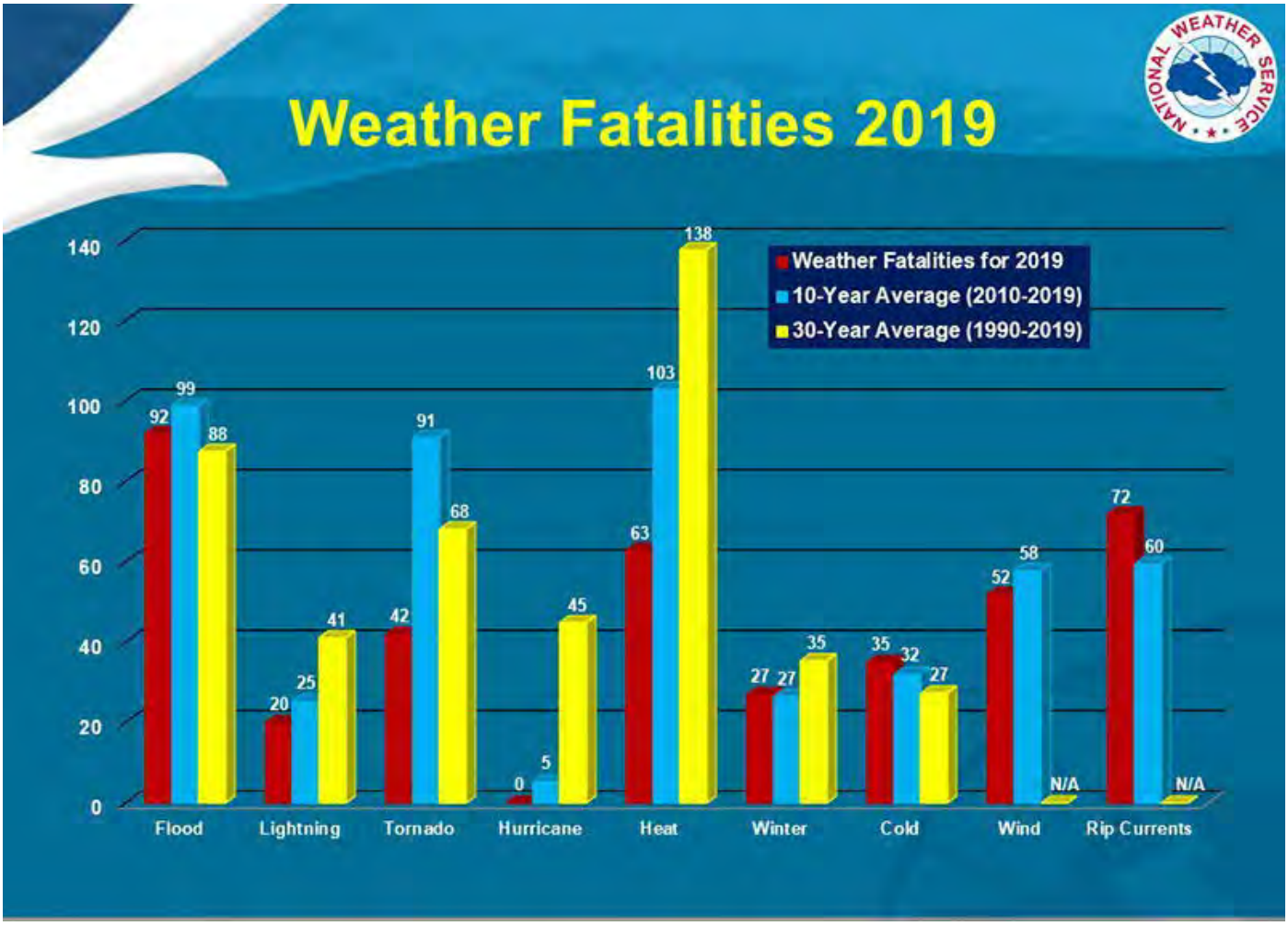
Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person. There are many types of human coronaviruses, including some that commonly cause mild upper-respiratory tract illnesses. COVID-19 is a new disease, caused by a novel (or new) coronavirus that has not previously been seen in humans. Along with other federal, state, and local agencies and public health officials across the country, the City continues work to protect public health during the COVID-19 pandemic. As of October 22, 2020, Union County had 19,328 cases and 1,367 deaths. Please refer to Appendix C for the City of Elizabeth Department of Health & Human Services COVID-19 Pandemic Report for additional information.

The City also has a public webpage addressing COVID-19:
https://www.elizabethnj.org/CivicAlerts.aspx?AID=41

5.2.8 National Weather Service Weather Fatality, 2019

As a conclusion to this natural hazard profiling section, Figure 5-1 below shows that weather fatalities should be taken seriously from year to year. Note that over 400 people in the US have died in 2019 from weather related hazards and 2019 had very few hurricane deaths.

Figure 5-1 National Weather Service, Weather Fatalities 2019



6 Vulnerability Assessment

The purpose of the Vulnerability Assessment is to examine the built environments (e.g., infrastructures), populations and economic sectors which are susceptible to damage by identified natural hazards. This section of the Plan presents the methodology where the City continues to evaluate vulnerabilities with implemented mitigative actions. The City continues to reduce vunerability each project completed.

As previously discussed in Section 5, the risk assessment process included both hazard identification and potential risk assessments through profiling hazards. As part of the Vulnerability Assessment, each City department was asked to update their hazard ranking with consideration of identified hazards that may be a major risk to the City. Hazards discussed in Section 5 were therefore ranked based on a scale of 1-5 with 5 being the most likely to impact the City. Impact assessment was based on a scale of High, Medium or Low regarding an identified hazard occurrence. Note that the survey included all natural hazards that were considered so the results would not be biased by just having the major hazards identified in the previous assessments.

This mid-term assessment update was implemented through the July 2017- June 2018 Questionnaire evaluation/survey that can be reviewed in Appendix A. Note that in this updated survey, **Hurricane/Coastal Storm/Nor'easter** is ranked first with an average score of 4.5. Followed by a tie between **Severe Winter Storm and Severe Thunderstorm** with both having average score of 4.3. This is followed by **Flooding** with an average score of 3.8. The next two highest ranking hazard is another tie between **Extreme Cold and Heat** with average scores of 3.7. **Table 6-1** presents the revised findings of the Hazard Ranking Vulnerability Assessment as prepared by each City department in the 2017/2018 Questionnaire update.

Interesting to note that the 2015 Planning Committee hazard vulnerability survey also identified the **Hurricane/Coastal Storm/Nor'easter** as being the number one ranking natural hazard with an average score of 4.7 (now 4.5). This hazard was followed by **Flooding** with an average score of 4.5. **Severe Thunderstorm** had an average ranking of 4.3 with **Severe Winter Storm** had an average score of 4.0. **Extreme Heat** had an average score of 3.3 and **Extreme Cold** with an average score of 3.0. The main difference between the two surveys is that the recent Planning Committee survey ranked **Severe Winter Storm and Severe Thunderstorm** with both having average score of 4.3 above **Flooding** hazard, now dropping to an average score of 3.8 (from 4.5). Putting **Severe Winter Storm and Severe Thunderstorm** (scores of 4.3) almost as high as **Hurricane/Coastal Storm/Nor'easter** impacts with a score of 4.5.

This indicates a shift in mitigation priorities implemented over the last 20 years where flooding hazard was the priority. With a slightly lower ranking and other hazards coming into the forefront, there is an indication that the City had implemented effective mitigation measures for flooding. Flooding by no means is resolved, as flooding will always be a major risk in low lying areas. Flood recovery times are likely faster with all the major flood control projects and backup generators keeping water pumps working in these low lying areas. **Severe Winter Storm and Severe Thunderstorm** have now both jumped near the top of the hazard ranking and mitigative actions for these hazards will be discussed with the Planning Committee in 2021. The City continues to assess projects and evaluates if they have reduced vulnerabilities, like the levee walls improvements that are holding up well and keeping flood waters in the Elizabeth River. Also, most new backup generators have not been needed, so those assessments won't occur until they are needed and tested. Some of these evaluation comments are noted in Section 8, on Table 8-3 and Table 8-4.

The City realizes that all these hazards noted above are becoming more prevalent and more extreme in recent years. It appears that these extreme weather hazard trends will continue with climate change and sea level rise influences in the northeast that will continue for decades. The number of mitgative actions completed, exisitng and proposed is self-evident on the City's commitment to this endeavor.

Table 6-1 Hazard Ranking Vulnerability Assessment by Hazard (based on 2017/2018 Questionnaire)

Department	Avalanche		Coastal Erosion		Hurricane/ Coastal Storm/ Nor'easter		Drought		Earthquake		Expansive Soil		Extreme Heat	
	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact
Public Works & Engineering	1	Low	3	Medium	5	High	2	Low	1	Low	3	Medium	4	Medium
Planning & Community Development	1	Low	3	Medium	5	High	2	Low	1	High	1	low	4	Medium
Business Administration	1	Low	3	Medium	5	Mediu m	4	Low	1	Low	1	Low	4	High
Fire Department	1	Low	2	High	3	High	5	High	4	High	1	Medium	5	High
Police Department	0	Low	0	Low	5	High	0	Low	0	Low	0	Low	0	Low
Health & Human Resources	1	Low	2	High	4	High	3	Medium	2	High	2	Medium	5	High
Average Rank /Average Impact Assessment	<1	Low	2.2	Medium	4.5	High	2.7	Low	1.5	Medium	1.3	Medium	3.7	Medium /High

Rank: 1-5 with 5 being the most likely to impact a municipality. Zero means no data available or no response.
If Impact listed two responses (i.e., low-medium) it was assumed to be the higher impact
Impact: Low = <$500,000; Medium = $500,000-$1,000,000; High =>$1,000,000
Expansive soil: A fine-grained clay which occurs naturally and is generally found in areas that historically were a floodplain or lake area but can occur in hillside areas also. Expansive soil is subject to swelling and shrinkage of the soil, varying in proportion to the amount of moisture present in the soil.
Ice jams: Ice jams occur when warm temperatures and heavy rain cause rapid snow melting. The melting snow combined with the heavy rain, causes frozen rivers to swell. The rising water breaks the ice layer into large chunks, which float downstream and often pile up near narrow passages or near obstructions, such as bridges and dams. (Northeast States Emergency Consortium, NESEC)

Table 6-1 Hazard Ranking Vulnerability Assessment by Hazard (continued)

Department	Extreme Cold		Flooding		Hailstorm		Ice Jams		Land Subsidence		Mosquito-borne Illnesses	
	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact
Public Works and Engineering	4	Medium	5	High	2	Medium	2	Low	2	Low	3	Medium
Planning & Community Development	4	Medium	4	Medium	2	Low	1	Low	1	Low	3	Medium
Business Administration	4	High	5	High	3	Medium	1	Low	2	Low	4	Low
Fire Department	4	High	5	High	4	Medium	2	Medium	2	Medium	3	Medium
Police Department	1	Low	3	Medium	0	Low	0	Low	0	Low	0	Low
Health & Human Services (no update in 2018)	5	Medium	1	Low	3	Medium	5	High	0	Low	3	Medium
Average Rank / Average Impact Assessment	3.7	Medium	3.8	High	2.6	Medium	1.8	Low	1.2	Low	2.7	Medium

Notes for Table 6-1:
Rank: 1-5 with 5 being the most likely to impact a municipality. Zero means no data available or no response.
If Impact listed two responses (i.e., low-medium) it was assumed to be the higher impact
Impact: Low = <$500,000; Medium = $500,000-$1,000,000; High =>$1,000,000
Expansive soil: A fine-grained clay which occurs naturally and is generally found in areas that historically were a floodplain or lake area but can occur in hillside areas also. Expansive soil is subject to swelling and shrinkage of the soil, varying in proportion to the amount of moisture present in the soil.
Ice jams: Ice jams occur when warm temperatures and heavy rain cause rapid snow melting. The melting snow combined with the heavy rain, causes frozen rivers to swell. The rising water breaks the ice layer into large chunks, which float downstream and often pile up near narrow passages or near obstructions, such as bridges and dams. (Northeast States Emergency Consortium, NESEC).

Table 6-1 Hazard Ranking Vulnerability Assessment by Hazard (continued)

Department	Severe Winter Storm		Severe Thunderstorms		Tornado		Tsunami		Volcano		Wildfire	
	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact
Public Works and Engineering	5	High	4	High	1	Low	1	Low	1	Low	1	Low
Planning & Community Development	5	High	3	Medium	1	Low	1	Low	1	Low	1	Low
Business Administration	5	High	5	Medium	2	Low	1	Low	1	Low	1	Medium
Fire Department	5	High	5	Medium	1	Medium	1	Medium	1	Low	1	Low
Police Department	3	Medium	4	Medium	0	Low	0	Low	0	Low	0	Low
Health & Human Services (no update in 2018)	3	Medium	5	Medium	2	High	1	High	1	High	1	High
Average Rank / Average Impact Assessment	4.3	High	4.3	Medium	1.2	Low	1	Low	1	Low	1	Low

Notes for Table 6-1:

Rank: 1-5 with 5 being the most likely to impact a municipality. Zero means no data available or no response.
If Impact listed two responses (i.e., low-medium) it was assumed to be the higher impact
Impact: Low = <$500,000; Medium = $500,000-$1,000,000; High =>$1,000,000
Expansive soil: A fine-grained clay which occurs naturally and is generally found in areas that historically were a floodplain or lake area but can occur in hillside areas also. Expansive soil is subject to swelling and shrinkage of the soil, varying in proportion to the amount of moisture present in the soil.
Ice jams: Ice jams occur when warm temperatures and heavy rain cause rapid snow melting. The melting snow combined with the heavy rain, causes frozen rivers to swell. The rising water breaks the ice layer into large chunks, which float downstream and often pile up near narrow passages or near obstructions, such as bridges and dams. (Northeast States Emergency Consortium, NESEC)

Based on the above survey and the recorded low potential of hazards occurrence attributed to the City's geographic location, climatology, land form conditions, topographic features and/or other physical conditions/features, this section of the Plan only provides detailed vulnerability assessments for the following natural hazards (wind may be accounted for in some of the hazards):

Natural Hazards

- Hurricane, Tropical/Coasstal Storm, Nor'easter
- Flooding;
- Severe Thunderstorms;
- Severe Winter Storm (includes extreme cold); and
- Extreme Heat

The loss estimates provided in this Section were developed using available data and the methodologies applied have resulted in an "approximation" of risk. These estimates should be used to understand relative risk from hazards and potential losses. However, it is important to understand that uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning natural hazards and their effects in the built environment. This includes unforeseen circumstances that are the result of unpredictable climate and weather conditions, such as Superstorm Sandy in 2012, snow/ice storms between 2013 and 2014, extreme cold in late December 2015, and the wettest year in 2018 since 1895. Record rainfall in March 2018 included four nor'easters in three weeks and August storms caused flash flooding in New Jersey that famously swept dozens of cars from a dealership in Little Falls. There were more than 11 days with greater than 4" of rainfall and several rainstorms were near 6" and 7" in 24 hours. Record precipitation in 2018 exceed 64" per year.

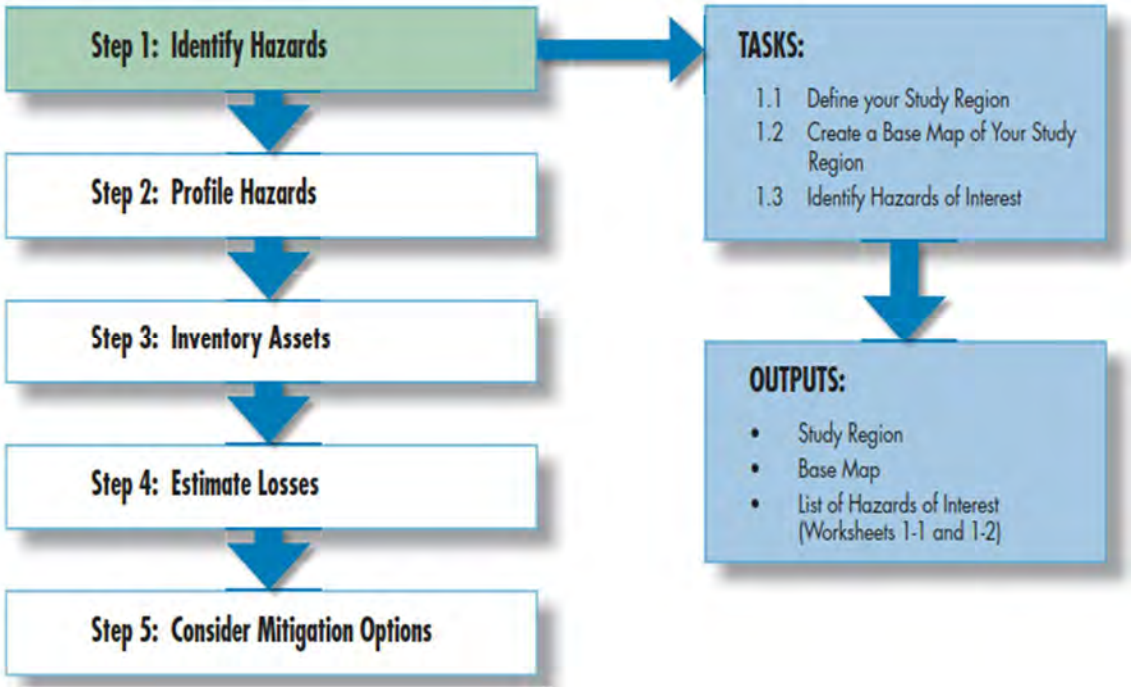
6.1 Methodology

Risk assessment utilizing two (2) methodologies: HAZUS-MH²® (FEMA's Loss Estimation Software) and a statistical risk assessment methodology. Both approaches provide estimates for potential impact by using a systematic framework for evaluation. The HAZUS-MH risk assessment methodology is parametric, in that distinct hazard and inventor parameters were modeled using the HAZUS-MH software to determine the impact (damages and losses) on the built environment. The updated HAZUS-MH software was used in 2019 to estimate losses from wind (coastal storm /nor'easter/ hurricane, thunderstom and tornado) and flood hazards. The second methodology, a staticically-based risk assessment approach, was applied to analyze hazards that are outside the scope of the HAZUS-MH software. The HAZUS-driven methodology uses a statistical approach and mathematical modeling of risk to predict a hazards's frequency of occurrence and estimated impacts based on recorded or historic damage information.

6.1.1 Explanation of HAZUS-MH Risk Assessment Methodology

HAZUS-MH is FEMA's standardized loss estimation software program, built upon an integrated GIS platform. Hazus software is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane and earthquakes. This risk assessment applied HAZUS-MH to produce regional profiles and estimate losses for hazards addressed in this Section of the Plan regarding flooding and high winds. Figure 6-1 presents the conceptual model of HAZUS-MH.

Figure 6-1 Conceptual Model of HAZUS-MH
Source: FEMA 433: Using HAZUS-MH for Risk Assessment How-to Guide



6.1.2 Explanation of Statistical Risk Assessment Methodology

Risks associated with other natural hazards were analyzed using a statistical assessment methodology developed and used specifically for this effort. This approach is based on the same principals as HAZUS-MH, but does not rely on readily-available automated software. Rather, historical data for each hazard are used and statistical evaluations are performed using manual calculations. The general steps used in the statistical risk assessment methodology are summarized below:

- Compile data from national and local sources;
- Conduct statistical analysis of data to relate historical patterns within data to existing hazard models (minimum, maximum, average, and standard deviation);
- Categorize parameters for each hazard to be modeled;
- Develop model parameters based on an analysis of data, existing hazard models, and risk engineering judgment; and
- Apply hazard model using the following criteria:
    - Analysis of frequency of hazard occurrence
    - Analysis of intensity and damage parameters of hazard occurrence
    - Development of intensity and frequency tables and curves based on observed data
    - Development of simple damage functions to relate hazard intensity to a level of estimated damages *(for example, one flood = $ in estimated damages)*
    - Development of exceedance and frequency curves relating a level of damage for each hazard to an annual probability of occurrence
    - Development of loss estimate

6.2 HAZUS Estimated Costs and Losses

So how does FEMA HAZUS modelling work? The economic loss results gathered in this section from HAZUS uses two (2) interrelated risk indicators:

1) Annualized Loss (AL), which is the estimated long-term value of losses to the general building stock in any single year in a specified geographic area
2) Annualized Loss Ratio (ALR), which expresses estimated annualized loss as a fraction of the building inventory replacement value

The estimated AL addresses the two (2) key components of risk: the probability of the hazard occurring in the study area and the consequences of the hazard, largely a function of building construction type and quality, and of the intensity of the hazard event. By annualizing estimated losses, the AL factors in historic patterns of frequent smaller events with infrequent but larger events to provide a balanced assessment of risk. The ALR represents the AL as a fraction of the replacement value of the local building inventory. This ratio is calculated using the following formula:

"ALR = ANNUALIZED LOSSES / TOTAL EXPOSURE AT RISK"

The ALR gauges the relationship between average AL and building replacement value. This ratio can be used as a measure of relative risk between areas and, since it is normalized by replacement value, it can be directly compared across different geographic units such as metropolitan areas or counties. It is important to note that HAZUS-MH was used to produce "worst case scenario" results. The outputs in this document are considered to be the result of a worst-case scenario event for each hazard, and it is understood that any smaller events which could occur would most likely create fewer losses than those calculated for the purpose of this assessment. The use of the annualized losses approach has three (3) primary benefits: (1) the ability to assess potential losses from all future disasters, (2) results across different hazards are readily comparable and are, therefore, easier to rank, and (3) the annualized losses method provides an objective means to evaluate mitigation alternatives.

Table 6-2 ans 6-3 below provide a breakdown of the estimated number of facilities and dollar exposure that formed the basis of the vulnerability and risk assessment presented in this Section. This information was derived from HAZUS-MH software and embeddd Census data at the time the HAZUS program was utilized.

Table 6-2 City Population and Number of Buildings/Building Value
Sources: HAZUS-MH 4.2

City	Population (2019)	Number of House-holds (July 2018)	Total Number of Buildings	Residential Building Value (in thousands)	Non-Residential Building Value (in thousands)	Total Building Replacement Value (in thousands)	Buildings Associated with Residential Housing (%)
Elizabeth	124,969	40,219	21,400	$9,129,417	$4,121,525	$13,250,942	87%

HAZUS estimates that there are 21,400 buildings in the region which have an aggregate total replacement value of approximately $13,251,000,000 (software estimates in 2014 dollars). Table 6-3 presents the relative distribution of the value with respect to the general occupancies. This information will be used in conducting the HAZUS analysis for flood and hurricane events.

Table 6-3 Building Exposure by Occupancy Type
Sources: HAZUS 4.2

Occupancy	Exposure ($1000)	Percent of Total
Residential	9,129,417	68.90%
Commercial	2,884,818	21.77%
Industrial	766,494	5.78%
Agricultural	4,389	0.03%
Religious	222,731	1.68%
Government	63,023	0.48%
Education	180,070	1.36%
Total	13,250,942	100.0%

6.2.1 Revitalization Projects and Planning

The foregoing parcel data does not tell the story of the recent development changes in the City particularly since the issuance of the 1990 Master Plan. Developments and use changes have been significant at Interchange 13A area as well as in the E-port neighborhood along the Arthur Kill River. Redevelopment has been extensive in other areas of the City as well, such as Midtown, and the UEZ program continues to assist in the revitalization of commercial areas. The updated 2016 Master Plan captures recent redevelopment plans and assist in developments that will reduce the City's vulnerabilities.

Redevelopment Plans

The City has created a number of redevelopment areas that are located in and around the UEZ, so that redevelopment can be approached in a comprehensive and updated manner to reduce vulnerabilities, mainly to adress flooding and coastal storms. Designating areas "in need of redevelopment" per the New Jersey Local Redevelopment and Housing Law is one (1) way to create specific design and use standards for an a targeted area for safer redevelopment. This designation also assists redevelopers with parcel assembly and tax abatements, as costs to address natural hazards could be greater. The largest and highest-profile redevelopment area has been the Kapkowski Road area. Other redevelopment areas are smaller in scale, but no less successful in the eyes of the surrounding neighborhood, such as the Waterfront Redevelopment Area in E-port. The City's redevelopment areas are in various phases of implementation; some areas have been almost entirely redeveloped while the City is working with developers on other areas to complete the desired redevelopment in a resilient manner. All of these developments are required to be built in accordance with the revised 2016 Master Plan and updated current building codes that would decrease the vulerability of the City.

Updated Brownfields Development Area (BDA) Initiative

The City participates in the BDA Initiative, which is a New Jersey Department of Environmental Protection (DEP) pilot program. Under the Program, the DEP works closely with select municipalities, who are impacted by multiple brownfield sites, all stakeholders, and other State agencies including the Economic Development Authority (EDA) and the Office of Smart Growth (OSG) to remediate and redevelop these sites in a streamlined process. The BDA encourages the reuse of these sites, and does not create or impose any additional regulatory or approval requirements on properties within the BDA.

Six (6) designated BDA sites have been in the Elizabeth BDA program, and all are currently in the **redevelopment** process. All new development will meet current building codes and address potential vulnerabilities, such as potential flooding and coastal storms. Current properties include the following:

1. Harborfront Villas (former American Chrome Site - Block 2, Lot 480). About 1/3 of the site has been developed with and the site developments are built to new building codes and reduces natural hazard vulnerabilities. Construction recently restarted.
2. Apple Tree Village, 237-247 First Street (Block 1, Lots 115A, 116). Fifteen (15) two-family homes built on-site so far, still addressing remediation requirements but when completed all new homes are built to meet new building codes.
3. Bethlehem Steel Site (Block 2, Lot 461). Has been successfully developed into School No. 28 that meets new building codes,
4. Borne Chemical Site (Block 4, Lot 1452). Portion has been developed into Waste Management Intermodal Facility, another portion remains undeveloped, but all new developments must meet new building codes.
5. Old Allied Signal (Block 1, Lot 1314/1315). Redeveloped as a distribution center under new building codes.
6. Former Exact Anodizing Company (Block 2, Lot 655). Plans for development will meet new building codes. Planning board approval was recently obtained.
7. Former Supermarket Property, (Block 2, Lot 604). Plans for redevelopment would meet new building code. Planning board approval was recently obtained.
8. Kull Property (Block 1, Lot 351), currently being redeveloped by the City as a parking lot.

In addition to the above, the DEP Site Remediation Program (SRP) – Brownsfields: BDA Sites at a Glance, references redevelopment of the Elizabethport in the City has approximately eight (8) sites, consisting of 200 acres, reserved for hotel, commercial, warehousing, residential and open space. All of the new development will meet or exceed new building codes to reduce natural hazard vulnerabilities.

6.2.2 Updated Zoning

In addition to the many redevelopment areas in the City, the City contains residential, commercial and industrial zoning districts that also regulate land use and building layout. Zoning and ordinances are frequently reviewed. The zoning districts are reflected on the NJDEP Land Use/Land Cover Map shown in Figure 6-2 below (updated 2017), which sets forth the basis for the 2016 City revised Zoning Map. In January 2018, modifications have been recommended for the City's Zoning Map but have not been adopted. Therefore, the April 2016 updated Zoning Map is presented in Figure 6-3 below.

Figure 6-2 – NJDEP 2012 Land Use/Land Cover (Updated 2/17/2017)

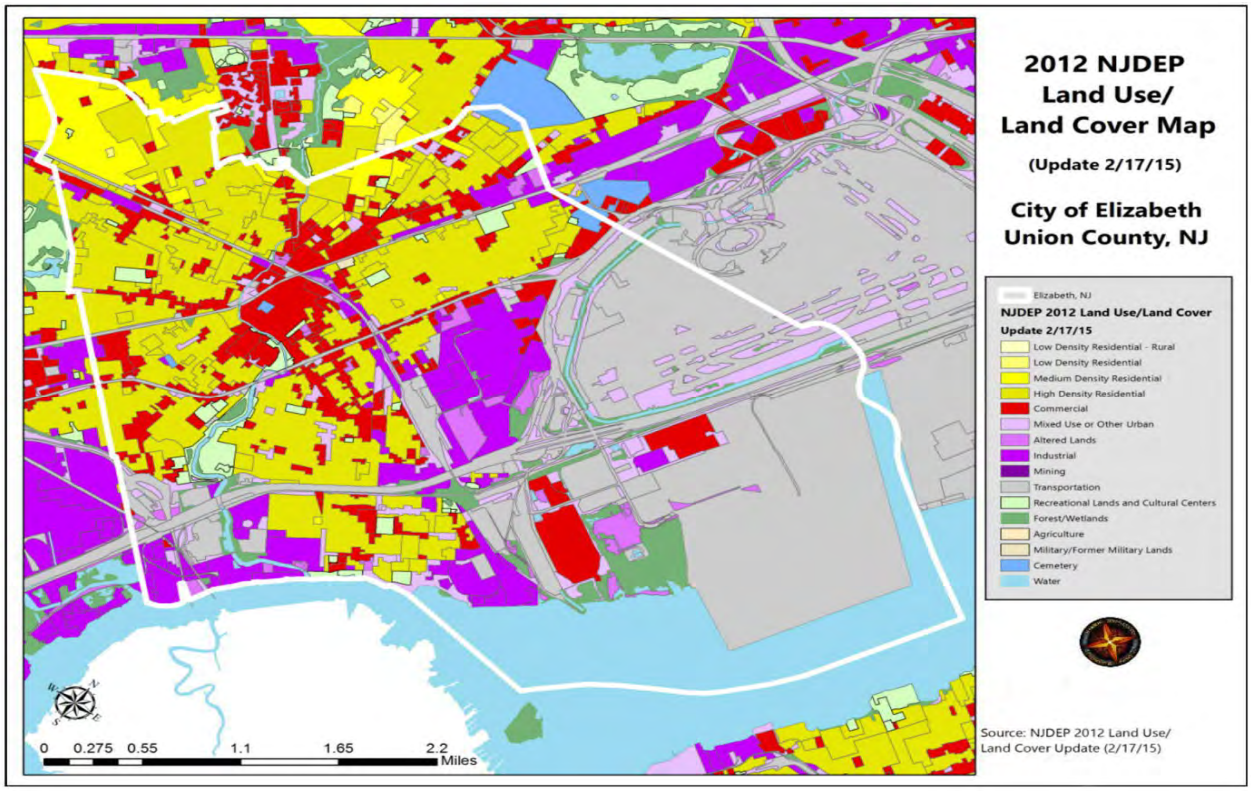
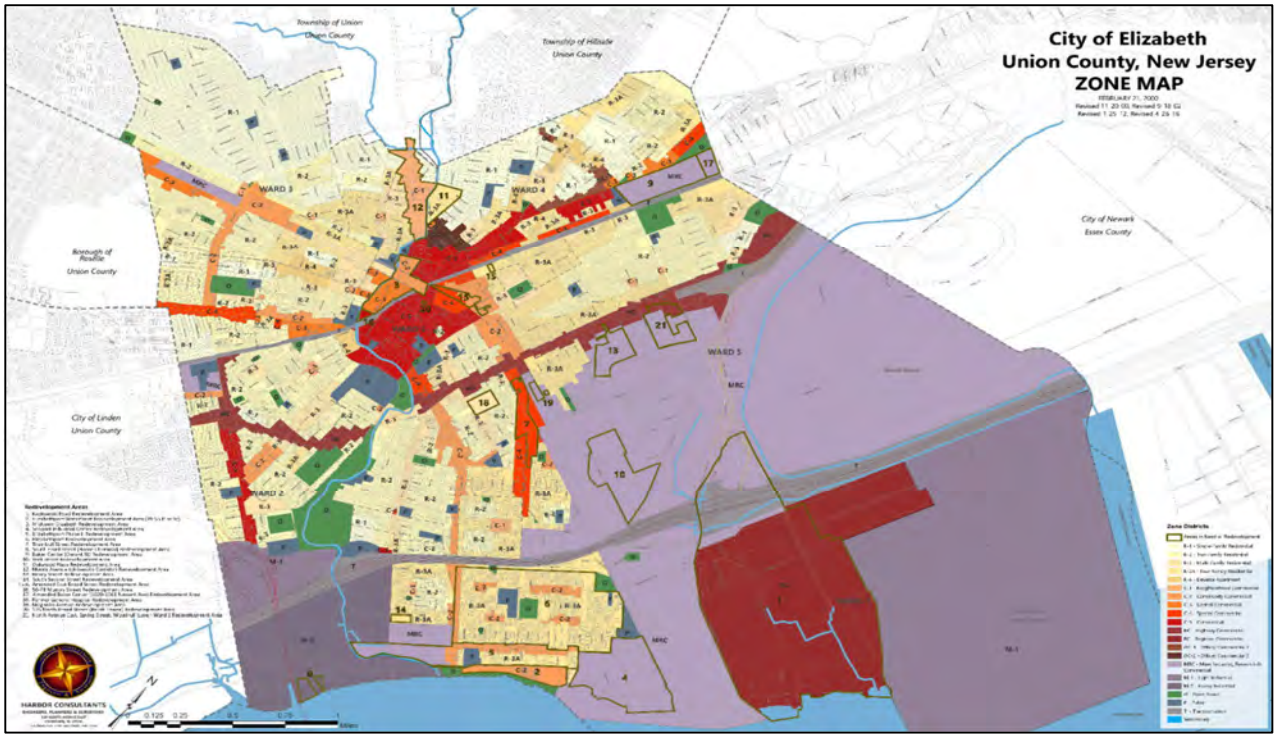


Figure 6-3 - City of Elizabeth Zoning Map, April 2016



6.3 Relationship of Elizabeth's Master Plan to Other Plans

The New Jersey Municipal Land Use Law N.J.S.A. 40:55D-1 et seq. (MLUL) establishes the legal criteria for the adoption of a Master Plan. The MLUL requires municipalities to prepare a new Master Plan at least once every ten years. The City has updated their Master Plan in 2016 and continues to organize local plans and ordinances, to include utilizing MLUL elements for the City to implement HMP mitigation projects. New 2015 -2020 ordinances related to HMP capital improvements found in Appendix D.

"*In the Metropolitan Planning Area, the State Plan's intention is to provide for much of the state's future redevelopment; revitalize cities and towns; promote growth in compact forms; stabilize older communities; redesign areas of sprawl; protect the character of existing stable communities.*"

In the Metropolitan Planning Area, the State Plan's intent is to do the following:

- Provide for much of the State's future development and redevelopment
- Revitalize Cities and Towns
- Take advantage of increased densities and compact building design
- Encourage distinctive, attractive neighborhoods with a strong sense of place
- Provide for mixed-use concentrations of residential and commercial activity
- Create a wide range of residential housing opportunities and choices with income mix
- Provide for a variety of multi-modal transportation alternatives
- Prioritize clean-up and redevelopment of brownfields and greyfields sites
- Create cultural centers of state-wide significance
- Re-design any existing areas of low-density sprawl

The City is fully developed with much impervious areas and depends on redevelopment of older properties to keep the City growing and reducing risks and vulnerabilities. The City is designated as an Urban Center and within the Urban Enterprise Zone (UEZ) Program. The UEZ program fosters an economic climate to help revitalize designated urban communities and stimulate their growth by encouraging businesses to develop, grow, and create private sector jobs through public and private investment. All of these programs help the City improve the effectiveness of other programs like this Plan. Specific redevelopment projects are noted on Subsection 6.2.1 above.

6.4 Hazard Vulnerability

The following section of the Vulnerability Assessment reviews major hazards identified above that are anticipated or ranked highest to have the most damage to the City, meaning what part of the City is more susceptible to impact people with greater damage to property, industry, resources, ecosystems, and/or historical buildings. The analysis considers both historical and potential impacts from disasters related to each identified hazard. The most recent HAZUS-MH modeling is incorporated into theses assessments.

6.4.1 Flooding

Urban flooding is the greatest risk and the City is extremely vunerable to urban flooding. The City engineer is now a Certified Floodplain Manger (CFM) and Mr. Loomis passed the CFM examination and earned his ASFPM CFM designation. Mr. Loomis and the City's Construction Official/Floodplain Administrator work together to address the City's flooding problems, which is the primary natural hazard impacting the City.

Flooding in the City can be divided into two (2) categories; Riverine flooding and Coastal Flooding. Elizabeth experiences both forms of flooding. The eastern border of the City is defined by the Newark Bay and the Arthur Kill. The Elizabeth River enters the City at its northwestern border with Hillside and empties into the

Arthur Kill near the City's southern corner. In addition to these water sources, a series of ditches have been created in the City to help alleviate the effects of excess stormwater runoff including the Great Ditch and the Peripheral Ditch. The Army Corps of Engineers have also constructed a four (4) segment levee system within the Elizabeth River and approximately 10 man-made detention ponds behind the levee system.

Review of a US Army Corps of Engineers (USACE) letter dated 22 July 2019 to the City refering to four (4) Annual Inspection reports for the four (4) segments of the levee "*conclude that the overall condition of these three levee systems is MINIMALLY ACCEPTABLE", "However, the overall condition of the Left Bank South – JEL4 system of the subject Flood Risk Management Project is UNACCEPTABLE because a portion of the floodwall is missing in the vicinity of Third Avenue and the three nearby railroad closure gates are inoperable*." Therefore, the City is working to remediate the Left Bank South such that the levee can possibly receive a minimally acceptable rating at the next annual field inspection. With at least a minimally acceptable rating on the Left Bank South, the City would maintain active status in the USACE P.L. 84-99 Rehabilitation Program for rehabilitation repairs should a significant storm occur.

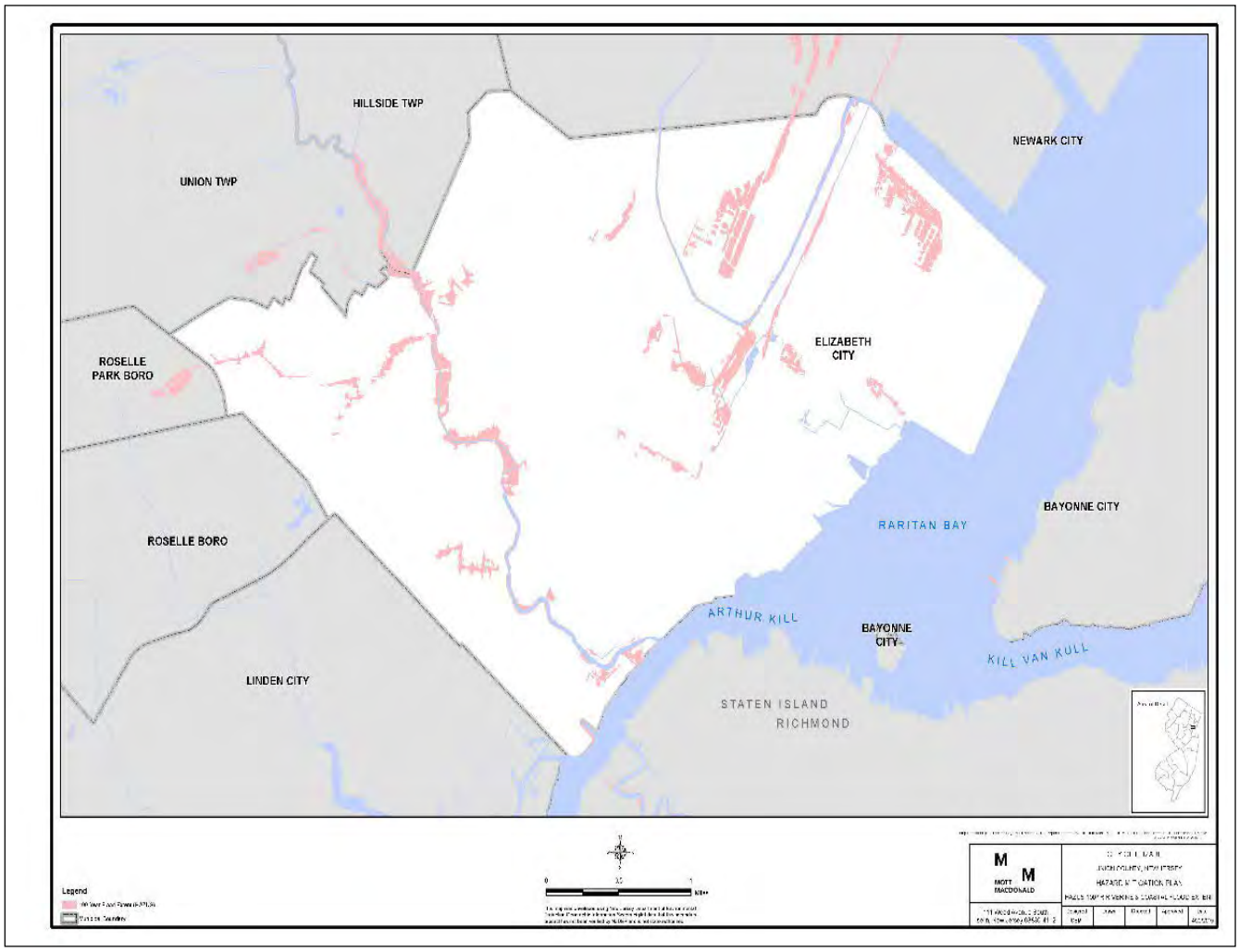
Flood Modeling

From the HAZUS program and using FEMA Q3 Digital Flood Data (Digitized Flood Insurance Rate Maps [DFIRM]) where available for the City, along with the modeling approach as described earlier, losses were estimated using return period events for 100-year and 500-year storm. Assumptions based on engineering judgment were made where data were not readily available, namely related to the extent of flooded areas and the depth of flooding. Using this approach, annualized losses were calculated by accounting for the losses from different return period events and their respective annual probabilities of occurrence. For example, the annual probability of observing a 100-year flood in any given year is 1 percent. The annual probability of observing a 500-year flood in any given year is 0.2 percent. This generic model does not take into account the condition of the levee system and does not account for the condition assessments of the four levee segments.

100-Year Flood Event

The following section presents the planning area vulnerability and estimated exposure, and potential annualized losses, respectively, caused by a 100-year flood through figures and tables. Due to the complexity of analyzing detailed flood risk for the City, it is important to note that this risk assessment is based on aggregated data and represents a base-level assessment. As such, additional adjacent communities outside of the City of Elizabeth Planning Area may have been included in the flood modeling due to the requirements of the Division of Emergency Management (DEM). The City as well as any areas outside of the City used as part of the modeling is considered the model region. However, damages to building stock, essential facilities, and other HAZUS model output parameters (debris generation, etc.) are specific to the City of Elizabeth. Figure 6-4 represents the extent of flooding within the planning area during a 100-year storm.

Figure 6-4 Extent of Flooding during a 100-Year Event
Source: HAZUS v. 4.2



6.4.1.1.1 Building Damage

General Building Stock Damage

General building stock is defined as all buildings located within the model area without specification as to use. HAZUS estimates that about 38 buildings will be at least moderately damaged to some degree in a 100-year flood, which is over 75% of the total number of buildings in the flood impact area. Per the model, an estimated 1 building will be destroyed from a 100-year storm. Table 6-4 below summarizes the expected building damage by occupancy during a 100-year storm in the model region.

