

UNION COUNTY, NEW JERSEY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2026

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Prepared for:
Union County
Division of Emergency Services
400 North Avenue East
Westfield, NJ 07090

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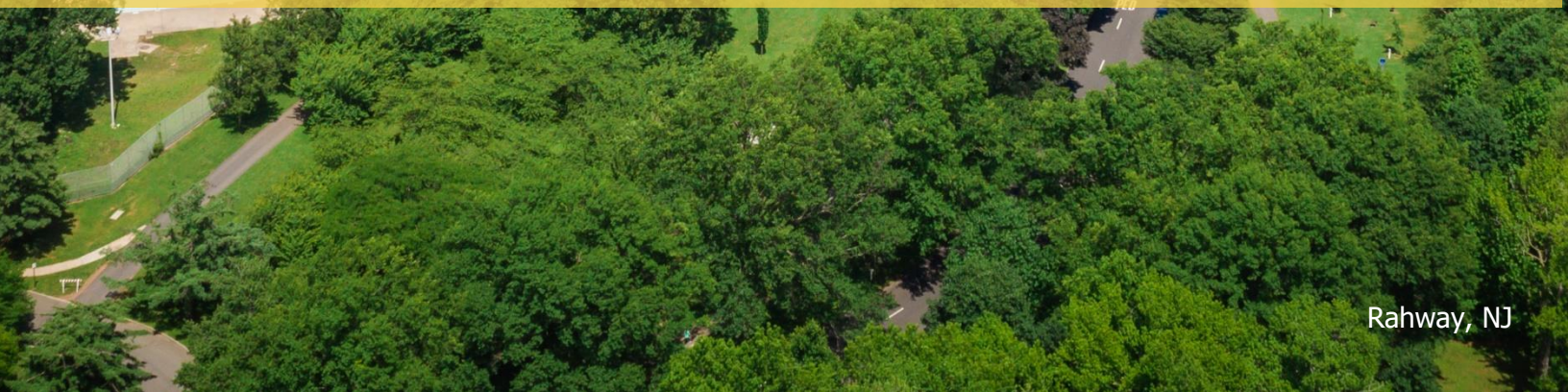
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Vol II. C – CRS Crosswalk
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1.0 INTRODUCTION



Rahway, NJ

1.0 INTRODUCTION

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, updated in March 28, 2016 (first update) and December 15, 2021 (second update). This Union County HMP is the third 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. Natural hazard mitigation saves $6 on average for every $1 spent on Federal mitigation grants, according to an analysis by the National Institute of Building Sciences (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 Union 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 selected the consultant Michael Baker International, Inc. (Michael Baker) to help develop the 2026 Union County Plan. The Union County Division of Emergency Services and Michael Baker worked together to update this HMP (the Project Team).

1.3 ORGANIZATION OF THE PLAN

The Union County HMP is organized into the following nine sections and two volumes of appendices:

1.0 Introduction: Discusses the purpose of hazard mitigation planning and the planning requirements for the HMP

2.0 HMP Review, Evaluation, and Implementation: Highlights changes in development and land use since the previous HMP, changes in priorities (goals, objectives, and hazard rankings), and progress in local mitigation efforts.

3.0 Mitigation Strategy: Union County's mitigation strategy is the blueprint for reducing potential future losses from hazards. This section includes the update process, mitigation goals and objectives, the evaluation and prioritization of mitigation actions, a summary of each municipality's mitigation strategy, and Union County's mitigation strategy.

4.0 Planning Process: Discusses the planning process, the planning team that led this HMP update, county, stakeholder, and municipal participation, and public participation.

5.0 Capability Assessment: Discusses state building codes and the unique planning, regulatory, administrative, technical, financial, and education and outreach capabilities present in Union County. This section also describes how the County and its municipalities integrate their plans and regulations with hazard mitigation.

6.0 Community Profile: Provides an overview on Union County and discusses population and the economy (including underserved communities and socially vulnerable populations), the built environment (including recent and future changes in development), and ecosystems and natural assets.

7.0 Risk Assessment: Identifies the hazards of concern and an analysis on the vulnerability and risks posed by each hazard.

8.0 Plan Maintenance: Explains the plan maintenance process for monitoring, evaluating, and updating the HMP once the plan is approved by FEMA.

9.0 Plan Adoption: Discusses the County and municipal HMP adoption process.

Appendices Volume I. Jurisdictional Information: Each municipality has their own appendix detailing their local community profile and mitigation strategy, including the following information:

- Planning Team and Participation: lists the names of local officials and representatives that attended the municipal meetings and helped write the municipal appendices.
- Community Profile: provides an overview of the municipality; land use, development, and growth since the previous plan (including recent, known, or anticipated major development and infrastructure); and information on demographics and vulnerable populations.
- Hazard Identification: includes each municipality's hazard ranking, an explanation for that hazard ranking, and significant storms events since the last plan update.
- Risk Assessment: includes municipal National Flood Insurance Program (NFIP) statistics, vulnerability of the built environment, and risk maps, including current flood risk, future flood risk (NJ Inland Design Flood Elevation and Sea Level Rise (if applicable)), and Wildland Urban Classification (if applicable).
- Capability Assessment: includes tables of local planning and regulatory; administrative and technical; education and outreach; and financial capabilities.
- Mitigation Strategy: provides an overall mitigation strategy since the previous plan and looking forward towards the next five years, completed or removed actions, and new and ongoing actions.

Appendices Volume II. Other Plan Materials: Includes the FEMA Plan Review Tool, resolution template, Community Rating System (CRS) crosswalk, annual progress report, adopted local resolutions, engagement documentation, and a comprehensive capability assessment table.

1.4 AUTHORITY AND REFERENCES

Authority for this plan originates from the following federal 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.*

Authority for this plan originates from the following State of New Jersey sources:

- State of New Jersey 2024 State Hazard Mitigation Plan
- Assembly No. 4691, State of New Jersey 220th Legislature, introduced 10/3/2022, updated 1/8/2024

FEMA's Local Mitigation Planning Policy Guide, effective April 11, 2025, was the primary guide used for the development of this plan. Previous FEMA guides including the 386 series and information available from NJOEM on hazard mitigations were used to guide this plan's development.

2.0 HMP REVIEW, EVALUATION, AND IMPLEMENTATION



Elizabeth, NJ

2.0 HMP REVIEW, EVALUATION, AND IMPLEMENTATION

2.1 OVERVIEW

This section was added to the 2021 Union County HMP to highlight changes in development and land use since the previous HMP, changes in priorities (goals, objectives, and hazard rankings), and progress in local mitigation efforts. The information below has been updated with changes after the plan was adopted in 2021 to early 2026.

2.2 HMP REVIEW: CHANGES IN DEVELOPMENT

This section discusses recent and future development and changes in land use/land cover since the last plan update in 2021.

RECENT AND FUTURE DEVELOPMENT

During the Planning Process, participants were asked if they were aware of any recent (since 2021) and future developments (5+ years) in their community. Recent and future development trends in Union County are illustrated below in **Table 2.2-1 below**. Future development located within a high-risk area are also noted in Table 2.2-1. For more information on the plans for new and future development, see each municipal narrative, under Land Use, Development, and Growth located in Appendices Volume I – Jurisdictional Information.

Table 2.2-1 Recent and Future Development, by Municipality

Municipality	New and Future Development
Berkeley Heights Township	The Terrace at Berkeley Heights was completed in 2021. This development contains 20 units and is not located within the floodplain. Additionally, construction of Woodcrest at Berkeley Heights, a luxury 55+ rental apartment community of 196 units as well as Modera Berkeley Heights, a 173-luxury apartment community at 1 Lone Pine Drive, was recently completed. Another development, Berkeley Crossing by Elite properties consisting of two developments of 10 and 45 units, was opened. The Toll Brothers' 67 luxury Carriage Homes and Condos, including 20 affordable-housing condos, at 110 Roosevelt Avenue was completed. Most recently completed in 2025 was the Clarus, a mixed-use development with 211 total units, including 32 affordable housing units, located between Lone Pine and Sherman Avenues. This development is located within the regulatory floodplain. The Park, a 12-story corporate park consisting of offices, 328 rental residential units and parking lots, is undergoing construction. It is located in the Interstate 78 corridor.
Clark Township	A luxury apartment complex at 35 Walnut Avenue was completed in mid-2023. The development includes 177 units including 28 affordable units. The complex is near the Rahway River but not located within the floodplain. The township reports that the development could worsen runoff impacts downstream. Completed in 2023 was a 48-unit development on Raritan Road. This is located higher up and not in the floodplain. Also completed in 2023 was the Hyatt Hills golf course at 1300 Raritan Rd. Union County has begun planning the Clark Reservoir Project, a project to preserve the natural landscape of the Clark Reservoir while adding recreational amenities like walking paths, duck boats, and a fishing pier. No future development identified by the municipality.
Cranford Township	Apartments at 750 Walnut were recently constructed. These are 272 units on over 38 acres. There are three buildings. In addition, there are also two commercial warehouses. Post-Irene there was a nearly 300-unit development at 235 Birchwood. The street here floods due to the creek that runs along it. There is a catch basin, but it has not been tested yet by a severe storm. The multi-unit development at 235 Birchwood falls within the NJ Inland Design Flood Elevation zone which is FEMA's 1% annual chance floodplain + 3 feet (NJFloodMapper). On South Avenue between High Street and Walnut Avenue, there is going to be a four-story mixed-use development going in. It falls within the flood zone. On Chestnut Street, another brownstone is going in, there will be parking on the first floor and residential above it. Around 30 units will be constructed. Additionally, the township got its next round of state affordable housing obligation and has a redevelopment zone.
Elizabeth City	There has been significant development in the City of Elizabeth. It has included 10 affordable units at 823-827 East Jersey Street; eight two-family dwellings at 100 First Street; two warehouse building consisting of 300,000 SF at 827-907 Newark Avenue; 17

Municipality	New and Future Development
	dwelling units at 308-312 West Jersey Street; 20 affordable units at 828 East Jersey Street; four warehouse buildings consisting of 277,440 SF at Tern Landing; 122,446 SF self-storage building at 165 Division Street; 86 dwelling units at 705-713 Newark Avenue; 61 dwelling units at 538-550 Morris Avenue; 9 two-family dwellings at 111-121 Miller Street; 12 dwelling units at 30-34 Bank Street; 12 dwelling units at 731-735 New Point Road; and 267 dwelling units and 11,000 SF commercial space at 100 Union Street called Vinty. There is also substantial anticipated development in Elizabeth. This includes a 148-room hotel at 33-37 West Grand Street; 10 affordable units at 1033-1039 East Jersey Street; 7 dwelling units and 940 SF retail at 140 Jefferson Avenue; 12 dwelling units at 26-30 Elm Street; 94 dwelling units, 2,131 SF retail, and 2,789 SF bakery at 581-599 Pennsylvania Avenue; 164,352 SF warehouse with 8,774 SF of office at 711 Lidgerwood Avenue; 145 dwelling units and 14,600 SF of commercial at 59-81 & 74-82 Livingston Street; a 102-seat restaurant at 735-739 Edgar Road; 19 dwelling units at 420-242 Westminster; 19 dwelling units at 225-229 Broad Street; 16 dwelling units at 424-432 Rahway Avenue; 78 dwelling units at 69-73 West Jersey Street; 16 dwelling units at 463-467 Madison Avenue; 27 dwelling units and 5,960 SF medical office at 748-762 Spring Street; 14 dwelling units and 600 SF retail at 836-842 Spring Street; 24 dwelling units at 170-176 First Street; and a 258-unit apartment building with approximately 3,000 square feet of retail space at 250 Union Street.
Fanwood Borough	Recent development includes three locations. 40 S Ave which is a mixed-use construction with 30 residential units. The new development Soho is a four-story development with approximately 80-100 residential units along with commercial units on the bottom. Carano Square on 105 S. Ave is two buildings with over 150 units. All three locations experience no flooding. There is one mixed-use development going in at 383 S. Ave. This will include about 15-20 residential units and is outside the flood zone.
Garwood Borough	296 luxury apartments, called Vermella, were completed at 450 South Avenue. There is anticipated development at 15-31 North Avenue and 75-93 North Avenue. At the latter, plans for an apartment building have been approved.
Hillside Township	An outdoor pool at Central Avenue and a new library at Memorial Drive began construction in 2025. The Spray Park Phase of the outdoor pool project opened in August 2025, and pool construction began in mid-September 2025. The police department will expand into the existing library, while ground broke for the new library in August 2025. At 1350 Liberty Avenue, senior housing with an anchor tenant will be constructed. It is outside the flood zone.
Kenilworth Borough	No recent development identified by the municipality. The former Merck & Co. campus in Kenilworth will be converted to a data center and research facility. This redevelopment will be known as the NEST campus. The plan for this development has been approved but the final agreement is not complete. PSE&G will be readying the area's electrical infrastructure to support the extensive energy needs of the facility. Additional anticipated development includes a 165-unit apartment building which has been approved near Michigan and Galloping Hill. The development includes about 15 affordable units and is not located in the floodplain.
Linden City	New residential properties were built at North Wood Avenue, South West Avenue, and West Elizabeth Avenue. However, none of these are in a floodplain. The Walmart at Legacy Square will be redeveloped into the largest Walmart in the country. It is not located in a regulatory floodplain.
Mountainside Borough	In 2024, the borough constructed a new Department of Public Works facility along Route 22. The project cost $2 million and was funded through the sale of land on Mountain Avenue which is to be the site of the Park West condominium complex. Park West at Mountainside is a 36- unit townhome condominium development located near Mountainside Avenue and New Providence Road in the south of town. The development is currently in the final stage of construction and expected to be completed in 2025. This complex is not located in the floodplain. Anticipated development includes a 20-lot subdivision of single-family homes off Route 22 off Route 22 which is in the planning process. Not located within the floodplain.
New Providence Borough	Development under construction includes the "Bard site" (111 Spring St) along the Salt Brook. This is a townhouse and multifamily development consisting of 192 units, including a 20% set-aside for affordable units. There is flooding and wetlands around the creek area of the site, but this flooding does not impact the development area. The site was required to meet new DEP standards. Another development, called Riverbend, consisting of 22 townhome units (4 of which are affordable), was recently completed. This development is located in the floodplain. Additional development includes the Lantern Hill Senior Living Community on Mountain Avenue, an assisted living facility which has been expanded over the years. The most recent expansion has received