Table 6-4 Expected Building Damage by Occupancy – 100-Year Flood
Source: HAZUS 4.2

% Building Damage	1-10		11-20		21-30	
Occupancy Type	**Model Counts**	**Model %**	**Model Counts**	**Model %**	**Model Counts**	**Model %**
Residential	70	65	**27**	25	**7**	6
Commercial	2	100.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00
Agricultural	0	0.00	0	0.00	0	0.00
Religious	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00
Educational	0	0.00	0	0.00	0	0.00
Total	72		27		7	
% Building Damage	**31-40**		**41-50**		**Substantially > 50**	
Occupancy	**Model Counts**	**Model %**	**Model Counts**	**Model %**	**Model Counts**	**Model %**
Residential	**2**	2	**1**	1	**1**	1
Commercial	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00
Agricultural	0	0.00	0	0.00	0	0.00
Religious	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00
Educational	0	0.00	0	0.00	0	0.00
Total	2		1		1	

Percent Building Damage: Of the buildings which will be impacted during the storm, the number of buildings which will incur a specific percentage of over-all damage

Essential Facility Damage

Essential facilities are defined as police stations, fire stations, hospitals and schools. The essential facility damage model is based on the after-effects of a flood event and, as such, the verbiage used to discuss the damage is provided in the present tense as if a storm has recently occurred. In addition, as previously discussed, the model data is based on 2010 information from FEMA.

Before the hurricane/storm event, the flood model region assumes that 886 hospital beds are available. On the day of the hurricane, the model estimates that 886 hospital beds are available for use given the size of the storm impacted area and the model area population. No other documentation regarding the duration of hospital bed availability is provided in the modeling. Table 6-5 presents the number of essential facilities potentially damaged during a 100-year flood but is not location specific. It just indicates that these number of facilities have a potential to be damaged.

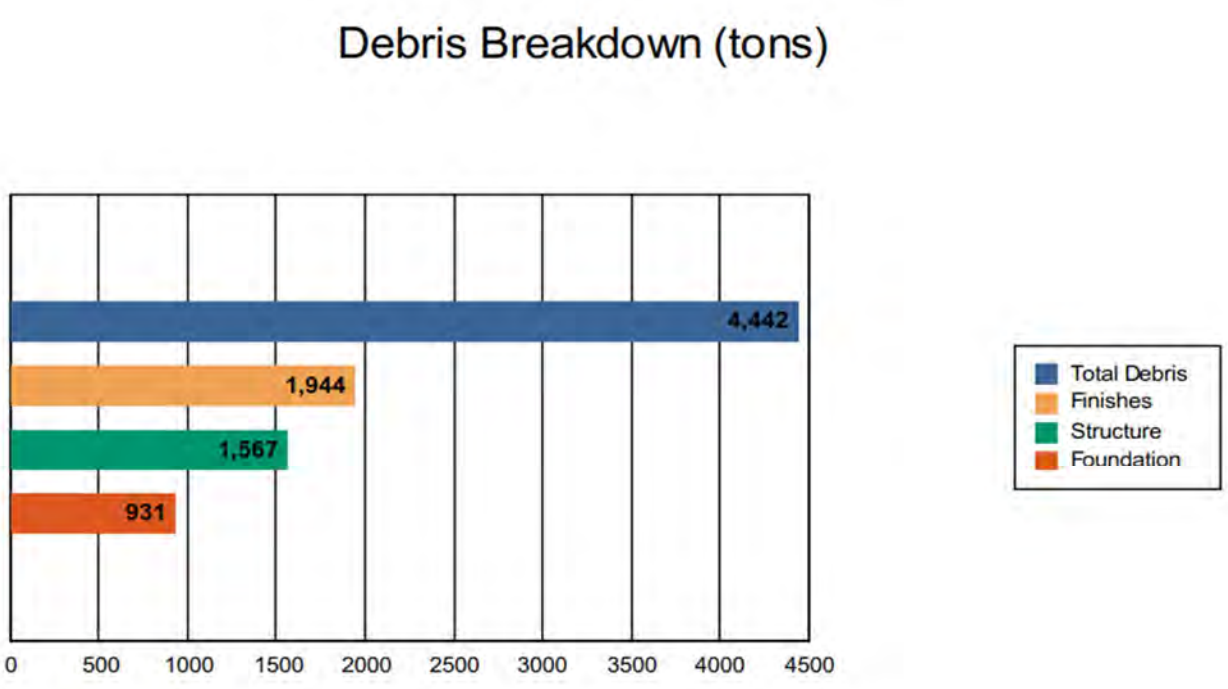
Table 6-5 Expected Damage to Essential Facilities– 100-Year Flood
Source: HAZUS 4.2

Essential Facilities				
Classification	**Total in Model Area**	**Probability of at Least Moderate Damage <50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 Day**
Emergency Operation Centers	0	0	0	0
Fire Stations	7	1	0	1
Hospitals	3	0	0	0
Police Stations	4	0	0	0
Schools	41	1	0	1

6.4.1.1.2 Induced Flood Damage/Debris Generation

HAZUS estimates the amount of debris that will be generated by the flood and breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). The model provided a distinction between the debris types because different types of material handling equipment will be required to handle each type of debris. The model estimates that 4,442 tons of debris will be generated. Of the total amount, 44% consists of finishes, 35% consists of structural and the remaining 21% consists of foundations. If the debris tonnage is converted into an estimated number of truckloads, it will require 178 truckloads (at 25 tons/truck) to remove the debris generated by the flood event. Figure 6-5 shows the breakdown of potential debris during a 100-year flood event.

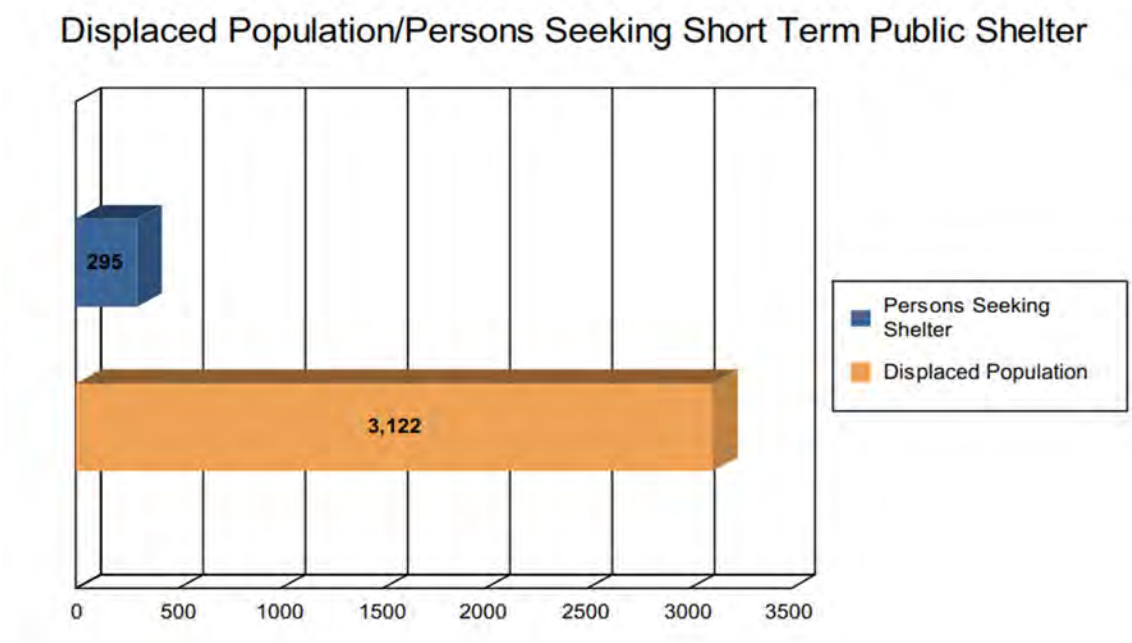
Figure 6-5 Debris Generated during a 100-Year Flood
Source: HAZUS v. 4.2



6.4.1.1.3 Social Impact

Social Impact is defined as the effects of the storm event on the model area's population. HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood event and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 1,041 households (or 3,122 people) will be displaced due to a 100-year flood. Displacement includes households evacuated from within or very near to the inundation area. Of these, 295 people (out of a population of 124,969) will seek temporary shelter in public places. Figure 6-6 shows the potential displaced population/persons seeking short term public shelter during a 100-year storm.

Figure 6-6 Displaced Population/Persons during a 100-Year Storm
Source: HAZUS v. 4.2



6.4.1.1.4 Economic Loss

Economic loss is defined as financial losses due to loss of buildings and loss of business while a building is unusable due to damages. The total economic loss estimated for a 100-year flood is 192.75 million dollars, which represents 5.29% of the total replacement value of the damaged study case buildings.

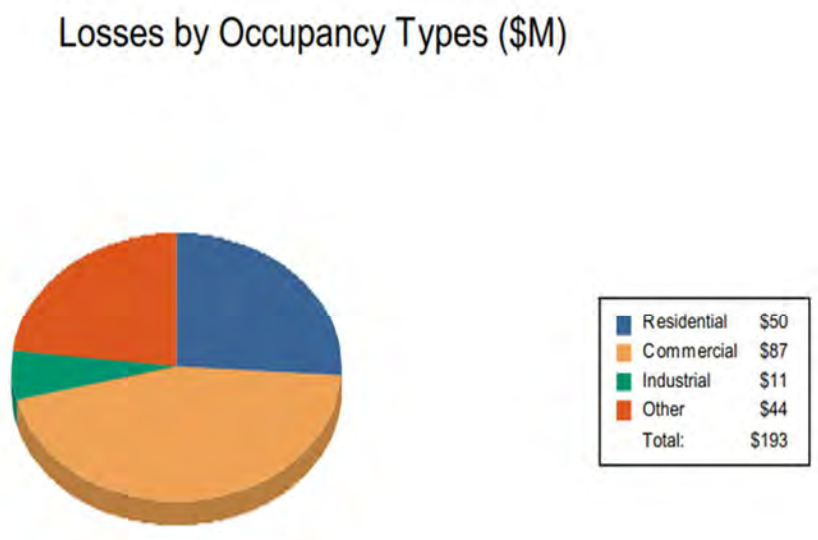
The model also provides losses which are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to buildings and contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include temporary living expenses for those people displaced from their homes because of flooding.

The total building related loss estimated for the 100-year flood event is 83.92 million dollars, with 56.5% of the estimated losses related directly to business interruption. The residential occupancies and related losses account for 26.12% of the total loss. Table 6-6 summarizes the building related economic loss estimates and Figure 6-7 shows loss by occupancy type.

Table 6-6 Building Related Economic Loss Estimates (Millions) 100-Year Flood
Source: HAZUS 4.2

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	22.79	7.34	2.56	1.42	34.11
	Content	14.73	19.62	6.84	7.50	48.69
	Inventory	0.00	0.36	0.77	0.00	1.13
	Subtotal	37.52	27.32	10.17	8.92	**83.92**
Business Interruption Loss						
	Income	0.44	25.10	0.28	2.80	28.62
	Relocation	5.57	6.73	0.36	1.50	14.16
	Rental Income	5.76	4.99	0.07	0.20	11.02
	Wage	1.05	22.46	0.46	31.06	55.02
	Subtotal	12.82	59.28	1.17	35.55	**108.83**
All	**Total**	**50.34**	**86.60**	**11.34**	**44.47**	**192.75**

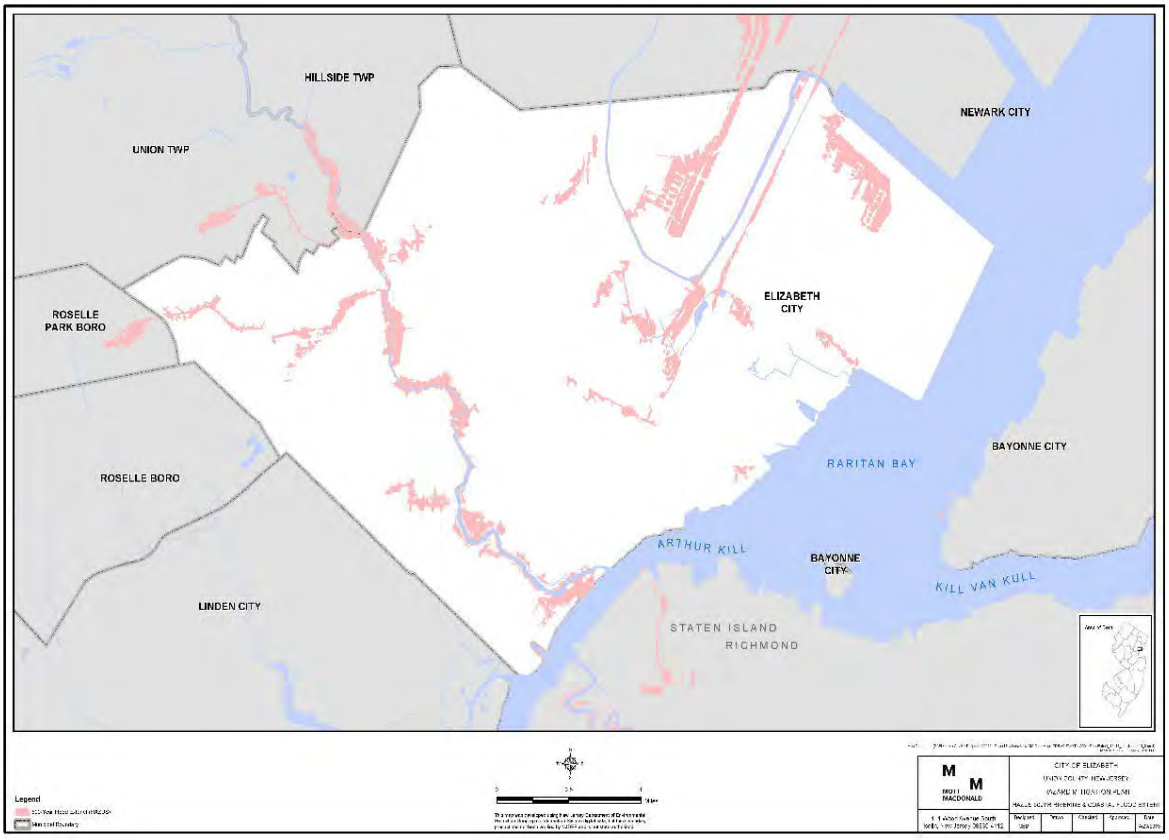
Figure 6-7 Building Losses by Occupancy Types during a 100-Year Flood
Source: HAZUS v.4.2



500-Year Flood Event

The following section presents the planning area vulnerability and estimated exposure, and potential annualized losses, respectively, caused by a 500-year Flood through figures and tables. Due to the complexity of analyzing detailed flood risk for the Planning Area, it is important to note that this risk assessment is based on aggregated data and represents a base-level assessment. As such, additional adjacent communities outside of the City of Elizabeth Planning Area have been included in the flood modeling due to the requirements of the DEM. However, damages to building stock, essential facilities, and other HAZUS model output parameters (debris generation, etc.) are specific to the City of Elizabeth. Figure 6-8 represents the extent of flooding within the planning area during a 500-year storm.

Figure 6-8 Extent of Flooding during a 500-Year Storm
Source: HAZUS 4.2



6.4.1.1.5 Building Damage

General Building Stock Damage

General building stock is defined as all buildings located within the model area without specification as to use. HAZUS estimates that about 62 buildings will be at least moderately damaged in a 500-year flood which is over 76% of the total number of buildings in the flood impact area. Per the model, an estimated 2 buildings will be destroyed under the 500-year flood. Table 6-7 summarizes the expected damage by general occupancy for the buildings in the region.

Table 6-7 Expected Building Damage by Occupancy 500-Year Flood
Source: HAZUS 4.2

% Building Damage	1-10		11-20		21-30	
Occupancy	**Model Counts**	**Model %**	**Model Counts**	**Model %**	**Model Counts**	**Model %**
Residential	112	65.00	40	23.00	11	6.00
Commercial	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00
Agricultural	0	0.00	0	0.00	0	0.00
Religious	0	0.00	0	0.00	0	0.00
Government	0	0.00	1	100	0	0.00
Educational	0	0.00	0	0.00	0	0.00
Total	112		41		11	
% Building Damage	**31-40**		**41-50**		**Substantially > 50**	
Occupancy	**Model Counts**	**Model %**	**Model Counts**	**Model %**	**Model Counts**	**Model %**
Residential	5	3.00	3	2.00	2	1.00
Commercial	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00
Agricultural	0	0.00	0	0.00	0	0.00
Religious	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00
Educational	0	0.00	0	0.00	0	0.00
Total	5		3		2	

Percent Building Damage: Of the buildings which will be impacted during the flood event, the number of buildings which will incur a specific percentage of over-all damage.

Essential Facility Damage

Essential facilities are defined as police stations, fire stations, hospitals and schools. The essential facility damage model is based on the after-effects of a flood event and, as such, the verbiage used to discuss the damage is provided in the present tense as if a storm has recently occurred. In addition, as previously discussed, the model data is based on 2010 information.

Before the hurricane/storm event, the flood model region assumes that 886 hospital beds are available. On the day of the hurricane, the model estimates that 886 hospital beds are available for use given the size of the storm impacted area and the model area population. No other documentation regarding the duration of hospital bed availability is provided in the modeling. Table 6-8 presents the number of essential facilities potentially damaged during a 500-year event.

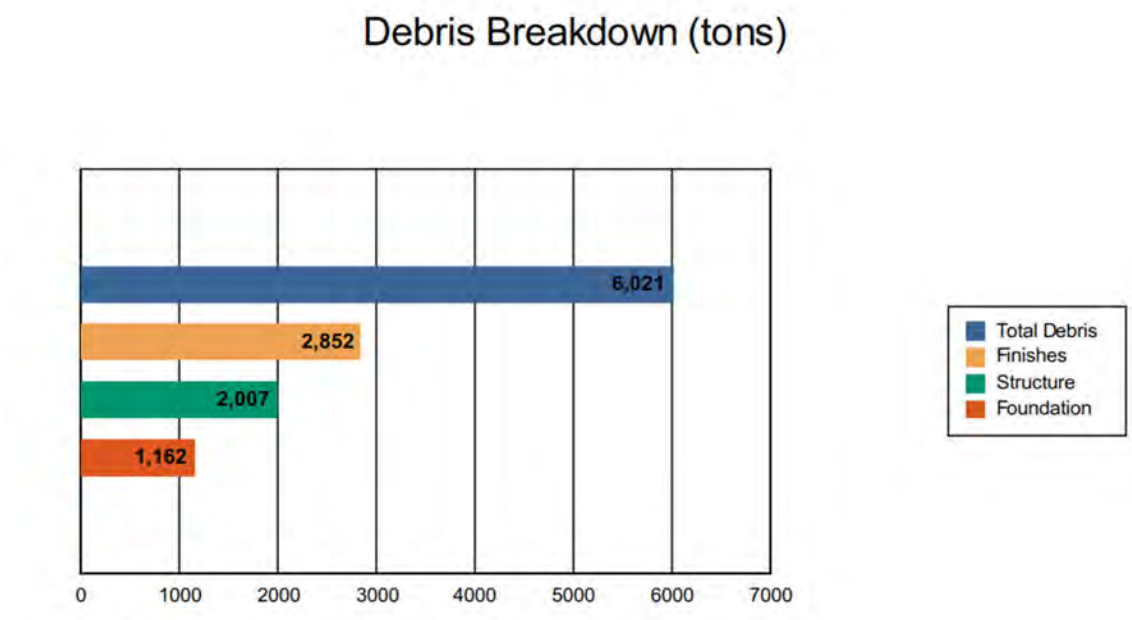
Table 6-8 Expected Damage to Essential Facilities– 500-Year Flood
Source: HAZUS 4.2

Essential Facilities				
Classification	**Total in Model Area**	**Probability of at Least Moderate Damage <50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 Day**
Emergency Operation Centers	0	0	0	0
Fire Stations	7	1	0	1
Hospitals	3	0	0	0
Police Stations	4	0	0	0
Schools	41	1	0	1

6.4.1.1.6 Induced Flood Damage/Debris Generation

HAZUS estimates the amount of debris that will be generated by the flood and breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). The model provided a distinction between the debris types because different types of material handling equipment will be required to handle each type of debris. The model estimates that 6,021 tons of debris will be generated. Of the total amount, 47% consists of finishes, 33% consists of structural and the remaining 19% consists of foundations. If the debris tonnage is converted into an estimated number of truckloads, it will require 241 truckloads (at 25 tons/truck) to remove the debris generated by the flood event. Figure 6-9 show the potential debris generated during a 500-year storm event.

Figure 6-9 Debris Generated during a 500-Year Flood
Source: HAZUS 4.2

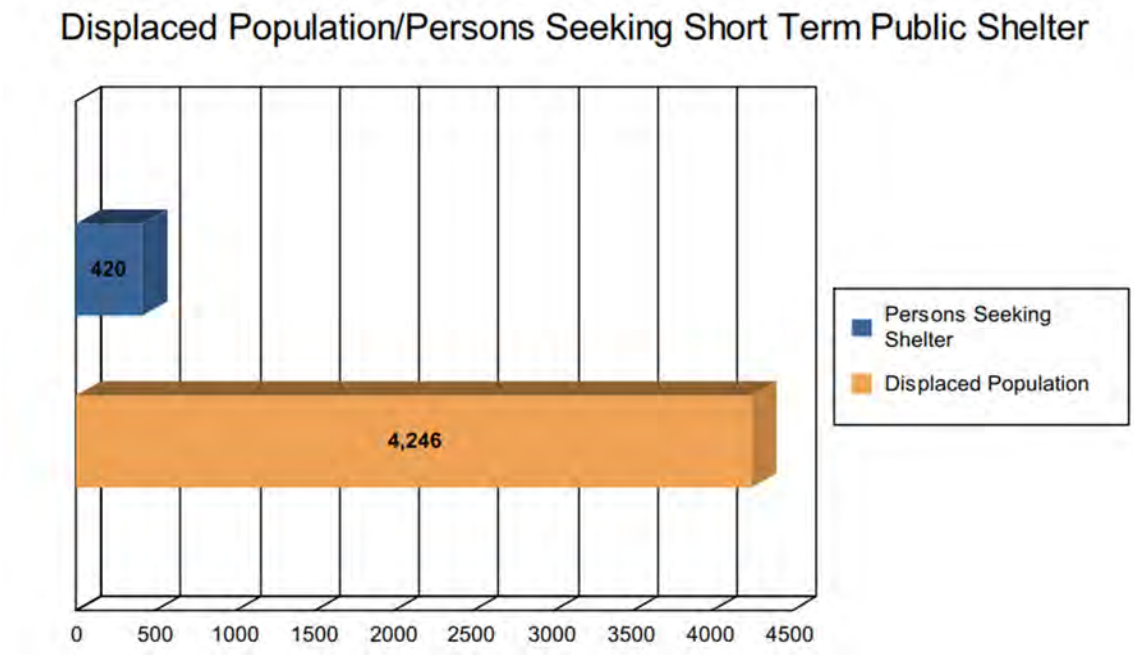


6.4.1.1.7 Social Impact

Social Impact is defined as the effects of the storm event on the model area's population. HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood event and the number of displaced people that will require accommodations in temporary public shelters. The model

estimates 1,415 households (or 4,246 people) will be displaced due to the flood. Displacement includes household evacuated from within or very near to the inundated area. Of these, 420 people (out of a total population of 124,969) will seek temporary shelter in public places. Figure 6-10 shows the potential displaced population during a 500-years storm event.

Figure 6-10 Displaced Population during a 500-Year Storm
Source: HAZUS 4.2



6.4.1.1.8 Economic Loss

Economic loss is defined as financial losses due to loss of buildings and loss of business while a building is unusable due to damages. The total economic loss estimated for a 500-year flood event is 277.90 million dollars, which represents 7.63% of the total replacement value of the damaged study case buildings.

The model also provides losses which are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to buildings and contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include temporary living expenses for those people displaced from their homes because of the flood.

The total building-related loss estimated for the 500-year flood event is 131.07 million dollars, with 53% of the estimated losses related directly to business interruption within the region. The residential occupancies of the impacted buildings account for 26.64% of the total loss. Table 6-9 provides a summary of the losses associated with the estimated building damage. Figure 6-11 shows potential Building Losses by Occupancy Types during a 500-Year Storm.

Table 6-9 Building Related Economic Loss Estimates (Millions) 500-Year Storm
Source: HAZUS 4.2

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	33.78	12.28	4.26	2.13	52.45
	Content	21.54	32.35	11.56	11.33	76.77
	Inventory	0.00	0.63	1.22	0.00	1.85
	Subtotal	55.32	45.26	17.04	13.46	131.07
Business Interruption Loss						
	Income	0.69	34.06	0.38	3.91	39.04
	Relocation	8.04	9.32	0.46	2.05	19.86
	Rental Income	8.35	6.90	0.10	0.26	15.60
	Wage	1.63	31.02	0.60	39.07	72.33
	Subtotal	18.71	81.29	1.53	45.29	146.83
All	**Total**	**74.03**	**126.55**	**18.56**	**58.75**	**277.90**

Figure 6-11 Building Losses by Occupancy Types during a 500-Year Storm
Source: HAZUS v.4.2

History of Flooding Events and Occurrences

The City of Elizabeth experiences flooding during both major and minor weather events. As noted in the FEMA Risk Assessment Summary for New Jersey, flooding in Union County occurs at a high frequency with extensive severity, implying that the probability of future events with extensive damage is inevitable. Because of the age of the City, many of the City's stormwater utilities are unable to capture and dispose of flood waters before rising waters cause damage to the City's structures, roadways and properties. Most of the costly flooding events which have affected the City are not equated to hurricane events or Nor'easters. Six of the eight events with recorded property damage values were due to low pressure systems which brought extensive rainfall to the area causing flash flood and urban flooding.

Evidence of the frequent flooding prompted the Planning Committee to identify and continually implement flood mitigation actions. Severe and consistant property damage, long recovery periods and economical losses have caused the City decision makers to fully commit resources to reduce the effects of flooding. These severe natural hazards that have become more evident in recent years. ach of these mitigation actions were specifically designed to alleviate the damage to properties caused by frequent flood events in these areas of the City, thereby reducing the potential hazard poised by flood including monetary damages to public and private property. For additional information regarding the proposed mitigation actions, please see Section 8 of the Hazard Mitigation Plan.

In addition to flooding, coastal storms, nor'easters, and hurricanes, all have a potential for strong wind(s) which can affect both the coastal zone and more inland portions of the City. For this section, these estimated damages are based on flooding and wind model from FEMA HAZUS 4.2.

Coastal Storms and Hurricanes

The chance of a coastal tropical storm or hurricane that may affect the area during the coastal storm and hurricane seasons was reviewed by Mott MacDonald. FEMA HAZUS model utilizes data from 1944 to present in the analysis and counted hits when a storm or hurricane was within about 100 miles (165 km) of the City. The Atlantic Oceanographic and Meteorological Laboratory and indicates that the City has about a 12-18% chance per year of experiencing a strike by a hurricane or coastal/tropical storm that is named.

Historically, the City of Elizabeth has been on the edge of several hurricane paths from 1888 to present. Recently, in 2012, Elizabeth was impacted by Superstorm Sandy and snow and ice storms in the winter of between 2013 and 2014.

A HAZUS loss estimation model for a hurricane event was created and utilized to estimate the effects of hurricane force winds on the City in the event of a direct hit. The model was designed to interpret the effects of a 100-year storm impact and a 500-year storm impact on the City. The 100-year and 500-year wind modeling data is specific to the affects from winds and was selected to be incorporate with the flood modeling data used most often by both NFIP and FEMA when interpreting the effects of natural hazard events on communities. The specific impacts under the wind event are based on aggregated data and represent a base-level assessment for the Planning Area as a whole. As previously stated, the Committee recommends that efforts be undertaken (on an ongoing basis) to enhance, expand and further improve the accuracy of the baseline established here and enhance the level of detail provided in future updates.

6.4.1.1.9 100-Year Hurricane Event

The following section presents the planning area vulnerability and estimated exposure, and potential annualized losses, respectively, caused by a 100-year hurricane (flooding and wind) through figures and tables. Due to the complexity of analyzing detailed hurricane risk for the City, it is important to note that this risk assessment is based on aggregated data and represents a base-level assessment.

6.4.1.1.9.1 Building Damage

General Building Stock Damage

General building stock is defined as all buildings located within the model area without specification as to use. HAZUS estimates that about 13 buildings will be at least moderately damaged by wind and flooding in a 100-year storm brought on by a hurricane within the study area. This would be 0% of the total number of buildings in the study area. Per the model, no buildings (estimated) will be completely destroyed by a 100-year wind event. Table 6-10 below summarizes the expected building damage by occupancy during a 100-year storm and Table 6-11 summarizes the expected damage by building type.

Table 6-10 Expected Building Damage by Occupancy – 100-Year Hurricane
Source: HAZUS 4.2

	None		Minor		Moderate		Severe		Destructive	
Occupancy	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Residential	18494.44	99.31	115.40	0.62	11.32	0.06	0.84	0.00	0	0.00
Commercial	1975.06	99.30	13.44	0.68	0.50	0.03	0	0.00	0	0.00
Industrial	485.18	99.22	3.79	0.78	0.02	0.01	0.01	0.00	0	0.03
Agricultural	25.85	99.42	0.15	0.56	0	0.02	0	0.00	0	0.00
Religious	175.05	99.46	0.95	0.54	0	0.00	0	0.00	0	0.00
Government	41.70	99.28	0.30	0.72	0	0.00	0	0.00	0	0.00
Educational	55.60	99.29	0.40	0.71	0	0.00	0	0.00	0	0.00
Total	21,252.87		134.43		11.85		0.85		0	

Percent: Of the buildings which will be impacted during the storm event, the number of buildings which will incur a specific percentage of over-all damage.

Table 6-11 Expected Building Damage by Type – 100-Year Hurricane
Source: HAZUS 4.2

Building Type	None		Minor		Moderate		Severe		Destructive	
	Count	%	Count	%	Count	%	Count	%	Count	%
Concrete	493	99.06	5	0.94	0	0.00	0	0.00	0	0.00
Masonry	4,235	98.32	63	1.45	9	0.21	1	0.01	0	0.00
Manufactured Homes	70	99.99	0	0.00	0	0.00	0	0.00	0	0.00
Steel	1,395	99.17	11	0.80	0	0.03	0	0.00	0	0.00
Wood	14,440	99.75	35	0.24	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Essential facilities are defined as police station, fire stations, hospitals and schools. As with flooding, the essential facility damage model is based on the after-effects of a hurricane and as such, the verbiage used is in the present tense as if a storm has recently occurred.

Before the hurricane, the region had 886 hospital beds available for use. On the day of the hurricane, the model estimates that 886 hospital beds and 100% are available for use. After one week, 100% of the beds will be available. By 30 days, 100% will be operational. Table 6-12 presents the expected damage to essential facilities during a 100-year hurricane.

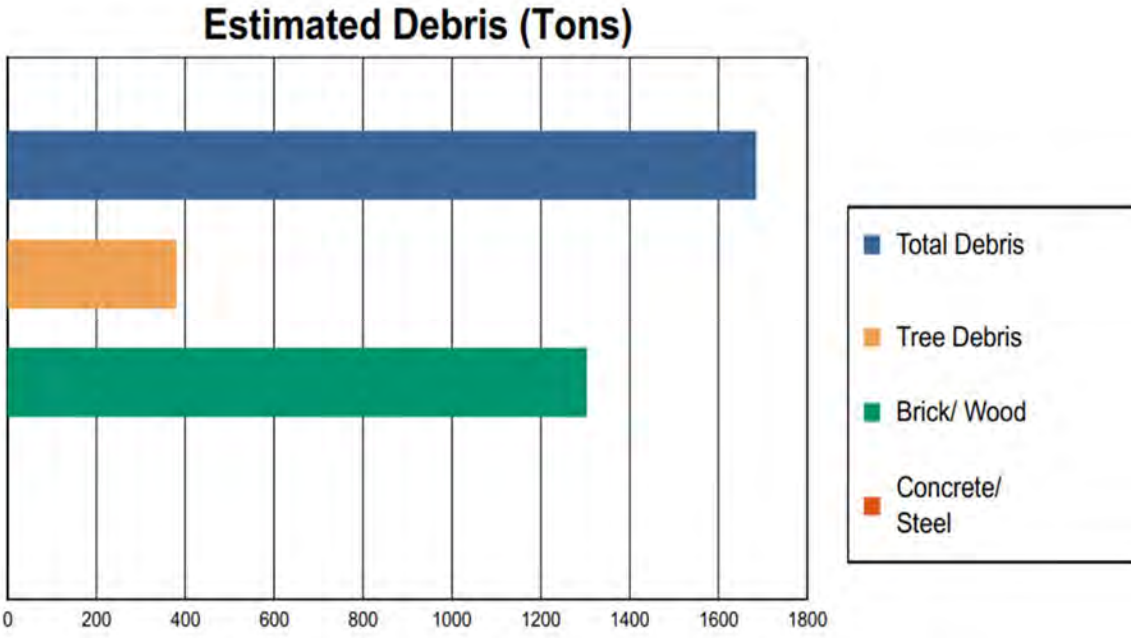
Table 6-12 Expected Damage to Essential Facilities – 100-Year Hurricane
Source: HAZUS 4.2

Facilities				
Classification	Total	Probability of at Least Moderate Damage >50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 Day
Fire Stations	7	0	0	7
Hospital (Trinitas)	3	0	0	3
Police Stations	4	0	0	4
Schools	41	0	0	41

6.4.1.1.9.2 Induced Hurricane Damage/Debris Generation

HAZUS estimates the amount of debris that will be generated by the hurricane and breaks the debris into three (3) general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. The model provides a distinction between debris types because different types of material handling equipment will be required to handle each type of debris. The model estimates that 1,685 tons of debris will be generated. Of the total amount, 110 tons (7%) is Other Tree Debris. Of the remaining 1,575 tons, 83% consists of brick/wood, 0% consists of reinforced concrete/steel and the remaining 10% consists of Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 52 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 271 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris. Figure 6-12 shows the potential 100-year hurricane debris generated.

Figure 6-12 Estimated Debris Generated from a 100-Year Hurricane
Source: HAZUS 4.2



6.4.1.1.9.3 Social Impact

Social Impact is defined as the effects of the storm event on the model area's population. HAZUS estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 household to be displaced due to the hurricane and 0 people (out of a total population of 124,969) will seek temporary shelter in public shelters.

6.4.1.1.9.4 Economic Loss

Economic loss is defined as financial losses due to loss of buildings and loss of business while a building is unusable due to damages. The total economic loss estimated for a 100-year wind event is 10.1 million dollars, which represents 0.08 % of the total replacement value of the damaged study case buildings.

The model also provides losses which are broken into two (2) categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to buildings and contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the high wind event. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the wind damage.

The total property damage losses were 10 million dollars. 4% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 93% of the total loss. Table 6-13 below provides a summary of the losses associated with building damage from a 100-year hurricane (i.e., wind and flooding).

Table 6-13 Building Related Economic Loss Estimates (Thousands of Dollars)
100 – Year Hurricane
Source: HAZUS 4.2

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	8,188.21	463.87	141.69	76.18	8,869.95
	Content	806.75	0.00	0.00	0.00	806.75
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	8,994.96	463.87	141.69	76.18	9,676.70
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	177.55	8.60	0.00	0.01	186.16
	Rental	251.09	0.00	0.00	0.00	251.09
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	428.64	8.60	0.00	0.01	437.25
Total	**Total**	**9,423.60**	**472.48**	**141.69**	**76.19**	**10,113.95**

6.4.1.1.10 500-Year Hurricane Event

The following section presents the planning area vulnerability and estimated exposure, and potential annualized losses, respectively, caused by a 500-year hurrricane through figures and tables. Due to the complexity of analyzing detailed hurricane risk for the City, it is important to note that this risk assessment is based on aggregated data and represents a base-level assessment.

6.4.1.1.10.1 Building Damage

General Building Stock Damage

General building stock is defined as all buildings located within the model area without specification as to use. HAZUS estimates that about 231 buildings will be at least moderately damaged by wind in a 500-year storm brought on by a hurricane within the study area. This is over 1% of the total number of buildings in the study area. Per the model, an estimated 0 buildings will be completely destroyed by a 500-year wind event. Table 6-14 below summarizes the expected damage by occupancy for the buildings and Table 6-15 summarizes the expected damage by building type.

Table 6-14 Expected Building Damage by Occupancy – 500-Year Hurricane
Source: HAZUS 4.2

	None		Minor		Moderate		Severe		Destructive	
Occupancy	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Residential	17,153.12	92.11	1,261.21	6.77	201.40	1.08	5.91	0.03	0.36	0.00
Commercial	1,872.63	94.15	98.23	4.94	15.99	0.80	2.15	0.11	0.00	0.00
Industrial	460.33	94.14	24.86	5.08	3.12	0.64	0.65	0.13	0.03	0.01
Agricultural	24.29	93.41	1.39	5.34	0.23	0.87	0.09	0.36	0.00	0.02
Religious	166.74	94.74	8.74	4.97	0.51	0.29	0.00	0.00	0.00	0.00
Government	39.94	95.09	1.92	4.57	0.14	0.33	0.00	0.00	0.00	0.00
Educational	53.14	94.90	2.66	4.74	0.20	0.36	0.00	0.01	0.00	0.00
Total	19,770.19		1,399.01		221.60		8.81		0.39	

Percent: Of the buildings which will be impacted during the storm event, the number of buildings which will incur a specific percentage of over-all damage

Table 6-15 Expected Building Damage by Type – 500-Year Hurricane
Source: HAZUS 4.2

Building Type	None		Minor		Moderate		Severe		Destructive	
	Count	%	Count	%	Count	%	Count	%	Count	%
Concrete	467	93.78	28	5.65	3	0.57	0	0.01	0	0.00
Masonry	3,857	89.56	313	7.27	131	3.05	5	0.12	0	0.00
Manufactured Homes	69	98.97	1	0.77	0	0.19	0	0.00	0	0.00
Steel	1,324	94.13	68	4.84	13	0.89	2	0.13	0	0.00
Wood	13,508	93.32	933	6.44	35	0.24	0	0.00	0	0.00

Essential Facility Damage

Essential facilities are defined as police station, fire stations, hospitals and schools. As with flooding, the essential facility damage model is based on the after-effects of a hurricane and as such, the verbiage used is in the present tense as if a storm has recently occurred.

Before the hurricane, the region had 886 hospital beds available for use. On the day of the hurricane, the model estimates that 886 hospital beds (100%) are available for use. After one week, 100% of the beds will be available. By 30 days, 100% will be operational. Table 6-16 presents the expected damage to essential facilities during a 500-year event.

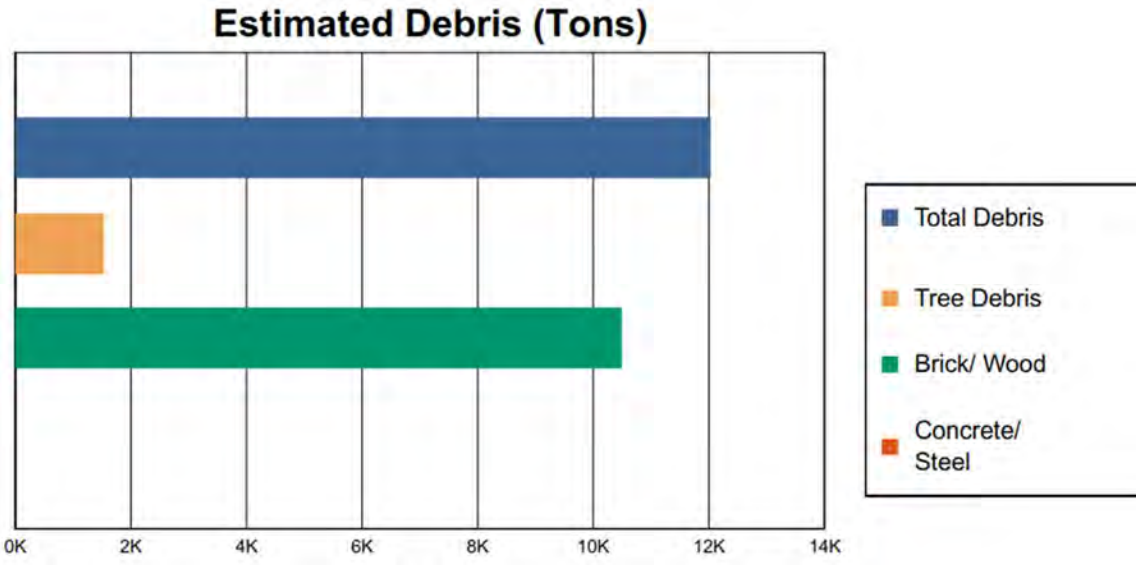
Table 6-16 Expected Damage to Essential Facilities 500-Year Hurricane
Source: HAZUS 4.2

Facilities				
Classification	Total	Probability of at Least Moderate Damage >50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 Day
Fire Stations	7	0	0	7
Hospitals	3	1	0	3
Police Stations	4	0	0	4
Schools	41	0	0	41

6.4.1.1.10.2 Induced Hurricane Damage/Debris Generation

HAZUS estimates the amount of debris that will be generated by the hurricane, which may incude Nor'easters and tropical storms. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris. The model estimates that a total of 12,026 tons of debris will be generated. Of the total amount, 442 tons (4%) is Other Tree Debris. Of the remaining 11,584 tons, Brick/Wood comprises 91% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 420 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 1,087 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris. Figure 6-13 shows the potential 500-year hurricane debris generated.

Figure 6-13 Estimated Debris Generated from a 500 Year Hurricane
Source: HAZUS 4.2



6.4.1.1.10.3 Social Impact

Social Impact is defined as the effects of the storm event on the model area's population. HAZUS estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates zero (0) households to be displaced due to the hurricane. Of these, zero (0) people (out of a total population of 124,969) will seek temporary shelter in public shelters.

6.4.1.1.10.4 Economic Loss

Economic loss is defined as financial losses due to loss of buildings and loss of business while a building is unusable due to damages. The total economic loss estimated for a 500-year wind event is 82.9 million dollars, which represents 0.63% of the total replacement value of the damaged study case buildings.

The model also provides losses which are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to buildings and contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the wind damage.

The total building-related loss estimated for the 500-year wind event is 83 million dollars, with 8% of the estimated losses related directly to business interruption within the region. The residential occupancies of the impacted buildings account for 88% of the total loss. Table 6-17 provides a summary of the losses associated with the estimated building damage during a 500-year hurricane.

Table 6-17 Building Related Economic Loss Estimates (Thousands of Dollars)
500-Year Hurricane
Source: HAZUS 4.2

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	61,827.35	4,625.77	1,432.21	532.62	68,417.95
	Content	5,801.39	917.50	643.28	41.48	7,403.65
	Inventory	0.00	30.90	91.01	0.37	122.27
	Subtotal	67,628.73	5,574.17	2,166.50	574.47	75,943.87
Business Interruption Loss						
	Income	0.00	450.75	12.77	35.36	498.88
	Relocation	2,437.22	590.45	47.70	32.58	3,107.95
	Rental	2,775.52	236.86	8.54	2.68	3,050.60
	Wage	0.00	232.53	18.19	88.62	339.34
	Subtotal	5,212.73	517.60	87.21	159.24	6,996.78
Total	**Total**	**72,841.47**	**7,111.76**	**2,253.71**	**733.71**	**82,940.65**

6.4.2 Severe Thunderstorms

Thunderstorms affect relatively small areas when compared with hurricanes, Nor'easters and winter storms, which have more wide-spread impacts. Despite their small size, thunderstorms are dangerous. The typical thunderstorm is 15 miles in diameter (with microburst at 2.5 miles or less in diameter) and lasts an average of 15-30 minutes. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10 percent are classified as severe. NWS defines severe weather as any weather event that can and does pose a threat to life and property including but not limited to heavy snow, freezing rain, high winds, flash flooding, river flooding, thunderstorms, tornadoes, tropical storms, and hurricanes. Thunderstorms carry a multiple vulnerability threat as they can produce a series of primary hazards to life and property including flash flooding, tornadoes, lightning, high winds and hail.

6.4.3 Severe Winter Storms

Severe Winter Storms are a combination of snow and ice accumulations with strong winds. These conditions are most significant during the following three types of winter storms: Blizzards, Heavy Snowstorms, and Ice Storms which may be accompanied with extreme cold.

Blizzard: The NWS defines a blizzard as a snow event with winds in excess of 35 mph and visibilities of 1/4 mile or less, for an extended period of time (i.e. > 3 hours). A blizzard is also the most dangerous of all winter storms because it combines the three main factors in gauging a storm's severity: snow fall amounts, wind and duration.

Heavy Snowstorm: A snowstorm is defined by the NWS as a snow event that drops four or more inches of snow in a twelve-hour period or less. This type of winter storm can down trees, cause power outages, damage property, lead to injuries, and cause fatalities.

Ice Storm: An ice storm occurs when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures and roads, for example. Ice loads are the result of the storm and oftentimes, the weight of the ice on a communications tower line can cause power outages and other damages. In addition, ice storms present hazard issues for transportation systems – on roads, rail lines, and air travel.

The impacts experienced by the City during severe winter storms include the following: immobility on roadways and through high-traffic corridors, decreased ability to initiate mobile emergency plans such as police, fire or ambulance due to impassible roads, loss of utilities and lack of heat in homes.

During an ice storm, two (2) types of ice can be produced due to the weather conditions: black ice and freezing rain.

- Black Ice: A thin layer of ice forms on all surfaces and is virtually impossible to detect. It contributes to traffic fatalities and injuries.

- Freezing Rain (Drizzle): Temperatures drop to near freezing and the liquid precipitation cools as it falls through the colder air then freezing on trees, power lines, roads and structures, primarily causing slippery conditions on untreated roadways.

Over the last 5-6 years, there have been a number of significant snow storms in New Jersey. Between February 11-14, 2014, the local area was hit with 10"-20" of snow and was listed as a NOAA "Category 3 – Major" storm. Between January 22-24, 2016, a NOAA "Category 4" storm hit the local area with 20"-30" of snow. Between March 12-15, 2017, the local area was hit with another NOAA "Category 3" snow storm with 4"-10" of snow. Between January 3-5, 2018, a coastal "blizzard" hit New Jersey with 6"-12" of snow. In the fall of 2018 and winter of 2019, there were a number of smaller snow storms in Union County based on storms records from the Office of the New Jersey Climatologist at Rutgers University. Between November 15-16, 2018, Union County received approximately 6.5" of snow and in February 12, 2019, the City received 2.7" of snow and on March 2, 2019, the City received 5.2" of snow with another 5 plus inches the following day. It is not always the snow that becomes dangerous to people, local travel and businesses, bitter cold is sometimes accompanies the snow storms. From February 13-20, 2015, the 8 days only averaged a high of 25.4 and the lowest temperature was1 degree Farenheight. Newark airport hit a low of 0 degrees on February 14, 2016. In late 2017 into early January 2018, there were 10 days of extreme cold followed involving a "bomb cyclone" (winds up to 50mph) and a polar vortex. On January 7, 2018, Trenton recorded a low of minus 2 degrees with much of the state in single digits or low teens. Cold temperatures also can also start early in the winter season as in 2017, Newark recorded a new record low temperature of 28 degrees on November 12 only to have the record broken on November 12, 2019 at 25 degrees. There was also another polar vortex event that brought temperatures below zero, such as on January 31, 2019, inland temperatures were below zero while coastal temperatures were all single digits. Newark airport recorded a temperature of 3 degrees without accounting for wind chill factor.

6.5 Summary of Hazard Vulnerabilities

High: Indicates that a jurisdiction is highly vulnerable to the hazard based upon previous occurrences of the hazard in the jurisdiction, local knowledge of hazard areas and the qualitative analysis of the hazards.

Medium: Indicates that a jurisdiction is moderately vulnerable to the hazard based upon previous occurrences of the hazard in the jurisdiction, local knowledge of hazard areas and the qualitative analysis of the hazards.

Low: Indicates that a jurisdiction is not very vulnerable to the hazard based upon previous occurrences of the hazard in the jurisdiction, local knowledge of hazard areas and the qualitative analysis of the hazards. Where applicable, the rankings have also taken into consideration the quantitative analyses that have been developed as part of the Planning process. Table 6-18 shows the hazard ranking vulnerability assessment.

Table 6-18 Hazard Ranking Vulnerability Assessment

Ranking	Overview of Vulnerability
High	High vulnerability to Flooding, Coastal Storms/Nor'easter/Hurricanes, Coastal Erosion, Thunderstorms, Severe Winter Storm, Extreme Heat and Earthquake.
Medium	Medium vulnerability to Drought, Extreme Cold, Hailstorm, Mosquito-Borne Illness.
Low	Low vulnerability to Avalanche, Expansive Soil, Ice-Jams, Land Subsidence, Tornado, Tsunami, Volcanoes, Wildfires

7 Capability Assessment

The purpose of conducting a capability assessment is to determine the ability of the City to implement a comprehensive mitigation strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs or projects. The capability assessment also relies on many federal and state programs that would support the City in this endeavor. For example, programs include the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, The Disaster Mitigation Act of 2000 that amended the Stafford Act and the Public Works Act, which provides grants for economic development, to require local governments to prepare hazard mitigation plans as a precondition for receipt of Hazard Mitigation Grant Program project funds, National Flood Insurance Act (discussed in detail is Subsection 8.4), NJDEP Flood Hazard Control Act Rules and local codes, ordinances and the City of Elizabeth Master Plan (2016, with 10-year update), the Municipal Stormwater Management Plan (2018, with annual review), the Stormwater Pollution Prevention Plan (2018, with annual review), the Sewer System Operations and Maintenance Manual (2019, with annual review) and the draft Combined Sewer Overflow Long Term Control Plan (2020, with 5-year update). All of these plans meet or exceed current basic regulatory requirements.

The City's capability assessment also depends on the identified risks and vunerabilities that need to be reduced. The City capability assessment may be summarized as Prevention Capabilities, Protection Capabilites (for critical infrastructures) and Implementation Capabilities, which all require funding that in some cases maybe an obstacle. The City has a simple but comprehensive mitigation strategy that can best be described as to continually assess vunerabilities, implement mitigative actions, evaluate executed strategies, and improve on those actions and/or move onto new actions to reduce risk and vunerability. This is analogous to plugging the lowest hole in the levee first, then plugging higher holes along the levee and keep plugging the next most vunerable hole until flooding from the levee is fully minimized to the maximum extent practicable. Such strategies are applied to all major natural hazards identified in Section 5. It is considered an essential step to continue meaningful mitigation actions in reducing risks and vunerabilities to the City. Of course, proposed mitigative actions need to be in alignment with the City's existing authorities, policies, programs and resources, and the City's ability to obtain funding for implemention. The City uses many funding sources (iBank/State revolving funds, loans, grants and HMGP) and always seeks new funding methods. In this endeavor, the City uses Mitigation Project Worksheets to evaluate mitigation actions, and examples of these worksheets are in Appendix E.

8 Mitigation Strategy

The Mitigation Strategy is a continuing process that strives to achieve mitigation goals and objectives that will reduce impacts of natural hazards to the City. Following the planning process, many mitigation projects were implemented, monitored, evaluated, and followup actions are based on the City's most current need and purpose to reduce risks and vunerability and to become more resilent to future years.

8.1 Overview

The City evaluates a wide-selection of techniques to achieve mitigation goals and objectives of the Plan. The techniques discussed and integrated into the overall mitigation strategy are described below.

1. Prevention

Prevention is particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred. Examples of preventative activities include:

- Planning and Zoning Updates
- Hazard Mapping Updates
- Open Space Preservation
- Floodplain Ordinances
- Stormwater Management
- Drainage System Maintenance
- Capital Improvements Programming
- Shoreline and Riverbank Stabilization
- Backup Generators

2. Property Protection

Property protection measures enable structures to better withstand hazard events, remove structures from hazardous locations, or provide insurance to cover potential losses. Examples include:

- Acquisition
- Relocation
- Building Elevation
- Critical Facilities Protection
- Retrofitting (i.e. wind proofing, flood proofing, seismic design standards)
- Flood Insurance

3. Natural Resource Protection

Natural resource protection activities reduce the impact of hazards by preserving or restoring the functions of natural systems. Examples of natural systems that can be classified as high hazard areas include floodplains, wetlands and barrier islands. Thus, natural resource protection can serve the dual purpose of protecting lives and property while enhancing environmental goals such as improved water quality or recreational opportunities. Parks, recreation, or conservation agencies and organizations often implement these measures. Examples include:

- Floodplain Protection

- Riparian Buffers and Plantings
- Erosion and Sediment Control
- Wetland and Storm Basin Restoration
- Habitat Preservation/Nature Based Solution
- Slope Stabilization

4. Structural Projects

Structural mitigation projects are intended to lessen the impact of hazards by modifying the environment or hardening structures. Structural projects are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Levees, Dikes, Floodwalls or Seawalls
- Detention and Retention Basins
- Channel Modification
- Storm Sewer Re-Construction
- Roadside Drainage

5. Emergency Services

Although not typically considered a mitigation technique, emergency services minimize the impact of a hazard on people and property. Actions taken immediately prior to, during, or in response to a hazard event include:

- Early Warning Systems
- Evacuation Planning and Management
- Search and Rescue
- Use of Drones

6. Public Information and Awareness

Public Information and Awareness activities are used to advise residents, business owners, potential property buyers and visitors about hazards and mitigation techniques they can use to protect themselves and their property. Examples of measures that maybe used to educate and inform the public include:

- Outreach and Education
- Training
- Workshops
- Real Estate Disclosure

The City is involved with many community projects as listed in the City of Elizabeth "*State of the City 2020*". This document presents 2020 community projects that will have positive impacts to the community with some projects that will help reduce natural hazard impacts, such as reducing erosion and flooding keeping the communities cooler in extreme hot weather conditions and assuring wellness in the community, and especially flu and COVID-19:

- River Flood Control project, Greening Union County Grant – over 1000 trees planted
- Citywide brochure mailings offering free trees for residents to be planted by the City at no cost
- Completed two (2) of the largest municipal spray parks in Union County - the Department of Recreation continues improve the quality of life throughout the City
- Health and Human Services Department education and outreach with 689 immunizations and 310 flu shots – this will be important when a vaccine is available in 2021.

8.1.1 Mitigation Techniques

The City reviews and updates the *Risk Assessment, Capability Assessment* and *Vulnerability Assessment* to determine feasible and effective mitigation that can receive funding. The DMA 2000 specifies that state

and local governments should prioritize actions based on the level of risk a hazard poses to the lives and property of a given jurisdiction. The Mitigation Matrix – Natural Hazards is provided in Table 8-1 and was used as a general guide to ensure that the hazards identified through this planning process were addressed utilizing appropriate mitigation techniques.

Table 8-1 Mitigation Matrix – Natural Hazards

Mitigation Technique	Natural Hazards					
	Flooding	Costal Storm/ Nor'easter/ Hurricane	Thunderstorm	Severe Winter Storm	Extreme Heat	Extreme Cold
Prevention	X	X	X	X		
Property Protection	X	X	X			
Natural Resource Protection	X	X	X			
Structural Projects	X	X	X	X	X	X
Emergency Services	X	X	X	X	X	X
Public Information and Awareness	X	X	X	X	X	X

8.2 Mitigation Action Plan

The mitigation action plan (MAP) is dynamic because the Plan is a living document. Mitigation plans and projects are subject to change as funding may be re-prioritized or delayed. Table 8-2 represents the general and typical format in which each mitigation action is utilized. Each mitigation action has been designed to achieve the goals identified, mostly for reducing risks of impacts by flood waters. By identifying specific projects, hazards, cost, the MAP lays the framework for the City to engage in prioritized actions and changes in priorities (i.e., adaptive mnagement) that will reduce the City's exposure to future hazard events and disasters.

Table 8-2 Mitigation Action Worksheet

Mitigation Action	
A. Municipal Department:	
B. Action Item (Describe):	
C. Hazard(s):	
D. Lead Agency/Department Responsible	
E. Estimated Cost	
F. Funding Method:	
G. Implementation Schedule	

H. Priority:	

Notes:

A. **Municipal Department:** Be sure to identify your department.
B. **Action Item:** Identify specific actions that, if accomplished, will reduce vulnerability and risk in the impact area. Actions should match mitigation goals.
C. **Hazard(s):** The hazard(s) the action attempts to mitigate.
D. **Lead Agency/ Department Responsible:** Identify the local agency, department or organization that is best suited to accomplish this action.
E. **Estimated Cost:** If applicable, indicate the cost to accomplish the mitigation action. This amount should be estimated until a final dollar amount can be determined.
F. **Funding Method:** If applicable, indicate how the cost to complete the action will be funded. For example, funds may be provided from existing operating budgets (General Revenue), a previously established contingency fund (Contingency/ Bonds), or a federal or state grant (External Sources).
G. **Implementation Schedule:** Indicate when the action will begin, and when the action is expected to be completed. Remember that some actions will require only a minimum amount of time, while others may require a long-term continuing effort.
H. **Priority:** Indicate whether the action is a 1) High priority – short-term immediate – reducing overall risk to life and property; 2) Moderate priority – an action that should be implemented in the near future due to political or community support or ease of implementation; 3) Low priority – an action that should be implemented over the long term that may depend on the availability of funds.

The MAP includes an element of prioritization or changes in mitigation priorities. The mitigation actions for Elizabeth were prioritized based on the following five (5) factors: (1) effect on overall risk to life and property; (2); ease of implementation; (3) political and community support; (4) special emphasis on a general economic cost/benefit review; and (5) funding availability. An overall ranking of High, Moderate or Low was given to each action based on analysis of the action in terms of the five factors listed above. If an action was determined not to be cost feasible, it was eliminated from consideration. Projects were determined to be "not feasible" when estimated losses were significantly below the estimated project costs. Funding is an essential component of cost/benefit analysis for FEMA and HMGP mitigative program. Although prioritization is important, the MAP should be regarded as a dynamic comprehensive listing of projects which are implemented as physical and funding resources become available. As such, a project with a lower risk priority but with limited funding requirements may proceed prior to a project with a higher risk priority but lacks a viable funding source. As outlined in Section 9, the mitigation actions will be routinely monitored, updated and/or revised based on the completion of actions/projects and changing vulnerability and risk conditions.

8.3 Long-Term Mitigation Actions

In formulating the City's mitigation strategy, the Planning Committee considered a wide range of activities to help achieve their long-term goals to reduce risk and vulnerabilites from major hazards. As part of the City's onging effort to update mitigative actions, the City in June 2018 completed a HMP questionnaire that was sent out in July 2017 to six (6) members of the Hazard Mitigation Planning Committee. The City's questionnaire asessesed and updated the City's vulnerability based on revised hazard profiling and rankings. Please refer to the Hazard Mitigation Plan 2017/-2018 Questionnaire in Appendix A.

Based on the June 19, 2018 HMP completed Questionnaire evaluation/survey report, Table 8-1 was updated to reflect the long-term commitment to reducing risks and vulnerability of identified and re-prioritized mitigation actions with new mitigation projects. This long-term planning process only requires re-assessment through the mid-term Questionnaire evaluation/survey, as mitigation projects require 2-5 years or longer to design, fund, and construct. Mitigation actions identified by the City address both existing and completed projects with future projects that are subject to change as the mitigation process is dynamic and requires many elements to fall into place before funding is obtained. The majority of the mitigation projects are directly or indirectly related to flood hazards. The City considers all major hazard risk and vulnerability when identifying potential mitigation actions and considers the possible impacts from climate change (extreme weather and sea level rise). Because of these intensifying hazard conditions, the City reviews

new development and redevelopment as part of their long-term hazard mitigation planning and uses many funding vehicles when applicable and practicable to increase mitigative actions.

Table 8-3 below is a living table that shows completed projects over the 5-year Plan period (2015-2020) and shows new projects being assessed for potential funding before being implemented.

Table 8-3 Mitigation Projects (completed and new)

Action or Issue	Category	Completed or New with Assessment Comment	Specific Hazard(s) Addressed
Trenton Avenue Improvement Facility Plan	Flood Mitigation Project	**Completed before 2015**	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Cherry Street/West Jersey Sewer Separation/Pump Station Upgrades and Generator Installation	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Partial Sewer Separation was recently **Completed in 2020.** This reduced the amount of maintenance required for the Pump Station. Additional upgrades are still needed.	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Elizabeth River and Arthur Kill shoreline stabilization	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects.	**Completed before 2015** Initiated due to impacts by Sandy and holding up well so far	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Salt and Storage Facilities Upgrades	Structural Mitigation	**Completed before and after 2015** Significantly increased salt supply and has eliminated potential shortfalls in winters with heavy sleet and snow	Severe Winter Storm
South Street Pump Station and Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	Under Construction to be **completed** by the end of the year	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Progress Street Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects.	**Completed in 2020** Has reduced flooding impacts on surrounding properties since installation.	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Trumbull and 6th Streets Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	Under Construction to be **completed** by the end of the year 2020	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Veterans Memorial Park, Municipal Marina, Recreation Pier Bikeway	Flood Mitigation Project	**Completed in 2015**	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms

Erxleben Recreation Center Renovations and generator	Flood Mitigation Project	**Completed in 2020**	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Midtown Elizabeth Redevelopment Area Infrastructure Improvements	Flood Mitigation Project	**Completed in 2016**	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
North Avenue and Van Buren	Flood Control/Mitigation Project	New – being assessed for funding	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Summer and South Broad Street	Flood Control/Mitigation Project	New – being assessed for funding	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Liberty Square Senior Center Generator	Flood Mitigation Project	New – being assessed for funding	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Brick Sewer and Water Main Lining Projects	Flood Control/Mitigation Project	New – being assessed for funding	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Police Drone Control Tower	Emergency Search and Rescue/monitoring	New – being assessed for funding	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms
Emergency Response Ambulance Canopy	Extreme winter weather protection	New – in design for this winter	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms

8.3.1 Ward by Ward HMP Updated Projects

The following assesses the six (6) Wards that make up the City. Most of these projects are noted Table 8-3 and Table 8-4.

Ward 1 – Completed Projects

- Third Avenue Sewer - Phase 1 - Flood Mitigation completed at the end of 2014
- Waterfront Reconstruction (Post Sandy) - Veterans Memorial Park, Municipal Marina, Recreation Pier Bikeway - Hurricane Mitigation completed in 2015
- Third Avenue Sewer - Phase 2 CSO 035 Modification - Flood Mitigation completed in 2016
- Salt Storage Facility - Winter Storm Mitigation (City Wide Use) completed in 2017
- South Second Street Pump Station Improvements (New Pumps and Drives) - Flood Mitigation complete in 2018
- Progress Street Stormwater Control Project - Flood Mitigation completed in 2020
- Kapkowski Road Pump Station Grinder installation - Flood Mitigation completed in 2015
- Kapkowski Road Pump Station Sluice Gate installation - Flood Mitigation completed in 2019
- Kapkowski Road Pump Station Generator installation - Flood Mitigation completed in 2020

Ward 1 - Current Projects

- Levee/Floodwall Rehabilitation - On-going Since 2014 - Flood Mitigation
- South Second Street Drainage Project - In Detailed Design Phase - Flood Mitigation
- Atlantic Street CSO Tank - In Detailed Design Phase - Flood Mitigation

Ward 1 – Future Projects

- Marina Generator for Fueling Station
- Liberty Square Senior Center Generator
- Dowd Avenue Pump Station
- Trumbull Street Regional Stormwater Management Project
- Atalanta Plaza Flood Wall

Ward 2 - Completed Projects

- Summer Street CSO Flood Relief - Flood Mitigation completed in 2011
- South Street Flood Control (Underpass) - Flood Mitigation completed in 2013
- Erxleben Recreation Center Renovation (and Generator Installation) - Storm Mitigation completed in 2020

Ward 2 - Current Projects

- Levee/Floodwall Rehabilitation - Flood Mitigation that started in 2014
- Joint Meeting WWTF Flood Mitigation Project (By Others) - Financial Contributor - In Detailed Design Phase - Flood Mitigation (FEMA Funded)
- Trenton Avenue Pump Station Improvements & Generator - In Preliminary Design Phase - Flood Mitigation

Ward 2 - Future Projects

- Cole Place and Clifton Street Traffic Signal Improvements (Generator Hook-up)
- Mattano Park Pump Station Generator
- Summer Street and South Broad Street Flood Control Project
- Bayway Area Sewer Separation
- Maple Avenue/Route 1&9 Flooding
- Fire House Replacement

Ward 3 – Completed Projects

- Verona Avenue/Gebhardt Avenue Storm Sewer Improvement Project - Flood Mitigation completed 2011
- Westfield Avenue/Elmora Avenue Sewer Modification Project - Flood Mitigation completed 2012
- Galloping Hill Road and Magie Avenue Traffic Signal Improvements (Battery Backup) - Storm Mitigation completed by others in 2015
- Summit Road and Magie Avenue Traffic Signal Improvements (Battery Backup) - Storm Mitigation completed by others in 2015

Ward 3 - Current Projects

- Lincoln Avenue Sewer - In Detailed Design Phase - Flood Mitigation
- Park Avenue Sewer - In Detailed Design Phase - Flood Mitigation

Ward 3 - Future Projects

- Monmouth Road Sewer (JMEUC)
- Pennington Street Sewer Surcharge

Ward 4 - Completed Projects

- Levee/Floodwall Rehabilitation - Flood Mitigation on-going since 2014
- Midtown Elizabeth Redevelopment Area Infrastructure Improvements - Flood Mitigation completed 2016
- Morris Avenue and Julian Place Traffic Signal Improvements (Battery Backup) - Storm Mitigation completed in 2017
- Trotters Lane Sidewalk Improvements - Winter Storm Mitigation completed in 2017

Ward 4 - Current Projects

- Ursino Dam Repairs - Preparing Bid Documents - Flood Mitigation
- Sherman Ave Water Building Repairs - In Construction - Water Supply Protection

Ward 5 - Completed Projects

- Mickey Walker Recreation Center Renovations (Generator Installation) - Storm Mitigation completed in 2016
- Replaced Firehouse - Engine Company 6 - All Hazard Mitigation completed in 2016
- Jackson Avenue and Anna Street Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2017
- Sampson Senior Center Generator Installation - Storm Mitigation completed in 2017
- Police Headquarters Emergency Generator Installation - Storm Mitigation completed in 2018 (HMP Grant)
- North Avenue East Storm Sewer Installation - Flood Mitigation completed in 2020
- North Avenue and Madison Avenue Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2020

Ward 5 - Current Projects

- Trumbull Street Stormwater Control Project - Construction Complete and to be closeout soon - Flood Mitigation
- Emergency Response Facility Ambulance Canopy in Detailed Design Phase - Winter Storm Mitigation
- North Avenue and Monroe Avenue Traffic Signal Improvements (Generator Hook-up) - In Construction - Storm Mitigation
- North Avenue and Adams Avenue Traffic Signal Improvements (Generator Hook-up) - In Construction - Storm Mitigation

Ward 5 - Future Projects

- Anna Street and Walnut Street Flood Control
- North Avenue and Van Buren Flood Control
- Trumbull Street Regional Stormwater Management Project
- Route 1&9 / Railroad Flooding

Ward 6 – Completed Projects

- Elizabeth Avenue and Jefferson Avenue Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2015

- Elizabeth Avenue and Bridge Street Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2015
- Midtown Elizabeth Redevelopment Area Infrastructure Improvements - Flood Mitigation completed in 2016
- West Grand Street and Cherry Street Traffic Signal Improvements (Generator Hookup) - Storm Mitigation completed by others in 2017
- West Grand Street and Union Street Traffic Signal Improvements (Battery Backup) - Storm Mitigation completed in 2017
- East Jersey Street and Madison Avenue Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2017
- Peterstown Community Center Generator Installation - Storm Mitigation completed in 2017
- Engine Company No. 1 Garage Floor Reinforcing - All Hazard Mitigation completed in 2018
- West Jersey Street Storm Sewer Installation - Flood Mitigation completed in 2018
- West Jersey Street Lift Station Grinder Installation - Flood Mitigation completed in 2018
- Elizabeth Avenue and South Street Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2019
- Elizabeth Avenue and High Street Traffic Signal Improvements (Generator Hook-up) - Storm Mitigation completed in 2019

WARD 6 - Current Projects

- Levee/Floodwall Rehabilitation - On-going Since 2014 - Flood Mitigation
- South Street Flood Control Project - In Construction - Flood Mitigation

Ward 6 - Future Projects

- West Jersey Lift Station Generator
- Engine 1 Floodproofing
- Police Drone Tower

Table 8-4, Mitigation Action Matrix shows a range of specific mitigation actions and projects to reduce risks and vulnerabilities of weather related hazards. Other non-physical mitigation actions, such as HMP related ordinances and 2016 Master Plan updates are mentioned in earlier sections of the Plan. Below presents a prioritized hazard mitigation matrix recognizing mitigation projects with City identification numbers, the projects issue, the projects location, the mitigation technique or category. This table also provides mitigation project information such just as ranking, cost and NFIP project information. The revised top 10 projects have been updated and progress is shown by completed mitigation projects. Example worksheets used for mitigation projects that have mitigation Purpose, Cost, Scheduling or Timing, and who is Administratively Responsible are included in Appendix E, along with a correspondence with the Army Corps of Engineers regarding the Elizabeth River levee walls inspection and a Continued Eligibility determination for Rehabilitation Assistance Under P.L. 84-99.

The mitigation projects noted below consist of various funding sources. For example the State Revolving Fund (SRF) Loans through I-Bank are being used for the Trumbull and South Street Flood Control Projects. The SRF Funds are used to implement Third Avenue and Atlantic Street Flood Control and South Second Pump Station and Lincoln Avenue Stormwater Drainage Improvements. The Kapkowski Road Corridor Project - Traffic Signal Improvements and Underpass Lowering will be funded by a Federal Earmark Grant. The ggenerator and electrical upgrades at the City's Police Headquarter was funded from FEMA's HMGP.

Table 8-4 Mitigation Action Matrix (Exisitng Projects)

City ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost and Funding Source
#1	Dowd Avenue Pump Station	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering		~25 Million
#2	Trumbull Avenue Stormwater Management Project	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering		~30 Million
#3	Monmouth Road Flood Control (JMEUC Issues)	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering/Joi nt Meeting Group		~3 Million
#4	Park Avenue and Summit Road Flood Control	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	**#4**	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~4 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#5	Maple Avenue/Route 1&9 Flooding	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~3 Million
#6	Route 1&9 Flooding/Railroad Flooding	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~3 Million
#7	Cherry Street/West Jersey Sewer Separation/Pump Station Upgrades and Generator Installation	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	**#8**	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group	Partial Sewer Separation Completed. Has reduced the amount of maintenance required. Additional upgrades still needed.	~4 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#8	Ursino Dam Repairs	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	**#6**	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~1 Million
#9	Portable Generators and Transfer Switches at Key Traffic Signals	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	**#9**	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group	Have continually been installing generator connections on all new signals, have not needed to use them yet	~.5 Million
#10	Miscellaneous Generators and Electrical Upgrades at Critical Facilities	Flood Mitigation; Structural Mitigation; Stormwater and Wastewater Policies/Projects/Supply of Fuel	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering/Police Department/ Joint Meeting Group	Existing - Replaced generator at Police HQs (HMGP). Installed generators at 4 community recreation centers.	~6 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#11	Extreme Heat Education and Awareness Outreach	Administrative Action: Education Outreach and/or Training	Ongoing	Extreme Heat	Not Ranked	No	City Health Department		~$100,000
#12	Earthquake Awareness Outreach	Education and Outreach; Training	Ongoing	Earthquakes	Not Ranked	No	City Health Department		~$100,000
#13	Third Avenue and Atlantic Street Flood Control	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	#2	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group	Project is in design phase	~8 Million
#14	South Second Pump Station and Flood Control with Generator	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Existing Station is now operational, upgrades and generator in design phase	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	#1	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~4 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#15	Atlanta Plaza Floodwall	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~30 Million
#16	#2 South Street Pump Station and Flood Control	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Under Construction to be completed in 2021	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Near Completion	Yes*	Department of Public Works/ City Engineering		~6 Million
#17	Bayway Area Sewer Separation	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	No	Department of Public Works/ City Engineering/ Joint Meeting Group		~6 Million
#18	Trumbull and 6th Streets Flood Control	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing and to be completed in late 2020 or early 2021	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Near Completion	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group	Under Construction	~6 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#19	Broad Street Firehouse Engine #1	Flood Mitigation; Flood Proofing Firehouse	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	No	Department of Public Works/ Fire Department		~7 Million
#20	Kapkowski Road Pump Station with upgrades and Generator	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~2 Million
#21	Trenton Avenue Pump Station with upgrades and Generator	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	**#7**	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~9 Million
#22	Trenton Avenue Generator	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	See ID #21	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group		~.75 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#23	Mattano Park Pump Station upgrades and Generator	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/Playground and Parks	Still needs a generator Electric system replaced after Sandy and flood proofing constructed	~.75 Million
#24	Decker Avenue Storm Sewer (Backups)	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	See ID #32	Yes*	Department of Public Works/ City Engineering	This is part of the Lincoln Avenue Project which is in design	~2 Million
#25	Pennington Street Sewer Surcharge	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Not Ranked	Yes*	Department of Public Works/ City Engineering		~2 Million
#26	Marina Generator Emergency Fueling Station	Response to public fueling needs	Ongoing	Fueling emergency and public vehicles to respond to emergency site	Not Ranked	Yes*	Department of Public Works/ City Engineering		~.5 Million
#27	Levee Project	Upgrade the levee for flood water management	Ongoing	Flooding, Coastal storms, Hurricane; Thunderstorms	**#5**	Yes*	Department of Public Works/ City Engineering	Maintenance, repairs and improvements still being made	~20 Million

ID #	Project Area and/or Issue	Category or Action	Existing Projects and Expected Year for Completion	Specific Hazard(s)	Priority	NFIP*	Lead Agency	Project Comments if Any	Estimated Cost
#28	Site wide Emergency Overhead Signs	Public Notification	Ongoing	Notify the Public of Hazardous and locations of Muster Points	**#10**	No	Department of Public Works/ City Engineering		~.5 Million
#29	Site wide Solar Power Disconnects	Public Notification	Ongoing	Transfer main electrical power to solar for continuous electricity	Not Ranked	No	Department of Public Works/ City Engineering		~.5 Million
#30	Infectious Disease Control	Public Notification	Ongoing	Notify the public of critical stations to receive vaccinations.	Not Ranked	No	City Health Department		~$100,000
#31	New Fire House Construction	Flood Mitigation	Ongoing	Improve Emergency Response	Not Ranked	No	Department of Public Works/Fire Department		~6 Million
#32	Lincoln Avenue Stormwater Drainage Improvements	Flood Mitigation; Stormwater and Wastewater Policies/Projects	Ongoing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	**#3**	Yes*	Department of Public Works/ City Engineering/ Joint Meeting Group	In design phase of work	~3.5 Million

NFIP* - Mitigation actions which relate to address compliance with the National Flood Insurance Program

8.4 National Flood Insurance Program

The National Flood Insurance Program (NFIP) was established by the National Flood Insurance Act of 1968, with the intent of reducing the need for post-disaster federal aid by offering flood insurance and providing mitigation incentives to properties that have significant flood risks. The three (3) components of the NFIP are as follows: flood insurance, floodplain management and flood hazard mapping. NFIP identifies and maps the Nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. The FEMA Flood Map Service Center can be used to find out if your property is in a regulated flood zone: https://msc.fema.gov/portal/home

The City participates in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in this communities. The City continues to implement mitigation projects that are NFIP applicable to lower the cost of flood insurance in the community. The City has been a participant in the program since May 1970.

8.4.1 Repetitive Loss (RL) Properties

Another way to gauge flood hazard risk is to identify and analyze the number of properties that have filed multiple flood insurance claims. Properties that meet these criterions are typically referred to as "*repetitive loss*" (RL) properties. The NFIP definition of repetitive loss is, "*A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978.*" Structures that flood frequently strain the National Flood Insurance Fund. The latest information on RL properties in the City show that there were eleven (11) NFIP repetitive loss properties in the City. Due to privacy laws, the eleven (11) property addresses are not provided but noted numerically below:

- Property #1 located in Ward 1 on the Arthur Kill, submitted claims only after Sandy
- Property #2 located in Ward 1 on the Arthur Kill, submitted claims before and after Sandy
- Property #3 located in Ward 4 and not in a flood area and submitted claims in 2014
- Property #4 located in Ward 1 and not in a flood area and all claims before Sandy
- Property #5 located in Ward 2 and submitted 1 claim before (1996) and 1 claim after Sandy. Long-range sewer separation project is in the planning phase.
- Property #6 located in Ward 2 and submitted multiple claims before and after Sandy (mitigation action is ongoing)
- Property #7 located in Ward 2 not in a flood area and submitted claims only before Sandy
- Property #8 located in Ward 2 not in a flood area and submitted claims only before Sandy
- Property #9 located in Ward 2 near Goethals Bridge. Seven claims submitted before and after Sandy (flood prone property was bought and demolished by the Port Authority)
- Property #10 located in Ward 6 and submitted claims before and after Sandy. Should be mitigated by the South Street Flood Control Project to be completed by the end of the year.
- Property #11 located in Ward 6 and not in a flood area. Submitted 2 claims before Sandy.
- Note that five (5) other single claim properties are on the NFIP list and they have either been mitigated by demolition of property or are addressed by ongoing mitigation action.

8.4.2 Severe Repetitive Loss (SRL) Properties

Severe repetitive loss (SRL) properties are another class of repetitive loss. These properties, defined under the 2004 Flood Insurance Reform Act, are those buildings that either have four or more claims of $5,000 or

more, or have at least two claims that cumulatively exceed the building's value. There are no SRL properties within the City.

8.4.3 MAP and NFIP Compliance

Mitigation action plan as identified in this Section includes strategies to analyze and implement NFIP mitigation actions related to the continued compliance with FEMA's NFIP, that included many flood mitigation projects listed above in Table 8-5 that will reduce flooding in repetitive loss communities. As previously discussed, the City has been a participant in the NFIP since May 1970 and has adopted and enforced floodplain management ordinances to reduce future flood damage, many new HMP related ordinance between 2015 to 2020 (see Appendix D for a list of HMP realted ordinance since 2015). All new construction or redevelopment must meet the City flood ordinance requirements and provide documentation of such prior to Municipal approval. However, several areas of the City are still affected by flooding because of development that preceded newer NFIP guidance. As noted above, there were elevin (11) repetitive loss homes but the data is old and the number is likely to be lower as many NFIP projects have been completed and implemented since 2105 as indicated in Table 8-5 and in the subsection 8.4.1 above that shows all completed project by the six (6) Wards.

9 Plan Maintenance Procedures

In accordance with 44 CFR Part 201.6 (c)(4)(i), this Section describes how the City implements, evaluates, expands and enhances the Plan over the years. This Section also discusses how participating entities and the public may comment and participate with pre-disaster mitigation planning. The three following subsections are provided to meet the requirements related to Plan maintenance:

- **Implementation**
- **Evaluation, Monitoring and Enhancement**
- **Public Involvement**

9.1 Implementation

Mitigation goals and objectives, and past, current and future mitigation projects/actions are described in Section 8 of this Plan. The City Engineer has the authority and responsibility to implement, administer, expand or revise mitigation actions with concurrence of other noted departments and Planning Committee members described in Table 3.1.

Each department has its own voice and may initiate HMP mitigation discussions before, during or after the mid-term HMP Questionnaireevaluation/survey report found in Appendix A. The City Engineer and applicable Planning Committee member(s) will take on the role to address each department's goals and objectives and will prioritize the implementation of mitigation projects so to continuely reduced the City's risks and vulnerabilities.

Implementation of the HMP and mitigation projects listed in Section 8 is based on the mitigation action plan (MAP) that is dynamic and subject to change as funding may be re-prioritized or delayed. Implemention of mitigation projects is dynamic, and will depend on the specific project, hazard being addressed (e.g., flooding vs wind storm), cost and the responsible deparment that demonstrates that they have the resources to implement the mitigation project.

Many elements are involved with the implementation or actions of any mitigation project and the following elements are evaluated and prioritized before implementation occurs. The following are some of the key elements in implementing and prioritizing mitigation projects:

- City's exposure to hazards and future disasters (priority based on risk and vulnerability)
- Cost/benefit effectiveness of proposed mitigation
- Technical feasibility of getting the project done
- Funding method, availability and effort to obtain funding
- How long before funding becomes available
- Ranking and priority of other proposed projects
- City's administrative and engineering schedules

9.2 City of Elizabeth Planning Committee

The City remains an active and viable entity that oversee the Plan's progress. During each update period the Planning Committee tries to involve the community and local/regional stakeholders by sending USPS certified letters to identified stakeholders and provides pubic notices in three (3) local newspapers (includes the Local Source La Voz newspaper) for the review of two (2) presentations so that public comments/participation can be obtained. The local and regional stakeholders contacted were updated in 2019 and include but are not limited to educational facilities, utility and transportation authorities/companies. Whether they participate and/or comment is beyond the reach of the City. As current mitigation projects are completed, the Planning Committee will add new mitigation projects and may re-prioritize exisitng mitigation projects so that risks and vulnerability to the City continues to be reduced. The Planning Committee uses a mid-term 2017-2018 Planning Committee Questionnaire evaluation/survey report to make updates and revisions to the Plans.

9.3 Evaluation, Monitoring, and Enhancement

An essential component of any updated mitigation plan is the continual development of a viable funding stream with methods to evaluate, monitor and enhance completed mitigation projects, to include the addition of new projects as needed and every 5-years. The City performs internal periodic reviews, and makes revisions and updates as necessary to ensure that the Plan continues to reduce natural hazard risks and vunerabilites. As part of the continuing process to address priority ranked hazards in a cost/benefit and efficient manner, the City evaluates various effective and practicable (including technological, economic, and institutional considerations) means of updating and implementing mitigation projects during thier mid-term HMP updating period of about 11 months (July 2017-June 2018). During this 11 month period before the final Questionnaire Report is completed, lead members of the Planning Committee with their internal teams may provide comments and revise mitigation projects that reflect the most updated City hazard issues, as dicussed in Section 8.4. This is the general approach to evaluate, monitor and enhance the Plan to keep the Plan viable and alive.

The Plan is reviewed, updated and submitted to the New Jersey State Hazard Mitigation Officer every five-years. The update cycle is based upon the date of adoption of and will commence on the fourth anniversary of the Plan adoption date to ensure that the revised Plan will be approved within each five-year cycle. As described below, the City has established a mid-term Plan Questionnaire review process that is deemed suffcient to keep mitigation projects up to date in this single jurisdictional City.

The City Engineer has determined that an informal HMP review may occur annually and especially after a major hazard is sufficient to reflect updated HMP conditions and to identify new issues. In particular, the City will in the future review FEMA guidance worksheets 1-5 included in *Bringing the Plan to Life, Implementing the Hazard Mitigation Plan (* FEMA 386-4, August 2003) and utilize these worksheets as a

basis for discussion on the mid-term Plan update for their review and monitoring process. The City has determined that the Plan review and evaluation will include the following:

- Identification of any changes in State or Federal regulations, including in particular, any modification to FEMA rules and guidance that could impact elements of the Plan and future funding;
- Identification of any natural hazard events which occurred during the past 3-4 years;
- Discussion of the impact(s) and lessons learned of any recent (generally occurring within the review year) hazard events in the City of Elizabeth Planning Area;
- Review of proposed and completed mitigation measures identified in the Plan;
- Evaluation of the success of completed mitigation measures identified in the Plan;
- Identification of any identified mitigation measures which should be added or removed from the Plan or any measures which should be substantially modified in terms of scope or importance as compared to that which was provided in the Plan;
- Identification or modification of funding options for mitigation measures;
- Identification of any changes in GIS or data acquisition and management technologies that would be useful or meaningful in Plan updates; and,
- Identification of any new Planning members or stakeholders that should be included in the Planning Process.

9.4 Integration of the Plan into Planning Mechanisms

As part of the interim Plan maintenance process, each City department discusses mitigation projects and ranking of hazards in the mid-term Plan review. Each Planning Committee lead team member is provided with blank copies an appropriate worksheet for their use in updating individual actions undertaken by their department. The Planning Committee member from each City department has the responsibility of ensuring that all completed mitigation actions are reviewed and revised as needed before the Questionnaire Report is finalized eleven (11) months later by the City Engineer. The comments in the mid-term Questionnaire evaluation/survey report from the City's departments are compiled for and located in Appendix A.

For this 5-year update, the City of Elizabeth has provided updated information on hazard ranking, risk and vulnerability assessments and mitigation measures and commented on current projects while adding new mitigation projects. Thus, the information contained herein represents an updated HMP source of public information and a planning tool for integration into future hazard mitigation projects. All mitigation projects shown in this HMP go through a full planning and integration process that includes capital improvement budgeting and planning, utility master planning, zoning/growth development management, mapping (including GIS), open space management, and funding sources. The City maintains a variety of local planning documents and mechanisms based upon each Departments (e.g., fire, police, health dept. and etc) prioritized needs. The City maintains both a revised 2106 Master Plan and an Emergency Operations Plan (EOP) that is implemented by others. As such, all these local planning documents, ordinances, and updated 2016 Master Plan represents the most appropriate local planning mechanisms to address current and futrue natural hazards for this single jurisdiction City. Further, according to Municipal Land Use Law, each municipality in New Jersey is required to re-examine its Master Plan and development regulations at least once every ten years. The City has updated their Land Use Plan Element of the Master Plan in 2016 which addresses the most recent changes in developments that take into account natural hazards. Thus, the integration of applicable pre-disaster mitigation tasks, actions and assessemnts of current and future pre-diaster projects reflect changes to planning and developments noted in the 2016 Master Plan and the City's planning mechanisms.

10 Plan Adoption

After considerable effort, the City has completed the final updated City of Elizabeth Hazard Mitigation Plan. The City has addressed the comments provided by NJOEM and FEMA Region II personnel to the best workable process. The City will adopt the 2020 Updated Plan in accordance with 44 CFR Part 201.6 (c)(4)(i) upon approval and a copy of the adopting resolution will placed in Appendix F – 2020 Updated HMP Adopted Resolution. The final approved Plan will be placed in the City's website for the public to review as necessary.

Appendix A

HMP 2017-2018 Questionnaire Evaluation Report

CITY OF ELIZABETH

Great Businesses. Vibrant Communities. A New Energy.

CITY OF ELIZABETH
HAZARD MITIGATION PLAN – 2017 UPDATE

June 19, 2018

Department of Public Works – 50 Winfield Scott Plaza
Elizabeth, NJ

CITY OF ELIZABETH
HAZARD MITIGATION PLAN
2017 UPDATE
DEPARTMENT OF PUBLIC WORKS
CITY HALL – 50 WINFIELD SCOTT PLAZA
ELIZABETH, NEW JERSEY 07201

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SUMMARY OF HAZARD MITIGATION PLAN QUESTIONNAIRE

The purpose of the Hazard Mitigation Plan Questionnaire is to assist in the identification of hazards, which threaten the community as well as to identify potential corrective or mitigation measures that would minimize the impact/effect of such hazards. Also, the questionnaire seeks to document corrective or mitigation measures, which already have been undertaken and to identify both successes and failures of previous efforts. Hazards may be natural, man-made or technological including terrorism.