Municipality	New and Future Development
	approval but has not yet begun construction. This development is not located in the floodplain. A Daycare Center (165 South St) was completed in 2025; however, it is not in floodplain. An additional Nursing Home in the floodplain was recently approved for expansion at 144 Gales Drive. During Hurricane, Ida several people required rescue from this location. The Borough has since attached a 12k platform to its high-water rescue vehicle to ensure accessibility to the elderly. A site plan application has been approved for 121 Chanlon Road in the town's affordable housing overlay zone. The development will consist of 83 units with 21 units set aside for affordable housing. This development is not in an existing floodplain. As previously stated, an expansion to the Lantern Hill Senior Living Community was approved in 2023. This will be the final phase of development for the complex. This expansion has yet to begin construction but once complete, it will contain an additional 444 independent living units. This site, however, is not located in a floodplain. A site plan was approved by the Planning Board for a 21.5 acre site located at 70 Ryder Way. This development will include 297 residential units which includes 59 affordable units. The development will consist of townhomes and two multi-story apartment buildings. These will all be age-restricted rental units. The site is not located in a flood plain. In 2024, New Jersey American Water completed replacement of approximately 3,200 feet of aging water main in New Providence. The company upgraded the aging water lines that were installed as far back as the 1900s with new 16-inch ductile iron main along South Street / County Road 647 from Springfield Avenue to Central Avenue. The project also includes replacing fire hydrants and utility-owned service lines along the pipeline route. Still in the process, New Jersey American Water will replace any customer-owned service line that has been identified as lead or galvanized as part of a statewide initiative to remove all lead and galvanized service lines by 2031.
Plainfield City	11 residential complexes were developed on South Avenue. These are not located in a regulatory floodplain. The DEP has restricted any residential development beyond 1000 North Avenue, because of increased flood risk. Other planned developments include: 11 residential buildings on South Avenue, four complexes along East 3rd Street, and developments on Roosevelt Avenue and Watching Avenue. None of these developments will be located in a regulatory floodplain.
Rahway City	In 2023, Merck relocated their headquarters back to their campus in Rahway, NJ. Over the company's nearly 120-year history in Rahway, the 200-acre site, which extends into Linden, expanded from one manufacturing plant to approximately 100 buildings. The recent developments include a multipurpose auditorium, additional parking and a $450 million learning and manufacturing facility. Other major developments include the construction of several multi-family residential developments including Brownstones Phase 1 and The Mint 2. The Brownstones Phase 1, the first of two proposed phases, is situated at 1901 Elizabeth Avenue and consists of 298 residential units. The Mint 2, the second of two phases, is situated at 84 Monroe Street and consists of 109 residential units. Vermella Rahway, which is situated along Essex Street, broke ground in 2024 and is expected to open for leasing in 2026. Vermella Rahway consists of 164 residential units. Glendennings Homes is a public housing community located along Capobianco Plaza and is managed by the Rahway Housing Authority. This development consists of 112 units and is scheduled to be completely replaced in several phases over the next few years. While the unit count will remain the same, the project aims to modernize the existing housing units and improve living conditions for residents.
Roselle Borough	There have been a few recent developments in the past five years. There were 953 apartments built on Pine Street, where certain sections of the area fall within the FEMA flood zone. On 4th and Chestnut, 31 one-bedroom apartments were built outside of the flood zone. On 1100 Spruce Street, 195 units were built outside of the flood zone as part of a five-story apartment building. In the next five years, there are three anticipated developments. Borough Hall will be reconstructed at 210 Chestnut Street. 135 units are expected to be built at the Top Line Property on the 100 block of East 1st Avenue as part of a five-story apartment building. A four-story, 55-unit multi-family dwelling will be constructed in a new development on 792 East 3rd Street. There will also be an apartment building constructed along E Saint Georges Avenue; 195 units.
Roselle Park Borough	A 400-unit mixed-use development and two buildings comprising 300 units were built on Westfield Avenue. These developments are located close to a regulatory floodplain. Additionally, there are other projects on the table for development throughout the borough.
Scotch Plains Township	The township's Third Round Affordable Housing settlement required the township to rezone several properties and areas to permit housing at a higher density to fulfill affordable housing requirements. As required by the settlement agreement, 228 residential units are under construction on Terrill Road at the former Parker Gardens site (now Orchid Park) and 200 residential units were constructed on Route 22 at the former Bowcraft site (now Glenside). Furthermore, the township is currently planning towards addressing its fourth-round state-mandated affordable housing obligations received in October 2024. The township is seeking to satisfy as much of their affordable housing obligations as possible in the downtown area to protect their well-established residential neighborhoods. There have been several projects (mixed-use, residential, and commercial) that have been constructed or are currently under construction downtown. The township's Housing Element and Fair Share Plan is due on June 30, 2025.

<table>
<tr><th>Municipality</th><th>New and Future Development</th></tr>
<tr><td></td><td>The NJDEP's new Flood Hazard Area (FHA) and Stormwater Management Rules, adopted in July 2023, put a significant portion of the township's downtown and other parts of town in the regulated floodplain. A mixed-use downtown redevelopment project spread across approximately nine acres area in Downtown Park Avenue toward U.S. Highway Route 22 is planned. The redevelopment plan includes the relocation of the township's Emergency Services (Police, Fire, OEM, Fire/EMS), currently located in a floodplain, to township-owned property on Plainfield Avenue where a new state of the art combined facility will be constructed. The facility is not planned in a location prone to flooding. Additionally, the township is working with a developer to sell several large parking lots to reduce impervious surfaces and mitigate flooding in the area. Any projects that have been constructed recently, are in the process of construction, or that will be constructed need Individual Permit approval from the NJDEP.</td></tr>
<tr><td>Springfield Township</td><td>A recent apartment complex was completed with retail underneath on Morris Avenue to Church Mall. A development project called The Metropolitan was built on Millburn Avenue with 240 units. The next development of 32 units is on the Church Mall. Both developments are outside the flood zone. Another project (The Gomes Project) on Morris Avenue, consisting of 140 units and retail stores on the first floor, has been under construction for many years and may reach completion in the next year or two.

Scotty's Pub on Morris Avenue has been sold, and it is going to be a 55+ community with about 30 units. This area is outside the flood zone.</td></tr>
<tr><td>Summit City</td><td>Primarily redevelopment of business and corporate districts, but there is no large-scale development that added a large number of units.

The township is pretty built out, so no large-scale developments are coming. A few redevelopments are happening. The old firehouse is one of them as the firehouse has to move simply due to age. Tyrconnell Housing will add 28 new units. This is Morris and River Road. This area does not flood.</td></tr>
<tr><td>Union Township</td><td>None identified at this time by the municipality.</td></tr>
<tr><td>Westfield Town</td><td>The projects shown in the table below have been completed from 2021 to present.
<table>
<tr><th>Application Number</th><th>Address</th><th>Application Type</th><th>Description</th><th>Planning Board Approval Date</th><th>Status</th><th>Bedroom Distribution</th></tr>
<tr><td>PB 22-3</td><td>440 North Avenue East</td><td>Preliminary and Final Major Site Plan</td><td>Construction of 10-unit building.</td><td>Approved 5/2/2022</td><td>Complete</td><td>
<table>
<tr><th>Unit Size</th><th>Market Rate</th><th>Affordable</th><th>Total</th></tr>
<tr><td>Studio</td><td>NA</td><td>NA</td><td>NA</td></tr>
<tr><td>1 Bedroom</td><td>NA</td><td>NA</td><td>NA</td></tr>
<tr><td>2 Bedroom</td><td>8 units</td><td>1 units</td><td>9 units</td></tr>
<tr><td>3 Bedroom</td><td>NA</td><td>1 units</td><td>1 unit</td></tr>
<tr><td>Total</td><td>8 units</td><td>2 units</td><td>10 units</td></tr>
</table>
</td></tr>
<tr><td>PB 21-12</td><td>516-540 North Avenue East</td><td>Preliminary and Final Major Site Plan</td><td>Construction of 40-unit building</td><td>Approved 4/4/2022</td><td>Complete</td><td>
<table>
<tr><th>Unit Size</th><th>Market Rate</th><th>Affordable</th><th>Total</th></tr>
<tr><td>1 Bedroom</td><td>5 units</td><td>0 units</td><td>5 units</td></tr>
<tr><td>2 Bedroom</td><td>25 units</td><td>4 units</td><td>29 units</td></tr>
<tr><td>3 Bedroom</td><td>4 units</td><td>2 units</td><td>6 units</td></tr>
<tr><td>Total</td><td>34 units</td><td>6 units</td><td>40 units</td></tr>
</table>
</td></tr>
<tr><td>PB 21-09</td><td>522 Springfield Avenue</td><td>Preliminary and Final Major Site Plan</td><td>Construction of 162 units total in three separate buildings</td><td>Approved 2/7/2022</td><td>Complete</td><td>
<table>
<tr><th>Unit Size</th><th>Market Rate</th><th>Affordable</th><th>Total</th></tr>
<tr><td>1 Bedroom</td><td>10 units</td><td>6 units</td><td>16 units</td></tr>
<tr><td>2 Bedroom</td><td>84 units</td><td>19 units</td><td>103 units</td></tr>
<tr><td>3 Bedroom</td><td>36 units</td><td>7 units</td><td>43 units</td></tr>
<tr><td>Total</td><td>130 units</td><td>32 units</td><td>162 units</td></tr>
</table>
</td></tr>
<tr><td>PB 21-11</td><td>552-556 North Avenue East</td><td>Preliminary and Final Major Site Plan</td><td>Renovation and expansion of former TD Bank building for 7,500 SF retail</td><td>Approved 1/26/2022</td><td>Complete</td><td>NA</td></tr>
<tr><td>PB 21-10</td><td>421-449 South Avenue East</td><td>Preliminary and Final Major Site Plan</td><td>Mixed use project consisting of 156 residential units and 17,000 square feet of commercial space</td><td>Approved 10/4/2021</td><td>Complete</td><td>
<table>
<tr><th>Unit Size</th><th>Market Rate</th><th>Affordable</th><th>Total</th></tr>
<tr><td>Studio</td><td>NA</td><td>4 units</td><td>4 units</td></tr>
<tr><td>1 Bedroom</td><td>48 units</td><td>NA</td><td>48 units</td></tr>
<tr><td>2 Bedroom</td><td>82 units</td><td>16 units</td><td>98 units</td></tr>
<tr><td>3 Bedroom</td><td>NA</td><td>6 units</td><td>6 units</td></tr>
<tr><td>Total</td><td>130 units</td><td>26 units</td><td>156 units</td></tr>
</table>
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Municipality	New and Future Development

PB 12-12	430-516 Central Avenue	Preliminary and Final Major Site Plan Approval	Proposed mixed-use building containing 15,359 SF commercial space and 22 residential units	Approved 11/4/2013	Complete	8 – One BR Market Rate 14 – Two BR Market Rate

The Town has adopted a redevelopment plan for a project called One Westfield Place will feature new housing, retail, and office properties. The redevelopment plan allows for a maximum of approximately 200 residential units and approximately 200,000 square feet of commercial space along with various public improvements which include public plazas and streetscape enhancements. Site plan approvals have not yet been obtained and construction has not yet started on this project.

Remaining major development projects anticipated to be completed in the next five (5) years include:

Application Number	Address	Application Type	Description	Planning Board Approval Date	Status	Bedroom Distribution
PB 24-005	1003 North Avenue West	Preliminary/Final Major Site Plan w/variances	Construction of a mixed-use building w/22 residential units for homeless veterans	Approved 11/4/2024	Applicant seeking project financing	22 - special needs units
PB 23-012	118 Elm St	Preliminary/Final Major Site Plan w/variances	Construction of a mixed-use 3-story building w/22 residential units over 3,863 SF retail and parking	Approved 10/16/2023	Under Construction	16 – One BR Market Rate 6 – Two BR Market Rate
PB 23-010	500 North Avenue East	Preliminary/Final Major Site Plan	Construction of a three-story apartment building w/29 units	Approved 12/4/2023	Applicant revising plans to meet conditions of approval	**Unit Size** / **Market Rate** / **Affordable** / **Total** 1 Bedroom / 19 units / 1 unit / 20 units 2 Bedroom / 5 units / 3 units / 8 units 3 Bedroom / 0 units / 1 unit / 1 unit **Total** / **24 units** / **5 units** / **29 units**
PB 23-04	418 South Ave East; 448 South Ave East; 338 Windsor Ave	Preliminary/Final Major Site Plan	Construction of three story apartment building with 37 units	Approved 7/17/2023	Under Construction	**Unit Size** / **Market Rate** / **Affordable** / **Total** Studio / NA / 1 unit / 1 unit 1 Bedroom / 12 units / NA / 12 units 2 Bedroom / 19 units / 3 units / 22 units 3 Bedroom / NA / 2 units / 2 units **Total** / **31 units** / **6 units** / **37 units**
PB 23-07	184 Elm Street	Preliminary and Final Major Site Plan	Two story addition onto existing building. Two ground floor commercial tenant spaces (5,962 SF total) and a total of 10 dwelling units on upper stories	Approved 6/5/2023	Applicant determining project start date	6 – One BR Market Rate 4 – Two BR Market Rate

<table>
<tr><th>Municipality</th><th>New and Future Development</th></tr>
<tr><td></td><td>
<table>
<tr><td>PB 22-9</td><td>415-427 South Avenue W</td><td>Preliminary and Final Major Site Plan</td><td>Applicant proposes to construct a new mixed-use building and parking. New building will have 5,233 SF of commercial / retail on 1st floor and 20 apartments in total on 2nd and 3rd floors.</td><td>Approved 10/3/2022</td><td>Under Construction</td><td>16 – One BR Market Rate
4 – Two BR Market Rate</td></tr>
<tr><td>PB 22-11</td><td>201 and 215 Prospect Street; 112 Ferris Place</td><td>Preliminary & Final Major Site Plan</td><td>Applicant proposes to construct a new mixed-use building and parking. New building will have 500 SF commercial / retail on 1st floor and 60 apartments in total.</td><td>Approved 8/1/2022</td><td>Under Construction</td><td>
<table>
<tr><th>Unit Size</th><th>Market Rate</th><th>Affordable</th><th>Total</th></tr>
<tr><td>Studio</td><td>NA</td><td>NA</td><td>NA</td></tr>
<tr><td>1 Bedroom</td><td>29 units</td><td>1</td><td>30 units</td></tr>
<tr><td>2 Bedroom</td><td>22 units</td><td>6 units</td><td>28 units</td></tr>
<tr><td>3 Bedroom</td><td>NA</td><td>2 units</td><td>2 units</td></tr>
<tr><td>Total</td><td>51 units</td><td>9 units</td><td>60 units</td></tr>
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<tr><td>Winfield Township</td><td>The township is built out. Due to the unique nature of landownership in the town almost no new development is allowed, although residents can make some improvements.</td></tr>
</table>

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 2.2-2 Land Cover Changes Since 2015 In Union County,** the County's urban footprint decreased by less than 0.1%. Local and state protections advance the aim for this type of development not to increase flood, wind, or earthquake risk to existing or new property owners.