As part of this effort, the City requires the cooperation and input from various city departments, agencies, divisions and bureaus to assist in identifying possible hazards within and surrounding the City of Elizabeth.

The Department of Public Works, Division of Engineering, as part of the update of the city's Pre-Disaster Mitigation Plan, sent out the Hazard Mitigation Plan Questionnaire to the various agencies be completed and submitted to the Division of Engineering. The following departments, bureaus, and divisions submitted completed questionnaires:

- Business Administration
- Department of Public Works
- Elizabeth Fire Department
- Planning and Community Development – Bureau of Construction
- Elizabeth Police Department
- Health and Human Services – Department of Health

The Hazard Mitigation Questionnaire the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

___ Severe Winter Storms
___ Hurricanes/Nor'Easters
___ Hazardous Materials Incident
___ Flooding
___ Bridge Failure

The Hazard Mitigation Plan Questionnaire received from the Department of Business Administration ranked the hazards as: Severe Winter Storms 5, Hurricanes/Nor'Easters 3,

Hazardous Materials Incident 2, Flooding 4, and Bridge Failure 1. The Department of Business Administration did not identify any other potential hazards that would affect the community.

The Hazard Mitigation Plan Questionnaire received from the Department of Public Works ranked the hazards as: Severe Winter Storms 3, Hurricanes/Nor'Easters 2, Hazardous Materials Incident 5, Flooding 5, and Bridge Failure 5. The Department of Public Works noted possible flooding and drainage issues on South First Street between Third Avenue and Relocated Bayway and the Great Ditch that runs parallel with Dowd Avenue. The flooding and drainage issues on South First Street between Third Avenue and Relocated Bayway has since been addressed as a result of this update process.

The Hazard Mitigation Plan Questionnaire received from the Elizabeth Fire Department ranked the hazards as: Severe Winter Storms 4, Hurricanes/Nor'Easters 3, Hazardous Materials Incident 2, Flooding 5, and Bridge Failure 1. The Elizabeth Fire Department noted the possible terrorist threats as additional hazard along with fire hazards due to age and construction of existing buildings. Fire Engine No. 1 located at 24 South Broad Street was identified as a critical facility which is repeatedly impacted by flooding, severe winter storms or other hazards.

The Hazard Mitigation Plan Questionnaire received from the Department of Planning and Community Development ranked the hazards as: Severe Winter Storms 1, Hurricanes/Nor'Easters 3, Hazardous Materials Incident 4, Flooding 2, and Bridge Failure 5. The Department of Planning and Community Development listed as additional hazards of having the downstream portion of the Elizabeth River dredged to prevent inland/upstream flooding and making provisions to prevent coastal flooding. The identified steps or actions undertaken or planned to be undertaken include the enforcement of the flood plain ordinances to ensure any new building in Special Flood Hazard Areas (SFHA) are constructed to prevent flood damage and substantial repairs to existing buildings comply with the National Flood Insurance Program (NFIP) Standards. An application has been made to participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS) and mitigation measures will be taken to accomplish a classification.

The Hazard Mitigation Plan Questionnaire received from the Elizabeth Police Department ranked the hazards as: Severe Winter Storms 2, Hurricanes/Nor'Easters 4, Hazardous Materials Incident 3, Flooding 5, and Bridge Failure 1. The Elizabeth Police Department identified as an additional hazard of a cyber-attack and physical terrorist threats.

The Hazard Mitigation Plan Questionnaire received from the Department of Health and Human Services ranked the hazards as: Severe Winter Storms 3, Hurricanes/Nor'Easters 4, Hazardous Materials Incident 2, Flooding 1, and Bridge Failure 5.

Copies of all completed Hazard Mitigation Plan Questionnaires submitted are attached in Appendix A.

SECTION 6.1: SUMMARY OF VULNERABILITY ASSESSMENT BY HAZARD

The Department of Public Works, Division of Engineering as part of an update of the city's Pre-Disaster Mitigation Plan, sent out Vulnerability Assessment by Hazard to be completed and resubmitted to the Division of Engineering. The following departments, bureaus, and divisions were sent Vulnerability Assessment by Hazard:

- Business Administration
- Planning and Community Development – Bureau of Construction
- Department of Public Works – Division of Engineering
- Elizabeth Police Department
- Elizabeth Fire Department
- Department of Health and Human Services

As part of the Vulnerability Assessment, each City department ranked each identified natural hazard and provided an assessment of the likely severity of impact. Assessments were limited to direct impacts and not induced impacts. All hazards were ranked based on a scale of 1 to 5 with 5 being the most likely to impact the City of Elizabeth.

Impact assessment was based on a scale of High, Medium and Low with regard to the extent of damage in the event of the hazard's occurrence within the City of Elizabeth.

The Vulnerability Assessment by Hazard Table received from the Department of Business Administration noted minor changes when compared with the previous responses received in 2014. Changes in Ranking and Impact were as follows:

- Coastal Storm/Nor'Easter/Hurricane an increase in Rank to 4 from 5.
- Expansive Soil a decrease in Rank from 2 to 1.
- Extreme Cold a decrease in Rank from 5 to 4 and a change in Impact from Medium to High.
- Flood a change in Impact from Medium to High.
- Hailstorm decrease in Rank from 4 to 3.
- Mosquito-borne Illnesses a change in Impact from Medium to Low.
- Severe Winter Storm a change in Impact from Medium to High.
- Tornado a decrease in Rank from 3 to 2.
- Wildfire a decrease in Rank from 2 to 1.

The Vulnerability Assessment by Hazard Table received from the Department of Planning and Community Development noted only one change when compared with the previous responses received in 2014. Changes in Ranking and Impact were as follows:

- Extreme Heat an increase in Rank from 3 to 4.

The Vulnerability Assessment by Hazard Table received from the Department of Public Works/Engineering noted minor changes when compared with the previous responses received in 2014. Changes in Ranking and Impact were as follows:

- Coastal Erosion a decrease in Rank from 4 to 3.
- Drought a decrease in Rank from 3 to 2.
- Earthquake a decrease in Rank from 2 to 1 and a change in Impact from Medium to Low.
- Extreme Heat an increase in Rank from 3 to 4.
- Extreme Cold an increase in Rank from 2 to 4.
- Mosquito-borne Illnesses a change in Impact from low to Medium.

The Vulnerability Assessment by Hazard Table received from the Elizabeth Police Department noted only one change when compared with the previous response received in 2014. The changes in Ranking and Impact were as follows:

- Severe Winter Storm an increase in Rank from 2 to 3 and a change in Impact from Low to Medium.

The Vulnerability Assessment by Hazard Table received from the Elizabeth Fire Department did not depict any changes to any hazard rank or hazard impact when compared with the previous response received in 2014.

The Vulnerability Assessment by Hazard Table was sent to the Department of Health and Human Services. The Division of Engineering did not receive a response from the Department of Health and Human Services.

Copies of all completed Vulnerability Assessment by Hazard Tables submitted are attached in Appendix B.

Table 6.1 Hazard Ranking Vulnerability Assessment by Hazard

Department	Avalanche		Coastal Erosion		Coastal Storm/ Nor'easter/ Hurricane		Drought		Earthquake		Expansive Soil		Extreme Heat	
	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact
Public Works & Engineering	1	Low	3	Medium	5	High	2	Low	1	Low	3	Medium	4	Medium
Planning & Community Development	1	Low	3	Medium	5	High	2	Low	1	High	1	Low	4	Medium
Business Administrator	1	Low	3	Medium	5	Medium	4	Low	1	Low	1	Low	4	High
Fire Department	1	Low	2	High	5	High	5	High	4	High	1	Medium	5	High
Police Department	0	Low	0	Low	5	High	0	Low	0	Low	0	Low	0	Low
Health Department														

Table 6.1 Hazard Ranking Vulnerability Assessment by Hazard

Department	Extreme Cold		Flood		Hailstorm		Ice Jam		Land Subsidence		Mosquito-borne Illnesses	
	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact
Public Works & Engineering	4	Medium	5	High	2	Medium	2	Low	2	Low	3	Medium
Planning & Community Development	4	Medium	4	Medium	2	Low	1	Low	1	Low	3	Medium
Business Administrator	4	High	5	High	3	Medium	1	Low	2	Low	4	Low
Fire Department	4	High	5	High	4	Medium	2	Medium	2	Medium	3	Medium
Police Department	1	Low	3	Medium	0	Low	0	Low	0	Low	0	Low
Health Department												

Table 6.1 Hazard Ranking Vulnerability Assessment by Hazard

Department	Severe Winter Storm		Thunderstorms		Tornado		Tsunami		Volcano		Wildfire	
	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact	Rank	Impact
Public Works & Engineering	5	High	4	High	1	Low	1	Low	1	Low	1	Low
Planning & Community Development	5	High	3	Medium	1	Low	1	Low	1	Low	1	Low
Business Administrator	5	High	5	Medium	2	Low	1	Low	1	Low	1	Medium
Fire Department	5	High	5	Medium	2	Medium	4	Medium	1	Low	1	Low
Police Department	3	Medium	4	Medium	0	Low	0	Low	0	Low	0	Low
Health Department												

SECTION 8.3: TABLE 8-1 - LIST OF MITIGATION PROJECTS

Table 8-1 Mitigation Projects was revised to show updated information and status of existing and or new projects addressing specific hazards. The updated Mitigation Projects Table is attached.

Table 8-1 Mitigation Projects

Action or Issue	Category	New or Existing	Specific Hazard(s) Addressed	Status
Dowd Avenue Pump Station	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	Existing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Trumbull Street Regional Stormwater Management Project	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	Existing	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Monmouth Road Flood Control (JMEUC Issues)	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Park Avenue and Summit Road Flood Control	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Maple Avenue/Route 1&9 Flooding	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Route 1&9 Flooding/Railroad Flooding	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Cherry Street/West Jersey Sewer Separation/Pump Station Upgrades and Generators Installation	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Partial Sewer Separation Completed

Table 8-1 Mitigation Projects

Action or Issue	Category	New or Existing	Specific Hazard(s) Addressed	Status
Ursino Dam Repairs	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Portable Generators and Transfer Switches at key traffic signals	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Ongoing at the New Signal Installations
Elizabeth River and Arthur Kill shoreline stabilization	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Miscellaneous Generators and Electrical Upgrades at Critical Facilities	Flood Mitigation Project; Structural Mitigation; Stormwater and Wastewater Policies/Projects; Supply of Fuel	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Police HQ Generator Replacement has Started. Installed at Sampson, Peterstown & Mickey Walker
Salt and Storage Facilities Upgrades.	Projects/ Structural Mitigation	New	Severe Winter Storm	Recently Completed
Extreme Heat Education and Awareness Outreach	Education and Outreach; Training	Existing	Extreme Heat	
Earthquake Awareness Outreach	Education and Outreach; Training	Existing	Earthquakes	

Table 8-1 Mitigation Projects

Action or Issue	Category	New or Existing	Specific Hazard(s) Addressed	Status
Third Avenue and Atlantic Street Generators for Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Preliminary Study Completed. Design Phase in Progress
South Second Pump Station and Flood Control with Generators	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Repairs in Progress
Atlanta Plaza Floodwall	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
South Street Pump Station and Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Waiting for Final Approval from State to Advertise
Progress Street Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	In Construction Phase
Bayway Area Sewer Separation-	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Trumbull and 6th Streets Flood Control	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	In Construction Phase

Table 8-1 Mitigation Projects

Action or Issue	Category	New or Existing	Specific Hazard(s) Addressed	Status
Broad Street Firehouse Engine #1	Flood Mitigation Project; Flood Proofing Firehouse	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Kapkowski Road Pump Station with upgrades and Generators	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Trenton Avenue Pump Station with upgrades and Generators	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects Project	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Partial Mitigation Completed with Hurricane Sandy Repairs
Trenton Avenue Generator	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	
Mattano Park Pump Station with upgrades and Generators	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Partial Mitigation Completed with Hurricane Sandy Repairs
Decker Avenue Sewer (Backups)	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	Preliminary Study in Progress
Pennington Street Sewer Surcharge	Flood Mitigation Project; Stormwater and Wastewater Policies/Projects	New	Flooding, Coastal Storms, Nor'easter, hurricane; Thunderstorms	

Table 8-1 Mitigation Projects

Action or Issue	Category	New or Existing	Specific Hazard(s) Addressed	Status
Marina Generator Emergency Fueling Station	Respond to fueling public vehicles	New	Fueling emergency and public vehicles to respond to site in the case of an emergency	
Levee Project	Maintain and upgrade the levy for floor water management.	New	Flooding, Coastal Storms, Nor'easter, Hurricane; Thunderstorms	On-Going
Site wide Emergency Overhead Signs	Public Notification	New	Notify the Public of Hazardous and locations of Muster Points	
Site wide Solar Power Disconnects	Public Notification	New	Transfer main electrical power to solar for continuous electricity.	
Infectious Disease Control	Public Notification	New	Notify the public of critical stations to receive vaccinations.	
New Fire House Construction	Flood mitigation project.	New	Improve Emergency Response.	
Engine No. 6	Fire House Replacement	New	Improve Emergency Response.	Completed in October of 2016
Engine No. 2	Fire House Replacement	New	Improve Emergency Response.	

APPENDIX A

Hazard Mitigation Plan Questionnaires Submitted

The purpose of this questionnaire is to assist in the identification of hazards, which threaten our community as well as to identify potential corrective or mitigation measures that would minimize the impact/effect of such hazards. Also, this questionnaire seeks to document corrective or mitigation measures, which already have been undertaken and to identify both successes and failures of previous efforts. Please note that hazards may be natural, man-made or technological including terrorism. If additional space is required, attach additional sheets as necessary.

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1. Please rank the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

1	Severe Winter Storms
3	Hurricanes/Nor'Easters
4	Hazardous Materials Incident
2	Flooding
5	Bridge Failure

2. Please identify the locations/areas of your community that were impacted by the occurrence of the identified hazards. Please note the type of properties (residential, commercial, public, industrial, etc.) with specific location reference (street address, tax account number), as available. If possible, please provide the financial cost associated with the incurred damage with respect to reconstruction/recovery.

SEVERE WINTER STORMS: IMPACTED THE ENTIRE CITY

SHALLOW FLOODING: THIS OCCURED IN SMALL AREAS THROUGHOUT THE CITY

NOR' EASTERS: IMPACT THE ENTIRE CITY, ALL TYPE OF PROPERTY

FLOODING: (RIVERINE & COASTAL): IMPACTED PROPERTIES ALONG THE ARTHUR KILL & NEWARK BAY.

3. Please identify any additional hazards, not listed above, which you believe have a realistic potential to affect your municipality in the future. Please comment as to why you believe the potential exists for these hazards to affect your community.

(1) MAKE PROVISION TO PREVENT COASTAL FLOODING

(2) DREDING DOWN-STREAM OF THE ELIZABETH RIVER TO PREVENT INLAND / UP-STREAM FLOODING

4. Please identify any hazards, which are or may be present in adjacent communities, which have the potential to impact your community. Please provide available information related to prior incidents and resulting impacts to your community (location, level of damage, etc.). If you are aware of any mitigation undertaken or planned to be undertaken by the adjacent community, please provide available information.

NO REPORT OR INFORMATION HAVE BEEN RECEIVED ON ANY SEVERE INCIDENT

5. Please identify any steps or actions that have been undertaken or are planned to be undertaken to minimize or eliminate impacts and damage from the identified hazards. Please note or comment on the relative success of any implemented mitigation measures.

ENFORCEMENT OF THE FLOOD PLAIN ORDINANCES TO ENSURE NEW BUILDING IN SFHA ARE CONSTRUCTED TO PREVENT FLOOD DAMAGE, ALSO SUBSTANTIAL REPAIRS TO EXISTING BLDG COMPLY WITH THE NFIP.

APPLICATION HAS BEEN MADE TO PARTICIPATE IN THE NFIP COMMUNITY RATING SYSTEM (CRS) AND MITIGATION MEASURES WILL BE TAKEN TO ACCOMPLISH A CLASSIFICATION

6. Please identify any mitigation steps or actions you would like to take but are not planned for implementation at this time. Please note, if the implementation of such actions would be more beneficial or effective if performed on a regional (multi-municipal) or county scale.

(1) MODIFY HUMAN SUSCEPTIBILITY TO FLOOD DAMAGE
(2) MODIFY THE IMPACT OF FLOODING
(3) PRESERVE AND RESTORE NATURAL RESOURCES

7. Please identify and provide information on roads, bridges, dams, tunnels or transportation systems and the like, which are repeatedly impacted by flooding, severe winter storms or other hazards.

NO INFORMATION ARE AVAILABLE ON THE ABOVE, HOWEVER REQUEST HAS BEEN MADE FOR FEMA TO PROVIDE SAME

8. Please identify and provide information on critical facilities including but not limited schools, hospitals, and utility plants/systems, public facilities, which are repeatedly impacted by flooding, severe winter storms or other hazards.

SAME AS # 7 ABOVE

9. Please identify any other issues or items related to hazards or hazard mitigation, which you would like to discuss/evaluate.

City Employee Name & Title: RAYMANT P. SARRAN, CONSTRUCTION OFFICIAL

Signature: RPS anny

Response Date: 8/22/17

Telephone Number/Email: 905-820-4091 rsarran@cityofwelland.on.ca

Interoffice Memorandum

CITY OF ELIZABETH

Department of Public Works

DIVISION OF ENGINEERING

50 WINFIELD SCOTT PLAZA, ELIZABETH, NJ 07201

DATE: July 25, 2017

TO: Daniel Campbell, Deputy Fire Chief
Carlos Carvalho, Superintendent of Public Works
James Cosgrove, Police Director
Krishnah H. Garlic, Department of Health & Human Services
Edward M. Kirk, Division of Housing
Eduardo J. Rodriguez, Director of Planning and Community Development
Raywant Sarran, Construction Official
John Brennan, Chief of Police and Emergency Operations Coordinator
Onofrio Vitullo, Fire Director
Bridget Anderson, Business Administrator

FROM: Albeiro Hincapie Jr., Principal Engineering Aide

SUBJECT: **City of Elizabeth Pre-Disaster Mitigation Plan - Hazard Mitigation Committee – Hazard Mitigation Plan Questionnaire**

The City of Elizabeth, Department of Public Works, has begun the process to update the City's Pre-Disaster Mitigation Plan for funding in years 2015-2020.

As part of this effort, the City requires the cooperation and input from various city agencies and departments to assist in identifying possible hazards within and surrounding the City of Elizabeth. The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was set in place to reduce overall risk to people and structures, while at the same time, also reducing reliance on federal funding if an actual disaster were to occur.

Please review the categories noted below, along with the attached questionnaire. Include any and all potential mitigation projects that your agency/department may want to include for future FEMA funding. The mitigation project categories that may be eligible for funding are listed below:

- Property Acquisition
- Structure Demolition, Relocation and Elevation
- Mitigation Reconstruction

- Dry Flood proofing or Historical Residential Structures and Non-residential Structures
- Minor localized Flood Reduction Projects
- Non-structural Retrofitting of Existing Buildings and Facilities
- Infrastructure Retrofit
- Soil Stabilization
- Post-Disaster Code Enforcement
- Generators
- Hazard Mitigation Planning
- Management Cost
- 5% Initiative Projects - can be used to fund "mitigation" activities that will provide benefits through the reduction of future disaster damages and loss of life and injury*
- Advance Assistance - can be used to develop mitigation strategies and obtain dates to prioritize, select, and develop complete grant program applications in a timely manner. Consider using Advance Assistance early in the decision-making process to help facilitate the development of a viable project.

***Examples of Activities which can be funded under the 5% Initiative:**

- The use, evaluation, and application of new, unproven mitigation techniques, technologies, methods, procedures, or products that are developmental or research based.
- Equipment and systems for the purpose of warning residents and officials of impeding hazard events.
- Hazard identification or mapping and related equipment that is tied to the implementation of mitigation measures.
- Geographical Information Systems software, hardware and data acquisition whose primary aim is mitigation.
- Development of studies or plans, with associated implementation schedules and resource commitment (as appropriate) that are expected to lead to reduction of losses.
- Other activities, clearly falling under the goal of mitigation, for which benefits are unproven or not clearly measurable and which the State has listed as priority in its hazard mitigation plan.

Please complete and return the attached questionnaire to the Division of Engineering, Room 304, no later than Wednesday, August 10, 2017. If there are any questions, please contact me at extension 4289.

AH: ah
cc: John F. Papetti Jr., Director of Public Works
Daniel J. Loomis, PE, City Engineer
File

The purpose of this questionnaire is to assist in the identification of hazards, which threaten our community as well as to identify potential corrective or mitigation measures that would minimize the impact/effect of such hazards. Also, this questionnaire seeks to document corrective or mitigation measures, which already have been undertaken and to identify both successes and failures of previous efforts. Please note that hazards may be natural, man-made or technological including terrorism. If additional space is required, attach additional sheets as necessary.

---

1. Please rank the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

3	Severe Winter Storms
4	Hurricanes/Nor'easters
2	Hazardous Materials Incident
1	Flooding
5	Bridge Failure

2. Please identify the locations/areas of your community that were impacted by the occurrence of the identified hazards. Please note the type of properties (residential, commercial, public, industrial, etc.) with specific location reference (street address, tax account number), as available. If possible, please provide the financial cost associated with the incurred damage with respect to reconstruction/recovery.

Please note that the above hazards identified in question 1 affect the entire city as a whole. There are some such as hurricanes, tropical storms, blizzards, and severe cold and heat affect all city residents throughout. The issue of flooding affects certain areas more severely like near bridges, specifically Trumhull Streets

3. Please identify any additional hazards, not listed above, which you believe have a realistic potential to affect your municipality in the future. Please comment as to why you believe the potential exists for these hazards to affect your community.

Power outages and surges caused by both natural and manmade disasters such as fires, floods, blizzards, excessive cold and heat and other related storms.

4. Please identify any hazards, which are or may be present in adjacent communities, which have the potential to impact your community. Please provide available information related to prior incidents and resulting impacts to your community (location, level of damage, etc.). If you are aware of any mitigation undertaken or planned to be undertaken by the adjacent community, please provide available information.

Same as in question 1 affecting surrounding municipalities such as the city's of Newark and Linden as well as Roselle, Roselle Park and Hillside townships

5. Please identify any steps or actions that have been undertaken or are planned to be undertaken to minimize or eliminate impacts and damage from the identified hazards. Please note or comment on the relative success of any implemented mitigation measures.

Work in progress

6. Please identify any mitigation steps or actions you would like to take but are not planned for implementation at this time. Please note, if the implementation of such actions would be more beneficial or effective if performed on a regional (multi-municipal) or county scale.

Work in progress

7. Please identify and provide information on roads, bridges, dams, tunnels or transportation systems and the like, which are repeatedly impacted by flooding, severe winter storms or other hazards.

Not applicable to the department of Health and Human Services.

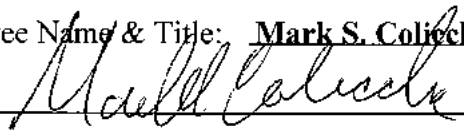
8. Please identify and provide information on critical facilities including but not limited schools, hospitals, and utility plants/systems, public facilities, which are repeatedly impacted by flooding, severe winter storms or other hazards.

All public and private schools, churches, day care center, community centers, Public libraries

9. Please identify any other issues or items related to hazards or hazard mitigation, which you would like to discuss/evaluate.

Public Health Disease Outbreak and Emergency Preparedness.

City Employee Name & Title: **Mark S. Colicchio Health Officer**

Signature: 

Response Date: **September 8, 2017**

Telephone Number/ Email: **mcolicchio@elizabethnj.org**

Interoffice Memorandum
CITY OF ELIZABETH
Department of Public Works
DIVISION OF ENGINEERING
50 WINFIELD SCOTT PLAZA, ELIZABETH, NJ 07201

DATE: July 25, 2017

TO: Daniel Campbell, Deputy Fire Chief
Carlos Carvalho, Superintendent of Public Works
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FROM: Albeiro Hincapie Jr., Principal Engineering Aide

SUBJECT: **City of Elizabeth Pre-Disaster Mitigation Plan - Hazard Mitigation Committee – Hazard Mitigation Plan Questionnaire**

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As part of this effort, the City requires the cooperation and input from various city agencies and departments to assist in identifying possible hazards within and surrounding the City of Elizabeth. The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was set in place to reduce overall risk to people and structures, while at the same time, also reducing reliance on federal funding if an actual disaster were to occur.

Please review the categories noted below, along with the attached questionnaire. Include any and all potential mitigation projects that your agency/department may want to include for future FEMA funding. The mitigation project categories that may be eligible for funding are listed below:

- Property Acquisition
- Structure Demolition, Relocation and Elevation
- Mitigation Reconstruction

- Dry Flood proofing or Historical Residential Structures and Non-residential Structures
- Minor localized Flood Reduction Projects
- Non-structural Retrofitting of Existing Buildings and Facilities
- Infrastructure Retrofit
- Soil Stabilization
- Post-Disaster Code Enforcement
- Generators
- Hazard Mitigation Planning
- Management Cost
- 5% Initiative Projects - can be used to fund "mitigation" activities that will provide benefits through the reduction of future disaster damages and loss of life and injury*
- Advance Assistance - can be used to develop mitigation strategies and obtain dates to prioritize, select, and develop complete grant program applications in a timely manner. Consider using Advance Assistance early in the decision-making process to help facilitate the development of a viable project.

***Examples of Activities which can be funded under the 5% Initiative:**

- The use, evaluation, and application of new, unproven mitigation techniques, technologies, methods, procedures, or products that are developmental or research based.
- Equipment and systems for the purpose of warning residents and officials of impeding hazard events.
- Hazard identification or mapping and related equipment that is tied to the implementation of mitigation measures.
- Geographical Information Systems software, hardware and data acquisition whose primary aim is mitigation.
- Development of studies or plans, with associated implementation schedules and resource commitment (as appropriate) that are expected to lead to reduction of losses.
- Other activities, clearly falling under the goal of mitigation, for which benefits are unproven or not clearly measurable and which the State has listed as priority in its hazard mitigation plan.

Please complete and return the attached questionnaire to the Division of Engineering, Room 304, no later than Wednesday, August 10, 2017. If there are any questions, please contact me at extension 4289.

AH: ah
cc: John F. Papetti Jr., Director of Public Works
Daniel J. Loomis, PE, City Engineer
File

The purpose of this questionnaire is to assist in the identification of hazards, which threaten our community as well as to identify potential corrective or mitigation measures that would minimize the impact/effect of such hazards. Also, this questionnaire seeks to document corrective or mitigation measures, which already have been undertaken and to identify both successes and failures of previous efforts. Please note that hazards may be natural, man-made or technological including terrorism. If additional space is required, attach additional sheets as necessary.

---

1. Please rank the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

___ Severe Winter Storms
___ Hurricanes/Nor'Easters
___ Hazardous Materials Incident
___ Flooding
___ Bridge Failure

2. Please identify the locations/areas of your community that were impacted by the occurrence of the identified hazards. Please note the type of properties (residential, commercial, public, industrial, etc.) with specific location reference (street address, tax account number), as available. If possible, please provide the financial cost associated with the incurred damage with respect to reconstruction/recovery.

3. Please identify any additional hazards, not listed above, which you believe have a realistic potential to affect your municipality in the future. Please comment as to why you believe the potential exists for these hazards to affect your community.

Cyber and physical terrorist threats

4. Please identify any hazards, which are or may be present in adjacent communities, which have the potential to impact your community. Please provide available information related to prior incidents and resulting impacts to your community (location, level of damage, etc.). If you are aware of any mitigation undertaken or planned to be undertaken by the adjacent community, please provide available information.

Newark Airport
Elizabeth Seaport
City of Linden - refineries/Chemical Storage
& Elizabeth

5. Please identify any steps or actions that have been undertaken or are planned to be undertaken to minimize or eliminate impacts and damage from the identified hazards. Please note or comment on the relative success of any implemented mitigation measures.

Our Emergency Management Unit has developed plans and exercises to address natural or man made disasters. These plans including ongoing coordination with the Union County Emergency Management Team. We also have implemented communications system for inter and intra Agency communications including public communication in dealing with disasters.

6. Please identify any mitigation steps or actions you would like to take but are not planned for implementation at this time. Please note, if the implementation of such actions would be more beneficial or effective if performed on a regional (multi-municipal) or county scale.

M. R. A. P.

High wheel based utility vehicle which can be used for flood rescue & also man made terroristic threats.

OK 5 Ton Utility Trucks

7. Please identify and provide information on roads, bridges, dams, tunnels or transportation systems and the like, which are repeatedly impacted by flooding, severe winter storms or other hazards.

8. Please identify and provide information on critical facilities including but not limited schools, hospitals, and utility plants/systems, public facilities, which are repeatedly impacted by flooding, severe winter storms or other hazards.

None impacted repeatedly

9. Please identify any other issues or items related to hazards or hazard mitigation, which you would like to discuss/evaluate.

None

City Employee Name & Title: Deputy Chief Alexander Sotomayor

Signature: [signature]

Response Date: 8/10/17

Telephone Number/Email: (908) 558-2022 ASotomayor@fairmountnj.com

Interoffice Memorandum
CITY OF ELIZABETH
Department of Public Works
DIVISION OF ENGINEERING
50 WINFIELD SCOTT PLAZA, ELIZABETH, NJ 07201

DATE: July 25, 2017

TO: Daniel Campbell, Deputy Fire Chief
Carlos Carvalho, Superintendent of Public Works
James Cosgrove, Police Director
Krishnah H. Garlic, Department of Health & Human Services
Edward M. Kirk, Division of Housing
Eduardo J. Rodriguez, Director of Planning and Community Development
Raywant Sarran, Construction Official
John Brennan, Chief of Police and Emergency Operations Coordinator
Onofrio Vitullo, Fire Director
Bridget Anderson, Business Administrator

FROM: Albeiro Hincapie Jr., Principal Engineering Aide

SUBJECT: **City of Elizabeth Pre-Disaster Mitigation Plan - Hazard Mitigation Committee – Hazard Mitigation Plan Questionnaire**

The City of Elizabeth, Department of Public Works, has begun the process to update the City's Pre-Disaster Mitigation Plan for funding in years 2015-2020.

As part of this effort, the City requires the cooperation and input from various city agencies and departments to assist in identifying possible hazards within and surrounding the City of Elizabeth. The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was set in place to reduce overall risk to people and structures, while at the same time, also reducing reliance on federal funding if an actual disaster were to occur.

Please review the categories noted below, along with the attached questionnaire. Include any and all potential mitigation projects that your agency/department may want to include for future FEMA funding. The mitigation project categories that may be eligible for funding are listed below:

- Property Acquisition
- Structure Demolition, Relocation and Elevation
- Mitigation Reconstruction

- Dry Flood proofing or Historical Residential Structures and Non-residential Structures
- Minor localized Flood Reduction Projects
- Non-structural Retrofitting of Existing Buildings and Facilities
- Infrastructure Retrofit
- Soil Stabilization
- Post-Disaster Code Enforcement
- Generators
- Hazard Mitigation Planning
- Management Cost
- 5% Initiative Projects - can be used to fund "mitigation" activities that will provide benefits through the reduction of future disaster damages and loss of life and injury*
- Advance Assistance - can be used to develop mitigation strategies and obtain dates to prioritize, select, and develop complete grant program applications in a timely manner. Consider using Advance Assistance early in the decision-making process to help facilitate the development of a viable project.

***Examples of Activities which can be funded under the 5% Initiative:**

- The use, evaluation, and application of new, unproven mitigation techniques, technologies, methods, procedures, or products that are developmental or research based.
- Equipment and systems for the purpose of warning residents and officials of impeding hazard events.
- Hazard identification or mapping and related equipment that is tied to the implementation of mitigation measures.
- Geographical Information Systems software, hardware and data acquisition whose primary aim is mitigation.
- Development of studies or plans, with associated implementation schedules and resource commitment (as appropriate) that are expected to lead to reduction of losses.
- Other activities, clearly falling under the goal of mitigation, for which benefits are unproven or not clearly measurable and which the State has listed as priority in its hazard mitigation plan.

Please complete and return the attached questionnaire to the Division of Engineering, Room 304, no later than Wednesday, August 10, 2017. If there are any questions, please contact me at extension 4289.

AH: ah
cc: John F. Papetti Jr., Director of Public Works
Daniel J. Loomis, PE, City Engineer
File

The purpose of this questionnaire is to assist in the identification of hazards, which threaten our community as well as to identify potential corrective or mitigation measures that would minimize the impact/effect of such hazards. Also, this questionnaire seeks to document corrective or mitigation measures, which already have been undertaken and to identify both successes and failures of previous efforts. Please note that hazards may be natural, man-made or technological including terrorism. If additional space is required, attach additional sheets as necessary.

---

1. Please rank the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

___ Severe Winter Storms
___ Hurricanes/Nor'Easters
___ Hazardous Materials Incident
___ Flooding
___ Bridge Failure

See Attached

2. Please identify the locations/areas of your community that were impacted by the occurrence of the identified hazards. Please note the type of properties (residential, commercial, public, industrial, etc.) with specific location reference (street address, tax account number), as available. If possible, please provide the financial cost associated with the incurred damage with respect to reconstruction/recovery.

See Attached

3. Please identify any additional hazards, not listed above, which you believe have a realistic potential to affect your municipality in the future. Please comment as to why you believe the potential exists for these hazards to affect your community.

See Attached

4. Please identify any hazards, which are or may be present in adjacent communities, which have the potential to impact your community. Please provide available information related to prior incidents and resulting impacts to your community (location, level of damage, etc.). If you are aware of any mitigation undertaken or planned to be undertaken by the adjacent community, please provide available information.

See Attached

5. Please identify any steps or actions that have been undertaken or are planned to be undertaken to minimize or eliminate impacts and damage from the identified hazards. Please note or comment on the relative success of any implemented mitigation measures.

See Attached

6. Please identify any mitigation steps or actions you would like to take but are not planned for implementation at this time. Please note, if the implementation of such actions would be more beneficial or effective if performed on a regional (multi-municipal) or county scale.

See Attached

7. Please identify and provide information on roads, bridges, dams, tunnels or transportation systems and the like, which are repeatedly impacted by flooding, severe winter storms or other hazards.

See Attached

8. Please identify and provide information on critical facilities including but not limited schools, hospitals, and utility plants/systems, public facilities, which are repeatedly impacted by flooding, severe winter storms or other hazards.

See Attached

9. Please identify any other issues or items related to hazards or hazard mitigation, which you would like to discuss/evaluate.

See Attached

City Employee Name & Title: Deputy Chief Daniel E Campbell

Signature: [signature]

Response Date: 8/22/17

Telephone Number/Email: (908) 820-2810 dcampbell@elizabethnj.org

Question #1

1. Bridge Failure
2. Hazardous Materials Incidents (Chem Control, Release of toxic gas on North Ave East and Jersey Garden Blvd)
3. Hurricanes/Nor-Easters
4. Severe Winter Storms
5. Flooding

Question #2

1. Bridge Failure - Jersey Gardens Boulevard.
2. Hazardous Materials – Port Elizabeth due to it being the busiest port on the east coast and having access to Rail, Highway and Air transportation.
3. Hurricanes/Nor-Easters – Throughout the entire City
4. Severe Winter Storms – Throughout the entire City
5. Flooding – Multiple locations around throughout the City.

Question #3

1. Terrorist Events – with the increase in home grown terrorism the potential for an attack on the Jersey Gardens Mall and with Elizabeth being the county seat, the Courthouse along with the other county buildings is very high.
2. Fires – Due to age, construction and water main size, the potential for multiple structures to be affected by fire exists.

Question #4

1. Bayway Refinery – Neighborhoods in the Bayway have the potential of being impacted by a major incident at the refinery.

Question #5

1. Interoperability – The City has installed a new truncated radio system that allows all city agencies to communicate with each other during a major event.

Question #6

1. Fire – Increase water main sizes to provide ample water to combat fires in the older neighborhoods
2. Terrorist – Develop a new or improve the existing plan of sharing crucial information on potential targets and/or threats.
3. Storms – Develop program to remove and replace aging trees that have the potential to impact electrical lines.

Question #7

1. During heavy rains flooding still occurs on streets and under passes in the City. The Fire Dept responds to numerous incidents of people trapped in their cars at these underpasses during heavy rains.

Question #8

1. The firehouse located at 24 South Broad Street is located in a flood zone. This firehouse was built in 1927. A new firehouse should be built and relocated to a new location.

Question #9

1. Evacuation of residents during flooding conditions. Methods to remove affected people from those areas.

Interoffice Memorandum
CITY OF ELIZABETH
Department of Public Works
DIVISION OF ENGINEERING
50 WINFIELD SCOTT PLAZA, ELIZABETH, NJ 07201

DATE: July 25, 2017

TO: Daniel Campbell, Deputy Fire Chief
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FROM: Albeiro Hincapie Jr., Principal Engineering Aide

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Please review the categories noted below, along with the attached questionnaire. Include any and all potential mitigation projects that your agency/department may want to include for future FEMA funding. The mitigation project categories that may be eligible for funding are listed below:

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- Generators
- Hazard Mitigation Planning
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- 5% Initiative Projects - can be used to fund "mitigation" activities that will provide benefits through the reduction of future disaster damages and loss of life and injury*
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AH: ah
cc: John F. Papetti Jr., Director of Public Works
Daniel J. Loomis, PE, City Engineer
File

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---

1. Please rank the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

3 Severe Winter Storms
2 Hurricanes/Nor'Easters
5 Hazardous Materials Incident
6 Flooding
5 Bridge Failure

2. Please identify the locations/areas of your community that were impacted by the occurrence of the identified hazards. Please note the type of properties (residential, commercial, public, industrial, etc.) with specific location reference (street address, tax account number), as available. If possible, please provide the financial cost associated with the incurred damage with respect to reconstruction/recovery.

NONE

3. Please identify any additional hazards, not listed above, which you believe have a realistic potential to affect your municipality in the future. Please comment as to why you believe the potential exists for these hazards to affect your community.

NONE

4. Please identify any hazards, which are or may be present in adjacent communities, which have the potential to impact your community. Please provide available information related to prior incidents and resulting impacts to your community (location, level of damage, etc.). If you are aware of any mitigation undertaken or planned to be undertaken by the adjacent community, please provide available information.

NONE

5. Please identify any steps or actions that have been undertaken or are planned to be undertaken to minimize or eliminate impacts and damage from the identified hazards. Please note or comment on the relative success of any implemented mitigation measures.

NONE

6. Please identify any mitigation steps or actions you would like to take but are not planned for implementation at this time. Please note, if the implementation of such actions would be more beneficial or effective if performed on a regional (multi-municipal) or county scale.

NONE

7. Please identify and provide information on roads, bridges, dams, tunnels or transportation systems and the like, which are repeatedly impacted by flooding, severe winter storms or other hazards.

South First Street between Third Avenue and Rebecca Bayway, to be specific bridge that crosses Elizabeth River and Joint Meeting cause flooding due to overflow gates not working properly

8. Please identify and provide information on critical facilities including but not limited schools, hospitals, and utility plants/systems, public facilities, which are repeatedly impacted by flooding, severe winter storms or other hazards.

NONE

9. Please identify any other issues or items related to hazards or hazard mitigation, which you would like to discuss/evaluate.

Great Ditch running parallel with Dowd Ave and Turnpike should be dredged due to debris fallen into embankment commercial businesses along side could be impacted, many improvements have been done on drainage leading into Ditch, but not Ditch itself, to my knowledge.

City Employee Name & Title: Carlos Carvalho Supt D.P.W

Signature: [signature]

Response Date: 12/18/2017

Telephone Number/Email: 908 389 5500 / CCarvalho@Elizabethnj.org

The purpose of this questionnaire is to assist in the identification of hazards, which threaten our community as well as to identify potential corrective or mitigation measures that would minimize the impact/effect of such hazards. Also, this questionnaire seeks to document corrective or mitigation measures, which already have been undertaken and to identify both successes and failures of previous efforts. Please note that hazards may be natural, man-made or technological including terrorism. If additional space is required, attach additional sheets as necessary.

---

1. Please rank the identified hazards based on severity by prioritizing the hazards from 1 to 5 with 1 being the least likely to impact the municipality and 5 being the most likely to have an impact on the municipality:

5 Severe Winter Storms
3 Hurricanes/Nor'Easters
2 Hazardous Materials Incident
4 Flooding
1 Bridge Failure

2. Please identify the locations/areas of your community that were impacted by the occurrence of the identified hazards. Please note the type of properties (residential, commercial, public, industrial, etc.) with specific location reference (street address, tax account number), as available. If possible, please provide the financial cost associated with the incurred damage with respect to reconstruction/recovery.

[illegible]

3. Please identify any additional hazards, not listed above, which you believe have a realistic potential to affect your municipality in the future. Please comment as to why you believe the potential exists for these hazards to affect your community.

[illegible]

4. Please identify any hazards, which are or may be present in adjacent communities, which have the potential to impact your community. Please provide available information related to prior incidents and resulting impacts to your community (location, level of damage, etc.). If you are aware of any mitigation undertaken or planned to be undertaken by the adjacent community, please provide available information.

5. Please identify any steps or actions that have been undertaken or are planned to be undertaken to minimize or eliminate impacts and damage from the identified hazards. Please note or comment on the relative success of any implemented mitigation measures.

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7. Please identify and provide information on roads, bridges, dams, tunnels or transportation systems and the like, which are repeatedly impacted by flooding, severe winter storms or other hazards.

8. Please identify and provide information on critical facilities including but not limited schools, hospitals, and utility plants/systems, public facilities, which are repeatedly impacted by flooding, severe winter storms or other hazards.

9. Please identify any other issues or items related to hazards or hazard mitigation, which you would like to discuss/evaluate.

City Employee Name & Title:

Signature:

Response Date: 5/10/17

Telephone Number/Email:

APPENDIX B

Vulnerability Assessment by Hazard Tables Submitted

Vulnerability Assessment by Hazard

Department: Public Works/Engineering				
DISASTER	Previous Response		New Response	
	Rank	Impact	Rank	Impact
Avalanche	1	Low	1	Low
Coastal Erosion	4	Medium	3	Medium
Coastal Storm/Nor'Easter/Hurricane	5	High	5	High
Drought	3	Low	2	Low
Earthquake	2	Medium	1	Low
Expansive Soil	3	Medium	3	Medium
Extreme Heat	3	Medium	4	Medium
Extreme Cold	2	Medium	4	Medium
Flood	5	High	5	High
Hailstorm	2	Medium	2	Medium
Ice Jams	2	Low	2	Low
Land Subsidence	2	Low	2	Low
Mosquito-borne Illnesses	3	Low	3	Medium
Severe Winter Storm	5	High	5	High
Thunderstorm	4	High	4	High
Tornado	1	Low	1	Low
Tsunami	1	Low	1	Low
Volcano	1	Low	1	Low
Wildfire	1	Low	1	Low

Notes for Table 6-1:

Rank: 1-5 with 5 being the most likely to impact a municipality

If Impact listed two responses (i.e., low-medium) it was assumed to be the higher impact

Impact: Low = <$500,000; Medium = $500,000-$1,000,000; High =>$1,000,000

Expansive soil: A fine-grained clay which occurs naturally and is generally found in areas that historically were a flood plain or lake area, but can occur in hillside areas also. Expansive soil is subject to swelling and shrinkage of the soil, varying in proportion to the amount of moisture present in the soil.

Ice jams: Ice jams occur when warm temperatures and heavy rain cause rapid snow melting. The melting snow combined with the heavy rain, causes frozen rivers to swell. The rising water breaks the ice layer into large chunks, which float downstream and often pile up near narrow passages or near obstructions, such as bridges and dams. (Northeast States Emergency Consortium, NESEC)

Vulnerability Assessment by Hazard

Department: Police Department				
DISASTER	Previous Response		New Response	
	Rank	Impact	Rank	Impact
Avalanche	0	0	0	0
Coastal Erosion	0	0	0	0
Coastal Storm/Nor'Easter/Hurricane	5	High	5	High
Drought	0	0	0	0
Earthquake	0	0	0	0
Expansive Soil	0	0	0	0
Extreme Heat	0	0	0	0
Extreme Cold	1	0	1	0
Flood	3	Medium	3	Medium
Hailstorm	0	0	0	0
Ice Jams	0	0	0	0
Land Subsidence	0	0	0	0
Mosquito-borne Illnesses	0	0	0	0
Severe Winter Storm	2	Low	3	Medium
Thunderstorm	4	Medium	4	Medium
Tornado	0	0	0	0
Tsunami	0	0	0	0
Volcano	0	0	0	0
Wildfire	0	0	0	0

Notes for Table 6-1:

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Ice jams: Ice jams occur when warm temperatures and heavy rain cause rapid snow melting. The melting snow combined with the heavy rain, causes frozen rivers to swell. The rising water breaks the ice layer into large chunks, which float downstream and often pile up near narrow passages or near obstructions, such as bridges and dams. (Northeast States Emergency Consortium, NESEC)

Vulnerability Assessment by Hazard

Department: Planning and Community Development				
DISASTER	Previous Response		New Response	
	Rank	Impact	Rank	Impact
Avalanche	1	Low	1	Low
Coastal Erosion	3	Medium	3	Medium
Coastal Storm/Nor'Easter/Hurricane	5	High	5	High
Drought	2	Low	2	Low
Earthquake	1	High	1	High
Expansive Soil	1	Low	1	Low
Extreme Heat	3	Medium	4	Medium
Extreme Cold	3	Medium	4	Medium
Flood	4	Medium	4	Medium
Hailstorm	2	Low	2	Low
Ice Jams	1	Low	1	Low
Land Subsidence	1	Low	1	Low
Mosquito-borne Illnesses	3	Medium	3	Medium
Severe Winter Storm	5	High	5	High
Thunderstorm	3	Medium	3	Medium
Tornado	1	Low	1	Low
Tsunami	1	Low	1	Low
Volcano	1	Low	1	Low
Wildfire	1	Low	1	Low

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Vulnerability Assessment by Hazard

Department: Fire Department				
DISASTER	Previous Response		New Response	
	Rank	Impact	Rank	Impact
Avalanche	1	Low	1	Low
Coastal Erosion	2	High	2	High
Coastal Storm/Nor'Easter/Hurricane	5	High	5	High
Drought	5	High	5	High
Earthquake	4	High	4	High
Expansive Soil	1	Medium	1	Medium
Extreme Heat	5	High	5	High
Extreme Cold	4	High	4	High
Flood	5	High	5	High
Hailstorm	4	Medium	4	Medium
Ice Jams	2	Medium	2	Medium
Land Subsidence	2	Medium	2	Medium
Mosquito-borne Illnesses	3	Medium	3	Medium
Severe Winter Storm	5	High	5	High
Thunderstorm	5	Medium	5	Medium
Tornado	2	Medium	2	Medium
Tsunami	4	Medium	4	Medium
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Vulnerability Assessment by Hazard

Department: Business Administrator				
DISASTER	Previous Response		New Response	
	Rank	Impact	Rank	Impact
Avalanche	1	Low	1	Low
Coastal Erosion	3	Medium	3	Medium
Coastal Storm/Nor'Easter/Hurricane	4	Medium	5	Medium
Drought	4	Low	4	Low
Earthquake	1	Low	1	Low
Expansive Soil	2	Low	1	Low
Extreme Heat	4	High	4	High
Extreme Cold	5	Medium	4	High
Flood	5	Medium	5	High
Hailstorm	4	Medium	3	Medium
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Land Subsidence	2	Low	2	Low
Mosquito-borne Illnesses	4	Medium	4	Low
Severe Winter Storm	5	Medium	5	High
Thunderstorm	5	Medium	5	Medium
Tornado	3	Low	2	Low
Tsunami	1	Low	1	Low
Volcano	1	Low	1	Low
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Appendix B

Public Notices and Presentation Documentations

March13-2020 Cancelled-COVID19

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3362
RETURN RECEIPT REQUEST

Mark Bocchieri
Director, External Affairs
Verizon
25 Main Street
Hackensack, NJ 07601

Dear Mr. Bocchieri:

The purpose of this letter is to inform Verizon of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

As part of the public process, the City invites stakeholders and the public to attend public meetings through a series of published advertisements/notices. This is the first public meeting to be held on March 31, 2020 and will also be advertised in the Star-ledger, Union County Local Source and La Voz. The public notice is also posted on the City's website as well as the Elizabeth Public Library's website. A PowerPoint presentation will be used to inform the public and obtain public comments about known or potential natural hazards (e.g., hurricanes).

This letter is specifically sent to invite identified local stakeholders, like Verizon, to participate and comment on the City's Hazard Mitigation Plan.

Your input in this public commenting process is extremely important as we attempt to create a better process for all stakeholders within and adjacent to the City. Please attend the public meeting if possible; and if not, please submit any comments you may have to Daniel Loomis at his email address (dloomis@elizabethnj.org). You may also mail the comments to:

Daniel J. Loomis, PE
City Engineer
City of Elizabeth
50 Winfield Scott Plaza
Elizabeth, NJ 07201

If you would like to attend this public meeting, it will be held on Tuesday, March 31, 2020 in the City's Council Chambers located on the 3rd Floor of City Hall. The meeting address is the same as the mailing address above. The meeting will take place in between 4:00PM and 6:00PM.

Thank you for your interest in the City's Hazard Mitigation Plan. We look forward to hearing your comments or suggestions.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3058
RETURN RECEIPT REQUEST

Nick Di Rocco
Vice President
South Jersey Industries
1 South Jersey Plaza
Folsom, NJ 08037

Dear Mr. Di Rocco:

The purpose of this letter is to inform AGL Resources of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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This letter is specifically sent to invite identified local stakeholders, like you, to participate and comment on the City's Hazard Mitigation Plan.

Your input in this public commenting process is extremely important as we attempt to create a better process for all stakeholders within and adjacent to the City. Please attend the public meeting if possible; and if not, please submit any comments you may have to Daniel Loomis at his email address (dloomis@elizabethnj.org). You may also mail the comments to:

Daniel J. Loomis, PE
City Engineer
City of Elizabeth
50 Winfield Scott Plaza
Elizabeth, NJ 07201

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Thank you for your interest in the City's Hazard Mitigation Plan. We look forward to hearing your comments or suggestions.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3003
RETURN RECEIPT REQUEST

Dr. Dawood Farahi
President
Kean University
1000 Morris Avenue
Union, NJ 07083

Dear Dr. Farahi:

The purpose of this letter is to inform you of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City of Elizabeth
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City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3010
RETURN RECEIPT REQUEST

Dee Gillespie
Director of New Jersey Contracts/Projects
Liberty Water Company and Etown Services LLC
New Jersey American Water
P.O. Box 102
Bound Brook, NJ 08805

Dear Mr. Gillespie:

The purpose of this letter is to inform New Jersey American Water of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City Engineer
City of Elizabeth
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Elizabeth, NJ 07201

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Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3027
RETURN RECEIPT REQUEST

Gary S. Horan
President and CEO
Trinitas Regional Medical Center
225 Williamson Street
Elizabeth, NJ 07202

Dear Mr. Horan:

The purpose of this letter is to inform you of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City Engineer
City of Elizabeth
50 Winfield Scott Plaza
Elizabeth, NJ 07201

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Thank you for your interest in the City's Hazard Mitigation Plan. We look forward to hearing your comments or suggestions.

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Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3034
RETURN RECEIPT REQUEST

Olga Hugelmeyer
Superintendent of Schools
Elizabeth Board of Education
500 North Broad Street
Elizabeth, NJ 07208-3302

Dear Ms. Hugelmeyer:

The purpose of this letter is to inform the Elizabeth Board of Education of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City Engineer
City of Elizabeth
50 Winfield Scott Plaza
Elizabeth, NJ 07201

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Sincerely,

Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3041
RETURN RECEIPT REQUEST

William D. Jones
Secretary - Treasurer and Executive Director
Elizabeth Housing Authority
688 Maple Ave, Elizabeth, NJ 07202

Dear Mr. Jones

The purpose of this letter is to inform you of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City Engineer
City of Elizabeth
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Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3072
RETURN RECEIPT REQUEST

Susan Matika
Executive Assistant to the President
Union County College
1033 Springfield Avenue
Cranford, NJ 07016

Dear Ms. Matika:

The purpose of this letter is to inform you of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3065
RETURN RECEIPT REQUEST

Carla A. Mazza
Executive Director
Elizabeth Parking Authority
233 Commerce Place
Elizabeth, NJ 07201

Dear Ms. Mazza:

The purpose of this letter is to inform you of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City of Elizabeth
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City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3089
RETURN RECEIPT REQUEST

Bill O'Dea
Executive Director
Elizabeth Development Company
205 First Street, Suite 114
Elizabeth, NJ 07207

Dear Mr. O'Dea:

The purpose of this letter is to inform The Port Authority of New York and New Jersey of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3102
RETURN RECEIPT REQUEST

Denise Palazzo
Mall Manager
The Mills at Jersey Gardens
651 Kapkowski Rd
Elizabeth, NJ 07201

Ms. Palazzo:

The purpose of this letter is to inform the Simon Property Group of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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City Engineer
City of Elizabeth
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Daniel J. Loomis, PE
City Engineer

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
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DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3096
RETURN RECEIPT REQUEST

Chad Serpa
Senior External Relations Representative
The Port Authority of New York and New Jersey
4 World Trade Center
150 Greenwich Street, 22nd Floor
New York, NY 10007

Dear Mr. Serpa:

The purpose of this letter is to inform The Port Authority of New York and New Jersey of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 12, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3119
RETURN RECEIPT REQUEST

Paul Wyckoff
Government & External Affairs Chief
NJ Transit
One Penn Plaza East
Newark, NJ 07105-2246

Dear Mr. Wyckoff:

The purpose of this letter is to inform NJ Transit of an opportunity to provide comments on the ongoing efforts by the City of Elizabeth (City) to update their jurisdictional Pre-Disaster Hazard Mitigation Plan - Natural Hazards (HMP). The HMP complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000) and provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The HMP identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategy to minimize identified risks.

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Sincerely,

Daniel J. Loomis, PE
City Engineer

7016 3010 0001 1903 2990

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Domestic Mail Only

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- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
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Regional Public Affairs Manager
Public Service Electric & Gas
Street and Apt
472 Weston Canal Road
City, State, ZI
Somerset, NJ 08873

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Sent To
Mark Bocchieri
Director, External Affairs
Verizon
Street a
25 Main Street
City, Sta
Hackensack, NJ 07601

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Dr. Dawood Farahi
President
Kean University
Street and Apt. No., or P
1000 Morris Avenue
City, State, ZIP+4®
Union, NJ 07083

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Sent To
Nick Di Rocco
Vice President
South Jersey Industries
Street and Apt. No., or PO
1 South Jersey Plaza
City, State, ZIP+4®
Folsom, NJ 08037

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Sent To
Carla A. Mazza
Executive Director
Elizabeth Parking Authority
Street and Apt. No.
233 Commerce Place
City, State, ZIP+4®
Elizabeth, NJ 07201

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Sent To
Susan Matika
Executive Assistant to the President
Union County College
Street and
1033 Springfield Avenue
City, State,
Cranford, NJ 07016

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Postage
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Total Postage
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Sent To: Gary S. Horan
President and CEO
Trinitas Regional Medical Center

Street and Apt: 225 Williamson Street

City, State, ZIP: Elizabeth, NJ 07202

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Sent To: Olga Hugelmeyer
Superintendent of Schools
Elizabeth Board of Education

Street and Apt: 500 North Broad Street

City, State, ZIP: Elizabeth, NJ 07208-3302

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Sent To: Bill O'Dea
Executive Director
Elizabeth Development Company

Street and Apt: 205 First Street, Suite 114

City, State, ZIP: Elizabeth, NJ 07207

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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To: William D. Jones
Secretary - Treasurer and Executive Director
Elizabeth Housing Authority

Street: 688 Maple Ave, Elizabeth, NJ 07202

City, State, ZIP+4®

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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To: Chad Serpa
Senior External Relations Representative
The Port Authority of New York and New Jersey

Street: 4 World Trade Center
150 Greenwich Street, 22nd Floor

City: New York, NY 10007

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Sent To: Paul Wyckoff
Government & External Affairs Chief
NJ Transit

Street and Apt. N: One Penn Plaza East

City, State, ZIP+4: Newark, NJ 07105-2246

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Dee Gillespie
Director of New Jersey Contracts/Projects
Liberty Water Company and Etown Services LLC
New Jersey American Water
P.O. Box 102
Bound Brook, NJ 08805

PS Form 3800, April 2015

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Denise Palazzo
Mall Manager
The Mills at Jersey Gardens
651 Kapkowski Rd
Elizabeth, NJ 07201

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May 2020

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3270
RETURN RECEIPT REQUEST

Mark Bocchieri
Director, External Affairs
Verizon
25 Main Street
Hackensack, NJ 07601

Dear Mr. Bocchieri:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3287
RETURN RECEIPT REQUEST

Michael Coyle
Regional Public Affairs Manager
Public Service Electric & Gas
472 Weston Canal Road
Somerset, NJ 08873

Dear Mr. Coyle:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3294
RETURN RECEIPT REQUEST

Nick DiRocco
Vice President
South Jersey Industries
1 South Jersey Plaza
Folsom, NJ 08037

Dear Mr. DiRocco:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3300
RETURN RECEIPT REQUEST

Dr. Dawood Farahi
President
Kean University
1000 Morris Avenue
Union, NJ 07083

Dear Dr. Farahi:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3317
RETURN RECEIPT REQUEST

Dee Gillespie
Director of New Jersey Contracts/Projects
Liberty Water Company and Etown Services LLC
New Jersey American Water
P.O. Box 102
Bound Brook, NJ 08805

Dear Mr. Gillespie:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3324
RETURN RECEIPT REQUEST

Gary S. Horan
President and CEO
Trinitas Regional Medical Center
225 Williamson Street
Elizabeth, NJ 07202

Dear Mr. Horan:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3331
RETURN RECEIPT REQUEST

Olga Hugelmeyer
Superintendent of Schools
Elizabeth Board of Education
500 North Broad Street
Elizabeth, NJ 07208-3302

Dear Ms. Hugelmeyer:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3348
RETURN RECEIPT REQUEST

William D. Jones
Secretary - Treasurer and Executive Director
Elizabeth Housing Authority
688 Maple Ave, Elizabeth, NJ 07202

Dear Mr. Jones

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3355
RETURN RECEIPT REQUEST

Susan Matika
Executive Assistant to the President
Union County College
1033 Springfield Avenue
Cranford, NJ 07016

Dear Ms. Matika:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3379
RETURN RECEIPT REQUEST

Carla A. Mazza
Executive Director
Elizabeth Parking Authority
233 Commerce Place
Elizabeth, NJ 07201

Dear Ms. Mazza:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3386
RETURN RECEIPT REQUEST

Bill O'Dea
Executive Director
Elizabeth Development Company
205 First Street, Suite 114
Elizabeth, NJ 07207

Dear Mr. O'Dea:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3393
RETURN RECEIPT REQUEST

Denise Palazzo
Mall Manager
The Mills at Jersey Gardens
651 Kapkowski Rd
Elizabeth, NJ 07201

Ms. Palazzo:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3409
RETURN RECEIPT REQUEST

Chad Serpa
Senior External Relations Representative
The Port Authority of New York and New Jersey
4 World Trade Center
150 Greenwich Street, 22nd Floor
New York, NY 10007

Dear Mr. Serpa:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

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Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

May 4, 2020

CERTIFIED MAIL 7016 3010 0001 1903 3416
RETURN RECEIPT REQUEST

Paul Wyckoff
Government & External Affairs Chief
NJ Transit
One Penn Plaza East
Newark, NJ 07105-2246

Dear Mr. Wyckoff:

Due to the current situation with the coronavirus and the need for social distancing, the public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards has been transitioned to an on-line presentation. This information is now available on the City of Elizabeth website. The presentation is 13:53 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

7016 3010 0001 1903 3317

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Dee Gillespie
Director of New Jersey Contracts/Projects
Liberty Water Company and Etown Services LLC
New Jersey American Water
P.O. Box 102
Bound Brook, NJ 08805

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Director, External Affairs
Verizon
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Hackensack, NJ 07601

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Gary S. Horan
President and CEO
Trinitas Regional Medical Center
225 Williamson Street
Elizabeth, NJ 07202

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Michael Coyle
Regional Public Affairs Manager
Public Service Electric & Gas
472 Weston Canal Road
Somerset, NJ 08873

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Olga Hugelmeyer
Superintendent of Schools
Elizabeth Board of Education
500 North Broad Street
Elizabeth, NJ 07208-3302

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Dr. Dawood Farahi
President
Kean University
1000 Morris Avenue
Union, NJ 07083

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Bill O'Dea
Executive Director
Elizabeth Development Company
205 First Street, Suite 114
Elizabeth, NJ 07207

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William D. Jones
Secretary – Treasurer and Executive Director
Elizabeth Housing Authority
688 Maple Ave
Elizabeth, NJ 07202

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The Mills at Jersey Gardens
Denise Palazzo
Mall Manager
651 Kapkowski Rd
Elizabeth NJ 07202

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Susan Matika
Executive Assistant to the President
Union County College
1033 Springfield Avenue
Cranford, NJ 07016

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Nick Di Rocco
Vice President
South Jersey Industries
1 South Jersey Plaza
Folsom, NJ 08037

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Carla A. Mazza
Executive Director
Elizabeth Parking Authority
233 Commerce Place
Elizabeth, NJ 07201

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To
Chad Serpa
Senior External Relations Representative
The Port Authority of New York and New Jersey
4 World Trade Center
150 Greenwich Street, 22nd Floor
New York, NY 10007

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Government & External Affairs Chief
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Departamento del Trabajo de NJ Inició pagos por desempleo

Trenton- El Departamento de Trabajo y Desarrollo de la Fuerza Laboral de New Jersey anunció que los beneficiarios de la Asistencia Federal de Desempleo Pandémico (PUA, sus siglas en inglés), los contratistas independientes y otros que generalmente no son elegibles para los beneficios del seguro de desempleo comenzaron a ser notificados sobre su elegibilidad para PUA, y el Departamento comenzó a hacer los pagos el viernes de 1 de mayo.

PUA es un nuevo programa autorizado por el Congreso, como parte de la Ley de Ayuda, Alivio y Seguridad Económica Coronavirus (CARES), para proporcionar beneficios de desempleo a los trabajadores que no son elegibles para el desempleo regular.

Además de las personas que trabajan por cuenta propia o contratistas independientes, esto incluye a aquellos que no tienen suficientes ingresos recientes, para recibir beneficios regulares de desempleo. Los trabajadores de este grupo, que han solicitado desempleo regular y se les ha negado, no tienen que hacer nada más. El Departamento comenzó a comunicarse con ellos y a procesar los pagos desde la semana pasada.

"El Departamento ha trabajado duro durante el último mes, para poner en marcha este programa, a pesar de los desafíos sin precedentes de COVID-19, y ahora está disponible", dijo el comisionado del Trabajo, Robert Asaro-Angelo. "Si bien llevará tiempo determinar la elegibilidad para todos los que buscan beneficios de PUA, el proceso ha comenzado a llevar miles de millones de dólares adicionales a las billeteras de los trabajadores independientes elegibles", agregó.

En un mes, el equipo del Departamento del Trabajo de New Jersey creó la infraestructura para implementar este nuevo programa federal, de manera de determinar la elegibilidad, proteger la información personal confidencial, prevenir el fraude y emitir pagos.

Certificación semanal

Los reclamantes deben certificar estos beneficios en Internet cada semana. El cronograma de certificación, basado en el número de Seguro Social, se puede encontrar en: ***www.myunemployment.nj.gov.***

Los reclamantes recibirán pagos retroactivos desde la fecha cuando presentaron su reclamo de desempleo. Sin embargo, deben certificar su reclamo de PUA por cada semana que reclamen beneficios, incluso si previamente certificaron su reclamo regular de desempleo para la misma semana. En otras palabras, los reclamos de PUA se procesan por separado de los reclamos de desempleo regulares; por lo tanto, la información de certificación debe completarse por separado.

El grupo inicial de reclamantes elegibles para PUA fue notificado la semana pasada sobre su franja horaria para certificar los beneficios. Recibieron el pago el martes 5 de mayo. Los trabajadores que certificaron beneficios el viernes de la semana pasada también recibirán un pago suplementario de 600 dólares por separado, como parte de la Ley CARES, por cada semana que fueron elegibles para PUA, desde el 29 de marzo.

Aquellos que certificaron después del viernes pasado recibieron el complemento de la Ley CARES esta semana. Los solicitantes que recibieron la instrucción de certificarse para PUA el viernes, sábado o domingo recibieron el pago el martes.

Aquellos que certificaron el lunes o más tarde recibieron el pago dos días hábiles después de la certificación. Los trabajadores que son elegibles para PUA, pero para quienes los registros salariales disponibles están incompletos, recibirán pagos semanales de PUA por la cantidad mínima de 231 dólares, más el beneficio suplementario semanal de $600 por separado, una vez que certifiquen los beneficios, de acuerdo con el cronograma.

Se contactará a estos trabajadores por separado, para actualizar su información de ingresos, y cualquier ajuste necesario a su tasa de beneficio semanal se realizará en función de la información de ingresos actualizada que proporcionen.

Lo que necesita saber

Esto es lo que necesitan saber los trabajadores independientes de New Jersey, los contratistas independientes y otras personas que pueden ser elegibles para PUA:

• El primer paso para recibir PUA es solicitar los beneficios estatales de desempleo, a través de ***www.myunemployment.nj.gov.***

• Si ya solicitó el desempleo estatal, no necesita hacer nada más en este momento.

• Si aún no ha solicitado los beneficios estatales de desempleo, puede encontrar instrucciones para trabajadores independientes, contratistas independientes y otras personas que no son elegibles para el desempleo regular en: ***https://myunemployment.nj.gov/labor/my-***

Condado de Union
Aviso Público

SE AVISA QUE: la siguiente Resolución, No. 2020-332, fue adoptada por la Junta de Freeholders Electos del Condado de Union, en su Reunión Ordinaria, que se celebró el 23 de abril de 2020.

James E. Pellettiere, Secretario de la Junta de Freeholders del Condado de Union.

POR CUANTO, la Ley de Límite de Gobierno Local, Estatuto Escrito de New Jersey (NJSA) 40A: 4-45.1 y el siguiente (eq. seq), establece que en la preparación de su presupuesto anual, un condado limitará cualquier aumento en dicho presupuesto hasta un 2.5%, a menos que lo autorice la Resolución para aumentarlo a 3.5% sobre el impuesto fiscal del año anterior del condado, sujeto a ciertas excepciones; y

POR CUANTO, el Estatuto Escrito de New Jersey (NJSA) 40A: 4-45.15b

Estados Unidos sigu

(Viene de la 1ra Página)

fermedades y respuesta rápida en más de 120 países.

La asistencia del Depto de Estado y USAID, para COVID-19, hasta la fecha incluye:

• Casi $200 millones en asistencia de emergencia de salud de la cuenta del Fondo de Reserva Global para Emergencias de Salud de USAID para Brotes de Enfermedades Infecciosas Contagiosas y Programas de Salud Global. Estos fondos priorizaron intervenciones para mitigar y preparar comunidades en países en desarrollo afectados y en riesgo de COVID-19.

• Casi $300 millones en asistencia humanitaria de la cuenta de Asistencia ante Desastres Internacionales (International Disaster Assistance, IDA) de USAID. Estos fondos dan prioridad a las poblaciones afectadas por las crisis humanitarias en curso, en particular las perso-

/CARES_FFRCA.pdf.

Precedentes

Cientos de miles de trabajadores que han quedado desempleados, suspendidos o que han visto sus horas reducidas han solicitado beneficios de desempleo, desde que la pandemia COVID-19 golpeó a New Jersey, a mediados de marzo.

A pesar de la rápida afluencia de reclamos, New Jersey ha otorgado más de mil millones de dólares en beneficios de desempleo a más de 550,000 personas.

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Noticia p

Municipio: Ciudad de Elizabeth
Impreso el 7 de mayo de 2020

Noticia pública:

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Notices

PUBLIC NOTICE The City of Elizabeth is updating its jurisdictional Hazard Mitigation Plan Natural Hazards that complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000). The Hazard Mitigation Plan Natural Hazards provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The Hazard Mitigation Plan Natural Hazards identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategic plan to minimize identified risks. As part of the process, the City intended to host public meetings to obtain public input on potential natural hazards; however due to the current COVID-19 restrictions, the first presentation is being provided as a slide show and video presentation. The presentation slides and video can be found on the City of Elizabeth website on the Engineering Page under the Hazard Mitigation tab. The link is as follow: https://www.elizabethnj.org/444/Hazard-Mitigation The materials are available for review and comment. The City is seeking public input on potential natural hazards which may threaten the community as well as to identify potential mitigation measures that would minimize the impact/effect of such hazards. The City will also be seeking information on the impact of past disasters in your community. All questions, comments or suggestions should be directed to the City of Elizabeth, Division of Engineering, City Engineer Daniel Loomis, at dloomis@elizabethnj.org or 908-820-4270. 5/7/20 $74.40

Related Categories: Notices and Announcements - Legal Notice

PUBLIC NOTICE The City of Elizabeth is updating its jurisdictional Hazard Mitigation Plan – Natural Hazards that complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000). The Hazard Mitigation Plan – Natural Hazards provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The Hazard Mitigation Plan – Natural Hazards identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategic plan to minimize identified risks. As part of the process, the City intended to host public meetings to obtain public input on potential natural hazards; however due to the current COVID-19 restrictions, the first presentation is being provided as a slide show and video presentation. The presentation slides and video can be found on the City of Elizabeth website on the Engineering Page under the Hazard Mitigation tab. The link is as follow:
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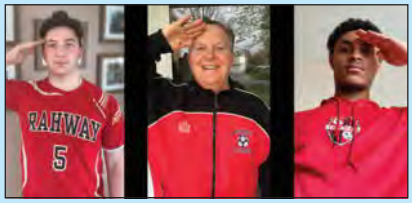
EC farmers markets

— See Page 3

Saluting 1st responders



— See Page 4

Livestream of falcons

— See Page 13

Merck plans to move headq from Kenilworth back to Ra

By Yael Katzwer
Editor

RAHWAY / KENILWORTH — Merck announced last week that it will be consolidating its New Jersey operations into a single headquarters in Rahway by the end of 2023. While this is a boon for Rahway, it is a blow for Kenilworth, which has served as the home of Merck's headquarters since 2015.

Not answering specific questions, a Merck spokesperson sent the following statement to LocalSource.

"On Tuesday, April 28, we announced our intention to consolidate our New Jersey campuses into a single New Jersey location in Rahway," spokesperson Jessica Fine said. "Rahway, the birthplace of life-changing scientific breakthroughs that have improved human health over the last century, will once again be Merck's global headquarters by the end of 2023. The consolidation of sites will allow us to bring all our divisions and their leadership teams together to create a more modern environment centered around science and innovation. We remain committed to New Jersey and invested in the state as the home of our global headquarters."

Merck has been headquartered in Kenilworth, announced plans last week to move its headqu consolidating all its New Jersey campuses in tha

Over the past several years, Merck's

210-acre Ra being prima one that is n

Cranford enhances legacy with

By EmilyAnn Jackman
Staff Writer

CRANFORD — Cranford residents now have a way to show off their historic housing and take pride in Cranford's long-standing history. Cranford's Historic Preservation Advisory Board has designed a brass plaque for buildings within the North Cranford Historic District that have been identified and documented as a historic or cultural resource.

The North Cranford Historic District represents a significant period in Cranford's history when the town was the "Venice of New Jersey," during which the area was transformed from a rural farming village to a suburban railroad community. Encompassing neighborhoods around the Rahway River, the district contains houses in a variety of architectural styles, built from circa 1850 to 1920, that symbolize the historical feel of Cranford. Those are the houses that the HPAB wants to help recognize.

HPAB Chairwoman Maureen S nificance of the North Cranford Hi

"The history of the North Cranfor same as the early history of Cranfor 24. "The community grew around from a farming village to the suburb of Dayton, Eastman and Bigelow w around Springfield, Union, Alden a the center of the expanding area we Historic District. Summer residence way to year-round residences as rail

"By 1871, the township was i slowed by the recession of the 187 spite of the slowdown, developers visions in anticipation of continue

LIKE US & FOLLOW US

Workers remove the triage tent that had been positioned outside the Trinitas Regional Medical Center ER since early March.

Photo Courtesy of Trinitas Regional Medical Center

As virus slows, Trinitas Medical Center takes down its emergency triage tent

ELIZABETH — Trinitas Regional Medical Center has removed the emergency triage tent that was erected outside the emergency room to treat possible surges of coronavirus patients, according to an April 29 press release.

"We set up the tent seven weeks ago out of an abundance of caution," Trinitas President and CEO Gary Horan said. "Thankfully, we only had to use the extra space infrequently."

The triage tent was used just a few times to help decompress the emergency department during periods of heavy patient volume, and it has not seen any use at all in the last few weeks.

"Our emergency department was able to treat larger numbers without relying on that extra space," Horan said, "Now that our numbers of COVID patients are consistently dropping, we can safely remove the tent and reclaim the sidewalk in front of our ER."

Horan added that the tent can be reassembled quickly if it's needed at some point in the future.

The number of COVID-19 patients within the walls of Trinitas is likewise dropping, according to Horan. The medical center's staff successfully has treated and discharged more than 600 COVID patients since March 1. The tent's removal has brought a positive reaction.

"It's been a fixture at Trinitas for nearly two months, and now that it's gone people are feeling more upbeat that the worst of this virus is behind us," Horan said.

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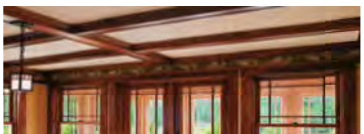
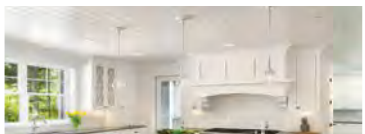

Area farmers markets reopen, institute n

By EmilyAnn Jackman
Staff Writer

SUMMIT / WESTFIELD — Spring has sprung, and residents are ready to purchase their favorite crops, but COVID-19 restrictions have hindered farmers markets. The good news is that the markets are beginning to pick up steam in Summit and Westfield. With coronavirus-related safety measures in place, residents now have corn, strawberries, organic hot peppers and Jersey tomatoes in their future.

The Westfield Farmers Market opened this past weekend at the North Avenue train station parking lot to great success. This new-look farmers market combines online shopping with weekly pickup to keep shoppers connected with local farmers and producers. It will continue every Saturday morning, with pickup scheduled alphabetically by last name, starting at 10 a.m. and finishing by noon.

Customers can place their orders online all week until 11:59 p.m. on Thursday at www.gwaccnj.com/farmers-market. The vendors will prepare and package the orders on Friday and bring them to the market Saturday morning. Pickup is by car only; car windows should remain closed in the market area. Nothing is available for purchase at the market on Saturday.

According to a Westfield Farmers Market press release, there were just over 200 customer orders for the first Saturday morning and the process went smoothly.

The Summit Farmers Market, which is celebrating its 25th year and will reopen to the public this Sunday, May 10, is hoping to see a huge success as well.

"It's exciting to realize that the Summit Farmers Market opened 25 years ago with only a handful of farmers and has grown to over 40 vendors, all New Jersey based," Summit Downtown Inc. Executive Director Nancy Adams said on May 4. "As one of the top markets in the state, an average of 4,000 people come to the market weekly from about 20 different communities."

The Summit Farmers Market plans to intermesh the best of in-person and online shopping in the face of the coronavirus.

The Westfield Farmers Market reopened this past weekend, drawing in more thar

"Summit Downtown Inc. has worked with Mayor Nora Radest, the Summit City Council, the Summit Police Department and the Summit Board of Health to create a safe and healthy environment for our customers and vendors," Adams said. "Guidelines for the market have been approved by the governor's office as well as the city of Summit and the aforementioned departments. Safety for all is the No. 1 priority. Many of our vendors offer preordering, prepay and even delivery service. Orders can also be picked up at the market. Our market will still allow customers to choose their own products, but there will be limitations as to the time allowed within the market, the number of customers inside at one time, etc."

This season's Summit Farmers Market will run from 8 a.m. to 1 p.m. on Sundays for 29 weeks. In addition to enforcing social distancing this season, the market has made some other changes.

"We have moved the Summit Farmers Market this year from Park & Shop Lot No. 2 to Lot No. 1, at the corner of DeForest Avenue and Woodland Avenue," Adams said. "Lot No. 1 is approximately twice the size of the regular market Lot No. 2, allowing us to spread out the vendors more and allow for more space for shoppers to have room to distance from other shoppers. The lot will be fenced off with only an entrance, which is on DeForest, and exit, which is by the alleyway at Woodland, opening, where both will be manned.

"We will be limiting the number of customers shopping at one time; volunteers and market staff will be assisting the flow at the entrance and the exit," she continued. "Shoppers and vendors alike will be required to wear masks and gloves and maintain 6-feet distance in the line waiting to enter inside the market. While cash is going to be accepted by vendors, all vendors will offer credit/debit card payments along with mobile paying, resulting in touchless exchanges."

According to the Summit Downtown Inc. website, food and product sampling has been suspended and no food or drink products are allowed to be consumed at the market. Also, only one person per family may shop at the market at a time. Customers are also asked to limit their time inside the market to 15 minutes, and no dogs are permitted at this time.

Adams is hoping everyone will embrace the changes.

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HUD allocates second wave of relief funds, $23M g

U.S. Department of Housing and Urban Development Secretary Ben Carson announced May 1 that his department will allocate $685 million in COVID-19 relief funding to help low-income Americans residing in public housing. New Jersey will receive an allocation of $23,302,088. The funding, made available by the CARES Act legislation, will be awarded to public housing authorities across the nation.

"As a result of President Trump's

housing safe through these unprecedented times," Carson said. "HUD has worked hard to ensure that these funds will reach public housing authorities quickly and efficiently, so they are well equipped to protect their residents and staff as we all work together as a nation to combat this invisible enemy."

These funds will be allocated through the Public Housing Operating Fund and can be used by PHAs for preparing for a coronavirus outbreak through creation or

dinating with providers of services needed to support residents as a result of coronavirus, including cost of delivery of goods, supplies and equipment; coordinating with local health service providers; child care costs for residents so that they can continue to work and child care costs for staff performing essential functions; and other reasonable expenses related to preparing for the coronavirus.

The following allocations have been made in Union County: $1,022,065 to the

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Photos Courtesy of Ryan Beenders, Charles Cutignola, Kevin O'Callahan and Megan O'Callahan

Above, the Rahway High School varsity soccer team gathers prior to social distancing. At right, the team's coach and captains salute first responders.

Rahway state soccer champs salute first res

By Rob Kinch

RAHWAY — Fear, anxiety and heartbreak are ever present right now. Yet these emotions are conquered daily by our neighbors: the first responders, the doctors, the nurses, the neighborhood restaurants that ensure a hot meal is always available. In appreciation, students from Rahway's high schools salute them.

Heralded in November 2019 as Central Jersey Group II State Sectional Champs — for the first time in 47 years — Rahway's high school varsity soccer team's players are resolute in their determination to honor and thank the men and women in Rahway who are now supporting the community — Rahway's 2020 champs.

"Those who are working on the front lines, who are risking their lives to help others, are the real-life heroes and champions in life," team co-captain Charles Cutignola, a senior, said.

It is with this spirit and understanding that the team players, students from Rahway High School and Rahway's Alternative Center for Education, are united in their wish to dedicate the trophy to their heroes.

"Even though we were underdogs in our tournament run, we were still supported by our town," team co-captain Ryan Beenders, a senior, said. "Our frontliners may be underdogs against the virus, but, like us, they will win and defeat it!"

"On behalf of myself and my team, we are honored to dedicate our championship trophy to the warriors on the front line — the real heroes," senior co-captain Jose Hernandez said.

Union County Coach of the Year and RHS head boys soccer coach Kevin O'Callahan said he is deeply moved by his students' willingness to relinquish their trophy.

"Their effort, trust and belief in one another game after game taught them what it took to become champions, yet they never lost sight of who the real champions are — the front-line workers," O'Callahan said. "Our soccer championship was for fun, but their daily battle is about life and death. We salute all those on our front lines for the sacrifices they make for us."

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Purchase a plaque to show your home's place

(Continued from Page 2)

in the NCHD, about 80 percent are contributing to the historic character or significance of Cranford. The owners of those contributing buildings qualify to purchase a plaque.

"A plaque can be purchased by the owner of any building within the North Cranford Historic District as defined in the 'Phase I Cranford Historic Resources Survey: Review of Existing Documentation, Baseline Inventory and Survey Updates,'" Strazdon said. "The 32 reports covered in the survey were conducted between 1947 and 2015 and were done in support of state or federal historic preservation regulations when a project, such as flood management, was proposed. The reports list 158 privately and publicly owned buildings or sites and 11 districts. The NCHD is one of those districts and was originally identified in a 2001 New Jersey Historic Preservation Office Opinion and the borders were later updated.

"To be considered significant, houses within the NCHD must meet one of the plaque," she continued. "Of the 948 buildings in the NCHD, 778 are significant."

According to Strazdon, Criterion A is an association with events that have made a significant contribution to the broad patterns of Cranford's history and with the transformation of Cranford from rural farming community to railroad suburb.

Criterion B is an association with the lives of persons significant in the town's past and with prominent local developer Sylvester Cahill, who initiated a large-scale subdivision of the NCHD with Roosevelt Manor in 1894.

Criterion C embodies the distinctive characteristics of a type, period or method of construction that represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction as a representative and intact collection of popular architectural styles of the late 19th and early to mid-20th centuries. Criterion C also includes examples of residential designs by local architect Franklin T. "cottage" architecture, and designed six homes in NCHD; and examples of landscape design by the Olmsted Brothers, the successor to the firm founded by Frederick Law Olmsted, in development of the Rahway River Parkway as part of the larger Union County Park System.

The 8-by-10-inch oval brass plaques are available now for purchase; the price will increase for purchases made after Aug. 30. To order a plaque, visit www.preservecranford.com.

"HPAB initially offered a plaque to the owners of the 158 privately and publicly owned buildings or sites specifically listed in the Resources Survey," Strazdon said. "That plaque is the one that is currently being offered to NCHD owners and is dark green and states, 'This Historically Significant Building Contributes to the Character of Cranford.' Last year, we created a special red plaque for the owners of homes in the Sunny Acres Historic District, which states, 'Sunny Acres District: A Neighborhood Celebrating the Character of Cranford.' HPAB is currently work-

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We salute the people on the front lines of America's battle with COVID-19

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- Hospital Support Staff
- Grocery & Delivery Workers
- The American Public
- Healthcare Workers
- Emergency Medical Technicians
- Law Enforcement Officers
- Firefighters & First Responders

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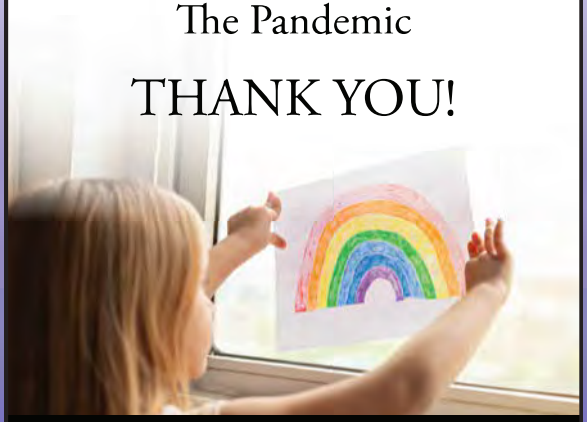

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Bartolotti confirmed as next Summit poli

SUMMIT — At its meeting on April 28, Summit Common Council unanimously approved the appointment of police Capt. Andrew Bartolotti as the next chief of police. Bartolotti replaces Chief Robert Weck, who is set to retire June 1.

"It is with great confidence and enthusiasm that I appointed Capt. Andrew Bartolotti to be Summit's next chief of police," Summit Mayor Nora Radest said. "Capt. Bartolotti is a 20-year veteran of the Summit Police Department and is an uncommonly well-qualified officer. He has the deepest respect from his fellow officers, and I am certain he will be an excellent chief."

Bartolotti joined the Summit Police Department in 2000, spending four years as a police officer before being assigned to the detective bureau in 2004. Earning undergraduate and graduate degrees from Fairleigh Dickinson University, he reached the rank of sergeant in 2007, lieutenant in 2011 and captain in 2012. In 2017, Bartolotti represented the city of Summit and the police department with distinction when he was selected as one of six law enforcement executives from the state of New Jersey to attend the prestigious FBI National Academy in Quantico, Va., and train alongside some of the world's most accomplished police leaders. Since April 1, he has been serving as the officer-in-charge while Weck is on extended leave following a positive COVID- 19 diagnosis.

"As chief it will be my priority to continue improving the quality of life in Summit for all of its citizens through ethical, transparent and progressive policing," Bartolotti said. "The Summit Police Department will continue to build relationships through outreach, engagement and our proven track record of responsiveness to the needs of the community."

Capt. Andrew Bartolotti, right, will succeed Robert Weck as Summit's next police chief on June 1.

UC tax preparer sentenced to four years i

A former employee of Tax Pros and Tax Solutions & Associates, tax preparation businesses located in Essex and Union counties, was sentenced April 29 to four years in prison for conspiring to defraud the United States by filing false income tax returns, U.S. Attorney Craig Carpenito announced.

Tony V. Russell, 49, of Stone Mountain, Ga., previously pleaded guilty before U.S. District Judge Michael Shipp in Trenton federal court to count one of an indictment charging him with conspiracy to defraud the IRS. Shipp imposed the sentence April 29 in a teleconference proceeding.

Two members of the conspiracy have previously pleaded guilty to their roles in the fraud and await sentencing. Damien Askew, 39, of Union, pleaded guilty June 6, 2017, to conspiracy to defraud the IRS and filing a false federal personal income tax return and is awaiting sentencing. Rudolph Sanders, 41, of Newark, pleaded guilty May 10, 2018, to conspiracy to defraud the IRS and is awaiting sentencing.

Two other members of the conspiracy, Joseph Kenny Batts, 49, of Elkridge, Md., and Angelo K. Thompson, 38, of Reisterstown, Md., were arrested April 17, 2018, on charges of conspiracy to defraud the IRS and aiding and assisting in the preparation of false federal income tax returns. On Aug. 8, 2019, Thompson pleaded guilty before Shipp to count one of an indictment charging him with conspiracy to defraud the IRS, and awaits sentencing. On Sept. 17, 2019, Batts was convicted following a one-week trial before Shipp on one count of conspiracy to defraud the United States and five counts of aiding and assisting in the preparation of false federal income tax returns, and awaits sentencing.