Table 2.2-2 Land Cover Changes Since 2015 in Union County

Land Cover Type	2015 (Acres)	Percent Change	2020 (Acres)	Percent Change
Agriculture	86.6	0.4%	79.8	-7.9%
Barren Land	778.6	12.1%	868.1	11.5%
Forest	6,082.8	-1.0%	6,007.1	-1.2%
Urban	55,689	0.0%	55,723.4	<1%
Water	1,910.9	-1.6%	1,908.2	<1%
Wetlands	2,903.3	0.1%	2,864.8	-1.3%

Source: New Jersey DEP DOIT BGIS 2025 Land Use/Land Cover 2020 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.

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 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.

2.3 HMP EVALUATION: CHANGES IN PRIORITIES

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

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 2021 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 maintained the 2021 HMP Goals and Objectives continue to address the risk that the County faces and therefore did not make any changes to the Goals and Objectives. The Steering Committee highlighted the importance of data sharing and collaboration with other counties. The Goals and Objectives for the 2026 Union County HMP are listed in **Table 2.3-1 HMP Goals and Objectives**.

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	Objective
Goal 5: **Mitigate High Hazard-Potential Dams** within the County	**Objective 5.A**: Repair or rehabilitate high hazard-potential dams.

CHANGES IN HAZARD RANKINGS

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 2021 plan and determined that the same 15 natural hazards and 10 human-caused hazards from the 2021 plan should be profiled for the 2026 HMP. However, the ranking of the 25 hazards changed slightly from the previous plan, which were reevaluated by the Steering Committee in the Spring of 2025. Table 2.3-2 Hazard Ranking Crosswalk details the changes in hazard ranking from 2021 to 2026.

Table 2.3-2 Hazard Ranking Crosswalk

2021 Hazards Profiled	2021 Hazard Ranking	2026 Hazard Ranking
Natural Hazards		
Dam Failure	Medium	Medium
Drought	Medium	Medium
Earthquake/Geological	Low	Low
Erosion–Hurricane/Nor'easter/Coastal Storm	Medium	High*
Extreme Temperature–Cold	High	High
Extreme Temperature – Heat	High	High
Flood	High	High
Hail	Medium	Medium
High Wind – Straight-Line Winds	High	High
High Wind – Tornado	Medium	Low*
Landslide (non-seismic)	Low	Low
Severe Storm – Lightning	Low	Low
Severe Storm – Winter Weather (Includes Ice Storm)	High	High
Storm Surge –Hurricane/Nor'easter/Tropical Storm	High	High
Wildfire	Low	Medium*
Human-Based Hazards		
Hazardous Materials Release – Fixed Site	High	High
Hazardous Materials Release – Transportation	High	High
Animal Disease	Low	Low
Civil Unrest	Medium	Medium
Cyber Attack	High	High
Economic Collapse	Medium	Medium
Nuclear Hazards	Medium	Medium
Pandemic	High	High
Power Failure	High	High
Terrorism	High	High

Notes:
Impacts from Climate Change and Sea Level Rise are addressed in each applicable hazard.
** hazard ranking change*

2.4 HMP IMPLEMENTATION: PROGRESS IN LOCAL MITIGATION EFFORTS

As required by FEMA, Union County and its 21 municipalities completed an evaluation of the mitigation strategies and actions from the 2021 plan and reported on the status of each, either as Ongoing, Completed, or Withdrawn. The table below highlighted completed mitigation actions since the last plan update in 2021.

Table 2.4-1 Municipal Mitigation Strategy Summary

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
Berkeley Heights Township	Action 01-01	Acquire Homes at Robbins Avenue and Springfield Intersection.	Acquire homes at Robbins Avenue and Springfield intersection.
Berkeley Heights Township	Action 01-02	Flood-proof Town Hall Building Which Houses Police Department/Data Storage.	Flood-proof Town Hall Building which houses Police Department/Data Storage.
Berkeley Heights Township	Action 01-04	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.
Berkeley Heights Township	Action 01-05	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Berkeley Heights Township	Action 01-06	Flood-proof Homes Along 400 and 600 River Road.	Flood-proof homes along 400 and 600 River Road.
Berkeley Heights Township	Action 01-07	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.
Berkeley Heights Township	Action 01-08	Upgrade and Improve Summit Road and Sussex Road Drainage Ditch	Upgrade and improve the stormwater management system for Summit Road as a result of this drainage ditch.
Clark Township	Action 02-01	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.
Clark Township	Action 02-02	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.
Clark Township	Action 02-03	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Cranford Township	Action 03-02	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.
Cranford Township	Action 03-03	Purchase and Install Backup Generator for Fire Department.	Purchase and Install Backup Generator for Fire Department.
Cranford Township	Action 03-05	Upgrade Gate System at Hansel's Dam.	Upgrade gate system at Hansel's Dam.
Cranford Township	Action 03-06	Inflow and Infiltration Phase 1	Installation of approximately 3,000 LF of storm conveyance pipe and associated drainage structures.

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
Cranford Township	Action 03-07	Cranford Avenue Drainage Improvements	Improvements include roadway reconstruction, milling and paving, HMA overlay, base repair, curb installation, modular block retaining walls, construction of ADA-compliant ramps, upgrading inlets with eco curb pieces, driveway replacement, grading and drainage improvements
Cranford Township	Action 03-08	Kensington Avenue and Edgar Avenue Drainage Improvements	Installation of approximately 850 LF of storm conveyance pipe and associated drainage structures. Improvements also included, milling and paving, HMA overlay, base repair, curb installation, and construction of ADA-compliant ramps.
Elizabeth City	Action 04-01	Upgrade and/or Repair Ursino Dam.	Upgrade and/or repairs of the local dam.
Elizabeth City	Action 04-02	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.
Elizabeth City	Action 04-03	Upgrade and Repair Storm Drains and Sewers along Decker Ave.	Upgrade and repair of storm drains and sewers along Decker Ave. to eliminate backups.
Elizabeth City	Action 04-04	Conduct a Citywide Public Communication Campaign to increase Emerging Disease Outbreaks and Epidemics.	Conduct a citywide public communication campaign to increase emerging disease outbreaks and epidemics. 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.
Elizabeth City	Action 04-05	Construct an Emergency Response Ambulance Canopy.	Construct an emergency response ambulance canopy to provide overhead protection for emergency vehicles during severe winter weather events.
Elizabeth City	Action 04-06	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.
Fanwood Borough	Action 05-02	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Garwood Borough	No completed mitigation actions since 2021.		
Hillside Township	No completed mitigation actions since 2021.		
Kenilworth Borough	Action 08-01	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	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

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
		Stormwater Management Rules at N.J.A.C. 7:8, Adopted March 2, 2020.	ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Kenilworth Borough	Action 08-02	Improve Maintenance of Brook near GSP	There is a 10-foot-wide area that requires minor cleaning. It is located near a repetitive loss area where water comes off the parkway. The area was last cleaned out about 15-20 years ago
Linden City	Action 09-02	Flood-proof Department of Public Works	Flood-proof Department of Public Works.
Linden City	Action 09-06	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.
Linden City	Action 09-07	Purchase a Backup Generator for City Hall.	Back-up generator for City Hall.
Linden City	Action 09-08	Replace Range Road Bridge.	Replace Range Road Bridge to eliminate flood risk.
Linden City	Action 09-09	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.
Linden City	Action 09-10	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Mountainside Borough	Action 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.
Mountainside Borough	Action 10-02	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.
Mountainside Borough	Action 10-03	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	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
Mountainside Borough	Action 10-04	Purchase and Install a Generator for Borough Hall.	Purchase and Install a Generator for Borough Hall.
New Providence Borough	Action 11-01	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, gabion baskets, remove and replace trash racks, and repaired the scour of the dam inlet and outlets
New Providence Borough	Action 11-02	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

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
			Providence High School and an upgraded bridge would allow improved emergency response
New Providence Borough	Action 11-03	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Plainfield City	Action 12-01	Obtain Backup Power or Bury Lines for Fire Station on Central Avenue.	Obtain backup power or bury lines for Fire Station on Central Avenue.
Plainfield City	Action 12-02	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.
Plainfield City	Action 12-04	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.
Plainfield City	Action 12-06	Install emergency generator at Warming Center (Welcome Center) at Senior Citizens Building - 400 East Front St.	Install emergency generator at Warming Center (Welcome Center) at Senior Citizens Building - 400 East Front St.
Plainfield City	Action 12-07	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.
Plainfield City	Action 12-08	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Rahway City	Action 13-01	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.
Rahway City	Action 13-02	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Roselle Borough	No completed mitigation actions since 2021.		
Roselle Park Borough	Action 15-01	Flood-proof the Chestnut Street Fire Station.	Flood-proof the Chestnut Street fire station.
Roselle Park Borough	Action 15-02	Flood-proof the Lorane Fire House.	Flood-proof the Lorane Fire House
Roselle Park Borough	Action 15-03	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
Roselle Park Borough	Action 15-05	Mitigate Flooding of the Sherman School.	Mitigate flooding of the Sherman School.
Roselle Park Borough	Action 15-06	Obtain Backup Power to the Roselle Parks Middles School.	Backup power to the Roselle Parks Middles School.
Roselle Park Borough	Action 15-07	Obtain Backup Power for and Retrofit the Aldine School.	Backup power/retrofitting of the Aldine School.

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
Roselle Park Borough	Action 15-08	Obtain Backup Power for and Retrofit Roselle Park High School.	Backup power/retrofitting of Roselle Park High School.
Roselle Park Borough	Action 15-10	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.
Roselle Park Borough	Action 15-11	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).
Roselle Park Borough	Action 15-12	Join CRS Program.	Join CRS Program.
Roselle Park Borough	Action 15-13	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Scotch Plains Township	Action 16-02	Install Generator at Municipal Building.	Install generator at municipal building.
Scotch Plains Township	Action 16-03	Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.	Restore eroded streambanks upstream of pump station.
Scotch Plains Township	Action 16-04	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).
Scotch Plains Township	Action 16-06	Upgrade EOC.	Upgrade EOC.
Springfield Township	Action 17-01	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.
Springfield Township	Action 17-02	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.
Springfield Township	Action 17-03	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.
Springfield Township	Action 17-04	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Summit City	Action 18-01	Purchase and Install a Backup Generator for the Department of Public Works.	Backup generator for the Department of Public Works.
Summit City	Action 18-04	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.

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
Summit City	Action 18-07	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.
Summit City	Action 18-08	Construct Spillway Improvements at River Road.	Construct spillway improvements at River Road to reduce flooding.
Summit City	Action 18-09	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Summit City	Action 18-10	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.
Union Township	Action 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.
Union Township	Action 19-02	Harden and Retrofit Police Department.	Hardening/retrofitting of Police Department.
Union Township	Action 19-03	Harden and Retrofit of Municipal Building.	Hardening/retrofitting of Municipal Building.
Union Township	Action 19-04	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.
Union Township	Action 19-05	Purchase New Emergency Standby Generator for Firehouse Headquarters.	New Emergency Standby Generator – Firehouse Headquarters
Union Township	Action 19-06	Purchase New Emergency Standby Generator for Senior Center.	New Emergency Standby Generator – Senior Center
Union Township	Action 19-07	Repair Retaining Walls on Various Streams Throughout the Township.	Repair retaining walls on various streams throughout the Township to ensure they remain functional during future flood events.
Union Township	Action 19-08	Purchase New Emergency Standby Generator for Police Department.	New Emergency Standby Generator – Police Department
Union Township	Action 19-09	Repair Irvington Branch Retaining Wall.	Irvington Branch Retaining Wall Repairs
Westfield Town	Action 20-01	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 ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Westfield Town	Action 20-02	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
Winfield Township	Action 21-01	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or

Jurisdiction	Completed Action #	Completed Action Name	Completed Action Description
		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.	additional measures in order to address local water quality and flooding conditions as well as other environmental and community needs. The sample ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.
Winfield Township	Action 21-02	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.
Union County	Action 23-07	Install a Fiber Loop Throughout Each County Complex 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 county 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.