According to documents filed in this and related cases and statements made in court, from at least 2009 to April 2015, Batts was co-owner, along with Askew, of Tax Pros, a tax return preparation and payroll business in Essex County, where Russell, Sanders, Batts, Thompson and Askew prepared tax returns. To boost their business, the defendants conspired to falsify their clients' federal income tax returns to generate refunds from the IRS in amounts that their clients were not entitled to receive. Russell, Sanders, Batts, Thompson and Askew inflated tax refunds by fabricating and inflating credits deductions, such as charita bursed employee expenses;

Russell and other memb mitted Batts to use their pr bers — the identification nu are required to place on tax when preparing tax returns the actual tax return prepa tax fraud conviction.

After law enforcement Tax Pros in April 2015, Bat opened Tax Solutions & As sell, Thompson and Batts eral income tax returns. amounts of the tax refund Russell and Sanders caused excess of $900,000.

In addition to the priso sell to three years of superv to pay restitution of $241,1

BULLETIN BOARD

Food drive in Cranford

The Cranford Policemen's Benevolent Association partnered with the Cranford Firefighters' Mutual Benevolent Association and FLAG of Cranford to organize a food drive to help local food banks. The drive's main focus is Cranford Family Care and families in need in Cranford.

On Saturday, May 9, from 10 a.m. to 4 p.m., the PBA will have its Police Unity Tour trailer and State PBA trailer on-site at 570 South Ave. E. to collect donations, with the goal and motto being "#PackTheTrailer."

Volunteers from the PBA, FMBA and FLAG will remove goods from vehicles and fill the trailer. It will be a contactless process. Strength and Fitness Club has also partnered and is lending the use of its parking lot.

For more information, contact Cranford PBA Local No. 52 delegate Rob Chamra at delegate@cranfordpba52.org.

Summit Library board meets

The board of trustees of the Summit Free Public Library will hold its regular monthly meeting on Wednesday, May 13, at 2 p.m. at www.uberconference.com/suepermahos. The conference number is 857-216-4019; the PIN is 45193.

SPL book sessions

Springfield Public Library's "Zoom in on Books" will take place online via Zoom every Monday afternoon at 2 p.m. Chat with old friends from the Really Good Book discussion group and meet fellow book lovers. Talk about the books you are currently reading and recommend old favorites. To join each weekly session, email Susan Tegge at stegge@sfplnj.org at least 24 hours in advance to be given the session's link and password.

Blood drive May 23

A blood drive will be held Saturday, May 23, from 10 a.m. to 2 p.m. at the

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Union County LocalSource is published and mailed to the homes of subscribers every Thursday by Worrall Community Newspapers, an independent, family owned newspaper company. To report a breaking news story, call 908-686-7700 and ask for our editorial department. We accept news releases and opinion pieces by email.

Union County LocalSource
1291 Stuyvesant Avenue

Union County LocalSour weekly by Worrall Community N Avenue, Union, N.J. 07083. Ma $47 for two years in Union Coun able. College and out-of-state sub

UC parks to reopen on limited basis with social d

Union County parks have partially reopened for limited and passive activities only, in accordance with statewide restrictions issued by Gov. Phil Murphy. The county's two golf courses were set to open May 6, once routine maintenance had been conducted.

"Union County parks will reopen under guidelines that are consistent with the statewide plan, which provides for residents to benefit from healthy outdoor activities while diligently observing precautions against spreading or contracting COVID-19," Freeholder Chairman Alexander Mirabella said. "As a reminder, the virus does not disappear outside. Please be safe, and help save lives by observing the 6-foot social distance guideline and other rules for visiting county parks during this time."

Union County parks are open on the following basis:

• All group activities, including picnics, athletic games and other gatherings, remain prohibited.

• Only individual activities are permitted, such as walking, jogging, bicycling and fishing. For these activities, individuals may be accompanied by family members, caretakers, household members or romantic partners.

• Park visitors must stay on marked paths and observe signage for social distancing.

• Park visitors are encouraged to wear masks.

• The following facilities remain closed until further notice: restrooms; picnic areas; athletic fields; playgrounds and exercise stations; Trailside Nature and Science Center; Warinanco Sports Center; Watchung Stable; and Echo Lake and Warinanco dog parks.

Visitors are advised to avoid congested areas. When using pathways and trails, give way to others, in order to maintain a 6-foot social distance.

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We salute the people on the front lines of America's battle with COVID-19

Coronavirus HEROES

- Doctors and Nurses
- Hospital Support Staff
- Grocery & Delivery Workers
- The American Public
- Healthcare Workers
- Emergency Medical Technicians
- Law Enforcement Officers
- Firefighters & First Responders

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UHS seniors are recognized as scholar-a

By Yael Katzwer
Editor

UNION — Though high school athletics are canceled for the rest of the season, three Union High School athletes have been honored for their prowess on the field, as well as for their excellence in academics.

UHS senior Brian Kwarteng has been selected to receive a 2020 New Jersey State Interscholastic Athletic Association Scholar Athlete Award; one student athlete from each NJSIAA member school receives this honor each year. UHS seniors Elizabeth Arias and Zachary Radler have similarly been selected as 2020 Union County Interscholastic Association Conference Scholar-Athletes; one male student athlete and one female student athlete from each UCIAC member school receive this honor each year.

"We are very proud of all of our student athletes. Those chosen for the awards stood out because of their success in school, their involvement with the community, and the contributions they made to their team and teammates," Union Athletic Director Linda Ionta told LocalSource. "I would like to congratulate Brian, Elizabeth and Zachary as well as their parents and families, on representing Union High School as our scholar-athlete recipients."

Academically, Kwarteng is a member of the National Honor Society, the Spanish National Honor Society and Key Club; secretary of Model United Nations; peer emissary leader with the UHS Ambassadors; sergeant at arms of Men's Empowerment; social media adviser to Farmer Fam; and senior class president. Athletically, Kwarteng is captain of varsity track and field and a four-time state champion:

Photos Courtesy of Brian Kwarteng and Zachary Radler

Brian Kwarteng, left, has been selected to receive a 2020 NJSIAA Scholar Athlete Award. Zachary Radler, left, has been selected as a 2020 UCIAC Scholar-Athlete, along with Elizabeth Arias, who is not pictured.

400-meter hurdles State Sectional Champion 2019; State Sectional Champion 4-x-200 meters; State Sectional Champion 4-x-400; and State Group IV Champion 4-x-400. Out of school, he is the musical leader at Qodesh Family Church in Plainfield.

"My initial reaction was absolute shock," Kwarteng told LocalSource about receiving the NJSIAA honor. "I got on the phone with my athletic director and she was just saying all these great things about me and talking about how the administration and staff are proud to give me this honor. I then became very happy for myself because the NJSIAA Scholar Athlete Award is another thing that brings honor to my family name."

The senior plans to attend Tufts University, located in Boston, Mass., in the fall to study biology on the pre-med track. He will run track and field for Tufts, too.

"My proudest track and field moment was at North 2 Group 4 State Sectional at Ridge High School on May 25, 2019. On that day I became a state sectional champ in the 400 hurdles, winning out of an unseeded heat. I beat everyone in the fastest heat and claimed my title for UHS," Kwarteng said. "My proudest academic moment was ranking top 50 in my class. It is a great accomplishment because my class has a myriad of intelligent individuals. I was also named the senior class president, which helped me exhibit my leadership skills."

All of this success did not come easily though; it required hard work.

"The advice that I would give to younger athletes is to take their sport seriously; it could take you a long way," Kwarteng said. "Even sometimes your grades might not be the greatest, but sports can take you places you never imagined. Don't wait for your turn — just go for it. Be the best athlete you can be."

The UCIAC scholar-athletes are selected each year by the school using the following criteria: athletic achievement, academic achievement, and community and club involvement.

Radler has been a vital member of the cross-country, winter track and spring track teams for the past four years.

"In all four years of my high school career I played in three seasons," Radler said. "I was named captain in all three seasons in my senior year and received two varsity awards in cross-country and three in both winter and spring track. In my time in these sports I competed at the town, county and state level, where our teams have found much success."

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Schools to stay closed, spring sports canceled

Gov. Phil Murphy announced May 4 that New Jersey school buildings will remain closed for the rest of the school year. This announcement has also served as the final death knell for the spring 2020 sports season, which the New Jersey State Interscholastic Athletic Association had been hoping to resurrect at least in part once school buildings were reopened.

"Following today's announcement by Gov. Murphy, the NJSIAA has officially canceled New Jersey's 2020 high school spring sports season," the NJSIAA wrote in a May 4 statement. "This decision was not made lightly, and we are disappointed for the thousands of New Jersey student-athletes who will be unable to compete this spring. While we remained

"The last few weeks have been heartbreaking on many levels, from the tragic loss of life to thousands battling the virus to millions who have suffered emotional and economic loss. It's been a harrowing time for everyone, and we know our student-athletes are extremely disappointed. That said, these unfortunate circumstances may have put an intriguing challenge in the path of our young people. As New Jersey's own Vince Lombardi once said, 'It's not whether you get knocked down, it's whether you get up.' We're confident all our kids will get back up and stand tall," the statement continued.

"The NJSIAA will continue developing plans for the potential restarting of scholastic sports during the fall season.

Merck move to affect two UC municipalities

(Continued from Page 1)

"One of my top priorities since taking office as mayor has been to further develop our relationship with Merck, Rahway's single largest landowner and tax-paying entity," Rahway Mayor Raymond Giacobbe Jr. told LocalSource. "This renewed commitment to our community will bring hundreds of additional jobs, new facilities on their Rahway campus, and an increase in visitors to our downtown and surrounding areas, all of which will positively impact our local economy."

Giacobbe is especially proud of Merck recognizing Rahway as "the birthplace of life-changing scientific breakthroughs."

"Merck has roots in Rahway dating back to 1917, and our city served as its global headquarters until 1992," he said. "This renewed commitment to Rahway represents a major step in our progress as a city, and I look forward to our continued and expanded partnership."

Merck moved its headquarters from Rahway to Whitehouse Station in 1992, then from Whitehouse Station to its current 100-acre site in Kenilworth in 2015.

"When Merck decided, years ago, to move its corporate headquarters to Kenilworth, the borough bent over backwards to accommodate the corporate entity," Kenilworth Mayor Linda Karlovitch told LocalSource. "Upon the completion of the new move, I am confident other potential corporate entities will see an ideal location with the ready access to the parkway, points west and of course New York."

Karlovitch is relying on Kenilworth's drawing power — the same drawing power that brought Merck there in the first place — to bring new opportunities to the borough as Merck enacts the move.

"It is unclear what the impact will be in the final result of Merck relocating out of Kenilworth. The two-year window for the movement is a long time period," she said. "We have already planned to engage the state economic advisers to assist us in the changeover. This will mean a review of the property tax implications. Because of the unique zoning granted to Merck it will be necessary to see what modifications are needed for our land use requirements."

Despite the company's decision to move to Rahway, Karlovitch pointed out that Merck's stay in Kenilworth has been profitable for the company.

"It is interesting to note that prior to COVID-19, the company proclaimed net income of $3.2 billion and a 13-percent increase in earnings per share. It's fair to say that during their time in Kenilworth the company flourished," Karlovitch said. "For Merck CEO Ken Frazier, the stay in Kenilworth has been profitable. In 2019, Frazier's total compensation hit $27.65 million up from $20.93 million in 2018, according to a securities filing."

Nevertheless, Karlovitch believes the next company to come to Kenilworth will find equal success. But in the meantime, she and borough officials are looking for ways to protect Kenilworth's interests.

"The borough will be exploring options to ensure we are protected," she said. "We will keep moving forward."

Rotary raises funds to support Overlook Hosp.

SUMMIT — Rotary International District 7475 is donating much-needed critical care equipment to Overlook Hospital in Summit to help with the COVID-19 pandemic. Rotary has raised $34,000 to donate one critical-care bed to the ICU, according to a recent press release.

Overlook Hospital is renovating two floors to become additional ICU units and is looking for funding to help purchase the necessary equipment. The hospital has ordered 20 Hillrom Progressa Bed System critical-care beds. The beds, which can be upgraded in the future, cost $34,000 each. They feature technology — including percussive and vibration therapies — that helps patients breathe. The hospital does not like to transfer patients between beds, because doing so increases the risk of

are also mobile. They are expected to last 12 to 15 years. Each bed could potentially save thousands of lives.

Rotary District 7475 consists of 82 Rotary Clubs representing 2,000 Rotarians in nine counties of northern New Jersey. Past District Gov. D. Michael Hart is the district's International Foundation chairman. He was able to write a grant proposal that was matched by the Rotary International Foundation totaling $34,000 to purchase one bed.

"The rest of the world thinks Americans are rich and do not need any help," Hart said. "This program is a good example of how Rotary International can help people right here in a time of crisis."

Hart recently wrote two other grants totaling $100,000 to purchase 10 ventila-

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OPINION

The classroom is closed

EDITORIAL

Gov. Phil Murphy announced May 4 that New Jersey schools would not reopen their buildings this school year. For teachers and administrators, this means the continued work of educating our children from afar, adjusting to new methods and technologies, and remaining pillars of the community. For parents, this means the continued work of monitoring your child's daily lessons and spending even more quality time with them. But what does this mean for our children?

While some children may have been overjoyed when schools were first closed, that is no longer the case. They have realized that lessons have continued unabated and they have had to take on new responsibilities. Also, just as adults can struggle with the work-life balance, students must now find motivation to focus on their studies when they are surrounded by the comforts of home. Paying attention to classwork is a lot more difficult when you are sitting at home rather than in a classroom.

For some students, this announcement may have thrown them for a loop. Many students were looking forward to returning to school to see their friends and teachers. Additionally, this announcement could have instigated or increased anxiety in students. For younger students, this may be anxiety about what is happening in the world; the best way to deal with this is to communicate openly with your children and admit your own anxieties while comforting them that they are not alone, their feelings are normal and everyone is working together to make things better.

For older students, this may be anxiety about their future academic careers. How will not being in school affect honors or AP class placement next year? With SAT and ACT testing canceled, how will this affect college admissions? Again, parents should communicate openly with their children and encourage them to ask their teachers or guidance counselors these questions. Educators likely have the answers to these questions, or can point students in the right direction to those answers.

This announcement is perhaps most difficult for high school seniors, who were looking forward to their final high school sports season, prom, graduation parties and a big graduation itself. A lot of high school rites of passage have been canceled or postponed,

See **SUPPORT**, Page 12

Happy Mother's Day

EDITORIAL

Mother's Day is nearly here — that special day where we go out of our way to show our mothers how much we love and appreciate them. This year, Mother's Day falls on Sunday, May 10.

Current events necessitate that we celebrate this year's Mother's Day differently than in past years. Due to social distancing and its vital importance, this year we cannot embrace our moms or gather to give her presents. But that doesn't mean the day should pass by unmarked. There are still so many ways to celebrate. We can utilize telephone calls and videoconferencing platforms to talk with Mom. We can order her a present online to be delivered to her home. We can send her a card through the mail system.

Many sons and daughters thank their mom on Mother's Day through a thoughtful gift. This year, with so many people jobless or struggling financially, that may not be feasible. Mom will understand. Love doesn't need to be expressed through material objects. Show Mom how much you love her by writing down your top 10 memories of her from your childhood; she'll love that.

And Dad, if you have little kids, you are even more on the hook than in previous years to prepare a memorable Mother's Day. Ordinarily, children would be making Mother's Day cards and presents in school. With school buildings closed, that may not happen. Put aside some time with your kids to make Mom a present she'll love, whether it's a macaroni necklace or a very avant-garde painting that really forces you to use your imagination.

Of course, our mothers deserve our love and appreciation every day of the year. Don't feel confined to only show your affection on Mother's Day. We should be celebrating mothers, and the other women in our lives who had a hand in shaping us, every single day.

Happy Mother's Day!

Union County LocalSource

Published Weekly Since 1917 By

Worrall Media
1291 Stuyvesant Avenue, Union, N.J. 07083
Phone: 908-686-7700
Fax: 908-688-0401
Office Hours: 9am to 5pm M-F

LocalSource encourages reader response to letters, columns and editorials each week. Send letters or columns to editorial@thelocalsource.com or mail to

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The great mulch dilemma

THE GARDENER'S APPRENTICE

BY ELISABETH GINSBURG

Every day I take a long walk around my neighborhood to allay the claustrophobia that comes with shelter-in-place confinement. As I walk along I observe that almost every single house has at least one mail-order package waiting on the front porch. I am reminded of the refrain of the Rolling Stones song "You Can't Always Get What You Want." It goes, "You can't always get what you want, but if you try sometime, you find you get what you need." I would amend that to, "You can't always get what you want, but if you try sometime, you find you get what you need from Amazon."

What I need now is mulch. Lots and lots of mulch.

My relationship with mulch has long been fraught with equal amounts of love, hate, drama and boredom, not to mention a lot of heavy lifting. Did I mention guilt? Guilt clings to any kind of mulch like barnacles to a ship's hull. Years ago, I arranged for a truckload of shredded cedar mulch to be delivered to the rear of my driveway. Two years later I got the last of it shoveled onto the beds. Believe me when I tell you that I felt guilty about that mulch pile every single day.

Apart from its role in producing guilt and muscle aches, this ground-covering substance is a great thing for the garden. I recommend it to everyone. Mulch acts as a cozy blanket for the soil, protecting it from temperature extremes, retaining moisture and keeping down weeds. Organic mulches break down over time, conditioning and feeding the earth underneath. Putting down mulch also saves time, and most gardeners I know consider time even more precious than the perfect tomato or Himalayan blue poppy.

You save the most time — not to mention back pain — if you hire a group of garden laborers to put down the mulch. Sadly, my eccentric cottage-style landscape is not a good candidate for contract mulchers. The beds and borders are full of plants in various stages of growth and development. Even the best hired mulchers tend to fling the stuff around with abandon, blanketing everything in sight. Some of my plants probably wouldn't survive the onslaught.

Ever since the Giant Mulch Pile Debacle, I have gone back to the old way of acquiring mulch, buying several two- or three-cubic-feet bags at a time. At the big-box stores you save a small amount of money, but the mulch — stacked sky high on pallets and exposed to the elements — is more likely to be wet and extremely heavy. That heaviness becomes painfully obvious when you lug the floppy bags to your car and heft them into the trunk.

"Shelter in place" started just as I was about to embark on the annual rite of buying several bags of mulch from the garden center. Wanting to keep to the letter of the restrictions, I decided to try something new before the weeds in my garden got wind of the opportunities inherent in the current situation and doubled their growth rate. I decided to order some com-

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The braver new world

THE EGO HAS LANDED

BY ROGER STRYESKI

If anything fully demonstrates the new order of things in this pandemic, it is the lowly NJ Transit bus. These buses have gone retro and actually look like buses instead of billboards. No more do they proclaim the worldliness of a state university. They no longer are enveloped in yellow, like big school buses in the livery of a contractor. Then again, 50 percent fewer people are allowed on them — as if that many are actually going to work. A complaint site for commuters has been in suspended animation.

It is now common history that mass purchasing in the early days of the crisis caused shortages of certain paper products. Only recently have name-brand paper towels and toilet paper started reappearing. I have had a suspicion that some of the products that first appeared were the clearing out of the warehouses of the dregs of the market — one step above generic? Paper napkins were missing for the longest time, and this was not very well reported.

Meats may be the next variable. Processing plants, pork at first and now beef, are being affected by personnel shortages due to the virus. I'm not sure what is going on with fish, yet New Jersey's fleet cannot sell its catches with all the restaurants closed.

Canned goods are an odd item that I have seen disrupted. I cannot obtain my favorite cream of mushroom soup or New England clam chowder. All the other lines are there. If you really want my heart to stop, for two weeks at my market, they were out of Friskies canned cat food. Try explaining that to the descendants of ancient deities.

I do not miss the counter services at the market. I never used them. The last time was years ago, and it swore me off using the deli counters. How hard was it

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Coordination will get us through t

(Continued from Page 10)

weeks have been something of a technological blur. His day means daily conference calls with county and municipal officials. Often the give-and-take can consume a chunk of the freeholder's day. There is ongoing pressure for the adoption of a county budget with a zero-percent increase. As a member of the fiscal committee, Hudak has had to participate via Zoom and Google in developing a budget, striving to meet this goal.

Hudak has made it his business between the freeholder interaction, family responsibilities and his business career to keep close watch on meeting people's recreational needs for parks and open space.

"Look, people who know me understand how much I miss the face-to-face interaction with the diversity of our residents," he said. "I have to confess, while I understand the need for videoconferencing, I very much miss the ability to see the interaction of the residents. Hopefully, this short-term interruption will ultimately end, and we can go back to eye-to-eye contact."

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Support students

(Continued from Page 10)

leaving seniors feeling lost and angry. A lot of school districts are working to find solutions by offering virtual proms and planning socially distant graduation celebrations. The best way to support graduating seniors is to encourage them to reach out to friends via Zoom or other videoconferencing platforms, and to make sure you celebrate them and their accomplishments at home.

To all of the teachers and administrators — and parents who have had to become their children's teachers and administrators — thank you for everything you are doing. And to the students, we know this time is difficult for you, but we salute you and we are here for you.

Making do with c

(Continued from Page 11)

that it was just as heavy as a bag of wet mulch. I dragged loads of coir to the appropriate garden beds and applied it, cursing myself roundly for not putting the brick in a wheelbarrow prior to hydration. Once the coir was down, it looked almost identical to shredded bark mulch.

Coir was originally marketed as a soil amendment and a sustainable alternative to peat moss. It has increased in popularity over the last decade and now pops up in all kinds of products. One of my favorite online/catalog garden vendors has switched from plastic shipping pots to vessels made of molded coir, advertising the reduction in plastic waste and the benefit of being able to plant the newly arrived specimens "pot and all."

Coir has many of the same virtues as more conventional mulches. Both stay in place, and they present an identical appearance once weathered in. The coir is pH neutral while the bark mulch is slightly acidic, but I doubt this makes a difference to the majority of my plants. Coir probably holds
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WORSHIP CALENDAR

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TEMPLE BETH AHM YISRAEL, Springfield NJ (973) 376-0539, visit www.tbaynj.org Senior Rabbi: Mark Mallach. We offer many exciting events throughout the year, Women's League, Men's Club, a nurturing Early Childhood Program, a warm Religious school, Adult education and so much more!

JEWISH - REFORM

TEMPLE SHA'AREY SHALOM Springfield, NJ (973) 379-5387 visit www.shaarey.org Rabbi: Renee Edelman Cantor: Jason Rosenman Inspiring services and creative programs and events. Religious School, PreSchool, active Sisterhood and Brotherhood, Renaissance (Seniors), classes, trips, speakers and much more.

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Pastor: Rev. Dennis E. Hughes
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Worship Service 10:AM

COMMUNITY UNITED METHODIST CHURCH
301 Chestnut St.,
Roselle Park. NJ 07204
Phone: 908-245-2237
www.roselleparkumc.org
Pastor: Rev. Manuel P. Cruz, Jr.
11:00 AM Worship Service
11:00 AM Sunday School
Childcare Available

UNITED METHODIST CHURCH OF UNION. 2095 Berwyn Street, Union, NJ 07083. Rev. James G. Ryoo, Pastor. Church telephone 908-687-8077. Office hours by appointment. Sunday service at 11:00 AM includes a children's sermon. Sunday School at 10:00. Youth Sunday School during the main service. Communion the first Sunday of the month. Choir and Praise Team. UMW group meets 2nd Saturday each month. Friday evening bible study with the pastor at 7:30 PM. We are a friendly, multi ethnic/cultural church and we welcome all!

NON-DENOMINATIONAL

KENILWORTH GOSPEL CHAPEL 557 Newark Ave., Newark and 23rd Street, **Kenilworth**, 908-272-6131, Pastor Stephen Swaim. Sunday 9:30 am Breaking of Bread, 11:00 am
Family Bible Hour and Sunday School
7:00 pm Prayer and Bible Study, (childcare provided), Friday 7:00 pm Youth Activities for Grade School age, Jr. High and Sr. High. kenilworthgospel.org

PRESBYTERIAN

COMMUNITY PRESBYTERIAN CHURCH, 1459 Deer Path, **Mountainside**, New Jersey 07092. You are invited to join us in Worship Services on Sundays at 10:30 am. This is a place for you to enjoy uplifting music and relevant messages that will energize and inspire you. We offer a warm and friendly environment with Bible study, Sunday school and active adult and youth groups. For further information, please contact Dr. Christopher Belden, Pastor at 908-232-9490.

THE FIRST PRESBYTERIAN CONGREGATION OF CONNECTICUT FARMS, 888 Stuyvesant Ave., Union. Sunday Worship Service 11:00 am with nursery care, Holy Communion first Sunday monthly. Church office 908-688-3164; office hours are M-T 9am - 5pm Fri 9am - 1pm. www.ctfarms.org, Rev. Roberta Arrowsmith, Pastor.

07081, 973-379-4320. Rev. Dr. Rhonda Myers - Interim. Sunday Worship begins at 10:15am followed by Fellowship Hour. Church time nursery and Sunday School for infant to second grade avail. Sunday School for grades 3-12 begins at 9:00am in the Parish House @ 37 Church Mall. For more information about Church groups and community activities or to contact Pastor Myers, please call the Church Office at 973-379-4320, or e-mail FirstPCOffice@verizon.net

TOWNLEY PRESBYTERIAN CHURCH, 829 Salem Road, Union NJ 07083. 908-686-1028 - Rev. Ron Thompson, Pastor. Sunday Worship Service 10:00am followed by Fellowship Hour. A Time for Prayer: Mondays at 4:00pm - Bible Study: Wednesdays at 6:30pm. All are welcome - www.townleychurch.org

PROTESTANT REFORMED

REFORMED CHURCH OF LINDEN, 600 N. Wood Ave. (corner of Wood & Henry), Linden. 908-486-3714. Serving Christ and the community since 1871. Sunday worship 10:30 am, Sunday School 9:30am. Rev. Wilfredo Rodriguez,

Meet the newest members of Union County Courthouse's falcon family

Two peregrine falcons that live on the roof of the Union County Courthouse in Elizabeth are welcoming new occupants into the nest. The pair have been watching over four eggs for several weeks, and the first one hatched on the morning of May 1. All four have now hatched.

Union County residents and people all over the world can observe the falcons and watch the eggs hatch by tuning into the county's free livestream falcon cam at ucnj.org/falcon.

"Union County has been helping to preserve and protect peregrine falcons in our area since 2006, and we are all very proud to be part of this conservation success story," Freeholder Chairman Alexander Mirabella said.

The population of peregrine falcons was drastically reduced by the use of the pesticide DDT during the 20th century. The falcons have been making a comeback in New Jersey following an intensive preservation effort that began in the 1980s.

Falcons have been nesting on the courthouse every year since 2006, when county personnel affixed a nesting box to the roof under the guidance of state wildlife experts.

Photo Courtesy of Union County

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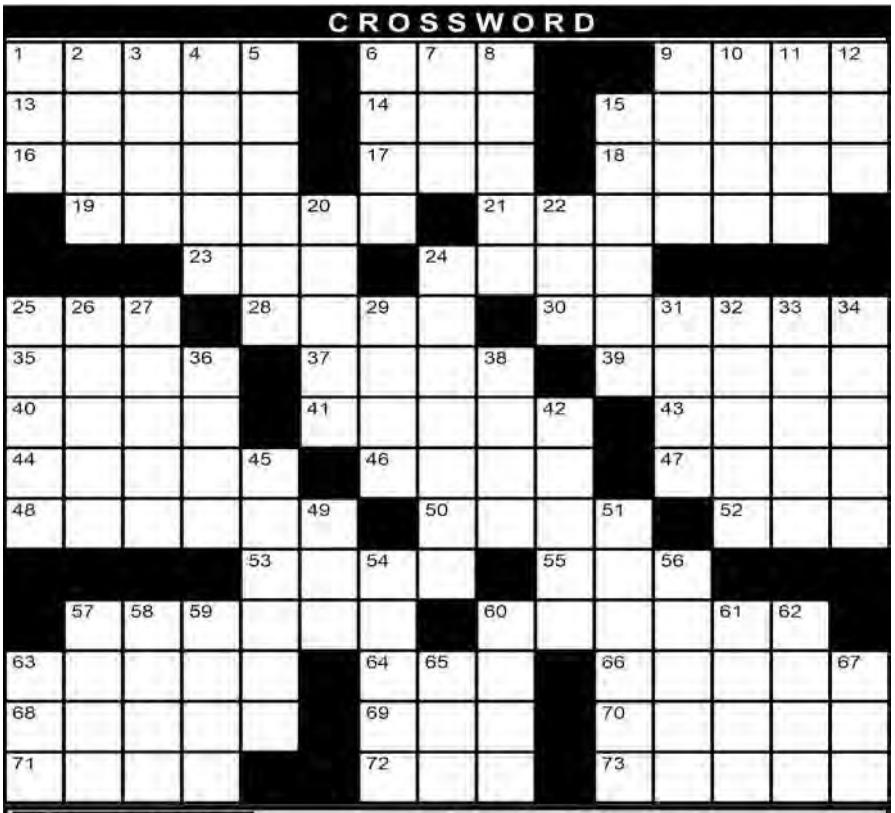

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1. "Flowers in the ____"
6. Emergency responders
9. Peacock's pride
13. Life force in Sanskrit
14. Doctor Dolittle, e.g.
15. The Beast's problem
16. Happen again
17. Freudian topic
18. In a fitting way
19. *Hopkins' Lecter to ____'s Starling
21. *McGillis' Charlie to ____'s Maverick
23. Unagi
24. Undesirable row
25. Stuff in a tray?
28. The Tramp's love interest
30. Hairy vertebrate
35. "Best ____ schemes o' mice an' men"
37. Be inclined
39. City in Belgium
40. Debussy's "Clair de ____"
41. D'Artagnan's weapon, pl.
43. Speed on water
44. "This ____ ____," on a box
46. The Chapin School, e.g.
47. €
48. Post-roller coaster ride state
50. The Coen brothers' "True ____"
52. ____ Diego
53. Deuce topper
55. Lamb's mother
57. *Clark's Rhett to ____'s Scarlett
60. *John's Danny to ____'s Sandy
63. Continually annoy
64. Matterhorn, e.g.
66. Cooler clime conifer
68. Do like phoenix
69. Tiger's peg
70. "My Own Private ____"
71. Thou ____, or you have
72. Bajillion years
73. Article of faith

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HOROSCOPES

AQUARIUS, Jan. 21 to Feb. 18
You may have to get tough with a friend or colleague who is behaving badly, because it seems to be the only kind of language they understand. Don't go too far and start bringing up disputes and disagreements from long ago. Stay on point.

PISCES, Feb. 19 to March 20
Go beyond the call of duty this week, but you probably won't get much thanks for it. You don't help others because you want to be praised for it, you do it out of the goodness of your soul.

ARIES, March 21 to April 20
No doubt you feel trapped by personal and social obligations but there is no reason to despair. The planets suggest a new opportunity will come knocking at your door very soon, so keep smiling and keep your eyes peeled for the next big opening.

TAURUS, April 21 to May 21
If you put your mind to a difficult problem you may be very surprised how easily you manage to solve it. Push yourself hard over the next few days and push other people hard too – they are capable of a whole lot more, as are you.

GEMINI, May 22 to June 21
When advice clashes with what your instincts are telling you it is your instincts you must heed. Make sure your thinking is based on logic and reason, rather than emotion and sentiment.

CANCER, June 22 to July 22
Don't worry if something you say appears to hurt a colleague's

LEO, July 23 to Aug. 23
Challenges to your authority ar
but that's good because it will
seem to have forgotten: that yo
never be taken for granted. Fgh

VIRGO, Aug. 24 to Sept. 22
You may be in an adventurous
friends and relatives to follow y
kind of high-risk endeavors that

LIBRA, Sept. 23 to Oct. 23
Why so anxious? Why so serio
back on your face and you also
failure. It could be that the tw
being a bit more positive in you

SCORPIO, Oct. 24 to Nov. 22
Make sure you know what you
facts and figures to back up yo
challenge what you've been sayi
the evidence then it will look ba

SAGITTARIUS, Nov. 23 to Dec
You are going through a phase i
to the surface. Don't be scared
head-on and question why they

CAPRICORN, Dec. 22 to Jan.
No point in trying to hide your f

IN MEMORIAM

- ADASE – Diane, formerly of Roselle Park; May 2. RPHS cafeteria employee, aunt, 61.
- AIELLO – Diane Lois, of Hillside; April 29. Credit specialist, aunt, 73.
- BAVARO – Jennie, of Roselle Park; April 27. Great-great-grandmother, 103.
- BERMAN – Frances, formerly of Union; April 30. Owned plumbing business, grandmother, 79.
- BOUZA – Cesareo Jr., of Elizabeth; April 27. Helmsley-Spear executive, 88.
- CERAMI – Louise V., of Union; April 22. Grandmother, 93.
- COLE – Johnnie, of Linden; April 18. Age 91.
- CORNELL – Jean, formerly of Union; April 21. Banquet manager, mother, 91.
- COSTA – Rose E., formerly of Union; April 30. Jitterbugger, grandmother, 93.
- CULVER – Lillie Mae, of Linden; April 25. Age 79.
- D'ANGERIO – Raquel "Kelly," formerly of Clark; April 24. Community volunteer, 84.
- DIETRICH – Goerge, formerly of Union, Roselle Park; April 27. Army veteran, father, 78.
- DIROMA – Joseph W., of Union; April 23. Greenskeeper, grandfather, 81.
- ERICKSEN – Frances, of Rahway, April 28. Grandmother, 77.
- GASPAR – Maria, of Rahway; April 28. Seamstress, grandmother, 92.
- GONCALVES – Maria "Mary" Costa, formerly of Cranford; April 29. Bookkeeper, mother, 90.
- GREEN – Richard J. Sr., of Linden; April 24. Battle of the Bulge veteran, machinist, 96.
- HAMILTON – Lillian, of Elizabeth; April 25. Age 85.
- KOVACH – George F., of Union; April 25. Holy Name Society president, husband, 93.
- LICCIONE – Dolores (Ferrin), of Union; April 28. ShopRite employee, grandmother.
- LOHMANN – Carl Donald, of Summit; April 25. Summit First Aid Squad member, 77.
- MAURIZI – Florence, of Summit; April 27. Dog lover, grandmother, 81.
- MCCORMACK – James "Jim," of Linden; April 20. V
- MILLER – Edward J., of Kenilworth; April 25. Teach
- MILLER – Jean, of Kenilworth; April 27. Grandmoth
- MULLEN – Theresa, of Springfield; April 3. Seamstr
- OLIVER – Allan R., of Linden; April 23. Age 85.
- PIELECH – Lois D. (Curran), formerly of Roselle Park,
- PODOLSKI – Anthony "Bob" R., of Elizabeth; April 2
- RENDEIRO – Lillian Neves, of Union; April 3. Activitie
- ROBERTSON – Marie Kelly, formerly of Summit; April
- SCATURO – Marie C. "Kate," formerly of Elizabeth; Ap
- SCHNARR – Arthur E. Jr., of Elizabeth; April 19. Air Fo
- SOSNA – Victor Markel, of Cranford; April 25. Electrica
- THORNTON – Mary Elizabeth, formerly of Rahway; great-grandmother, 96.
- TOMEK – Francis Lee, of Union; April 18. Architect,
- TOMEK – Marilyn Pearce, of Union; April 15. Worked i
- VIVENZIO – Anthony, of Clark, formerly of Rah resentative, grandfather, 65.
- WALKER – John Wesley, formerly of Elizabeth; Apri
- WIGGINS-NIXON – Lona, formerly of Roselle; April
- WILLIAMS – Harry V., of Elizabeth; April 29. Age 8
- YASHAY – Rose M. Capelli, formerly of Linden; Apri

In Memoriam is a weekly feature compiled by the news s also provide the opportunity for families and funeral direc sive, special notice about their loved one called an obituary on our website immediately and then in the next edition o paid obituary send an email to obits@thelocalsource.com o ily and friends' submissions must include sender's name, ad the funeral home. Call 908-686-7850 for assistance.

Bank in Roselle acquired by new banking company

Columbia Bank recently announced that it has completed its acquisition of Roselle Bank. At the effective time of the merger, Roselle Bank was merged with and into Columbia Bank and depositors of Roselle Bank became depositors of Columbia Bank, with the same rights and privileges in Columbia Bank MHC as if their accounts had been established in Columbia Bank on the date established at Roselle Bank. In addition, as part of the transaction, the company issued 4,759,048 shares of its common stock to Columbia Bank MHC.

"With the addition of Roselle Bank, Columbia Bank is now serving 12 counties across the state of New Jersey. The combination advances our strategic growth plan and allows us to deliver enhanced products, digital services and lending capabilities to new markets," said Thomas Kemly, president and CEO of Columbia Bank. "Our bank recently completed a successful systems conversion from its prior acquisition of Atlantic Stewardship Bank. With one successful conversion behind us, we look forward to welcoming the new customers and employees of Roselle Bank. Together, we are making community banking better."

OBITUARIES

Frances Lee Tomek
Marilyn Pearce Tomek

Marilyn Pearce Tomek, 79, died on Wednesday, April 15 in Summit. She had been in declining health for several months and died of the Covid-19 virus. Three days later, on Saturday, April 18, her husband, Frances Lee Tomek, also 79, died of natural causes in their home on Forest Drive in Union.

Mrs. Tom
NC in 1940 a
the legal pro
veteran and a
PA in 1940.
in May 1972
The Tomel
ter, Carolin
James, and
Berkeley Jan
viving relat
Pearce and
News, VA; n
burg, VA; s
Upper Sadd
Tomek, his
Evan, Matth
Because of
are no plans

PUBLIC NOTICE

UNION

UNION COUNTY

PUBLIC NOTICE

Notice is hereby given that bid proposals will be received from Bidders classified under N.J.S.A. 27:7-35.2 via the Internet until 10:00:59 A.M. on 5/21/2020 at which time the bid proposals submitted will be downloaded, and publicly opened and read, in the CONFERENCE ROOM-A, 1st Floor F & A Building, New Jersey Department of Transportation, 1035 Parkway

PUBLIC NOTICE

County; Springfield Township and Union Township, Union County; Hillside Township, Union County

100% State UPC NO: 153340
DP No: 20115

Bidders are required to comply with the requirements of N.J.S.A. 10:5-31 (P.L 1975, c. 127); N.J.A.C. 17:27.

Pursuant to N.J.S.A. 19:44A-20.19, contractors must provide a Certification and Disclosure of Political Contribution Form prior to contract award.

Pursuant to N.J.S.A. 52:32-44, contractor

PUBLIC NOTICE

Pursuant to N.J.S.A. 34:11-56.51, contractors must be registered with the New Jersey Department of Labor and Workforce Development, Division of Wage and Hour Compliance at the time of bid.

Plans, specifications, any addenda to the specifications, and bidding information for the proposed work are available at Bid Express website www.bidx.com. You must subscribe to use this service. To subscribe, follow the instructions on the web site. Fees apply to downloading documents and plans and bidding access. The fee schedule is available on the web site. All fees are directly payable to Bid

PUBLIC NOTICE

200 Stierli Court
Mt. Arlington, NJ 07856
Phone: 973-601-6690

One Executive Campus Rt. 70 West
Cherry Hill, NJ 08002
Phone: 856-486-6623

New Jersey Department of Transportation
Division of Procurement
Bureau of Construction Services
1035 Parkway Avenue
PO Box 600
Trenton, NJ 08625

PUBLIC NOTICE

Zoom meeting # will be provided for Council Members and other participants before the start of the meeting and members of the public can email questions and comments before and during the meeting to hillsidecouncilmeeting@gmail.com. The meeting will also be live-streamed on Facebook Live.

Copies of this notice will be posted, mailed and filed in accordance with the provisions of the Open Public Meetings Act at least 48 hours prior to the Public Meeting. This notice will also be posted on the Township Council Meeting Facebook page — Hillside Council Meetings 2020.

Formal action may be taken at this meeting.
U91069 UNL May 7, 2020 ($16.66)

PRO-LEGALS

ELIZABETH

PUBLIC NOTICE

The City of Elizabeth is updating its jurisdictional Hazard Mitigation Plan – Natural Hazards that complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000). The Hazard Mitigation Plan – Natural Hazards provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The Hazard Mitigation Plan – Natural Hazards identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategic plan to minimize identified risks. As part of the process, the City intended to host public meetings to obtain public input on potential natural hazards; however due to the current COVID-19 restrictions, the first presentation is being provided as a slide show and video presentation. The presentation slides and video can be found on the City of Elizabeth website on the Engineering Page under the Hazard Mitigation tab. The link is as follow:

https://www.elizabethnj.org/444/Hazard-Mitigation

The materials are available for review and comment. The City is seeking public input on potential natural hazard which may threaten the community as well as to identify potential mitigation measures that would minimize the impact/effect of such hazards. The City will also be seeking information on the impact of past disasters in your community.

All questions, comments or suggestions should be directed to the City Of Elizabeth, Division of Engineering, City Engineer Daniel Loomis, at dloomis@elizabethnj.org or 908-820-4270.
U91170 PRO May 7, 2020 ($22.54)

ROSELLE

PUBLIC NOTICE
BOROUGH OF ROSELLE, ROSELLE, NEW JERSEY

NOTICE OF A CONTRACT AWARD

The Borough of Roselle, New Jersey has awarded a contract with competitive bidding as a professional service pursuant to N.J.S.A. 40A:11-23. The contract and the resolution authorizing it are on file and available for public inspection in the office of the Municipal Clerk.

AWARDED: Mark Paving Company, Inc.
77 Cutters Dock Road
Woodbridge, NJ 07095

SERVICE: CDBG Year 45 Street Improvement

CONTRACT AMOUNT: $309,705.34
U91156 PRO May 7, 2020 ($12.25)

OBS-LEGALS

SPRINGFIELD

Take notice that the following decision was made at the regular meeting of the Planning Board held on April 27 2020 at Town Hall, 100 Mountain Avenue, Springfield, NJ:

Applicant: #1-2020-S
Applicant: LL BALFOUR INC
Site Location: 35 STERN AVE
Block: 3101 Lots: 9
For: Minor Subdivision Approval
WAS APPROVED

All documents and plans related to this application, including but not limited to the memorialized Resolution are on file in the Office of the Planning Board Administrator, Annex Building, 20 North Trivett Avenue, Township of Springfield, NJ. If you wish to view any documents, please contact Jennifer Law at Jennifer.Law@springfield-nj.us or call

PUBLIC NOTICE

PUBLIC NOTICE

PUBLIC NOTICE

SPRINGFIELD

Explanation: This ordinance amends the Township Code to supplement the Land Use provisions to include provisions regarding pipelines.

TOWNSHIP OF SPRINGFIELD
ORDINANCE NO. 2020-11

WHEREAS, the Springfield Township Committee recognizes the dangers that pipelines carrying or transferring hazardous materials may create due to the nature and volume of such materials flowing through the pipelines which, if permitted to run in close proximity to communities and environmentally sensitive areas of the Township, could negatively impact such areas by the occurrence of an explosion, spill, or rupture; and

WHEREAS, the Township Committee continually seeks to protect and maintain the environmental integrity of Springfield and the health and safety of its citizens, which such pipelines threaten to disrupt if not properly regulated.

NOW, THEREFORE, BE IT ORDAINED by the Township Committee of the Township of Springfield as follows:

SECTION I - AMENDMENTS

Chapter XXXV (Land Use), Article V (District Regulations), is amended and supplemented at Section 35-15.5 (Regulations Pertaining to All Districts) to add a new sub-section 35-15.5(i) (Pipelines) only, as follows:

35-15.5 Regulations Pertaining to All Districts.

.....

i.Pipelines.

1. Applicability. The provisions in this sub section apply to all hazardous material transmission pipelines proposed for construction and siting within the Township. To the extent any regulations within this section conflict with state or federal regulations or laws regulating hazardous material transmission pipelines, those state or federal regulations and laws shall take precedence over these regulations. The regulations set forth herein shall be in addition to any requirements imposed upon pipelines and pipeline owners and operators under applicable state and federal laws, rules and regulations, except to the extent prohibited by such laws, rules and regulations. The Township hereby adopts by reference the definitions set forth in the Hazardous Liquid Pipeline Safety Act of 1979, as amended, and re-codified in 49 U.S.C. § 601 and 49 CFR 190 to 199, except as otherwise set forth herein.
2. Pipeline uses. Hazardous material transmission pipelines not distributing services to end users within the Township which are not otherwise regulated by the New Jersey Board of Public Utilities are prohibited in all residential zones and districts within the Township and shall constitute conditional uses in all other zones and districts within the Township.
3. As used in this section 35-15.5(i):

"transmission pipeline operator" shall mean the individual or entity responsible for the operation, maintenance and management of a transmission pipeline.

"hazardous material transmission pipeline corridor" or "transmission pipeline corridor" shall mean pipeline pathway defined by rights-of-way and easements in which the pipelines and facilities of a hazardous material transmission pipeline are located, or proposed to be located, including rights-of-way and easements over and through public or private property.

"hazardous material transmission pipeline" or "transmission pipeline" shall mean a pipeline, whether above or below ground, which transports or is designed to transport a hazardous material. As used herein, a transmission pipeline includes all parts of those physical facilities through which a hazardous material moves in transportation, including pipes, valves, and other appurtenances attached to pipes, compressor units, pumping stations, metering stations, regulator stations, delivery stations, emergency response terminals, holders, breakout tanks, fabricated assemblies, and other surface pipeline appurtenances.

"hazardous material" as defined in Chapter 29 §29-1.1 (Definitions).

"high-consequence land use" shall mean a land use that, if located in the vicinity of a hazardous materials transmission pipeline, represents an unusually high risk to life in the event of a transmission pipeline failure due to the characteristics of the inhabitants or functions of the use. High-consequence land uses include:

(a) Child care;
(b) Houses of worship, including churches and other religious institutions;
(c) Hospitals;
(d) High-rise buildings, including hotels, dormitories, apartment complexes, and office buildings, which may not lend themselves to a timely evacuation;
(e) Open space uses, including Green Acres and Borough-owned lands designated as open space preservation areas, farmland preservation areas, historic preservation areas, Blue Acres preservation areas, active recreation areas, and passive recreation areas;
(f) National Park Service designated National Natural Landmarks;
(g) New Jersey Department of Environmental Protection (NJDEP) designated New Jersey Natural Areas and Natural Heritage Priority Sites;
(h) Residential care facilities;
(i) Institutional uses, including public and private schools, daycare facilities, and public or quasi-public buildings; and
(j) Essential public facilities.

"essential public facilities" shall mean those public facilities which are required in order to provide basic health and safety services to residents and visitors of the Township, including, without limitation, water sanitation plants, water treatment plants, sewer treatment plants, water storage facilities, telecommunication towers, police stations, fire stations, jails, courthouses, public health facilities, and emergency operations centers.

4. Development and construction of new hazardous material transmission pipelines. The following requirements and standards shall apply for the development and construction of new hazardous material transmission pipelines:

(a) Approvals required; application. A resolution of approval by the Township Planning Board shall be required prior to the commencement of any work to install a transmission pipeline within the Township. An original application for a transmission pipeline

dures outlined in Article IX of this C
addition to the procedures in Article
accompanied by three sets of plans
locations of the transmission pipeli
within the subject right-of-way and
(1) Detailed cross-section drawing
way easements, wetland and wa
(2) A flow diagram showing daily d
posed transmission pipeline;
(3) Changes in flow in the transmis
(4) The proposed maximum operat
pounds per square inch gauge
in elevation greater than 500 fe
as a minimum.

(b) Hazardous material transmission pi
ments or rights-of-way obtained by
operator shall be recorded in the off
for all new hazardous material trans

(c) Setbacks. In order to mitigate the a
impacts of hazardous material trans
imizing potential damage or interru
ities caused by transmission pipeli
shall be observed:

(1) Except as set forth in this secti
Township Engineer as part of t
process, where adequate mitiga
demonstrated by the applicant
Township Engineer, hazardous
pipeline corridors shall not be
a designated well head protecti
not be located closer than 2,50
feet in a Tier 2 WHPA, and 500
er, conditions such as slope ar
tional mitigation as identified i
process.
Wellhead protection area is the
surrounding a well or well field
move toward and reach such w
nants and groundwater pollutio
pose a significant threat to the
from the well.
(2) Except as otherwise set forth i
material transmission pipelines
than 100 feet from:

(i) Any wetland;
(ii) Any year-round naturally occur
vate or public well, or pond, un
ship Engineer as part of the pe
where adequate mitigation mea
ed by the applicant; or
(iii) Any property in a business dis
located.
(3) A hazardous material transmiss
appurtenance shall not be loca

(i) One thousand feet from any hi
or essential public facility stru
(ii) One hundred fifty feet from any
district on level grade; or
(iii) Two hundred fifty feet from any
district where the residential p
located downhill from the trans
appurtenance at a grade equal
that no transmission pipeline s
grade equal to or greater than
(4) An emergency response termin
than:

(i) Two thousand five hundred fee
land use lot or essential public
(ii) Two thousand five hundred fee
ty, zone or district on level gra

(d) Submittal of information. Preliminar
ing, without limitation, as-built draw
tion as may be requested by the Tow
transmission pipeline will be filed w
the transmission pipeline is commis
Engineer. Updated as-built informat
tion, as-built drawings or additional
requested by the Township Enginee
pipeline will be filed within sixty (6
pipeline is commissioned with the T

(e) Hazardous material transmission pi
transmission pipeline owner, operat
give documented notice 48 hours pr
transmission pipeline construction
businesses (including agricultural b
ship's Police Department and Depar
struction Services and Code Enforc
ers and business owners shall have
times during construction.

5. Hazardous material transmission pi
tion. In the event that a leak or failu
transmission pipeline, the transmiss
notify the Township Engineer, Town
ing, Construction Services and Cod
ment, and all property owners withi
transmission pipeline area within fo
transmission pipeline operators sha
emergency, cooperate with Township
effort to respond as soon as possib
health, safety, and welfare. All leak
shall be made in consultation with t
ation may be deemed complete with
the Township. In the event that a tra
down due to a leak or failure, the t
shall not restart the transmission p
approval of the Township Engineer.
6. In addition to this chapter, the trans
shall comply with the environmenta
Chapter 29 of the Township Code.
7. Hazardous material transmission pi
nance. Following any repair of a tra
disturbed by such repair shall be re
the applicable provisions of the Tow
8. Hazardous material transmission pi
be installed and maintained to ident
sion pipelines in accordance with a
marking requirements.
9. Emergency preparedness plan. Prio
mission pipeline, the transmission
with the Township Police Departmen

PUBLIC NOTICE

SPRINGFIELD

Explanation: This ordinance amends the Land Use provision of the Township Code to change the height limitation of fences.

TOWNSHIP OF SPRINGFIELD
ORDINANCE NO. 2020-10

TAKE NOTICE, that the foregoing Ordinance was passed and approved on second and final hearing at a Regular Meeting of the Township Committee of the Township of Springfield, County of Union, State of New Jersey, held on Tuesday, April 28, 2020.

Linda M. Donnelly, RMC Township Clerk
U91127 OBS May 7, 2020 ($9.80)

SPRINGFIELD

Explanation: This ordinance amends the Township Code to supplement the Land Use provisions regarding conditional use to include massage establishment.

TOWNSHIP OF SPRINGFIELD
ORDINANCE NO. 2020-09

TAKE NOTICE, that the foregoing Ordinance was passed and approved on second and final hearing at a Regular Meeting of the Township Committee of the Township of Springfield, County of Union, State of New Jersey, held on Tuesday, April 28, 2020.

Linda M. Donnelly, RMC Township Clerk
U91126 OBS May 7, 2020 ($10.29)

SPRINGFIELD

Explanation: This ordinance amends the Township Code to supplement the Land Use provisions regarding principal buildings per lot.

TOWNSHIP OF SPRINGFIELD
ORDINANCE NO. 2020-08

TAKE NOTICE, that the foregoing Ordinance was passed and approved on second and final hearing at a Regular Meeting of the Township Committee of the Township of Springfield, County of Union, State of New Jersey, held on Tuesday, April 28, 2020.

Linda M. Donnelly, RMC Township Clerk
U91125 OBS May 7, 2020 ($10.29)

SPRINGFIELD

PUBLICE NOTICE
FOR VIRTUAL PUBLIC HEARING
TOWNSHIP OF SPRINGFIELD
ZONING BOARD OF ADJUSTMENT

PLEASE TAKE NOTICE, that on **TUESDAY MAY 19, 2020** at 5:30 P.M. the Township of Springfield Zoning Board of Adjustment ("Zoning Board") will hold a **VIRTUAL PUBLIC HEARING** because of the ongoing COVID-19 (Coronavirus) public health emergency (the "VIRTUAL PUBLIC HEARING"). In compliance with the New Jersey Municipal Land Use Law (MLUL), the Ordinances of the Township of Springfield and the rules and regulations of the Township of Springfield Zoning Board of Adjustment ("Zoning Board"), and in order to comply with the Executive Orders signed by the Governor of the State of New Jersey, which prohibit and/or make public gatherings impracticable because of the COVID-19 (Coronavirus) public health emergency, and in an effort to follow best practices recommended by the United States Center for Disease Control (CDC), the VIRTUAL PUBLIC HEARING will be held by **online/virtual means via Zoom, a videoconferencing service only.** Interested members of the public can participate in or view the VIRTUAL PUBLIC HEARING via video or telephone conference, free of charge, by following the instructions which will be posted on the Township of Springfield website (www.springfield-nj.us) at least 48 hours prior to the start of the meeting, and/or by contacting Zoning Board Administrator, Jennifer A. Law via telephone at 973-912-2221 or via electronic mail at Jennifer.Law@springfield-nj.us.

The VIRTUAL PUBLIC HEARING is on the application **2020-2 of Dejan Milentijevic** (the "Applicant"), seeking Variance for Height, Lot Coverage and Accessory Structure approvals in connection with the property located at **38 Tree Top Dr** (Block **3304,** Lot **6**) Springfield, New Jersey (the "Property"). The Property is owned by the Applicant.

THE ZONING BOARD'S MAY 19, 2020 PUBLIC HEARING WILL **NOT** BE CONDUCTED IN-PERSON; ALL ZONING BOARD MEMBERS, BOARD PROFESSIONALS AND THE APPLICANT'S REPRESENTATIVES/PROFESSIONALS WILL PARTICIPATE IN THE VIRTUAL PUBLIC HEARING BY ONLINE/VIRTUAL MEANS VIA ZOOM VIDEOCONFERENCE AND/OR TELEPHONICALLY. **ALL INTERESTED MEMBERS OF**

PUBLIC NOTICE

PARTICIPATE IN THE VIRTUAL PUBLIC HEARING IS BY ONLINE/VIRTUAL MEANS VIA ZOOM VIDEOCONFERENCE OR TELEPHONICALLY.

All plans, maps and other documents relating to this application including the Site Plan Documents are on file and will be available for public inspection free of charge to the public. Alternatively, members of the public who do not have access to a computer and/or the internet to review the application and supporting materials on the Township's website, may physically inspect them, beginning ten (10) days prior to the virtual public hearing, by contacting Zoning Board Administrator, Jennifer A. Law via telephone at 973-912-2221 or via electronic mail at Jennifer.Law@springfield-nj.us to make an appointment to view the application and supporting materials at Town Hall, 100 Mountain Avenue, Springfield, New Jersey, 07081. The VIRTUAL PUBLIC HEARING may be continued without further notice on such additional or other dates as the Zoning Board may determine.

Dejan Milentijevic
Applicant
U91178 OBS May 7, 2020 ($49.49)

SPRINGFIELD

TOWNSHIP OF SPRINGFIELD
COUNTY OF UNION

To Whom It May Concern:
Under the terms of the "Open Public Meetings Act", P.L. 1975, C. 231, please be advised that the Zoning Board of Adjustment of the Township of Springfield will be hosting the following Public Meetings: Tuesday May 19th 2020. Monday June 8th 2020 & Monday June 15th 2020 all at 5:30 p.m. Due to the public health emergency occasioned by the COVID-19 virus, this meeting will be conducted electronically and/or by telephonic means. Public viewing of the meeting will be available via live streaming service. A link to such live stream, will be posted prior to the start of the meeting on the Township website https://springfield-nj.us along with information for participating in the public comment portion of the meeting. Official action will be taken relative to the Public Agenda on the website.

Jennifer Amend Law
Zoning Board Secretary
U91171 OBS May 7, 2020 ($13.72)

SUMMIT

BID NOTICE
CITY OF SUMMIT

PROJECT: 2020 — 2021 ATHLETIC FIELD MAINTENANCE SERVICES

DEPARTMENT: Community Programs

Sealed bids will be received by the Purchasing Agent of the City of Summit, Union County, New Jersey no later than 11:00 A.M. prevailing time, TUESDAY, MAY 19, 2020 in the Council Chamber, First Floor, City Hall, 512 Springfield Avenue, Summit, New Jersey, subject to modification related to COVID-19 restrictions, if any, for:

2020 — 2021 ATHLETIC FIELD MAINTENANCE SERVICES

in accordance with the specifications and proposal forms for same which may be obtained by contacting the office of the Department of Community Programs, 908-277-2932, during regular business hours, 8:30 am — 4:30 pm, Monday — Friday.

All bids shall be **addressed to PURCHASING AGENT, CITY OF SUMMIT, 512 SPRINGFIELD AVENUE, SUMMIT, NJ 07901.** Bids, along with bid securities, must be enclosed in a properly SEALED envelope bearing on the outside the name of the bidder and the **NATURE OF THE BID CONTAINED THEREIN.**

A Bid Security is required in the amount of ten percent (10%) of the total bid, not to exceed $20,000.00, in the form of a bid bond, certified check or cashier's check, made payable to the City of Summit.

Bidders are required to comply with the requirements of any and all applicable Federal, State and local laws, regulations and requirements, including but not limited to: N.J.S.A. 52:25-24.2 (Statement of Ownership Disclosure); N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27 et seq. (Affirmative Action); N.J.S.A. 52:32-44 (Business Registration), and the City's adopted minimum standard insurance requirements.

The Common Council reserves the right to reject all bids or proposals, waive any minor defects, and consider bids for sixty (60) days after their receipt pursuant to the Local Public Contracts Law, N.J.S.A. 40A:11-1 et seq.

No charge shall be made or recovery had for publishing any official advertising unaccompanied by such statement of price.

Purchasing Agent
Dated: April 28, 2020
U91112 OBS May 7, 2020 ($31.85)

PUBLIC NOTICE

20, 2020 and memorialized and approved the following resolutions:

1. ZB-19-1992
235 Morris Avenue
BL 3307 L 10
Minor Site Plan with (d) – variances for expansion of a nonconforming use & FAR

2. ZB-19-2002
37 Fairview Avenue
BL 1801 L 13
(d) – variance for FAR & (c) – variance for building coverage to construct 2nd story addition

3. ZB-19-2003
5 Iris Road
BL: 103 L: 20
(c) – variances for total side-yard & building coverage to expand garage

4. ZB-19-2004
142 Colonial Road
BL: 1402 L: 24
(c) – variance for total side yard % to construct 2nd floor addition

Christopher Nicola
Board Secretary

Dated April 28, 2020
U91100 OBS May 7, 2020 ($18.62)

EAG-LEGALS

CLARK

TOWNSHIP OF CLARK
NOTICE OF INTENTION

NOTICE IS HEREBY GIVEN that the following ordinance was introduced and passed on first reading at a Special Meeting of the Municipal Council of the Township of Clark, County of Union, State of New Jersey on Monday, May 4, 2020 and that said ordinance will be taken up for further consideration and final passage at a Regular Meeting via Conference Call as required by the Governor's Executive Order 107, to be held on Monday, May 18, 2020 at 7:30 pm, prevailing time. In accordance with N.J.S.A. 10:4-6 (the "Open Public Meetings Act") and in adherence to the Department of Community Affairs, Division of Local Government Services guidelines, all meetings of the Governing Body will be open to the public by electronic means. Audio of the regular meetings held on the third Monday of the month will be broadcast live on TV 36. Any member of the public wishing to participate in the meeting, can do so by emailing comments relative to this ordinance, other agenda items or any governmental issue to the Municipal Clerk at clerk@ourclark.com or by texting to 908-347-8348. If restrictions have been lifted by the Governor, by Monday, May 18, 2020 then the meeting will be held at 315 Westfield Avenue, Clark, New Jersey at the time and date stated above, at which time and place all persons interested therein will be given an opportunity to be heard concerning the same.

ORDINANCE OF THE MAYOR AND COUNCIL OF THE TOWNSHIP OF CLARK, COUNTY OF UNION, STATE OF NEW JERSEY, REPEALING ORDINANCE NO. 19-14 OF THE MAYOR AND COUNCIL OF THE TOWNSHIP OF CLARK, COUNTY OF UNION, NEW JERSEY, ADOPTING THE TERMINAL AVENUE REDEVELOPMENT PLAN FOR THE PROPERTY DESIGNATED AS BLOCK 58, LOTS 4 AND 5 ON THE OFFICIAL TAX MAP OF THE TOWNSHIP OF CLARK ADOPTED ON MAY 20, 2019.

WHEREAS, the Mayor and the Governing Body of the Township of Clark deem it in the best interest of the Township to cease efforts to redevelop the property designated as Block 58, Lots 4 and 5 on the Official Tax Map of the Township of Clark in accordance with the Local Redevelopment and Housing Law, N.J.S.A. 40A:12A-1, et seq.

NOW, THEREFORE, BE IT ORDAINED by the Governing Body of the Township of Clark that Ordinance No. 19-14 of the Mayor and Council of the Township of Clark, County of Union, New Jersey, adopting The Terminal Avenue Redevelopment plan for the property designated as Block 58, Lots 4 And 5 on the Official Tax Map of the Township of Clark adopted on May 20, 2019, be and hereby is repealed, rescinded, vacated and deleted; and

BE IT FURTHER ORDAINED if any section, paragraph, subsection, clause, or provision of this Ordinance shall be adjudged by the courts to be invalid, such adjudication shall apply only to the section, paragraph, subsection, clause, or provision so adjudicated, and the remainder of the Ordinance shall be deemed valid and effective; and

BE IT FURTHER ORDAINED any ordinances or parts thereof in conflict with the provisions of this Ordinance be and hereby are repealed to the extent of such conflict; and

BE IT FURTHER ORDAINED this Ordi-

PUBLIC NOTICE

covered by the emergency prepared pipeline shall be commissioned, no be introduced into the transmissio mission pipeline operator receivin gency preparedness plan by the Ch Transmission pipeline operators sh local emergency response official a emergency phone number.

10. **Insurance required. No transmissio mission any transmission pipeline material into a transmission pipelin ance policies covering general liab and contamination, and property d to be determined by the Township application and which shall be bas of potential liability and property d leak, spill or other failure of a tran commissioning any transmission pi the transmission pipeline is in ope sion pipeline operator shall submit age to the Township, and the Towns tional insured on all required polic**

11. **Indemnification and hold harmless. transmission pipeline, the transmis agree in writing to indemnify and h well as its officers, officials, super contractors, and assigns, from any arising from the transmission pipe to, any failure, leak, spill, contamin property damage, and personal inju hold-harmless agreement shall incl ment of the Township's reasonable costs.**

SECTION II - RATIFICATION
Except as expressly modified herein, all o Code of the Township of Springfield shall rem

SECTION III - SEVERABILITY
In case any section, subsection, paragrap sion of this ordinance shall be judged invali diction, such order or judgment shall not affe petent jurisdiction, such order or judgment s reminder of any section, paragraph, subdivi ordinance and to this end, the provisions of e sion, clause or provision of this ordinance a able.

SECTION IV - REPEAL
Any ordinance or portion of any ordinanc modifications of this ordinance is repealed to

SECTION V - REFERRAL
Following its introduction, this Ordinance s of Springfield Planning Board for its review a applicable law, prior to second reading and Committee.

SECTION VI - EFFECTIVE DATE
This ordinance shall take effect immediate according to law.

Linda M. Donnelly, does hereby certify th introduced for first reading at the Regular M tee of the Township of Springfield, in the Co sey, held on Tuesday, April 28, 2020, and th mitted for consideration and final passage at ship Committee to be held on Tuesday, M Municipal Building at 7 p.m., at which time a interested therein will be given an opportun Ordinance. Copy is posted on bulletin boa Clerk.

Lind
Tow

U91121 OBS May 7, 2020 ($326.34)

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Puzzle Appears in our A&E Section
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Partnership helps feed Linden's vulnerable r

LINDEN — Mayor Derek Armstead teamed up with Amazon, the United Way of Union County and Blue Apron to deliver more than a ton of food to Linden senior citizens and the disabled who are shut in due to the coronavirus, according to a recent press release.

In recent days, Armstead delivered meals from Amazon and Blue Apron, which have operations that employ thousands of workers in Linden, with help from the United Way, to make sure that those citizens have nutritious food during the COVID-19 emergency.

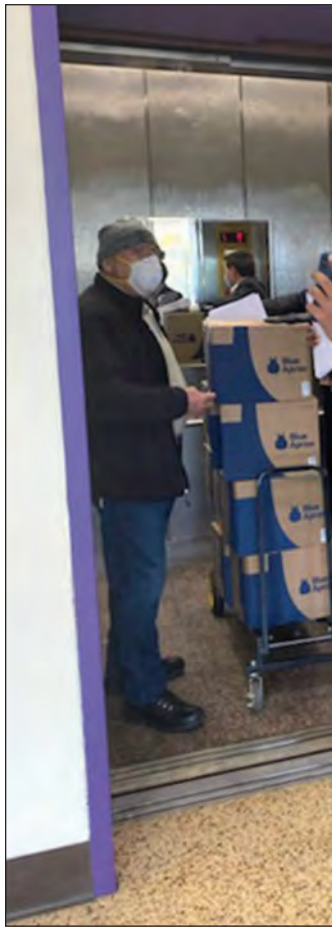
"With the elevated risk to older residents posed by this health crisis, we know that keeping strong and fit requires proper nutrition, so I am doing my best to keep Linden's senior and disabled citizens supplied with regular meals," Armstead said.

The food has been delivered to housing projects and to residences that serve the elderly and disabled.

"The Linden food delivery program for our sick and shut-in seniors during this pandemic has been a great success. I am thankful to God, our donors and our volunteers," said Armstead, who recently appeared in a Facebook video showing him dropping off nearly 800 meals at the Ann Ferguson, Edward J. Murawski and John T. Gregorio towers.

Armstead is encouraging members of the community to look out for one another during this difficult time.

"Continue to check on your elderly neighbors," Armstead said. "Our seniors are the most vulnerable to coronavirus. If you know of a sick or shut-in senior, please call my office at 908-474-8493."



Linden officials partner with organizatons to bring food to seniors and disa

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September 2020

AD TEXT

Notices

PUBLIC NOTICE: PUBLIC NOTICE The City of Elizabeth is updating its jurisdictional Hazard Mitigation Plan Natural Hazards that complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000). The Hazard Mitigation Plan Natural Hazards provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The Hazard Mitigation Plan Natural Hazards identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategic plan to minimize identified risks. As part of the process, the City intended to host public meetings to obtain public input on potential natural hazards; however due to the current COVID-19 restrictions, this second public presentation is being provided as a slide show and video presentation. The presentation slides and video can be found on the City of Elizabeth website on the Engineering Page under the Hazard Mitigation tab. The link is as follows: https://www.elizabethnj.org/444/Hazard-Mitigation The materials are available for review and comment. The City is seeking public input on potential natural hazards which may threaten the community as well as to identify potential mitigation measures that would minimize the impact/effect of such hazards. The City will also be seeking information on the impact of past disasters in your community. All questions, comments or suggestions should be directed to the City of Elizabeth, Division of Engineering, City Engineer Daniel Loomis, at dloomis@elizabethnj.org or 908-820-4270. 9/17/2020 $75.95

Related Categories: Notices and Announcements - Legal Notice

PUBLIC NOTICE:

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9/17/2020 $75.95

Published in *The Star Ledger*, Published Online 9/16. Updated 9/17.

PRO-Legals

ELIZABETH

PUBLIC NOTICE

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https://www.elizabethnj.org/444/Hazard-Mitigation

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LINDEN

Public Notice is hereby given, that beginning on the date, as enumerated below and continuing from day to day, until all items are sold, Storage Post Self Storage will sell at public sale, to the highest bidder for cash, goods for which a lien on the same is claimed. The following goods, household items, electronics, wares, merchandise, furniture, tools, and misc. items for storage and other charges for which a lien on the same is

claimed, to wit: **Date of Sale: 10/5/2020 Time of Sale: 9:00am Location: www.StorageAuctions.com Location (Facility Address): 401 S Park Ave., Linden NJ 07036** The Estate of Shawantaine A Britt c/o Darryl L Britt, #2167 boxes, fan, excercise bike; Lumpkins, Michelle #3065 bedframe, mattress, bags, boxes; Osei tutu Amankwa, Hilda #3314 glass bottles, clothes; The Estate Of Samuel M Kurus #5005 mattresses, bins, piano, a/c fan, boxes, dressers; Campo, Cynthia S #8001 boxes, household stuff; Sheryel M Hearns #9195 TV, bags of clothes; Clayborne, John B #9031boxes, totes, luggage; Stewart, Rahmean #1015 refrigerators; Hilton, Della R #8088 bags, TV, totes, table; Mcintyre, Donya E #1130 2 totes : Delvalle, Catherine #3117 furniture, boxes, chair, tv, coffee table; Champagne, Kelvin K #3294 TV, heater, weights; English, Tiara R #3285 AC, plastic shelf; De Oliveira Souza, Ramon #3194 boxes, mattress, bags; Enoch, Shanteria N #3313 luggage, clothing; Cancel, Brandon R #2101 couch, bed, mattress, boxes, car seat; Sams, Sophia V #8096 bags, boxes, fridge; Stephens, Michael B #3229 couches, dresser, mattress, headboard, bags; Ivan Diaz #4032 racks, clothes, boxes, luggage; Martinez, Felix #4027 chairs, appliances; McElrath, Mia L #1109 Lawn mower, fridge, ladders, microwave, boxes, bags; Battee, Brenda M #3100 totes, clothes, boxes. A $100 per unit cleaning deposit will be collected at the time of sale and returned when the unit is left broom clean. All sales are with reserve and are subject to prior cancellation. Sale rules and regulations are available at the time of sale. September 17, 24, 2020 U93956 PRO ($57.82)

ROSELLE

PUBLIC NOTICE BOROUGH OF ROSELLE, ROSELLE, NEW JERSEY

NOTICE OF A CONTRACT AWARD

The Borough of Roselle, New Jersey has awarded a contract without competitive bidding as a professional service pursuant to N.J.S.A. 19:44A-20.5. The contract and the resolution authorizing it are on file and available for public inspection in the office of the Municipal Clerk. AWARDED: **Moshood Muftau, Esq. 247 Conant Street. Hillside, NJ 07205** SERVICE: Consultant DURATION: July 16, 2020 through June 18, 2021 AMOUNT NOT TO EXCEED: $275.00 per session U93989 PRO September 17, 2020 ($13.72)

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4048
RETURN RECEIPT REQUEST

Mark Bocchieri
Director, External Affairs
Verizon
25 Main Street
Hackensack, NJ 07601

Dear Mr. Bocchieri:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4055
RETURN RECEIPT REQUEST

Michael Coyle
Regional Public Affairs Manager
Public Service Electric & Gas
472 Weston Canal Road
Somerset, NJ 08873

Dear Mr. Coyle:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

https://www.elizabethnj.org/444/Hazard-Mitigation

Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4062
RETURN RECEIPT REQUEST

Nick DiRocco
Vice President
South Jersey Industries
1 South Jersey Plaza
Folsom, NJ 08037

Dear Mr. DiRocco:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4086
RETURN RECEIPT REQUEST

Dee Gillespie
Director of New Jersey Contracts/Projects
Liberty Water Company and Etown Services LLC
New Jersey American Water
P.O. Box 102
Bound Brook, NJ 08805

Dear Mr. Gillespie:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4093
RETURN RECEIPT REQUEST

Gary S. Horan
President and CEO
Trinitas Regional Medical Center
225 Williamson Street
Elizabeth, NJ 07202

Dear Mr. Horan:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4109
RETURN RECEIPT REQUEST

Olga Hugelmeyer
Superintendent of Schools
Elizabeth Board of Education
500 North Broad Street
Elizabeth, NJ 07208-3302

Dear Ms. Hugelmeyer:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4116
RETURN RECEIPT REQUEST

William D. Jones
Secretary - Treasurer and Executive Director
Elizabeth Housing Authority
688 Maple Ave, Elizabeth, NJ 07202

Dear Mr. Jones

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4123
RETURN RECEIPT REQUEST

Susan Matika
Executive Assistant to the President
Union County College
1033 Springfield Avenue
Cranford, NJ 07016

Dear Ms. Matika:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

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City Engineer

CITY OF ELIZABETH, NEW JERSEY
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OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4130
RETURN RECEIPT REQUEST

Carla A. Mazza
Executive Director
Elizabeth Parking Authority
233 Commerce Place
Elizabeth, NJ 07201

Dear Ms. Mazza:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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City Engineer

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4147
RETURN RECEIPT REQUEST

Bill O'Dea
Executive Director
Elizabeth Development Company
205 First Street, Suite 114
Elizabeth, NJ 07207

Dear Mr. O'Dea:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

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City Engineer

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OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4154
RETURN RECEIPT REQUEST

Denise Palazzo
Mall Manager
The Mills at Jersey Gardens
651 Kapkowski Rd
Elizabeth, NJ 07201

Ms. Palazzo:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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City Engineer

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OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4079
RETURN RECEIPT REQUEST

Dr. Lamont Repollet
President
Kean University
1000 Morris Avenue
Union, NJ 07083

Dear Dr. Repollet:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4161
RETURN RECEIPT REQUEST

Chad Serpa
Senior External Relations Representative
The Port Authority of New York and New Jersey
4 World Trade Center
150 Greenwich Street, 22nd Floor
New York, NY 10007

Dear Mr. Serpa:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Sincerely,

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

September 14, 2020

CERTIFIED MAIL 7016 3010 0001 1903 4178
RETURN RECEIPT REQUEST

Paul Wyckoff
Government & External Affairs Chief
NJ Transit
One Penn Plaza East
Newark, NJ 07105-2246

Dear Mr. Wyckoff:

Due to the continuing situation with the coronavirus and the need for social distancing, a second public meeting to present and obtain comments on the City of Elizabeth Pre-Disaster Hazard Mitigation Plan - Natural Hazards is being provided as an on-line presentation in the same format as the first meeting. This information is now available on the City of Elizabeth website. The presentation is 17:46 minutes long and is located on the City's Division of Engineering Page under the Hazard Mitigation tab. Below is a link to the page:

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Please review the short presentation and provide any questions, comments or suggestions via email to me at dloomis@elizabethnj.org.

Sincerely,

Daniel J. Loomis, PE
City Engineer

From: Robert Lin
Sent: Monday, September 21, 2020 11:23 AM
To: Jonathan Phillips
Cc: Lucy Crespo; Jules Tezen; dloomis@elizabethnj.org
Subject: City of Elizabeth's Hazard Mitigation Plan - second public presentation.

Hello all again,

The City has sent out stakeholders letters and submitted public notifications in 2 newspapers for the second and final public notice presentation on the City's Hazard Mitigation Plan. The City's link to the second Hazard Mitigation Plan Presentation is below:

https://elizabethnj.org/444/Hazard-Mitigation

Note that there is also a Spanish version for public review on the web page. Please provide any comments or questions to Dan Loomis after you have reviewed the second presentation.

Thank-you,

Robert

Robert Lin, SPWS
Senior Project Scientist

D (973) 912-2581
robert.lin@mottmac.com

AFFIDAVIT OF PUBLICATION

I, Virginia García, Publisher of The Voice Publishing Corporation, trading as LA VOZ NEWSPAPER, with offices at 1020 Kipling Road, Elizabeth, New Jersey 07208, state that one (1) Legal Notice for the Division of Engineering of the City of Elizabeth was published in LA VOZ issue of September 17, 2020.

Virginia García
Publisher
The Voice Publishing Corporation

Signed and sworn before me by Virginia García on the Twenty first of September, 2020

Notary Public

My Commission Expires on _____

Abelardo D Garcia
Notary Public
New Jersey
My Commission Expires 8-29-2022
No. 2021952

Affidavit of Publication

ELIZABETH

PUBLIC NOTICE

The City of Elizabeth is updating its jurisdictional Hazard Mitigation Plan – Natural Hazards that complies with the Federal Disaster Mitigation Act of 2000 (DMA 2000). The Hazard Mitigation Plan – Natural Hazards provides the framework for state and local governments to evaluate and mitigate natural hazards as a condition of receiving Federal disaster assistance. The Hazard Mitigation Plan – Natural Hazards identifies and prioritizes the likelihood of damage to life and property from natural disasters and develops a strategic plan to minimize identified risks. As part of the process, the City intended to host public meetings to obtain public input on potential natural hazards; however due to the current COVID-19 restrictions, this second public presentation is being provided as a slide show and video presentation. The presentation slides and video can be found on the City of Elizabeth website on the Engineering Page under the Hazard Mitigation tab. The link is as follows:

https://www.elizabethnj.org/444/Hazard- Mitigation

The materials are available for review and comment. The City is seeking public input on potential natural hazard which may threaten the community as well as to identify potential mitigation measures that would minimize the impact/effect of such hazards. The City will also be seeking information on the impact of past disasters in your community.

All questions, comments or suggestions should be directed to the City Of Elizabeth, Division of Engineering, City Engineer Daniel Loomis, at dloomis@elizabethnj.org or 908-820-4270.

U94009 PRO September 17, 2020 ($23.03)

STATE OF NEW JERSEY
COUNTY OF UNION ss:

Karen Hoffman of Worrall Community Newspapers, being duly sworn according to law, states on oath that a notice, of which the annexed is a true copy, was published in the ***Union County Local Source*** serving Union, Roselle Park, Kenilworth, Hillside, Summit, Springfield, Mountainside, Linden, Roselle, Rahway, Elizabeth, Winfield, Cranford, Clark, and Garwood published at Union, New Jersey, in its issue of **September 17, 2020** making **1** insertion in all.

Sworn and subscribed before me this **17th** day of **September, 2020.**

NANCY J. WORRALL
A NOTARY PUBLIC OF NEW JERSEY
My Commission Expires May 19, 2024

Appendix C

Department of Health & Human Services
COVID-19 Pandemic Report

City of Elizabeth Department of Health & Human Services COVID-19 Pandemic Report

The City of Elizabeth, Department of Health & and Human Services has continuously been working to ensure the safety and wellbeing of our staff and community during the COVID-19 Pandemic.

The main office has been taking calls from residents asking about testing, access to treatment and telehealth, assistance with patient information in hospitals and nursing homes and seeking guidance and clarity around business closures. We have been assisting nurses, doctors and first responders with hotel stays while they are on duty. We are assisting individuals who are unable to successfully quarantine at home by providing hotel stays for the quarantine period. Additionally, we have provided emergency shelter for the homeless to help stem the spread amongst this vulnerable population.

Over 20,000 masks have been distributed to residents of the city. Sites have been set up in all six wards to facilitate distribution. In addition, we have provided masks to the YMCA, Jewish Family Services, and St. Josephs Social Services for distribution at their sites. Our distribution efforts have been supported through partnerships and donations from the CDC Foundation and County of Union who each donated 20,000 masks, Khris Ospina and his business partner who donated 5000 masks, as well as MTO, who, through the coordination of our staff, donated meals to the YMCA for residents and the homeless population they support and provided a donation of PPE to Trinitas Hospital. In an attempt to reach our most vulnerable residents, Inspectors from our Health Department have gone out on evenings and weekends to distribute masks, hand sanitizer and meals to the homeless and disenfranchised residents in our community, at times forgoing cars and riding bikes in an effort to get to people in need.

In a collaboration with Union County Freeholder Sergio Granados, the Union County Office of Community Engagement & Diversity and the International Rescue Committee (IRC) we have partnered with World Central Kitchen (WCK), an organization that provides assistance to locations who are hard hit by disasters, to provide food to the residents in our community. The food distribution of 4000 meals daily takes place Monday through Saturday at two of our Senior Centers, O'Donnell Dempsey and the Stephen Sampson. For those vulnerable senior citizens who cannot come to the distribution site or persons who are quarantined, we deliver meals to their homes. We have also received daily donations of fruit from one of our local businesses, Elmora Farmers Market and Groundworks Elizabeth, a local non profit, donates salad items daily from their community garden. Both of these donations are added to the Grab and Go bags from WCK and residents repeatedly express their gratitude for the fresh vegetables and fruit. The Rotary Club of Elizabeth donated dried meals (rice, beans, macaroni and cheese etc.) which were appreciated by families. Many of our local restaurants have been generous as well. Both Dolce's Restaurant and Brisa's Columbian Bakery have donated food to the shelters and seniors.

In addition to arranging for the families at the YMCA, our local shelter and low income housing program, to receive free breakfast and lunch from the Board of Education Nutrition Program, we also provide them with frozen meals to feed their residents dinner daily. Meal donations have also been given to the Salvation Army, The Real House Inc., Raphael's Life House, Elizabeth Housing Authority (including all Senior Buildings), Heritage Village, Community Access Unlimited, Family Promise, Bridgeway Rehabilitation Services, Alexion Manor and Charisma Christ Church. Through the hard work of dedicated and fearless employees from the Office on Aging, Office of Youth Services, Transportation Office, and the IRC we have been able to provide thousands of families with meals daily.

As a result of COVID19, St. Joseph's Social Services/Elizabeth Coalition to House The Homeless lost many of their volunteers. COE Office of Youth Services employees have assisted them with packaging and distributing groceries to 1000's of residents daily.

Because we are fielding daily calls and providing direct support to residents in the community we often find opportunities work within our network to help residents with needs outside of meal distribution and COVID19 related assistance. For example during our meal distribution we encountered a woman who walked to the site daily to pick up meals with her baby and no stroller. With the help of Natalie Hernandez, from the Union County Office of Community Engagement & Diversity and Commissioner of Elizabeth Board of Education, we were able to get the young mother a stroller and ease her burden of moving throughout the city.

The COE pharmacy assistance program also saw an increase in requests due to COVID19. Prescriptions were paid for by the COE as a result of residents losing their jobs and being unable to pay to fill needed prescriptions.

The following is an overview of what each office in the Human Service Division in the Department of Health & Human Services has been doing to help during this pandemic.

Office on Aging

The main office is operating on a regular schedule. We are assisting seniors with answering questions regarding COVID19, easing anxiety and connecting them to needed resources like food, doctors appointments, and banking. Additionally, we are helping them virtually to fill out forms for the 2020 Census, and PTR (Senior Tax Freeze) Applications.

In order to make sure our seniors are doing well; our center employees are performing daily wellness checks. During these calls, employees engage with the seniors in conversation in

order to reduce the stress of isolation, loneliness and depression. The wellness checks also provide an opportunity to share information on how to prevent exposure to illness. Additionally, we ask questions about their surroundings, apartment, home and/or building to assess safety. Finally, we connect seniors to transportation for trips to the bank, pharmacy, supermarkets and doctor's appointments as well as add them to the Grab and Go food delivery when needed. Our staff have also sent greeting and get-well cards to seniors who are not feeling well. We provide humor through our Facebook Page by sharing memories of Senior events and activities so that seniors can reminisce and looking forward to better days ahead. They have shown their gratitude by sending thank you cards and phone calls to the Office on Aging.

In addition to connecting our seniors to the Grab & Go meal distribution, we have also worked closely with the Hillside Food Bank and the Union County Nutrition Program to assure that seniors receive home meal deliveries.

City of Elizabeth Rental Assistance Program

The City of Elizabeth Rental Assistance Program (COERAP) is working diligently in assisting our clients during the COVID-19 Pandemic. We are maintaining close communication with our clients and making sure they have the necessary means to get them through this Pandemic. We have assisted clients who are in need via referral to the grab and go food program, connections to telehealth services and provided general support with regard to payment of rent through this crisis. .

In addition, we have been given the opportunity to assist the Public Health Nurses with the Communicable Disease Reporting and Surveillance System (CDRSS). We have the responsibility of making follow-up calls to people that have tested positive for COVID-19 and ask a series of questions that are needed for further investigation. Also, if they have questions

we assist them referrals to various available resources. They are also provided with phone numbers and information on testing sites if they have concerns about family members.

Office of Public Health

The Office of Public Health conducted numerous community presentations on 2019 Novel Coronavirus (COVID-19). Date of presentations were the following, 3/10/20, 3/12/20, 3/13/20, 3/16/20, 3/16/20. The presentations were given at Councilman Gallman's neighborhood block watch meeting, the Stephen Sampson Senior Citizen Center, O'Donnell Dempsey Senior Citizen Center, Liberty Square Senior Center, Peterstown Community Center. Community residents were grateful and presentations were well attended.

The Presentation outlined information on the coronavirus, including its origins, signs and symptoms (e.g. respiratory illness fever, cough, shortness of breath), how the virus is spread, the incubation period, and the possibility of being asymptomatic as well as what precautions to take in order to reduce the spread of the virus, including the importance of handwashing with soap and water for 20 seconds, and the use of hand sanitizer if soap and water isn't available.

This information has also been made available to the public through the Office of Public Health Facebook page, where we share resources for the community from how to keep active, to how to properly dispose of masks, gloves and other personal protective equipment and how to use approved products to clean and disinfect your home to slow the spread of COVID-19. The office has also shared stress relief tips with the public as well as city employees through facebook and email. The staff has fielded calls from the community and provided information on testing, food distribution, and resources for residents in need of masks, gloves etc.

The Office of Public Health is currently assisting the Public Health Nurses with follow up calls to residents who were diagnosed with COVID-19. We answer questions related to their positive test results guided by the New Jersey Department of Health. Follow up information is entered into the Communicable Disease Reporting and Surveillance System (CDRSS) daily.

Office of Youth Services

The Office of Youth Services joined the fight against this pandemic on April 1, 2020. We have made it our priority to provide resources for our families here in Elizabeth. We have been making phone calls, sending informative emails and using social media to inform residents of testing availability and other community resources. We have been working Monday through Saturday along with employees from the Office on Aging, Office of Transportation, Department of Health & Human Services, Union County Freeholder Sergio Granados, Union County Office of Community Engagement & Diversity and International Rescue Committee and World Central Kitchen for the Meals Distribution Program at the Stephen Sampson Senior Center and O'Donnell Dempsey Senior Center. In addition to providing meals at the senior centers, OYS staff has supported the Elizabeth Coalition to House the Homeless at their daily distribution sites, packaging and assisting with distribution of over 300 food and supply packages daily.