3.0 MITIGATION STRATEGY

Plainfield, NJ

3.0 MITIGATION STRATEGY

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 community lifelines and critical facilities. The Mitigation Strategy consists of:

- Union County's Hazard Mitigation Goals and Objectives that help guide the selection of activities that will mitigate identified hazards and reduce future losses (located in Section 2.0); and

- Strategies that lead to the identification, evaluation, and prioritization of mitigation actions. The County's mitigation strategies are located in this section while each municipality's mitigation strategies are located in Appendices Vol. I – Jurisdictional Information.

The Steering Committee Kickoff Meeting, which occurred on May 9, 2024, began the discussion of updating the mitigation strategy. The Steering Committee evaluated the previous HMP goals and objectives and maintained them as they continue to reflect the current risk and vulnerabilities that face 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 using the New Jersey State Hazard Mitigation Plan's 2024 Mitigation Action Prioritization Tool (MAP-T). This section further describes the strategy in developing County and municipal mitigation actions.

Section 3.0 Mitigation Strategy includes the following information:

- Hazard Mitigation Plan Goals and Objectives (Section 3.2)
- Evaluation and prioritization of mitigation actions (Section 3.3)
- The municipal mitigation strategy summary (Section 3.4)
- Union County's mitigation actions (Appendices Volume I. Jurisdictional Information – 23. Union County)

3.2 HAZARD MITIGATION PLAN GOALS AND OBJECTIVES

As discussed in the previous section, Union County's mitigation goals and objectives are the same as the 2021 update.

Table 3.2-1 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	**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.

Goal	Objective
to plan and implement hazard mitigation projects, programs, and activities.	**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.

3.3 EVALUATION AND PRIORITIZATION OF MITIGATION ACTIONS

When the Project Team met with the municipalities and the County, each mitigation action was discussed and updated based on their current status. The status evaluation includes completed, ongoing, withdrawn, or new.

Completed: The County and each municipality established which mitigation actions were successfully completed over the previous five-year cycle. For these completed actions, the County or municipality identified action details that may have changed or expanded, such as scope, cost, and funding source. The 2026 HMP contains the most up-to-date information provided for these actions, and the action will not be included in the mitigation actions table in future plan updates.

Ongoing: The Planning Team worked with the County and each municipality to reflect progress in the HMP implementation. Ongoing mitigation actions are those that were started but not completed or not started. They are carried forward from the 2021 plan into this plan update. In each municipal appendix, the reasoning for the ongoing status is noted in the “Notes” column.

Withdrawn: The Planning Team also worked with the County and each municipality to pinpoint Withdrawn Mitigations Actions, those that were included in the previous HMP but are no longer feasible, practical, or necessary to implement. These typically are actions completed by another entity or actions combined with other actions but may also be actions that did not retain political or fiscal viability.

New: The Planning Team worked with the County and each municipality to identify New Mitigation Actions to include in the hazard mitigation planning process. These may be actions that were started but not discussed in previous HMPs or actions that the County or municipality intends to start in the coming five years.

PRIORITIZATION OF MITIGATION ACTIONS

In addition to reviewing the status of each mitigation action, the Project Team worked with municipalities and the County to prioritize all ongoing and new actions using the New Jersey State Hazard Mitigation Plan’s 2024 Mitigation Action Prioritization Tool (MAP-T). Municipalities and the County reviewed their ongoing and new actions against MAP-T’s 14 criteria (Table 3.3-1) to evaluate the priority of the mitigation action. The more criteria that an action addresses, the higher its priority becomes. Action prioritization rankings are Low (action meets less than 6 criteria), medium (action meets between 7-11 criteria, and High (action meets above 11 criteria).

Table 3.3-1 MAP-T's Criteria and Description

Criteria	Description
Life Safety	Protection of life and prevention of injury Consider adverse effects on one segment of the population.
Property Protection	Elimination and reduction of damage to structures and infrastructure. Consider development in the floodplain or high-risk areas.
Cost-Effectiveness	Commensurateness of cost of the action with the benefits achieved.
Political	Public support and political will in support of the action. Consider any conflict with development pressures.
Legal	Authority to implement the action.
Fiscal	Capability to fund under existing program budgets, obtain authorization for a new budget, or acquire funding from another source like a grant.
Environmental	Potential environmental impacts of the action, compliance with environmental regulations, and co-benefits of the action.
Social Vulnerability	Benefits to socially vulnerable populations and underserved communities.
Administrative	Personnel and administrative capabilities to implement the action and maintain it, capability to obtain outside help, and alignment of the project's scope and scale with the entity's capabilities.
Hazards of Concern	Mitigation of high-ranked hazards through the action.
Climate Change	Incorporation of climate change projections for the State into the action, designs to withstand/address long-term conditions, and consistency with the State's climate resilience goals.
Timeline	Capability to complete the action in less than 5 years (within the planning horizon of the HMP).
Community Lifelines	Benefits that the action provides to community lifelines.
Other State and Local Objectives	Advancement of other entity objectives, like capital improvements, economic development, environmental quality, or open-space preservation, and support of policies of other plans and programs.

3.4 MUNICIPAL MITIGATION STRATEGY SUMMARY

This section provides a high-level summary for each municipality's mitigation strategy. New to this plan is the "Mitigation Statement," which summarizes what each municipality has prioritized through hazard mitigation planning since the last HMP in 2021 and their plan on what to prioritize for hazard mitigation in the next five years (2031). The Project Team worked with the municipalities to develop their mitigation strategy statement, which is included in Table 3.4-1. Additionally, the number of completed, ongoing, new, and withdrawn actions are also included in Table 3.4-1. For the full municipal mitigation strategy, refer to each municipal appendix (Appendices Vol. I – Jurisdictional Information). As required by FEMA, Union County and its 21 municipalities completed an evaluation of the mitigation strategies and actions from the 2021 plan and reported on the status of each, either as Ongoing, 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. There is also a mitigation actions table for Special Districts. For the 2026 HMP update, there are a total of **377 mitigation actions,** with **62 New actions, 210 Ongoing actions, 83 Completed actions,** and **22 Withdrawn actions.** For more information on the mitigation strategy, see Section 3.0 Mitigation Strategy. Note that Union County's mitigation actions are located in their appendix and not included in Table 3.4-1.

This section provides a high-level summary for each municipality's mitigation strategy. New to this plan is the "Mitigation Statement," which summarizes what each municipality has prioritized through hazard mitigation planning since the last HMP in 2021 and their plan on what to prioritize for hazard mitigation in the next five years (2031). The Project Team worked with the municipalities to develop their mitigation strategy statement, which is included in Table 3.4-1 Additionally, the number of completed, ongoing, new, and withdrawn actions are also included in Table 3.4-1. For the full municipal mitigation strategy, refer to each municipal appendix (Appendices Vol. I – Jurisdictional Information).

Table 3.4-1 Municipal Mitigation Summary

Jurisdiction	Mitigation Statement	# of New Actions	# of Ongoing Actions	# of Completed Actions	# of Withdrawn Actions
Berkeley Heights Township	Since the previous Hazard Mitigation Update, the Township of Berkeley Heights has constructed a new Municipal Complex which hosts our Police Division, Library, Recreation Department and finally our Buildings Department. In addition, our Township has prioritized removing hazardous dead trees that would impact power loss and cleaned out waterways to prevent flooding. It has also committed to clearing out clogged waterways on Township property. During the next five years, the Township will be focusing on continuing the above actions as mentioned above and also continue resident emergency notifications/preparedness for significant weather and or terrorist events.	0	15	7	1
Clark Township	The Township of Clark continues to make investments in hazard mitigation. The Police Department has been outfitted with rescue vests, and the Fire Department has purchased additional boats and water rescue suits for high water rescues. Inspection and maintenance of Pumpkin Patch waterway is completed twice per year. Storm water management is a critical requirement for all construction and improvements within the Township of Clark. The township is currently reviewing grant opportunities to consider improvements to the Pumpkin Patch area to reduce flash flooding. Areas around Rahway Park are part of a larger plan including numerous communities along the Rahway River.	0	4	3	0
Cranford Township	Since the 2021 plan update, our flood mitigation strategy has prioritized enhancing stormwater management systems and reinforcing critical infrastructure to reduce flood risks. Over the next five years, we will focus on undertaking a river desilting projects to increase water flow and transport capacity, expanding our stormwater management capabilities and expanding green infrastructure to improve water absorption and reduce runoff. These measures are crucial for safeguarding our community and ensuring resilience against future flooding.	6	11	6	3
Elizabeth City	Since the 2021 plan update, the City of Elizabeth has focused on enhancing flood resilience, improving emergency response capabilities and upgrading critical infrastructure to mitigate natural hazard risks. Key completed actions include improving drainage systems, enhancing backup power, increasing emergency response efficiency and responding to a global pandemic. Over the next five years, the City of Elizabeth will continue to improve drainage systems, implement an advanced emergency alert system, increase power resiliency, and improve public outreach amongst other actions to safeguard the residents of Elizabeth.	1	34	6	0
Fanwood Borough	The Borough of Fanwood continuously monitors and critiques all storms with an after-action meeting with OEM officials. It continuously clears storm drains before and after events throughout the Borough. All road projects, especially in flood prone areas, and extra inlets and piping are added as needed to move water from the roadway. Prior to storms, all debris is removed when needed. The Borough continues to educate the community about storm water management and will spend up to $1,000.00 in education and other incidentals pertaining to hazard mitigation. Currently, Forest Road Park building at 200 Forest Road is being updated with storage space to include bedding, to act as a temporary shelter, and/or charging station as needed. A whole building generator is also being installed in 2025. The historic train station at 232 North Avenue will be used, as needed, as an information center. All evacuation routes, which are county roads, are closely monitored and cleared as needed by the Borough of Fanwood DPW and Union County DPW. The Borough will not assist in elevating structures. The Borough is working on an update for its master plan, which is due to include a vulnerability assessment.	1	3	1	1
Garwood Borough	Since the 2021 plan update, the Borough has made strides in strengthening its defenses against natural hazards. We are adopting modern FEMA standards and reinforcing backup power at key facilities, these efforts have laid the groundwork for a more resilient community. Looking ahead, the Borough is setting its sights on the future—prioritizing initiatives that confront the growing challenges of climate change, including rising sea levels. Over the next five years, it plans to expand mitigation strategies by refining flood maps and implementing state-of-the-art emergency alert systems. These actions reflect the Borough's strong commitment to protecting residents and supporting sustainable growth in an ever-changing environment.	5	6	0	0

Jurisdiction	Mitigation Statement	# of New Actions	# of Ongoing Actions	# of Completed Actions	# of Withdrawn Actions
Hillside Township	The township is working with the engineering and administration to develop a mitigation strategy. This will include working with the Planning and Zoning Boards as well as the Township Planner. American Water Company is in the process of replacing old water lines and Elizabethtown Gas Company is replacing all old gas lines and meters. Request for assistance from FEMA for the flume that runs from the Rahway River down Central Avenue and turns left on Mertz Avenue was denied during Hurricane Ida; however, a maintenance plan is in place to assure that there is no spillage and unrestricted flow. An application for the BRIC grant to mitigate several roadways and a new OEM office were put on hold due to lack of funding.	0	11	0	0
Kenilworth Borough	Since the last update, the borough has continued to get funding to improve its OEM building. It also has been working to identify and fix areas that experience flooding on a regular basis. The borough is working on an update for its master plan, which is due to include a vulnerability assessment.	0	2	2	0
Linden City	Since 2021, the City of Linden has initiated a comprehensive mitigation action strategy aimed at strengthening its resilience against natural disasters and human-made hazards. This strategy focuses on enhancing infrastructure, promoting sustainable development practices, and fostering community engagement to effectively reduce vulnerabilities and ensure the well-being of its residents. The collaborative efforts of its various City Departments, as well as other governmental partners and stakeholders within the private sector, have demonstrated the City's commitment to a safer and more sustainable future.	3	12	6	4
Mountainside Borough	Since 2021, the Borough has been actively strengthening its commitment to hazard mitigation, with a strong emphasis on reducing flood risks. A central initiative has been the implementation of updated stormwater management ordinances designed to minimize environmental impact and mitigate flooding. These measures are being incorporated into both private and public development projects, promoting long-term resilience and sustainability across the community. The Borough will continue to prioritize flood mitigation in future development in both private development and government development.	0	3	4	0
New Providence Borough	Since 2021, the borough continued to review its commitment to hazard mitigation. The borough has made investments in repairing and rehabilitating the Clearwater detention dam, upgraded pedestrian bridges that cross various waterways, and improved rescue equipment operated by emergency services. The borough has also adopted new ordinances for stormwater management that intend to address flooding conditions and minimize environmental impact. The borough will continue to prioritize flood mitigation in future development in both private and government development.	2	7	3	0
Plainfield City	Since the 2021 plan update, the City of Plainfield has prioritized addressing flood-prone infrastructure, upgrading emergency power at critical facilities, and enhancing community outreach. Key efforts have included securing backup power for fire stations and planning major stormwater upgrades in high-risk neighborhoods. Over the next five years, the city aims to improve streambank stabilization, develop a microgrid for critical infrastructure, and elevate Repetitive Loss properties to increase resilience to worsening climate impacts.	3	8	6	2
Rahway City	Since the City of Rahway's last mitigation plan update in 2021, our overall strategy has focused on implementing practical, high-impact projects that address both acute and systemic flooding vulnerabilities. In response to the severe damage caused by Tropical Storm Ida—particularly the over $2 million in losses at Hamilton Stage and the destruction of more than 200 vehicles—our priorities have emphasized infrastructure hardening and real-time hazard communication. Key initiatives for 2025 include flood-proofing the Hamilton Stage building, installing flood depth gauges at historically low-lying intersections, and advancing the Tide and Sluice Gate Project to manage tidal inflows and enhance stormwater drainage capacity. Additionally, the City has launched a comprehensive waterway analysis, concentrating initially on Orchard Creek to identify debris and vegetation removal opportunities that can be executed rapidly for near-term benefits. This approach allows for immediate risk reduction while setting the stage for longer-term waterway improvements citywide. Our commitment to regional collaboration continues through active participation in the Mayors Council for the	1	8	2	0

Jurisdiction	Mitigation Statement	# of New Actions	# of Ongoing Actions	# of Completed Actions	# of Withdrawn Actions
	Rahway River Watershed, working closely with NJDEP and USACE on sustainable, basin-wide flood mitigation strategies. Looking ahead, the City's priorities over the next five years will include the systematic execution of smaller-scale waterway clearance projects identified in our ongoing analysis. These efforts are critical to reducing chronic flooding risks, improving hydraulic capacity, and building resilience incrementally throughout the City.				
Roselle Borough	Since the 2021 plan update, the Borough of Roselle has focused on enhancing flood resilience, improving emergency response capabilities for natural and human-made attacks, and upgrading critical infrastructure to mitigate natural hazard risks. Over the next five years, Roselle aims to prioritize projects that address streambank stabilization and security for various attacks.	23	12	0	0
Roselle Park Borough	Since the 2021 plan update, the Borough of Roselle Park has focused on enhancing flood resilience, improving emergency response capabilities, and upgrading critical infrastructure to mitigate natural hazard risks. Key completed actions include improving drainage systems and enhancing backup power at essential facilities. Over the next five years, The Borough of Roselle Park aims to prioritize projects that address emerging climate challenges, such as sea-level rise, by expanding mitigation strategies like updated flood mapping, increased drainage and retention basin capacity. These efforts underscore the Borough of Roselle Park's commitment to safeguarding residents and promoting sustainable growth in the face of evolving hazards. The borough is working on a 2026 update for its master plan, which is due to include a vulnerability assessment.	2	17	11	2
Scotch Plains Township	The overall mitigation strategy for the township will always focus and be prioritized first and foremost on life-safety initiatives, followed by encouraging the State Department of Transportation to take action on the long-standing mitigation effort of addressing the flooding on Route 22. The township's Downtown Development as well as development in general will always seek to make the township more resilient to the weather events that have increased in intensity and show no sign of stopping.	0	10	4	2
Springfield Township	Since the 2021 update, the Township of Springfield has increased resiliency by purchase and installation of emergency backup generators. The community often loses power and backup generators ensure that flood control / stormwater pumps are kept operational. New pumps and new generators are planned in construction.	0	14	4	0
Summit City	Since the last update, the City has completed construction of its new firehouse which also houses the City's OEM and its Emergency Operations Center (EOC). This modern facility will greatly assist the City's ability to serve the public in times of major incident activation. Looking to the future, the City intends to put a priority on upgrading its infrastructure to accommodate the intense microburst storms that seem to be increasing in frequency and greatly impact the existing infrastructure. This will be done through physical improvements as well consideration of policy and planning changes to assist in more resilient development.	0	9	6	4
Union Township	Since the 2021 plan update, Union Township, NJ (07083) has prioritized upgrades to aging storm water infrastructure, strengthening its pump stations, and improving emergency communication systems in response to increased flooding from severe weather events. Over the next five years, the township focus will center on modernizing and expanding the capacity of critical pump stations, particularly in low-lying and flood-prone neighborhoods, where existing systems have been overwhelmed during heavy rainfall. By enhancing pump performance and reliability, the township aims to significantly reduce the frequency and severity of localized flooding, protect homes and businesses, and improve its ability to manage storm events more effectively.	1	7	9	0
Westfield Town	Since the last plan update in 2021, the Town mitigation strategy has focused on strengthening critical infrastructure to ensure continuity of essential services during power failures and other emergencies. Westfield prioritized installing backup power systems at key facilities such as emergency shelters, fire and police stations, and communication centers to address vulnerabilities revealed during recent outages. Over the next five years, the Town plans to expand these efforts and prioritize hardening evacuation routes and enhancing	4	9	2	1

Jurisdiction	Mitigation Statement	# of New Actions	# of Ongoing Actions	# of Completed Actions	# of Withdrawn Actions
	communication systems to ensure residents can safely evacuate and stay informed during extended emergencies.				
Winfield Township	Since the last plan update, the Township of Winfield has focused on enhancing community outreach, improving emergency response capabilities, and upgrading critical infrastructure to mitigate natural hazard risks. Key completed actions include acquiring new technology to better notify its residents prior, during, and after emergencies. Over the next five years, Winfield aims to prioritize projects that address improving drainage systems and enhance backup power at essential facilities by expanding mitigation strategies like upgrading community shelters. These efforts underscore the Township of Winfield's commitment to safeguarding residents and promoting sustainable growth in the face of evolving hazards.	1	8	2	2
Special Districts	N/A	8	0	0	0



4.0 PLANNING PROCESS

Westfield, NJ

4.0 PLANNING PROCESS

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 2026 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 update was prepared through numerous meetings, both in-person and virtual, with the steering committee, County agencies and departments, regional stakeholders, all 21 municipalities, and members of the public. The County OEM webpage was used throughout the plan update to bring awareness to hazard mitigation and give the public an opportunity to provide comments. The Union County HMP followed FEMA's HMP process by following their four core steps in completing an HMP update.

Table 4.1-1 FEMA's Four Core 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.

New to this plan update is the inclusion of high hazard potential dam owners in the planning process. There 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). The Robinson's Branch Reservoir Dam is owned by Union County and as part of this plan update, they moved the priority to high for the action to mitigate the risk of dam failure for the dam. The Clearwater Detention Dam is owned by New Providence Borough and as part of this plan update, they created a new action to repair and maintain the dam. The Shackamaxon Dam is owned by NJ Golf Partners, LLC. The Shackamaxon Dam is owned by Heritage Golf Group. The Project Team engaged the engineer Jeff Derosier from Derosier Engineering, who reviewed the HMP and offered an update on the dam's inspection status and recent findings.

4.2 STEERING COMMITTEE

Union County formed a steering committee at the start of the planning process to guide the HMP development. The steering committee members includes County agencies and regional stakeholders, including representatives of FEMA's Community Lifelines (e.g., Health and Medical, Energy, Transportation) and non-profits that work with climate change. The steering committee met three times during the plan development process. Topics and implementation of the steering committee meetings are detailed in the next section.

4.3 ENGAGEMENT STRATEGY

This HMP update included a broad range of stakeholders, **including 10 County agencies and departments, 16 regional stakeholders, and each of the 21 municipalities**. Even more stakeholders were invited to participate in this HMP update, including stakeholder organizations and nonprofits that support underserved populations, climate change experts, neighboring counties, agencies that have the authority to regulate development, and other private and nonprofit interests involved in hazard mitigation activities. Section 4.3 Summary of Meetings Held During This Plan Update, each organization invited to the meeting is listed, along with the organization that attended each meeting. Table 4.4-1 Summary of Planning Attendance lists which organization participated in each meeting.

The Project Team held the following meetings during this plan update:

- Steering Committee Meeting #1
- Public Meeting #1
- Municipal Mitigation Workshop
- Individual Meetings
- Steering Committee Meeting #2
- Socially Vulnerable Roundtable
- Regional Stakeholder Meeting
- Regional Utility Authority Meeting
- Public Meeting #2
- Public Meeting #3

Summary Of Meetings Held

MAY 9, 2024: STEERING COMMITTEE MEETING #1

The County held an in-person steering committee kick-off meeting in May 2024. County departments and all 21 municipalities were invited to be on the steering committee. During this meeting, the Project Team reviewed the role of the steering committee; an overview on hazard mitigation and the planning process; changes since the last plan and new FEMA guidance; high-level overview of the planning process, risk and vulnerability assessment, capability assessment, mitigation strategy; and the project schedule. Participants that were physically at the meeting completed two worksheets during this meeting to evaluate the goals and objectives and profiled hazards from the previous plan. Hazards profiled by the New Jersey State Hazard Mitigation Plan (2024) were considered for this plan update. Virtual participants were emailed both worksheets as a follow-up to the meeting. The Project Team received several completed worksheets by both the steering committee and municipalities.

Table 4.3-1 Steering Committee Kick-off Meeting Invitations and Attendance

Organization Invited to Meeting	Attended Steering Committee Kick-off Meeting
Union County Public Safety	✓
Union County Department of Health	✓
Union County Public Health Nurse	✓
Union County Police	✓
Union County Department of Engineering, Public Works, Facilities Management	✓
Union County 911 Coordinator	✓
Union County Fire	✓
Union County Department of Public Works	
Union County Department of Human Services	
New Jersey State Police	✓
Lower Raritan Watershed Partnership	✓
Union County Utilities Authority	✓
Jersey Central Power & Light	
Union County Communications	✓
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	✓

OCTOBER 17, 2024: MUNICIPAL MITIGATION WORKSHOP

On October 17, 2024, the Planning Team met with 15 municipalities and other plan stakeholders from Union County OEM, Communications, and Utilities as well as Lower Raritan Watershed. At this meeting, the Planning Team provided an overview of hazard mitigation, the schedule for the hazard mitigation plan update, and role of municipalities in the plan update.

Table 4.3-2 Municipal Mitigation Workshop

Organization Invited to Meeting	Attended Municipal Mitigation Workshop
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	✓
Lower Raritan Watershed	✓
Union County OEM	✓
Union County Communications	✓
Union County Utilities Authority	✓

DECEMBER 3, 2024 - JANUARY 29, 2025: INDIVIDUAL MUNICIPAL MEETINGS

During individual meetings, which took place between December 3, 2024, and January 29, 2025, the Project Team discussed with each municipality details around its hazards and mitigation efforts. Each meeting lasted about an hour, and, aside from one virtual meeting, they occurred in person at the Union County Public Safety Building in Westfield, NJ. Discussion focused on significant storms events since the previous plan in 2021, recent major development and infrastructure from 2021 to present, known or anticipated major development and infrastructure in the next five (5) years, and organizations that work with socially vulnerable populations to bring to the table for the socially vulnerable roundtable meeting. The Project Team reviewed municipal risk maps produced by Michael Baker, including a map of Repetitive Loss (RL) properties overlaid on top of their current flood risk and Wildland Urban Interface (WUI) Classification. These maps also included future risk maps including permanent inundation under sea level rise (SLR) conditions, up to five feet of SLR, and New Jersey Inland Design Flood Elevation. Lastly, the Project Team worked with municipalities to review the list of critical facilities and community lifelines and rank hazards of concern (high, medium, or low). Information from these workshops is included in each municipality's appendix.

Table 4.3-3 Individual Meeting Attendance

Organization Invited to Meeting	Attended Individual Meeting
Berkeley Heights Township	✓ - Virtual
Clark Township	✓ - In Person
Cranford Township	✓ - In Person
Elizabeth City	✓ - In Person
Fanwood Borough	✓ - In Person
Garwood Borough	✓ - In Person
Hillside Township	✓ - In Person
Kenilworth Borough	✓ - In Person
Linden City	✓ - In Person
Mountainside Borough	✓ - In Person
New Providence Borough	✓ - In Person
Plainfield City	✓ - In Person
Rahway City	✓ - In Person
Roselle Borough	✓ - In Person
Roselle Park Borough	✓ - In Person
Scotch Plains Township	✓ - In Person
Springfield Township	✓ - In Person
Summit City	✓ - In Person
Union Township	✓ - In Person
Westfield Town	✓ - In Person
Winfield Township	✓ - In Person

FEBRUARY 3, 2025: STEERING COMMITTEE MEETING #2

On February 3, 2025, the Planning Team met with the steering committee for the second time to update it on the hazard mitigation planning process and schedule. The committee heard about the municipalities' participation in the process and what other stakeholders would be involved. Other stakeholders include County departments, organizations that represent socially vulnerable populations, adjacent counties, major employers, climate change experts like Rutgers University, and regional utility authorities/providers. All stakeholders have the opportunity to provide input on the plan, such as through updating and adding mitigation actions.

Table 4.3-4 Steering Committee Meeting #2

Organization Invited to Meeting	Attended Steering Committee Meeting #2
Union County Public Safety	
Union County Department of Health	✓
Union County Public Health Nurse	
Union County Police	
Union County Department of Engineering, Public Works, Facilities Management	✓
Union County 911 Coordinator	
Union County Fire	
Union County Department of Public Works	
Union County Department of Human Services	✓
New Jersey State Police	
Lower Raritan Watershed Partnership	
Union County Utilities Authority	✓
Jersey Central Power & Light	✓
Union County Communications	
Union County Office of Emergency Management	✓
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	✓

MARCH 11, 2025: SOCIAL VULNERABILITY ROUNDTABLE

The Project Team held a roundtable with organizations that support socially vulnerable populations across Union County in March 2025. These organizations were identified by municipalities during the municipal workshop or municipal meetings. Representatives from various identified organizations discussed recent hazards, such as extreme temperatures, the April 2024 earthquake, drought, cyberattacks, COVID-19, civil unrest against immigrant and refugee populations, and flooding, particularly during Hurricane Ida in 2021. Additionally, potential mitigation actions to address the hazards were discussed.

A key concern raised by representatives of the organizations was the damage to their facilities incurred by the organizations due to flooding during Hurricane Ida and other high rainfall events, particularly in Elizabeth. In particular, Trinitas Medical

Center, International Rescue Committee, and the Salvation Army in Elizabeth have been affected by plumbing issues and facility, and basement damage owing to flooding; repairs are ongoing in several of these organizations.