OYS employees also call the parents of the children who are enrolled in their programs weekly to see if anyone in the household is ill, if referrals are needed and to check on the children. Employees remind the parents of the BOE meal distribution and encourages them to complete the census. OYS employees have kept the children engaged with videos to teach the

children about COVID19, proper handwashing and explaining social distancing. Youth have made tik tok videos to demonstrate how they are staying busy during the pandemic and to keep the youth hopeful about the eventual return to the programs they love.

Transportation Office

Food Run

The Transportation Department has increased our shopping schedule from three to five days a week to ensure that all seniors can stock up on food items and toiletries. We not only take seniors to the major supermarkets throughout the City but will also take them to the smaller stores (Dollar General, Family Dollar, even the small local grocery stores). They can take as much time as they need. The drivers will come back for them and return them home.

Doctors Appointments

We are still providing transportation to and from doctors' offices. Anyone with a doctor's appointment can call our office the same day (waiving the 7-day advanced notice) and a driver will be assigned. Residents are picked up and returned home from these appointments.

Banks & Pharmacies

If any senior should need to go the bank (ATM), after an appointment has been made, a driver will pick them up, and take them to the bank. If at any time, a senior needs to pick-up medication, we will provide transportation for them also.

The Grab & Go Program Everyday (Excluding Sundays)

OYS reports to Stephen Sampson Senior Center to help answer phones, break down and separate food to be bagged and then help bag them. After the list has been given to the drivers, they then set out to deliver food to individual homes throughout the City. Each driver may have anywhere between 35-40 stops to make.

During the week, a staff member is always in the office to cover the phones, dispatch drivers to different locations. We all rotate the schedule so that a different person is working every day.

Re-entry Program

During the "stay-at-home" order, the Reentry Program has maintained communication and availability with clients.

Listed below is an overview of staff responsibilities

- Call all past clients to assure continued personal development and evaluate future needs
- Made available "clinical therapy" services for returning citizens suffering from emotional trauma through partnership with Jewish Family Services
- Provide housing assistance for those without stable living conditions
- Provide "Foodbank" services
- Provide online assistance with support service access
- Developing new programming for online employment assistance

Health Division

The Health Division performed the following activities in response to the COVID 19 Pandemic:

1. **Conducted several presentations on COVID 19 to the following:**
(a) All City Hall Employees
(b) All Police, Fire and EMS Personnel
(c) All Municipal Court employees and judges.
(d) The Elizabeth Board of Education (Meeting)
(e) Elizabeth Board of Education School Nurses
(f) Elizabeth Board of Education School Principals and Administrators
(g) Councilman Gonzalez Neighborhood Watch Meeting
(h) Councilman Gallman's Neighborhood Watch Group

2. Participated on several conference calls in response to the COVID 19 Pandemic with the following agencies:

(a) **Whitehouse Taskforce on COVID 19** which provided updates from the US Departments of Health and Human Services and Homeland Security

(b) **New Jersey Department of Health** provided daily conference calls with all Health Officers which provided daily updates, guidance along with discussing the many trends that are developing. All calls were hosted by the Office of Local Public Health and had representatives from Communicable Disease Service, Health Care Facilities, Sanitation and Safety Program and the Health Commissioner.

(c) **Union County Health Officer's Association/UCGPHP**: All calls were with our Regional epidemiologists to discuss guidance, recommendation and COVID- 19 issues specifically related to Union County.

(d) The Health Officer along with the Director listens daily to the **Governor's Press Conference** which gives updates on the number of cases, deaths and trends along with the implementation of Executive Orders.

3. The Health Division conducted surveillance with many agencies since February of 2020 by doing the following:

(a) Conducted many routine calls to the CDC Quarantine Station at Newark Liberty International weekly to obtain any updates or changes to screenings and travel advisories.

(b) Received calls from the Division Director of the US Department of Human Services to discuss needs and to obtain updates on COVID 19 on a national level.

(c) Conducted and received various calls from Trinitas Regional Medical Center's Departments of Emergency Management and Infection Control. The Health Officer personally transported the first COVID 19 test from the hospital to the NJDOH Laboratory.

(d) The Department of Health and Human Services collaborated with the CDC Foundation by requesting supplies and support to combat the city's effort to combat COVID 19.

4. The Health Division participated in several Planning Meetings and implemented the following in preparation for COVID 19.

(a) Served on the **Trinitas Regional Medical Center's Emergency Response Planning** Committee which held meetings to prepare for the pandemic such as setting up triage tents in front of the Emergency Room and to develop communications between the hospital and various agencies.

(b) The Health Division conducted several meetings with the **City of Elizabeth OEM** for the purpose of planning and implementation of all polies and procedures relating to the epidemic such as enforcing isolation and quarantine.

(c) The Health Division worked in collaboration with the **City of Elizabeth OEM** in obtaining supplies such as PPE's to distribute to different agencies and the community.

(d) The Health Division met with the mayor, Business Administrator and department directors to implement polices concerning city employees who either tested positive or were exposed to someone positive for COVID 19.

(e) The Health Division assisted with the Police and Fire Departments along with EMS to develop protocols for First Responders who were either exposed to or have tested positive for COVID 19.

(f) The Entire Department of Health and Human Services held several planning meetings to discuss updated policies and procedures which were implemented.

(g) The Health Officer participated in a Preparedness Training seminar which discussed both the medical and legal aspects of what to expect during the pandemic such as mode of transmission, the wearing of masks, legal issues with isolation and quarantine and various other items.

(h) Conducted planning meetings with the **Division of Central Licensing** to discuss ways to enforce Executive Orders issued by the Governor relating to businesses.

(i) The Health Division worked in collaboration with the **Elizabeth Board of Education** to discuss COVID 19's impact on schools along with obtaining School Nurses to assist in with case investigations and contact tracing.

5. Case investigation and contact tracing activities are as follows:

(a) The Health Division conducts investigations and contact tracings for all Elizabeth residents who have tested positive for COVID 19. Currently there are 4060 open cases and 1176 closed cases as of 5/20/2020.

(b) The Health Division works in collaboration with Trinitas Regional Medical Center in the reporting and investigation of positive COVID 19 cases. Conference calls held between the

Health Division, hospital and NJDOH were made to determine if a specimen was acceptable for testing.

(c) The Health Division has currently recruited 40 people to do case investigations and contact tracing to include employees from the Department of Health and Human Service, the Municipal Court and from the Department of Administration. In addition, the Elizabeth Board of Education provided school nurses to assist with case investigation and contact tracing activities.

(d) The Health Officer is currently investigating and monitoring COVID 19 outbreaks in 5 of Elizabeth's Long Term Care Facilities. The Health Division is working in collaboration with various programs within the NJDOH to include the COVID 19 Long Term Care Team, Communicable Disease Service and the Office of Local Public Health along with the facilities.

(e) The Health Division works in collaboration with the Union County Medical Examiner's Office in cases involving COVID 19 deaths by tracing those who were in direct contact with the patient.

6. Risk Communication and Press Issues relating to COVID 19:

(a) The Health Officer reports all cases that are opened and closed along with deaths that occur daily to the mayor who provides updates to the community daily through Facebook, twitter and robo calls.

(b) The Health Division directly works with the Office of Public Information to ensure that information and guidance placed on city media is accurate and correct.

(c) The Health Division directly assists the mayor with providing information in the development of press releases or to report new worthy items to the media.

7. Employment and Personnel health issues related to COVID 19:

(a) The Health Officer assisted the Business Administrator in developing policies and procedures relating to employees who either test positive or those that have been direct contact with someone positive for COVID 19.

(b) The Health Officer worked in collaboration with all of the Department Director on coming up with policies regarding members of their staff either being tested positive or being in direct contact with those who tested positive for COVID 19.

(c) The Health Officer worked directly with Police, Fire and EMS in developing policies and procedures specifically dealing with First Responders who have directly been exposed to someone who was positive or have tested positive for COVID 19.

8. OEM and Mortuary Issues related to COVID 19:

(a) The Health Officer directly worked with both Union County and the City of Elizabeth's (OEM) Office of emergency Management in obtaining PPE's for various organizations and emergency personnel.

(b) The Health Officer worked directly with Trinitas Regional Center, the Union County Medical Examiner's Office and all of the Funeral Homes within Elizabeth to discuss ways to obtain proper storage for bodies during the pandemic. Please note the NJ Office of the Medical Examiner provided adequate space by region.

9. Enforcing Executive Orders issued by the Governor during the COVID 19 Pandemic

(a) The Health Division in collaboration with the Central Licensing Division went out and investigated several complaints concerning businesses defying executive orders issued by the Governor to include clothing stores, furniture stores, car wash facilities and other businesses. Note that warnings were issued prior to issuing tickets.

(b) The Health Division in collaboration with the Central Licensing Division went into business conducting education on social distancing and the rules.

(c) Health Division inspectors went to all of the retail food establishments distributing Social Distancing signs to display for the purpose of educating customers on the practice.

(d) The Health Division working with the Union County Division of Consumer Affairs investigated and enforced several complaints relating to price gouging during the pandemic when certain items were in demand.

(e) In addition to all of the above activities, the Health Division responded to emergency housing and health complaints and responded to regular routine public health emergencies as they arise.

10. Legal issues relating to the COVID 19 Pandemic:

(a) The Health Officer often consulted the Law Department on legal issues that came up during the pandemic to include the enforcement of the Governor's orders, isolation and quarantine and jurisdictional authority as it relates to Long Term Care Facilities.

Appendix D

NJDEP Debris Management DPW TDMA Approval and New HMP Related Ordinances

Year	CODE	Name	Person	Address	Document Date	Service	
2015	O4554	CAPITAL BOND ORDINANCE			10-Mar-15	BUS FOR SENIOR CITIZENS AND OTHER CITY RESIDENTS	AN ORDINANCE OF THE CITY C CITY RESIDENTS IN AND FOR T
2015	O4616	CAPITAL BOND ORDINANCE			25-Aug-15	BUS TRANSPORT SENIORS AND OTHER CITY RESIDENTS	AN ORDINANCE OF THE CITY APPROPRIATING $10,0000 FO
2015	O4625	BOND ORDINANCE	FIRE DEPARTMENT		13-Oct-15	ACQUISITION OF TWO NEW FRONT LINE PUMPERS	AN ORDINANCE OF THE CITY C IN THE CITY OF ELIZABETH AN
2015	O4628	CAPITAL ORDINANCE	FIRE DEPARTMENT		13-Oct-15	ACQUISITION OF TRUCKS	AN ORDINANCE OF THE CITY C THE CITY OF ELIZABETH, IN TH
2015	O4627	BOND ORDINANCE	FIRE DEPARTMENT		13-Oct-15	ACQUISITION OF A SKY BOOM PUMPER	AN ORDINANCE OF THE CITY C CITY OF ELIZABETH AND APPR
2015	O4626	BOND ORDINANCE	FIRE DEPARTMENT		13-Oct-15	ACQUISITION OF A TOWER LADDER FIRE TRUCK	AN ORDINANCE OF THE CITY C DEPARTMENT IN THE CITY OF
2016	O4772	CAPITAL IMPROVEMENT FUND BOND ORDINANCE	FIRE DEPARTMENT		09-Nov-16	ACQUISITION OF (2) AMBULANCES REPLACEMENTS	AN ORDINANCE OF THE CITY C COUNTY OFUNION, NEW JERS
2016	O4776	CHAPTER 8.81	DEPARTMENT OF HEALTH AND HUMAN SERVICES		09-Nov-16	MUNICIPAL IDENTIFICATION CARD ELIZABETH RESIDENTS	AN ORDINANCE TO ESTABLISH ELIZABETH"
2016	O4774	BOND ORDINANCE	FIRE DEPARTMENT		09-Nov-16	FIRE DEPT. SELF CONTAINED BREATHING APPARATUS	AN ORDINANCE OF THE CITY C APPPROPRIATING $3,400,000
2017	O4909	CAPITAL ORDINANCE (REFER TO RESO#37229 PASS 8/22)			12-Sep-17	ACQUISITION OF AMBULANCE	THE CITY OF ELIZABETH, IN TH Refer to reso#37229 passed 8
2017	O4939	BOND ORDINANCE	PUBLIC WORKS		13-Nov-17	ACQUISITION OF EQUIPMENT AND VEHICLES PUBLIC WORKS	ORD. NO. 4939 -An Ordinance the Department of Public Wor
2018	O5080	CAPITAL BOND ORDINANCE	PUBLIC WORKS DEPARTMENT		23-Oct-18	ACQUISITION EQUIPMENT & VEHICLES	ORD. NO. 5080 -A Capital Ordi New Jersey appropriating $1,5
2018	O5081	CAPITAL BOND ORDINANCE	POLICE DEPARTMENT		23-Oct-18	ACQUISITION OF A VEHICLE FORD SUPER DUTY F550 DRW	ORD. NO. 5081 -A Capital Ordi New Jersey appropriating $15
2018	O5082	CAPITAL IMPROVEMENT FUND BOND ORDINANCE	DEPARTMENT OF PUBLIC WORKS		23-Oct-18	ACQUSITION OF EQUIPM & VEHICLES DUMP TRUCK PLOWS	ORD. NO. 5082 -A Capital Impr equipment and vehicles, for th
2019	O5140	CAPITAL SURPLUS BOND ORDINANCE			12-Mar-19	CAPITAL SURPLUS BOND FIRE PROTECTIVE EQUIPMENT	ORD. NO. 5140- A Capital Surp equipment for the Fire Depart
2019	O5141	CAPITAL SURPLUS BOND ORDINANCE			12-Mar-19	CAPITAL SURPLUS BOND REPLACEMENT FIRE PUMPER	ORD. NO. 5141 -A Capital Surp Fire Department in and for the
2019	O5142	CAPITAL SURPLUS BOND ORDINANCE			12-Mar-19	CAPITAL SURPLUS BOND ACQUISITION OF AMBULANCES (2)	and for the City of Elizabeth, i New Jersey.
2019	O5166	ESTABLISH CHAPTER 7.27 GOVERNING FATS, OIL, AND	GREASE SOURCE CONTROL		23-Apr-19	CHAPTER 7.27 GOVERNING FATS OIL & GREASE SOURCE CO	ORD. NO. 5166 - An Ordinar
2020	O5331	AMEND CHAPTER 8.81 MUNICIPAL INDENTIFICATION CARD			23-Jun-20	EXTEND EXPIRATION MUNICIPAL INDENTIFICATION CARDS	ORD. NO. 5331- An Ordinance extend the expiration date of
2020	O5332	BOND ORDINANCE BONDS OR NOTES TO FINANCE ALLOCABLE	JOINT MEETING OF ESSEX & UNION COUNTIES FLOOD MITG		23-Jun-20	JMEUC FLOOD MITIGATION FACILITIES PROJECT	ORD. NO. 5332- A Bond Ordina the City of Elizabeth, in the Co
2020	O5377	CAPITAL SURPLUS	ANIMAL CONTROL		13-Oct-20	AMBULANCE & (2) VANS FOR ANIMAL CONTROL	vans in and for the City of Eliza SE
2020	O5378	BOND ORDINANCE	POLICE DEPARTMENT SIGNAL SYSTEM DEPARTMENT		13-Oct-20	9-1-1 VESTA SYSTEM REPLACES THE 9-1-1 PATRIOT	ORD. NO. 5378 - A Bond Ordi Elizabeth and appropriating $3

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Solid & Hazardous Waste
401 E. State Street
PO Box 420, Mail Code 401-02C
Trenton, New Jersey 08625
Tel: (609) 633-1418
Fax: (609) 984-0565

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. McCABE
Commissioner

JAN 17 2019

John F. Papetti, Jr.
Elizabeth City
50 Winfield Scott Plaza
Elizabeth, NJ 07201

Re: Temporary Debris Management Area (TDMA) Pre-Approval Request
Elizabeth City Atlantic Street DPW Yard TDMA
Block 5, Lots 36, 40, 1353, and 1354
Elizabeth City, Union County
Facility ID Number: 796489

Dear Mr. Papetti:

The Department is in receipt of a request submitted January 10, 2019 seeking pre-approval for a Temporary Debris Management Area (TDMA) at the above referenced site. The Department has completed its review of the request and has reached a final determination to issue the TDMA Pre-Approval. Enclosed is a copy of the final approval document.

Please note the site may only be used as a TDMA once the notification requirements in Condition A.1 have been satisfied. The additional operating conditions in the Approval must be complied with during the operation and closure of the site.

If you have any questions, please contact Robin Heston-Murphy of my staff at (609) 984-4643 or via e-mail at robin.heston-murphy@dep.nj.gov.

Sincerely,

Anthony Fontana for MJA

Mary Jo M. Aiello, Director
Division of Solid and Hazardous Waste

Enclosure
c: Thomas Farrell, Chief, Bureau of Solid Waste Compliance & Enforcement, w/enc.
Gina Lugo, Supervisor, Bureau of Solid Waste Compliance & Enforcement, w/enc.
Daniel P. Sullivan, Union County Solid Waste Coordinator, w/enc.
Chris Scaturo, Union County OEM Coordinator, w/enc.

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State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Solid & Hazardous Waste
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PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. McCABE
Commissioner

TEMPORARY DEBRIS MANAGEMENT AREA (TDMA) PRE-APPROVAL

Under the provisions of N.J.S.A. 13:1E *et seq.* known as the Solid Waste Management Act and N.J.S.A. App. A:9-30 *et seq.*, known as the New Jersey Disaster Control Act, this Approval is hereby issued to:

ELIZABETH CITY
ATLANTIC STREET DPW YARD TDMA

Address:	300-338 Atlantic Street and 368 Third Avenue
Block & Lot:	Block 5, Lots 36, 40, 1353, and 1354
Municipality:	Elizabeth City
County:	Union County
Facility ID:	796489
Debris Types:	Vegetative Debris, Construction and Demolition (C&D) Debris, and Bulky Solid Waste

This Approval is subject to compliance with all conditions specified herein and all regulations promulgated by the Department of Environmental Protection (Department).

This Approval is for a Temporary Debris Management Area (TDMA) to be used to temporarily store debris which has been collected following an emergency event, such as a severe weather event including a flood, hurricane, or tornado or other debris generating emergency event. Use of a TDMA provides an area where collected debris can be consolidated prior to transportation to a solid waste or recycling facility, when such use is necessary. TDMAs may only be operated with an Approval from the Department during a Governor declared state of emergency, unless otherwise authorized by the Department.

This Approval does not convey any property rights of any sort, or any exclusive privilege. Failure to comply with all of the conditions specified herein may result in the revocation of this Approval and/or may result in such other regulatory or legal actions which the Department is authorized by law to institute.

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Scope of the Approval

This Approval, along with the referenced application documents herein specified, shall constitute the sole Approval of TDMA operations for the **ELIZABETH CITY ATLANTIC STREET DPW YARD TDMA** located in Elizabeth City, Union County, New Jersey. Any registration or approval previously issued by the Department for the specific activities described below and as conditioned herein, is hereby superseded.

TDMA Description

The TDMA will be located at 300-338 Atlantic Street and 368 Third Avenue in Elizabeth City, Union County on Block 5, Lots 36, 40, 1353, and 1354.

Elizabeth City Atlantic Street DPW Yard TDMA is authorized to receive, store, and transfer vegetative debris, construction and demolition (C&D) debris, and bulky solid waste resulting from a debris generating event. Vegetative debris may be ground or shredded for size reduction. No land clearing shall occur within the TDMA site.

Unprocessed vegetative debris, processed vegetative debris, construction and demolition (C&D) debris, and bulky solid waste will be stored in stockpiles. Processed vegetative debris will also will be stored in containers. No land clearing shall occur within the TDMA site.

Approved Documents

The TDMA shall be operated in accordance with N.J.A.C. 7:26-1 *et seq.*, the conditions of this Approval, and the following documents:

a. Site drawing entitled "Temporary Debris Management Area Site Plan," dated January 3, 2019.

b. TDMA Request Form and attachments signed by John F. Papetti, Jr., Director of Public Works, and received by the Department on January 10, 2019.

Operational Requirements

The TDMA Request Form and supporting documents were reviewed by the Division of Solid and Hazardous Waste, Land Use Management (Wetlands, Flood Hazard Areas, and Endangered Species), Natural and Historic Resources (Green Acres and State Historic Preservation), and Water Resource Management (Stormwater and Water Supply). Following are the operating requirements from each Program:

A. Division of Solid and Hazardous Waste

1. TDMA Activation and Operation

   a. The TDMA may only be utilized for the management of debris from a debris generating event and in accordance with Conditions 1.b or 1.c below.

   b. Operations Under a Governor Declared State of Emergency - Notification Required

      i. If a state of emergency is declared by the Governor and the Department has issued an Administrative Order allowing the relaxation of certain Solid Waste Rules, this TDMA Approval may be activated by submitting an activation notification via an email to solidwasteemergencies@dep.nj.gov, via fax to (609) 984-0565, or by calling (609) 633-1418. The activation notification should include the Facility ID and contact information for the primary contact.

      ii. The TDMA should not be operated until the Department has been notified of the activation of the site.

      iii. Use of the TDMA under these circumstances may occur once the notification is provided to the Department.

   c. Operations Without a Governor Declared State of Emergency - Written Authorization/Approval Required

      i. If there is a need for the use of the TDMA when a state of emergency has **not** been declared by the Governor, the Approval Holder must contact the Department by e-mail at solidwasteemergencies@dep.nj.gov, by fax at (609) 984-0565, or by phone at (609) 633-1418 to request activation of this TDMA Approval. The activation request should include the Facility ID, the contact information for the primary contact, and the reason for requesting activation.

      ii. Approval of the use of the TDMA outside of a Governor declared state of emergency will be decided on a case by case basis depending on the scope of the debris generating event. In this situation, written approval must be obtained from the Department prior to utilizing the site for debris management operations.

2. Debris Types

   Use of the TDMA shall be limited to vegetative debris, construction and demolition (C&D) debris, and bulky solid waste directly related to a debris generating event. This Approval does not allow the storage of e-Waste, household hazardous waste (HHW), hazardous waste, municipal solid waste, asbestos waste, or medical waste.

3. TDMA Location

The TDMA will be located at 300-338 Atlantic Street and 368 Third Avenue in Elizabeth City, Union County on Block 5, Lots 36, 40, 1353, and 1354.

4. Capacity

a. The TDMA will accommodate approximately 3,009 cubic yards of unprocessed vegetative debris. The unprocessed vegetative debris will be stored in a **stockpile** area with a maximum dimension of 65 feet by 100 feet with a height not to exceed 25 feet.

b. The TDMA will accommodate approximately 1,505 cubic yards of processed vegetative debris. The processed vegetative debris will be stored in a **stockpile** area with a maximum dimension of 65 feet by 50 feet with a height not to exceed 25 feet. Additional processed vegetative debris will be stored in containers as listed in 4.e below.

c. The TDMA will accommodate approximately 583 cubic yards of construction and demolition (C&D) debris. The construction and demolition (C&D) debris will be stored in a **stockpile** area with a maximum dimension of 35 feet by 60 feet with a height not to exceed 15 feet.

d. The TDMA will accommodate approximately 375 cubic yards of bulky solid waste. The bulky solid waste will be stored in a **stockpile** area with a maximum dimension of 30 feet by 45 feet with a height not to exceed 15 feet.

e. The TDMA will accommodate approximately 160 cubic yards of processed vegetative debris. The processed vegetative debris will be stored in 4 – 40 cubic yard **containers**.

f. Stockpiles and/or containers shall be located as shown on the approved site drawing in the existing disturbed areas on-site. No land clearing shall occur to create debris storage areas. The approved site drawing is attached to this Approval document.

5. Operational Time Frames

The TDMA may operate initially for a period of 60 days from the date the notification required in Condition A.1 is submitted to the Department. All debris must be removed to a permitted solid waste or recycling facility by the end of 60 days or the Approval Holder may be issued a Notice of Violation for operating an unpermitted solid waste facility.

Extensions to the initial operational time frame should be requested at least 14 days prior to the end of the initial 60-day operating time frame. Requests for extensions should be submitted via an e-mail to solidwasteemergencies@dep.nj.gov and must provide

information on why the extension is required and indicate the amount of additional time requested. A written response to the extension request will be issued by the Department.

6. Processing

Vegetative debris may be ground or shredded for size reduction. Vegetative debris may not be burned, except in a permitted solid waste resource recovery facility. Open burning of vegetative debris is prohibited in New Jersey.

Non-vegetative debris may only be transferred and may **not** be ground for size reduction. White goods, if received with bulky solid waste, should be separated from debris whenever practicable.

7. Recordkeeping and Reporting

A daily record must be maintained of the incoming debris, including quantity and type of debris, and outgoing debris, including quantity, type, and destination facility. Reports on the amount of debris received and the disposition of the debris, must be submitted to the Department in the format and at the frequency designated by the Department following the emergency event.

All records must be maintained by the Approval Holder for a minimum of three (3) years and be made available to the Department upon request. Other agencies, including the Federal Emergency Management Agency (FEMA), may require that records be maintained for a longer period of time.

8. Site Closure

Upon completion of all debris removal operations and closing of the TDMA, the site must be returned to its original conditions, including regrading and reseeding, as necessary. Written notification must be submitted to the Department by e-mail at solidwasteemergencies@dep.nj.gov or by fax at (609) 984-0565 to inform the Department the site will no longer be utilized as a TDMA and has been returned to its original conditions.

9. Recertification

Every five (5) years the Approval Holder shall certify, on forms provided by the Department, that the conditions on and around the site have not changed. If changes to the site occur within the five (5) years between certifications, the Department shall be immediately notified so a new review of the site conditions may be conducted. The Department may modify or rescind this Approval if changing site conditions cause the site to be determined to be inappropriate for debris management.

B. Stormwater

1. Perimeter Control

   a. TDMAs should have perimeter controls surrounding the site to manage and control stormwater runoff and to prevent debris and spills from entering water bodies and storm drain inlets. Additionally, on pervious surfaces, buffers should be provided between debris stockpiles and along all property lines. Perimeter controls, as outlined in sections i. through iv. below, should be in place for the entire duration of the TDMA operation.

      i. Stormwater controls, such as curbs, berms, hay bales, silt fences, mulch socks, flush bottom jersey barriers, or setbacks, should be located around and between each debris stockpile and around the perimeter of the TDMA location.

      ii. Windblown debris controls, such as slatted fencing, tarping or other forms of cover should be used in cases where debris may be blown into water bodies, storm drain inlets, or outside of the TDMA.

      iii. Preventative siltation/spill measures, such as oil booms or filter fabric inlet protection should be placed around all storm drain inlets located in or around the TDMA location.

      iv. Preventative tracking measures, such as gravel, quarry blend, or rumble strips at exits, should be in place to prevent vehicles from tracking debris outside of the TDMA location.

2. Debris Containment

   a. White goods (appliances), if separated from bulky solid waste, must be placed on an impervious surface at the TDMA site and a berm is required. Berms include sand bags, hay bales, and curbing.

   b. Construction and demolition (C&D) debris, bulky solid waste, and vegetative debris should be placed on pervious surfaces (grass/gravel) and a berm is required. Berms include sand bags, hay bales, and curbing.

   c. Processed vegetative debris (containers) may also be stored on existing impervious areas, provided that stormwater measures are in place to prevent all runoff from running off into nearby water bodies and storm drain inlets.

3. Maintenance of Stormwater Controls

All stormwater and debris containment measures should be routinely cleaned during TDMA operation to ensure continued functionality. Sediment and other debris gathered by stormwater measures should be properly disposed of during routine cleanings and prior to the removal of stormwater measures on site.

C. Air

All equipment must have a valid Air Pollution Control Permit if the equipment meets the definition of a significant source in N.J.A.C. 7:27-8.2(c), unless the Department waives the permit requirements for a specific emergency event.

D. State Historic Preservation

No additional operational conditions.

E. Green Acres

No additional operational conditions.

F. Endangered Species

No additional operational conditions.

G. Flood Hazard Areas

No additional operational conditions.

H. Wetlands

No additional operational conditions.

I. Water Supply

No additional operational conditions.

6/17/2019
Issuance Date

Anthony Fontana for MJA
Mary Jo M. Aiello, Director
Division of Solid and Hazardous Waste

NOTES:

1. THE EXISTING SITE CONSIST OF FOUR (4) CITY OWNED PARCELS (LOTS 36, 40, 1353, 1354 IN BLOCK 5) WITH AN OVERALL DIMENSION OF 100' X 500' OF PAVED, GRAVEL AND GRASSY AREAS.
2. LOT 1353 WAS ACQUIRED BY THE CITY AND THE HOUSE IS SCHEDULED TO BE DEMOLISHED IN THE NEAR FUTURE.
3. THE SITE IS NORMALLY USED FOR MISCELLANEOUS PUBLIC WORK STORAGE.
4. THERE IS ARE EXISTING PERIMETER FENCES AND LOCKABLE GATES AROUND THE PARCELS.
5. SILT FENCE WILL BE INSTALLED ALONG THE EXISTING PERIMETER FENCING AS SHOWN ON THE PLAN.
6. SILT FENCE AND INLET PROTECTION SHALL FULLY CONFORM TO THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY, MOST RECENT EDITION.
7. SECURITY GATES WILL BE LOCKED WHEN THE TDMA IS NOT IN USE.

DESIGNED BY:	DRAWN BY: DJLL	CHECKED BY:
APPROVED BY:		REVISIONS NO. / DATE

DANIEL J. LOOMIS
CITY ENGINEER

TEMPORARY DEBRIS MANAGEMENT AREA SITE PLAN

300-338 ATLANTIC STREET
BLOCK 5 LOTS 36,40,1353,1354
CITY OF ELIZABETH
UNION COUNTY, NEW JERSEY

CITY OF ELIZABETH
DIVISION OF ENGINEERING AND ADMINISTRATION
UNION COUNTY NEW JERSEY

SCALE: 1" = 40'	DATE: JAN 3, 2019	DRAWING NO.:	SHEET NO.:

Appendix E

Mitigation Project Worksheets and Corps Flood Eligibility Determination

MOTT MACDONALD

Hazard Mitigation Project Worksheets

City of Elizabeth, Union County, NJ

Summarized below are mitigation action strategies for selected ongoing or recently completed projects in the City of Elizabeth, Union County, New Jersey.

Project Name: South Street Flood Control Project

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: The purpose of this project is to address inadequate capacity within the existing combined sewer and the inability to reliably operate the South Street Pump Station. The project includes rehabilitation and upgrades to the South Street Pump Station, including new pumps, electrical systems and controls, and a backup generator. It also involves repairs and lining of the existing combined sewer on Fourth Avenue and connecting streets, installation of separate storm sewers and inlets at various locations including South Spring Street and the dead-end streets of Fourth Avenue between South Street and John Street, and restoration of the Elizabeth River Flood Control ponding areas and outlet structures.

Construction Cost: $5.32 million

Schedule: Construction began in 2019 and is anticipated to be completed in 2020

Project Name: Elizabeth River Levee Maintenance Flood Control Project

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: The purpose of this project is to mitigate flooding at the Elizabeth River through improvements to levees, flood walls and flume, and channel deepening. The City of Elizabeth maintains approximately 3.8 miles of levees and floodwalls that protect the surrounding communities from the Elizabeth River during major storm events. Mott MacDonald is working with the City and the US Army Corps of Engineers' (USACE) to design and implement emergency repairs to nine drainage structures and to assess and address the remaining Flood Control System, to prevent deterioration of the remaining structures. The project involves inspection, development and installation of emergency flood protection repair measures at locations that require immediate reconstruction to protect the community from a potential levee breach during the next high-water event, as well as inspecting and developing a comprehensive maintenance contract for the remaining structures. Development of temporary riverside cofferdams are underway to help maintain low environmental impacts during construction.

Construction Cost: The City has expended over $9 million since 2012 and further spending is anticipated.

Schedule: Project was initiated in 2012 and several construction contracts have been completed for levee and drainage structure restorations. Further construction contracts are scheduled for Ursino Dam restoration, 2021 through 2022.

Project Name: Lincoln Avenue Stormwater Drainage Improvements

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: This project addresses capacity limitations in the separate storm sewer drainage system that causes surface flooding impeding vehicle passage along Lincoln Avenue at the intersections with Melrose Terrace, Decker Avenue, and Wilson Terrace. The project purpose is to reduce periodic localized flooding in the area, through the construction of approximately 3,000 feet of new storm sewers to replace and augment the existing drainage system. The existing storm sewers on these streets will be upsized and the stormwater runoff directed east along Lincoln Avenue, north on Cherry Street, and across Morris Avenue to an existing large diameter storm sewer on Trotters Lane for discharge to the Elizabeth River.

Construction Cost: $2.8 million

Schedule: Project is currently under design, and construction is anticipated for 2021 to 2022

Project Name: South Second Street Stormwater Control Project

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: The purpose of this project is to mitigate chronic street flooding and promote economic development in the area, through drainage upgrades to provide a new storm system that drains into the existing ditch at the end of South Second Street, control improvements to the existing South Second Street Stormwater Pump Station, and cleaning and enhancement of the existing drainage ditch and headwall to allow unimpeded flow of runoff from the Geneva Street and South Second Street area to the pump station. The pump station will be modernized with new power distribution, control, and alarm systems, and a new natural gas generator.

Construction Cost: $2.8 million

Schedule: Project is currently in the permitting and final design stage, and construction is anticipated for 2021 to 2023

Project Name: Atlantic Street CSO Storage Facility Project

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: This project addresses flooding of localized low points along Third Avenue and the intersections of Doyle Street and Atlantic Street during moderate rainfall events with a high tide condition in the Elizabeth River, caused by inadequate hydraulic gradient in the existing combined sewer. This flooding impacts residents and impedes vehicle passage. This project will address this flooding while significantly reducing the overflow volume for Outfall 038A through the installation of an underground wet weather storage system in excess of 1 million gallons at Atlantic Street and Third Avenue. This storage facility will provide combined sewer overflow control for CSO Basin 038 and mitigate street flooding on Third Avenue. The project also includes installation of connection piping from existing combined sewer lines, and construction of a new pump station, emergency generator, and recycling center building on the property. After each wet weather event, the dewatering pump station will convey the combined sewage through a force main back to the existing trunk sewer. The use of a storage facility will effectively limit the quantity and frequency of CSOs.

Construction Cost: $8.2 million

Schedule: Project is currently in the permitting and final design stage, and construction is anticipated for 2022 to 2025

Project Name: Park Avenue Stormwater Control Project

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: This project provides additional drainage capacity to address periodic localized street flooding on Park Avenue between Coolidge Road and Springfield Road during significant wet weather events. The project involves the Westfield Avenue / Park Avenue trunk sewer located in CSO Basin 003, which receives flow from the Borough of Roselle Park via a 42" diameter storm sewer connection. The project includes evaluation of alternatives including replacement of the combined sewer, and increasing the diameter and slope to the maximum extent possible for improved hydraulic performance. The options being studied for mitigating the roadway flooding may also require modifications to the downstream regulator to assist with the flood relief.

Construction Cost: $8.6 million

Schedule: Project is currently in the planning stage, and construction is anticipated for 2022 to 2025

Project Name: Trenton Avenue Pump Station & Generator Upgrades

Administrative Responsibility: City of Elizabeth Department of Public Works

Purpose: The Trenton Avenue Pump Station receives flows from the upstream combined sewer system. The purpose of this project is to increase the peak discharge capacity of the Trenton Avenue Pump Station up to 75 MGD in an effort to reduce the frequency and magnitude of combined sewer overflows. In addition, the City wishes to undertake necessary improvements to repair failing or antiquated components of the Station while addressing resiliency, redundancy, and safety. Recommendations include items such as replacement of main pumps and piping; construction of a redundant force main; replacement and re-sizing of the existing backup generator system; and remediating structural defects.

Construction Cost: $8.1 million

Schedule: A facilities plan for the upgrade was developed in 2020 and preliminary design will be proceeding. Start of construction is anticipated within a five to ten-year timeframe.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NEW YORK 10278-0090

22 July 2019

SUBJECT: Elizabeth (Right Bank North – JEL1, Left Bank North – JEL2, Right Bank South – JEL3, Left Bank South – JEL4) New Jersey, Flood Risk Management Project - Continued Eligibility Determination for Rehabilitation Assistance Under P.L. 84-99

Mr. Daniel Loomis
City Engineer, City of Elizabeth, New Jersey
Department of Public Works
Office of the City Engineer
50 Winfield Scott Plaza,
Elizabeth, New Jersey 07201-2462

Dear Mr. Loomis:

Further to the results of the enclosed four (4) Annual Inspection reports, approved July 9, 10, and 12, 2019, for the June 11-12, 2019 field inspections; three of the four levee systems of the subject Flood Risk Management Project continue to be eligible to request Federal Rehabilitation Assistance should they be damaged by an extraordinary storm/event as provided for in Public Law (P.L.) 84-99 an Engineer Regulation (ER) 500-1-1.

The enclosed three (3) inspection reports (Right Bank North – JEL1, Left Bank North – JEL2, Right Bank South – JEL3), produced in accordance with United States Army Corps of Engineers (USACE) guidelines, conclude that the overall condition of these three levee systems is MINIMALLY ACCEPTABLE. Therefore, the three identified levee systems of the subject Flood Risk Management Project continue to be ACTIVE in the U.S. Army Corps of Engineers P.L. 84-99 Rehabilitation Program.

However, the overall condition of the Left Bank South – JEL4 system of the subject Flood Risk Management Project is UNACCEPTABLE because a portion of the floodwall is missing in the vicinity of Third Avenue and the three nearby railroad closure gates are inoperable. Therefore, this system of the subject Flood Risk Management Project is INACTIVE in the U.S. Army Corps of Engineers P.L. 84-99 Rehabilitation Program and is not eligible for rehabilitation repair should a significant storm occur. We recognize that the City is working with Cycle Chem to restore and enhance the flood protection in this segment. We again can provide knowledgeable personnel for an on-site visit to explain the current situation as stated in our 17 July 2019 letter attached.

SUBJECT: Elizabeth (Right Bank North – JEL1, Left Bank North – JEL2, Right Bank South – JEL3, Left Bank South – JEL4) New Jersey, Flood Risk Management Project - Continued Eligibility Determination for Rehabilitation Assistance Under P.L.84-99

The specific corrective items and recommendations for ongoing operation and maintenance work by your agency are listed in the enclosed four (4) Inspection Summaries and discussed in detail in the enclosed four (4) inspection reports. We ask your agency to assess and improve current operation and maintenance efforts in order to possibility receive an ACCEPTABLE rating at the next annual field inspection, in summer 2020.

The City of Elizabeth's continued cooperation in the inspections of this important storm damage reduction project is appreciated.

If you have any questions or comments concerning this matter, please contact Mr. Sean O'Donnell at Sean.B.O'Donnell@usace.army.mil or (917) 790-8501.

Sincerely,

Thomas M. Creamer
Chief, Operations, Readiness,
and Regulatory Functions Division

Enclosures

Inspection Summary

The overall condition of Elizabeth River – Right Bank North (JEL1), New Jersey, is considered to be MINIMALLY ACCEPTABLE. The following recommendations are based upon a visual inspection and review of the available archives for the project provided by the New York District Army Corps of Engineers.

Primary Concerns:

1. Stream bank needs to be repaired/stabilized to prevent further erosion
2. Excessive vegetation hinders full inspection of levees and interior drainage system
3. The local sponsor has not performed a video inspection of the culverts and discharge pipes within the past 5 years
4. City of Elizabeth is continuing repairs of the system, this report reflects the condition of the system on the date of the inspection

The following personnel participated in the inspection:

Name	Agency
Jeffrey Gross	United States Army Corps of Engineers
Shahid Shaikh	United States Army Corps of Engineers
David Rodriguez	United States Army Corps of Engineers
Keith Gottberg	United States Army Corps of Engineers
Erin O'Donnell	United States Army Corps of Engineers
Jenae Pennie	United States Army Corps of Engineers
Daniel Loomis	City of Elizabeth
Scott Clifford	City of Elizabeth (Consulting Engineer; Mott McDonald)

Inspection Summary

The overall condition of Elizabeth River – Left Bank North (JEL2), New Jersey, is considered to be MINIMALLY ACCEPTABLE. The following recommendations are based upon a visual inspection and review of the available archives for the project provided by the New York District Army Corps of Engineers.

Primary Concerns:

1. Stream bank needs to be repaired/stabilized to prevent further erosion
2. Excessive vegetation hinders full inspection of levees and interior drainage system
3. The local sponsor has not performed a video inspection of the culverts and discharge pipes within the past 5 years
4. City of Elizabeth is continuing repairs of the system, this report reflects the condition of the system on the date of the inspection

The following personnel participated in the inspection:

Name	Agency
Jeffrey Gross	United States Army Corps of Engineers
Shahid Shaikh	United States Army Corps of Engineers
David Rodriguez	United States Army Corps of Engineers
Keith Gottberg	United States Army Corps of Engineers
Erin O'Donnell	United States Army Corps of Engineers
Jenae Pennie	United States Army Corps of Engineers
Daniel Loomis	City of Elizabeth
Scott Clifford	City of Elizabeth (Consulting Engineer; Mott McDonald)

Inspection Summary

The overall condition of Elizabeth River – Right Bank South (JEL3), New Jersey, is considered to be MINIMALLY ACCEPTABLE. The following recommendations are based upon a visual inspection and review of the available archives for the project provided by the New York District Army Corps of Engineers.

Primary Concerns:

1. Pump Station at South First Street needs to be put into an operational status
2. Excessive vegetation hinders full inspection of levees and interior drainage system
3. The local sponsor has not performed a video inspection of the culverts and discharge pipes within the past 5 years
4. City of Elizabeth is continuing repairs of the system, this report reflects the condition of the system on the date of the inspection

The following personnel participated in the inspection:

Name	Agency
Jeffrey Gross	United States Army Corps of Engineers
Shahid Shaikh	United States Army Corps of Engineers
David Rodriguez	United States Army Corps of Engineers
Keith Gottberg	United States Army Corps of Engineers
Erin O'Donnell	United States Army Corps of Engineers
Jenae Pennie	United States Army Corps of Engineers
Daniel Loomis	City of Elizabeth
Scott Clifford	City of Elizabeth (Consulting Engineer; Mott McDonald)

Inspection Summary

The overall condition of Elizabeth River – Left Bank South (JEL4), New Jersey, is considered to be UNACCEPTABLE. The following recommendations are based upon a visual inspection and review of the available archives for the project provided by the New York District Army Corps of Engineers.

Primary Concerns:

1. Missing floodwall between Railroad (RR) gates Nos. 2 and 3.
2. Three RR-gates inoperable: RR Gate No. 1 not present. RR Gate No. 2 inoperable due to vegetation. RR Gate No. 3 inoperable due to fill.
3. Missing closure levee from RR-Gate No.1 to uphill tie off point.
4. Corrugated Metal Pipe (CMP) bottom deteriorated at culvert beneath Trenton Avenue. Cracking and spalling above discharge pipe inlet/outlet openings.
5. Drainage Structures No. 22 and 24 sluice gates were either removed or inoperable.
6. South Street Pump Station bypass slide gate inoperable during inspection.
7. Culverts and pipes should be video inspected.

The following personnel participated in the inspection:

Name	Agency
Jeffrey Gross	United States Army Corps of Engineers
Shahid Shaikh	United States Army Corps of Engineers
David Rodriguez	United States Army Corps of Engineers
Keith Gottberg	United States Army Corps of Engineers
Erin O'Donnell	United States Army Corps of Engineers
Jenae Pennie	United States Army Corps of Engineers
Daniel Loomis	City of Elizabeth
Scott Clifford	City of Elizabeth (Consulting Engineer; Mott McDonald)

Appendix F

2010 Updated Adoption Resolution

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