Additionally, concerns about the impact of extreme temperatures on senior populations, low-income communities, and people with chronic health conditions, were raised; the low-income clients of International Rescue Committee are particularly impacted by extreme heat because several of them do not have access to air-conditioning in their homes. The shelter of the Salvation Army in Elizabeth needs generators and a new cooling system to address the impact of extreme heat. The Gateway Family, YMCA, too needs generators to support refrigeration for storage of medication and support air-conditioning during extreme heat conditions; the common cooling centers in the respective buildings of the organization are insufficient to provide shelter to residents during extended periods of extreme heat.

Another concern raised by the International Rescue Committee was the lack of access to transportation for community members who do not have cars and need transportation during hazard events. For the email inviting stakeholders to the roundtable meeting, please see Appendices Volume II. Other Plan Materials Appendix F. Email Invites Stakeholders.

Table 4.3-5 Socially Vulnerable Roundtable Meeting Attendance

Organization Invited to Meeting	Attended
International Rescue Committee	✓
Community Hope	✓
Trinitas Regional Medical Center	✓
The Salvation Army, Elizabeth	✓
Union County Public Safety	✓
The Arc of Union	
Bridgeway	
Elizabeth Coalition to House the Homeless	
Family Promise	
LINCS	
Union County Division of Aging	
Community Food Bank	
Catholic Charities-Support Services for Veteran Families	
PROCEED, Inc.	
Acacia Lodge	
Linden Reformed Church	
Community In Cooperation	
NJ Reentry	
Legal Services New Jersey	
Urban League of Union County	
Mountainside Borough Senior Coordinator	
Jewish Family Services - Elizabeth	
Scotch Plains - Fanwood Ministerium	
Salvation Army - Cranford	
Crescent Avenue Presbyterian Church	
Cranford Family Care	
Abundant Life Church	
YMCA - Scotch Plains and Fanwood	
Jewish Community Center of Central New Jersey	
Salvation Army - Plainfield	
Groundwork Elizabeth	
Jewish Family Services	

MARCH 12, 2025: REGIONAL STAKEHOLDER MEETING

This meeting targeted participation from agencies that have the authority to regulate development, Offices of Emergency Management from neighboring counties, climate change experts, and other private and nonprofit interests involved in hazard mitigation activities. During the meeting, the Project Team summarized risk assessment findings and discussed the hazards of concern. Participants were asked if the assessment aligns with what they have experienced within the last five (5) years.

Participants noted that flooding owing to rain bursts or high rainfall over a few hours that overwhelms the stormwater infrastructure is a hazard of major concern. Additionally, flooding owing to extreme weather events such as hurricanes is a key concern. During Hurricane Ida in 2021, Port Elizabeth and Goethals Bridge in particular, were damaged by the flooding. Consequently, the Port Authority is in the process of performing their own Risk Assessment to mitigate flooding impacts, by identifying priority projects and funding sources for their implementation. It is also reviewing the impact of storm surges. Additionally, counties have jointly prepared a few plans to mitigate the impacts of hazards on infrastructure. In particular, Union, Essex, Somerset Counties have prepared a Treatment Plan and a Power Plan. For the email inviting stakeholders to this stakeholder meeting, please see Appendices Volume II. Other Plan Materials Appendix F. Email Invites Stakeholders.

Table 4.3-6 Regional Stakeholder Meeting Attendance

Organization Invited to Meeting	Attended
Kean University	✓
Port Authority of New York New Jersey	✓
Somerset County Office of Emergency Management	✓
Essex County Sheriff's Office of Emergency Management	✓
Middlesex County Office of Emergency Management	✓
Union County Office of Emergency Management	✓
Joint Meeting of Essex and Union Counties	
Lower Raritan Watershed Partnership	
Union County Office of Health Management	
Union County Department of Human Services	

MARCH 12, 2025: REGIONAL UTILITY AUTHORITY MEETING

The Project Team met virtually with representatives from municipal utility authorities in Union County in March 2025. These representatives discussed recent hazards, such as cyber-attack, power failure, heavy rainfall, flooding, earthquakes, droughts, COVID-19, and hurricanes.

Cyber-attack is an emerging concern; specifically, the Union County Utilities Authority experienced a cyber-attack in 2021, and the authority has since then been attempting to apply for coverage using Tier 3 insurance security. Additionally, it is applying for non-Federal grants and state funding and reviewing its cyber security measures.

Power failures are also a hazard of significant concern for the Union County Utilities Authority, as it essentially functions as the entire county's incinerator.

Wet weather significantly impacts the Rahway Valley Sewerage Authority. It is also prone to flooding due to CSOs during heavy rainfall events.

For the Regional Utility Authority's mitigation actions, please see Appendices Volume I. Jurisdictional Information 22. Special Districts Appendix.

Table 4.3-7 Regional Utility Authority Attendance

Organization Invited to Meeting	Attended
Jersey Central Power & Light	✓
Union County Utilities Authority	✓
Rahway Valley Sewerage Authority	✓
New Jersey American Water	✓
Waste Management of New Jersey, Inc	
Veolia Water	
ReWorld (formerly Covanta) Operators of the Union County Resource Recovery Facility (incinerator)	
Elizabethtown Gas	
PSE&G	

4.4 SUMMARY OF PARTICIPATION

Table 4.4-1 includes a summary of all stakeholder attendance, by meeting, organized by stakeholder group (County agency/department, regional stakeholder/State agency, or municipal representative).

Table 4.4-1 Summary of Planning Attendance

Participation	Meeting Type						
	Steering Committee Meeting #1	Steering Committee Meeting #2	Municipal Mitigation Workshop	Individual Meeting	Socially Vulnerable Roundtable	Regional Stakeholder	Regional Utility Authority
County Agency/Department							
Union County Public Safety	✓				✓		
Union County Department of Health	✓	✓					
Union County Public Health Nurse	✓						
Union County Police	✓						
Union County Department of Engineering, Public Works, Facilities Management	✓	✓					
Union County 911 Coordinator	✓						
Union County Fire	✓						
Union County Department of Public Works							
Union County Department of Human Services		✓					
Union County Communications	✓		✓				
Union County Office of Emergency Management		✓	✓				
Regional Stakeholders							
New Jersey State Police	✓						
Lower Raritan Watershed Partnership	✓		✓				
Union County Utilities Authority	✓	✓	✓				✓
Jersey Central Power & Light		✓					✓
International Rescue Committee					✓		
Community Hope					✓		

Participation	Meeting Type						
	Steering Committee Meeting #1	Steering Committee Meeting #2	Municipal Mitigation Workshop	Individual Meeting	Socially Vulnerable Roundtable	Regional Stakeholder	Regional Utility Authority
Trinitas Regional Medical Center					✓		
The Salvation Army, Elizabeth					✓		
Kean University						✓	
Port Authority of New York New Jersey						✓	
Somerset County Office of Emergency Management						✓	
Essex County Sheriff's Office of Emergency Management						✓	
Middlesex County Office of Emergency Management						✓	
Rahway Valley Sewerage Authority							✓
New Jersey American Water							✓
Municipalities							
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		✓	✓	✓			

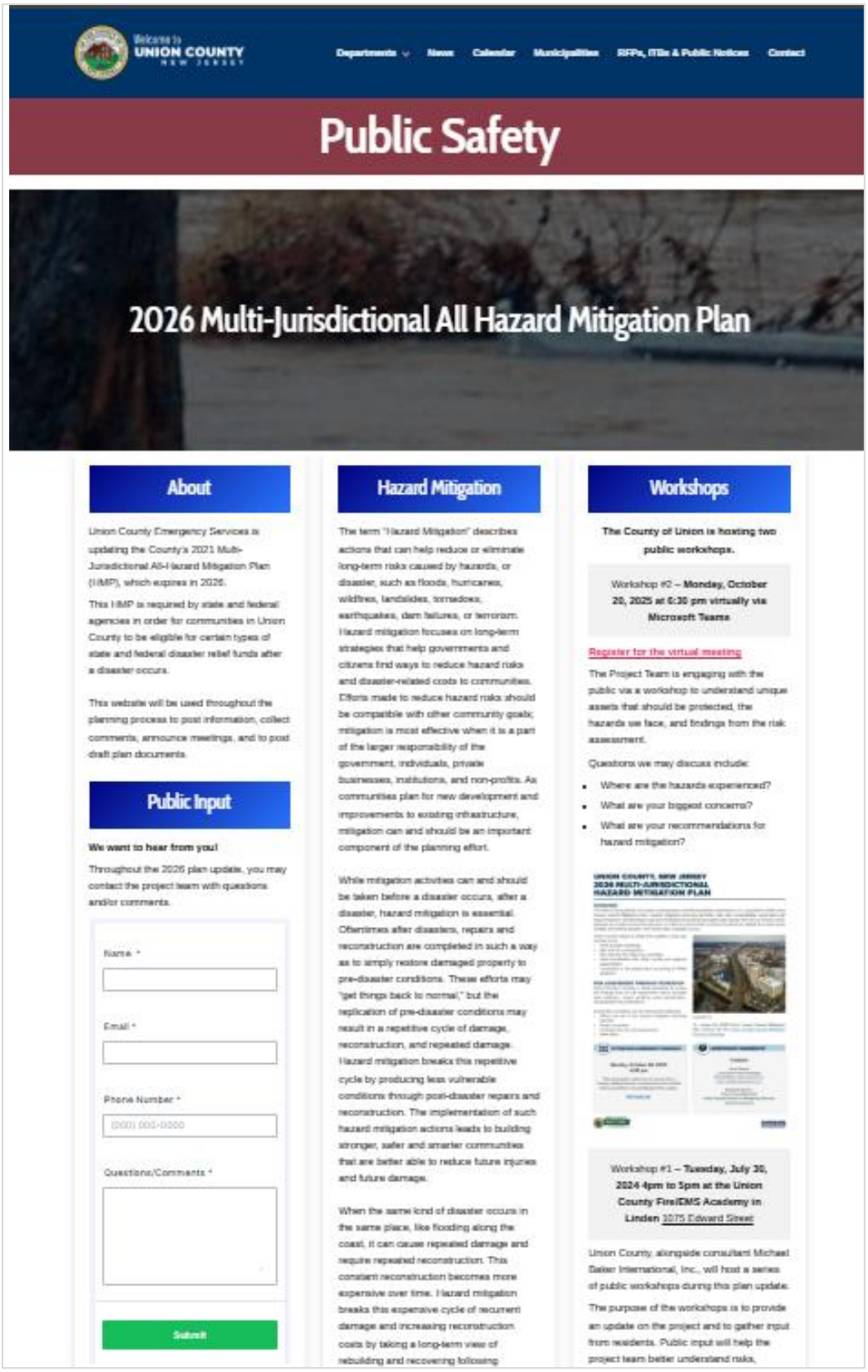
4.5 PUBLIC PARTICIPATION

Starting at the beginning of the planning process, members of the public were given the opportunity to be involved in the planning process. The Project Team hosted the first public workshop on July 20, 2024, where the County OEM website was announced. This website was the main point of communication for the public throughout the planning process.

WEBSITE

The Union County Division of Emergency Services hosted the Union County HMP website, which was used to announce information on the plan update. At the beginning of the planning process, the Project Team updated content on the Union County HMP website to announce the 2026 HMP update and the first public workshop. The County added a public comment section to the website which remained open throughout the entire planning process. Comments from the public were used to update the municipal community profiles (Appendices V.1 – Jurisdictions). The planning team used the public comments to inform the plan and reached out to the relevant municipalities to ask for additional input. Each public workshop was advertised on this website. The draft plan was also posted on this website for public review and comment. See Figure 4.5-1 for a snapshot of the Union County HMP website.

Figure 4.5-1 Union County HMP Website on September 22, 2025



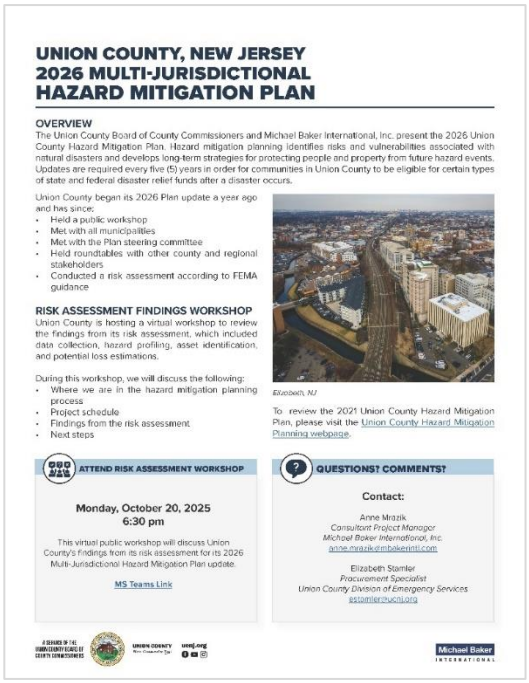
PUBLIC WORKSHOPS

For each of the public workshops, the Project Team created a workshop handout (Figure 4.5-2) with information on how to attend the public meeting and what it covers.

In addition to sending the public workshop handout to regional stakeholders, the project website advertised each public meeting and the County released the handout as a press release and posted on the County's social media. For the first public meeting on the risk assessment, TAPinto released a news article about the public meeting (Figure 4.5-3).

Figure 4.5-2 Public Workshop #1, #2, and #3 Handouts





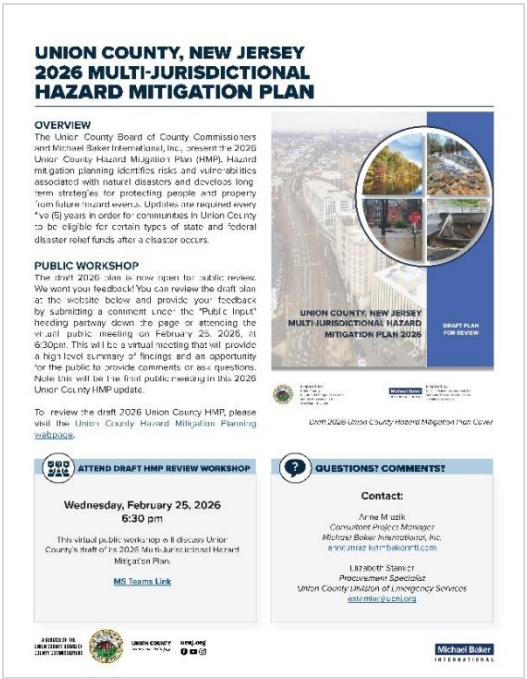
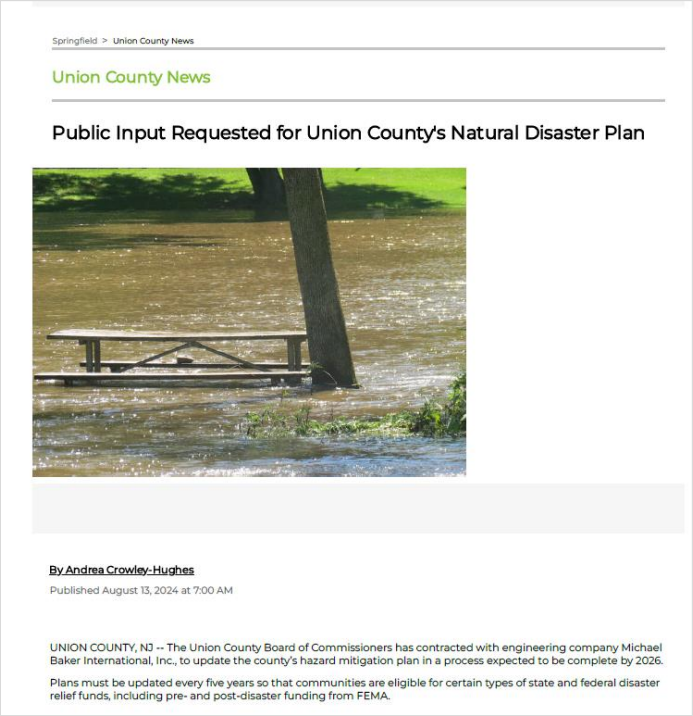


Figure 4.5-3 TAPinto Article about Public Meeting #1



Springfield > Union County News

Union County News

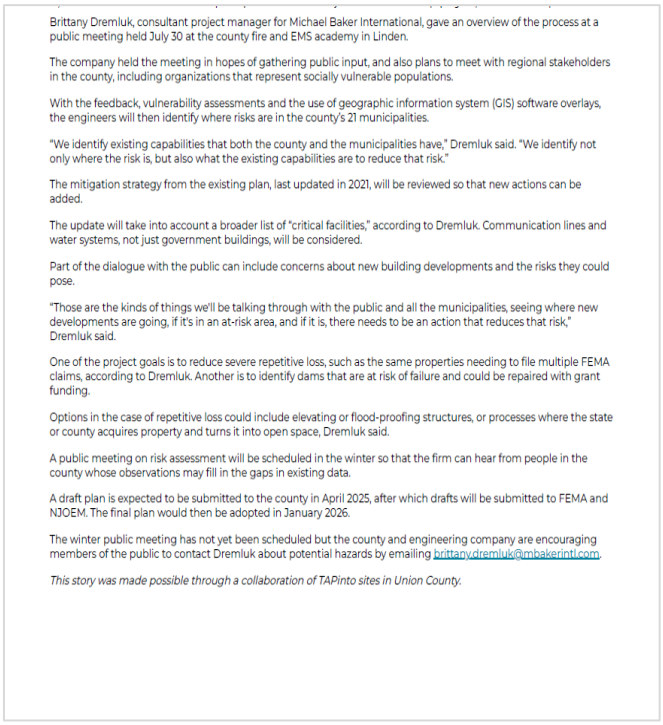
Public Input Requested for Union County's Natural Disaster Plan

By Andrea Crowley-Hughes

Published August 13, 2024 at 7:00 AM

UNION COUNTY, NJ -- The Union County Board of Commissioners has contracted with engineering company Michael Baker International, Inc., to update the county's hazard mitigation plan in a process expected to be complete by 2026.

Plans must be updated every five years so that communities are eligible for certain types of state and federal disaster relief funds, including pre- and post-disaster funding from FEMA.



Brittany Dremluk, consultant project manager for Michael Baker International, gave an overview of the process at a public meeting held July 30 at the county fire and EMS academy in Linden.

The company held the meeting in hopes of gathering public input, and also plans to meet with regional stakeholders in the county, including organizations that represent socially vulnerable populations.

With the feedback, vulnerability assessments and the use of geographic information system (GIS) software overlays, the engineers will then identify where risks are in the county's 21 municipalities.

"We identify existing capabilities that both the county and the municipalities have," Dremluk said. "We identify not only where the risk is, but also what the existing capabilities are to reduce that risk."

The mitigation strategy from the existing plan, last updated in 2021, will be reviewed so that new actions can be added.

The update will take into account a broader list of "critical facilities," according to Dremluk. Communication lines and water systems, not just government buildings, will be considered.

Part of the dialogue with the public can include concerns about new building developments and the risks they could pose.

"Those are the kinds of things we'll be talking through with the public and all the municipalities, seeing where new developments are going, if it's in an at-risk area, and if it is, there needs to be an action that reduces that risk," Dremluk said.

One of the project goals is to reduce severe repetitive loss, such as the same properties needing to file multiple FEMA claims, according to Dremluk. Another is to identify dams that are at risk of failure and could be repaired with grant funding.

Options in the case of repetitive loss could include elevating or flood-proofing structures, or processes where the state or county acquires property and turns it into open space, Dremluk said.

A public meeting on risk assessment will be scheduled in the winter so that the firm can hear from people in the county whose observations may fill in the gaps in existing data.

A draft plan is expected to be submitted to the county in April 2025, after which drafts will be submitted to FEMA and NJOEM. The final plan would then be adopted in January 2026.

The winter public meeting has not yet been scheduled but the county and engineering company are encouraging members of the public to contact Dremluk about potential hazards by emailing brittany.dremluk@mbakerintl.com.

This story was made possible through a collaboration of TAPinto sites in Union County.

PUBLIC WORKSHOPS SUMMARY

July 30, 2024: Public Workshop #1 – Introduction to Plan Update

The first public workshop served as an announcement to the public about the plan update and provided information on how to remain involved through the planning process. This meeting kicked-off the planning process by introducing the Project Team and providing an overview on hazard mitigation, including the planning process, changes since the last plan update, and the Union County HMP goals and objectives. The Project Team discussed each plan element and the project schedule, including upcoming public workshops.

October 20, 2025: Public Workshop #2 – Risk Assessment Findings

The second public workshop started by providing a project overview, including the purpose and schedule. The Project Team then reviewed the natural and human-caused hazards profiled in this plan update along with their county-level rankings and reviewed risk assessment findings on FEMA's floodplain, storm surge, wildfires, and sea level rise.

February 25, 2026: Public Workshop #3 – Draft Plan

The Project Team hosted its third public meeting in February 2026 online via Microsoft Teams to discuss updates to this HMP. During the meeting, the team provided an overview of the HMP update process, including its purpose, timeline, and key highlights from the draft plan. These highlights included a community profile, hazard identification, capability assessment, mitigation strategy, and plan maintenance. The team shared county-scale and selected municipal-scale maps detailing FEMA Flood Zones, NJ Inland Flood Elevation, Sea Level Rise, and the Wildland-Urban Interface (WUI). Updates on mitigation strategies were also presented, revealing 63 new actions, 215 ongoing actions, 82 completed actions, and 21 withdrawn actions across the county. The discussion concluded with a review of next steps for plan maintenance, including the process for towns to submit annual progress reports for additional actions before the next plan update.

This meeting was advertised by a press release (see Figure 4.5-4) and social media (see Figure 4.5-5). The Planning Team also emailed each individual who requested to be kept updated on the plan's progress via the public comment section on the website (see Figure 4.5-6).

Figure 4.5-4 Public Meeting 3 Press Release



UNION COUNTY NJ

Departments and Offices | News | Calendar | Municipalities | RFPs, ITBs & Public Notices | Contact

Union County Schedules Final Public Meeting on Hazard Mitigation Plan Update

February 11, 2026

The Union County Division of Emergency Services invites residents, businesses, and community stakeholders to participate in the final public meeting regarding the County's Hazard Mitigation Plan (HMP) update. The virtual meeting will take place on Wednesday, February 25, 2026, at 6:30 p.m.

The meeting will provide a high-level overview of the draft 2026 Multi-Jurisdictional Hazard Mitigation Plan, along with an opportunity for members of the public to ask questions and provide feedback prior to final submission.

Residents interested in attending the virtual meeting, reviewing the draft plan, or submitting public comments can find additional information and register by visiting: https://ucnj.org/hmp/. The draft plan is available for public review and comment through March 10, 2026.

The 2026 plan serves as an update to the County's 2021 Hazard Mitigation Plan and represents a collaborative effort involving municipal partners, emergency management professionals, and community stakeholders. The plan outlines strategies designed to reduce long-term risks to people, property, infrastructure, and the environment from natural and human-caused hazards.

Hazard mitigation planning plays a critical role in strengthening community resilience. By investing in mitigation strategies before disasters occur, communities can reduce the impact of future emergencies, lower recovery costs, and help residents and businesses return to normal operations more quickly.

Throughout the planning process, a dedicated project website was used to provide updates, share meeting information, and gather public input. The site also hosts the draft plan and supporting materials for review.

Members of the public seeking additional information about the plan or the public meeting may contact:

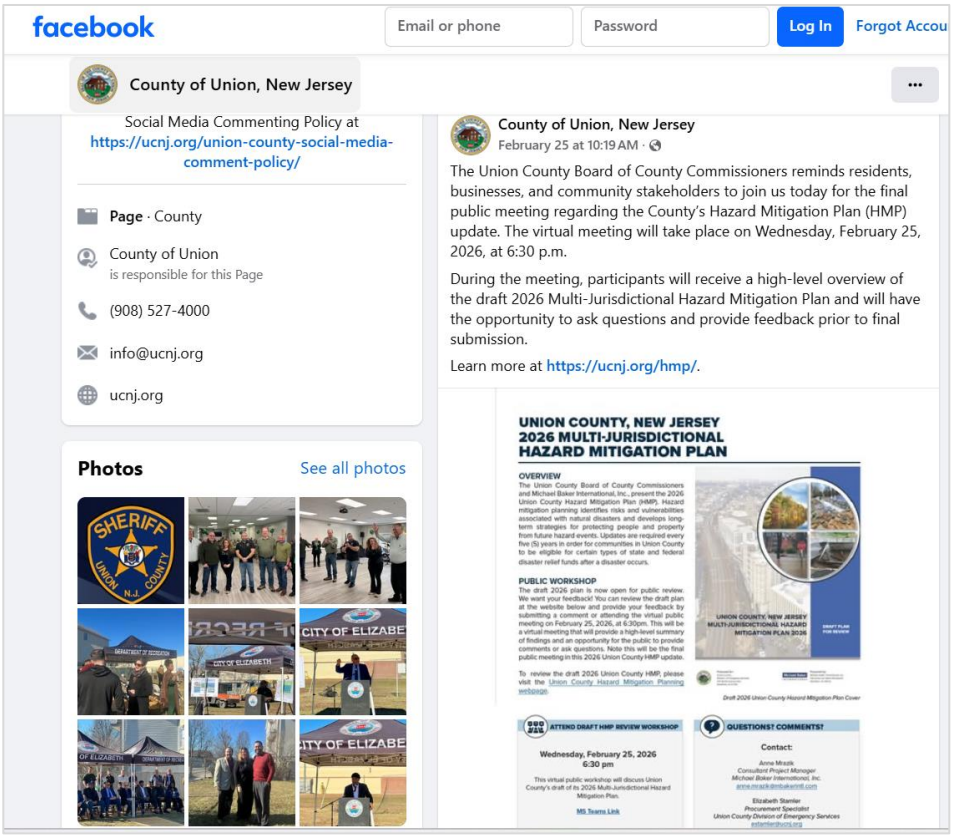
Anne Mrazik
Consultant Project Manager, Michael Baker International, Inc.
anne.mrazik@mbakerintl.com

Elizabeth Stamler
Union County Emergency Services
estamler@ucnj.org

Share this:

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Figure 4.5-5 Union County Facebook and Instagram Posts Advertising Public Meeting 3



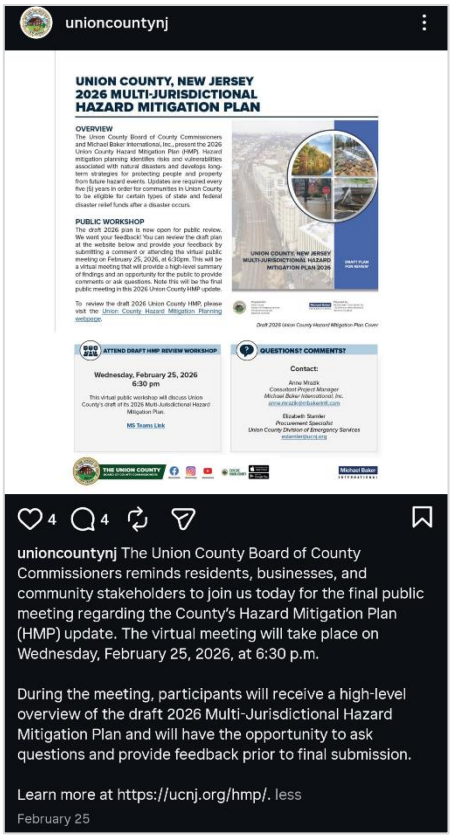


Figure 4.5-6 Email with a Blind Copy to Each Person Who Submitted in Public Comment Section on Website

From: Elizabeth Stamler
Cc: Mrazik, Anne
Subject: EXTERNAL: Union County Hazard Mitigation Plan 2026 - news
Date: Wednesday, February 11, 2026 1:52:34 PM

EXTERNAL EMAIL

Good afternoon,

You previously asked to be updated on the progress of Union County's 2026 Hazard Mitigation Plan Update. A press release went out today: https://ucnj.org/press-releases/public-info/2026/02/11/union-county-schedules-final-public-meeting-on-hazard-mitigation-plan-update/

There is a link within the press release that will bring you to two important updates:
We are having a virtual meeting on February 25, 2026 and our draft of the plan update is now available for review. Please feel free to take a look and let me or Anne (cc'd) know if you have any feedback or questions. Thank you.

Elizabeth Stamler
Procurement Specialist
Union County Emergency Services



5.0 CAPABILITY ASSESSMENT

Green Brook, Plainfield, NJ

5.0 CAPABILITY ASSESSMENT

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).

To fully understand each jurisdiction's existing authorities, policies, programs, and resources, the Project Team distributed a capability assessment survey to Union County's 21 municipalities prior to each municipal meeting. During the meetings, 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; Administrative and Technical; Financial; Education and Outreach. Each municipal capability assessment is located in the Appendix Vol. I – Jurisdictional Information.

5.2 NEW JERSEY STATE REGULATIONS

NEW JERSEY FLOOD HAZARD AREA CONTROL ACT

The New Jersey Flood Hazard Area Control Act (FHACA), part of New Jersey Administrative Code (NJAC) § 7:13, contains a regulatory standard for new habitable buildings in a flood hazard area or, in certain cases, in an area that was previously in a flood hazard that exceeds federal regulation. It requires these buildings add one foot of freeboard to the Flood Hazard Design Flood Elevation (DFE) and be set no lower than the elevation required under the Uniform Construction Code, NJAC 5:23. Habitable buildings are any building intended for regular human occupation and/or residence. This includes single-family homes and duplexes, multi-residence buildings, critical buildings, commercial buildings, accessory structures that are regularly occupied, mobile or manufactured homes and trailers intended for human residence, and any other building that is regularly occupied.

NEW JERSEY MODEL CODE COORDINATED ORDINANCES

For better coordination between the requirements set forth in the NFIP, the FHACA, and the Uniform Construction Code (UCC), the New Jersey Model Flood Damage Prevention Ordinances supplied by NJDEP were upgraded to create Model Code Coordinated Ordinances in 2021. These model ordinances include statewide minimum standards and optional suggested language for higher standards. Municipalities that have adopted floodplain ordinance that exceed the statewide minimum standards within Union County are described in their municipal appendices (Appendices Volume I – Jurisdictional Information). These updated regulations represent a strengthening and alignment of codes that dictate floodplain management.

NEW JERSEY PROTECTING AGAINST CLIMATE THREATS REFORM TO SUPPORT RESILIENT ENVIRONMENTS AND LANDSCAPES

The New Jersey Protecting Against Climate Threats (NJPACT) Resilient Environments and Landscapes (REAL), part of Governor Phil Murphy's January 2020 Executive Order 100, addresses environmental concerns and bolsters resilient investments in New Jersey. It adjusts coastal flood hazard areas to consider rising sea levels and storm surge, increases jurisdictional area further inland, requires higher first-floor elevations or floodproofing, and mandates higher roadways. It also implemented an inundation risk zone for structures proposed in areas of permanent or daily inundation from sea level

rise. NJPACT REAL added onto stormwater management practices, encouraged nature-based solutions and renewable energy, and streamlined NJDEP permitting practices. Lastly, it worked with FEMA to clarify updates the Federal Housing Authority rules with regards to the NFIP program.[1]

INLAND FLOOD PROTECTION RULES

Effective as of July 2023, the Inland Flood Protection rule of New Jersey seeks to better define vulnerable areas and regulate new construction in these areas. New DFE adds two feet to fluvial (non-tidal) flood elevation mapped by NJDEP. The rule mandates use of future projected precipitation when calculating flood elevations, conformance with NJ Uniform Construction Code standards, and meeting or exceeding minimum FEMA NFIP requirements. It also requires that stormwater Best Management Practices account for runoff from both today's storms as well as future storms.[2]

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.

If a municipality has updated their master plan to include the climate vulnerability assessment, it is noted in Table 5.6-1 Ongoing Municipal Planned Integration Activities with Hazard Mitigation and in each municipal appendix located in Appendices Volume I. Jurisdictional Information.

5.3 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.

[1] https://dep.nj.gov/njreal/
[2] https://dep.nj.gov/inland-flood-protection-rule/

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.

5.4 REGIONAL CAPABILITIES

PORT AUTHORITY OF NEW YORK AND NEW JERSEY

The Port Authority of New York and New Jersey (PANYNJ) has three facilities within Union County: Newark Liberty International Airport, the Elizabeth Marine Terminal, and the Goethals Bridge. The PANYNJ conducts proactive risk assessments of extreme weather and climate change threats. The Surge Inundation Risk Assessment leverages thousands of synthetic storm tracks to probabilistically assess risk of surge inundation under current climate conditions and for future climate scenarios and sea-level rise cases out to 2100. The Climate Risk Assessment is an asset-scale, multi-stressor exercise to identify key risks, develop corresponding risk mitigation measures, and prioritize cost-beneficial mitigations for investment.

UNITED STATES ARMY CORPS OF ENGINEERS

The United States Army Corps of Engineers (USACE) is involved in several different projects in Union County. For one, it is performing a validation study and General Reevaluation Report of the Green Brook NJ Sub-Basin. This sub-basin is in the Raritan River Basin and touches Union County in the City of Plainfield and the Township of Scotch Plains. Revised features could include non-structural work such as floodproofing, buy-outs, elevation of structures; channel modifications either small in scale or in combination with other measure(s); a diversion tunnel; levees or floodwalls; and a dry detention basin at another location in Upper Basin.

USACE is also performing a flood risk management feasibility study at the Rahway River Basin (fluvial). It is reactivating this study as there are local concerns of flooding. The work includes surveys, structure inventory, existing & improved condition hydrology and hydraulics (H&H), and alternatives layout. The project team is completing benefit-to-cost analyses and producing a plan that is engineering feasible, economically justifiable, and environmentally acceptable. The primary area of Union County affected by fluvial flooding in the basin is Cranford Township, although several other municipalities as well as the county are included in the study.

In addition to the fluvial study, USACE is doing a storm risk management feasibility study of the Rahway River Basin (tidal). Rapid development in the area is producing increased stormwater runoff and is the primary cause of flooding within the Rahway River Basin. The results of the flooding have included damage to houses, businesses, municipal facilities, and public infrastructure. Lower portions of the Rahway River Basin experienced damages during Hurricane Sandy. The recommended plan for the basin has structural and nonstructural components. While the structural portion focuses on Middlesex County, the nonstructural plan includes elevation and flood proofing for properties in the City of Rahway and City of Linden in Union County.

The USACE's Hudson Raritan Estuary (HRE) Feasibility Study, initiated in 2001, identifies and documents water resource-related components that contribute to environmental degradation within the estuary with the intent to develop potential solutions for ecosystem restoration. The ultimate goal is to restore ecological function and diversity affected by of human activities. 20 individual restoration projects, meant to restore 621 acres of habitat, were recommended. The Consolidated Appropriations Law of 2022 provided funding for the first four. While none of them are in Union County, portions of Union County were included in the studies.

In 2025, USACE is performing operations & maintenance work, including a maintenance dredging contract, in the Newark Bay Channels. Production of an annual hydrographic condition survey and online publication of the Controlling Depth Report, are also scheduled for 2025.

5.5 UNION COUNTY CAPABILITIES

UNION COUNTY FIRST ALERT

The County of Union uses the UC First Alert Network to immediately contact residents during a major crisis or emergency. The UC First Alert Network delivers important emergency alerts, notifications and updates all registered electrics devices. The Union County First Alert Network is administered by the Union County Office of Emergency Management.

UNION COUNTY COMMUNITY OUTREACH PROGRAM

The Union County Community Outreach Program, an initiative of the Union County Board of County Commissioners, connects with residents throughout the county by going door-to-door to speak with residents and provide information and resources. Outreach teams are in the community five days a week.

CLARK RESERVIOR PROJECT

The Clark Reservoir Project prioritizes environmental improvements like dredging to combat siltation and sedimentation, expand flood storage, and enhance water quality in the Clark Reservoir. It also includes improvements for the recreational experience at the reservoir. Commissioner Sergio Granados, Chairman of the Open Space Recreation and Historic Preservation Trust Board noted, “By prioritizing the preservation of the reservoir’s natural landscape and addressing longstanding environmental issues, we are creating a project that balances progress with preservation, making the Clark Reservoir a valued natural space for future generations to enjoy.” After receiving feedback from the public, the County modified the project in August 2024 to further prioritize environmental improvements.

BRIANT POND HYDRORAKING PROJECT

In collaboration with NJDEP to secure necessary permits, Union County is performing a hydro-raking project at Briant Pond in the City of Summit. It is meant to preserve natural habitats, improve ecological health, and increase recreational opportunities. T. R. Weniger, an experienced contractor, is leading the hydro-raking project, with Colliers Engineering performing operations oversight and management.

UNION COUNTY COMMUNITY EMERGENCY RESPONSE TEAM (CERT)

Union County’s Community Emergency Response Team (CERT) is a volunteer-based program designed to enhance local emergency preparedness and response. CERT members receive free training in disaster response skills such as fire safety, basic first aid, search and rescue, emergency management, and disaster psychology. Once trained, volunteers assist professional first responders during emergencies by supporting logistics, managing crowds, providing basic medical aid, and helping with communications. They also play a key role in community outreach, staffing public safety events, promoting disaster awareness, and helping organize spontaneous volunteers during large-scale incidents. In non-emergency times, CERT members contribute to preparedness efforts by participating in drills, simulations, and public education campaigns.

5.6 PLAN INTEGRATION

COUNTY INTEGRATION ACTIVITIES

Planning for the protection and management of open space and natural resources in the county already integrates hazard mitigation into other planning mechanisms and provides an excellent opportunity for continued and improved integration. Union County has adopted several plans and programs within the last two decades.

Union County Parks, Recreation & Open Space Master Plan (2010)

The Union County Parks, Recreation & Open Space Master Plan identifies the current major public space needs of the community and anticipates the future needs of its residents. In addition to planning for the county's recreational needs for health communities and civic life, it also protects natural areas and provides environmental balance and relief key to long-term sustainability, particularly in this dense, urban area. This plan was an update to the County's 1999 plan. The goals identified in the planning process were to provide an interconnected system of high quality, accessible, multi-use trails and greenway corridors; update parks and facilities giving consideration to recreation trends and priority need areas; provide funding sources for Master Plan implementation; preserve and protect the environment; and develop consistent maintenance and appearance of parks.

Union County Transportation Master Plan (2016)

The Union County Transportation Master Plan integrates hazard mitigation planning by emphasizing a resilient transportation system through vulnerability assessments, resilient design, and coordination with agencies such as NJDOT and FEMA. The plan also prioritizes maintaining emergency routes, engaging the public in preparedness efforts, and ensuring that transportation assets can withstand and recover from hazardous events. Chapter 3 of the plan, titled "Transportation Network" contains a section on climate resilience which discusses both Union County and the state of New Jersey's hazard mitigation plans. The plan examines existing efforts to address climate resilience; trends in regional climate change related to sea level rise, storm surge, temperature and precipitation; various issues and opportunities; and a strategy to implement recommendations.

Passaic River Basin Climate Resilience Planning Study (2019)

A climate resilience planning effort for transportation in the New Jersey portion of the Passaic River Basin, including parts of Bergen, Essex, Hudson, Morris, Passaic, Somerset, Sussex, and Union counties, was completed in June 2019. The purpose of the planning study was to identify adaptation strategies to protect transportation corridors and assets from extreme weather events, including excessive flooding, heat waves and sea level rise. The study consisted of the following activities: conduct a vulnerability assessment of the area's transportation system; project future climate risks for the Passaic River Basin; develop adaptation strategies for critical transportation corridors and assets; develop recommended actions and strategies to protect the transportation system from damage and disruption

NJTPA Resilience Improvement Plan (2024)

The NJTPA is the federally authorized Metropolitan Planning Organization for the 13-county northern New Jersey region, including Union County. The 2024 Resilience Improvement Plan focuses on enhancing the region's ability to withstand and recover from climate-related natural hazards through strategic transportation planning. Developed in partnership with the Port Authority of New York and New Jersey, the RIP supports hazard mitigation by identifying vulnerabilities in the transportation system such as risks from flooding, sea level rise, extreme weather, and other disasters and proposing resilience upgrades to critical infrastructure. As part of the federal PROTECT Program, the plan enables NJTPA subregions and municipalities to access funding for mitigation projects with reduced local cost share, improving competitiveness for grants aimed at evacuation routes, at-risk coastal infrastructure, and community resilience initiatives.

LOCAL INTEGRATION ACTIVITIES

Table 5.6-1 details how each municipality is currently integrating their plans and regulations with hazard mitigation and their strategy to integrate this HMP update with other community planning initiatives.

Table 5.6-1 Ongoing Municipal Integration Activities with Hazard Mitigation

Municipality	Ongoing Planned Integration Activities with Hazard Mitigation
Berkeley Heights Township	The climate change-related hazard vulnerability assessment in the Master Plan was developed in accordance with data and research noted in the Union County Hazard Mitigation Plan (HMP) 2021 Update Draft, climate change resources published by the NJDEP, and the Municipal Snapshot developed by Rutgers NJ Climate Change Resource Center. The Capital Improvement Plan contains wastewater treatment plant upgrades.
Clark Township	None identified by municipality.
Cranford Township	The Capital Improvement Plan identifies projects that, if implemented, could prevent and reduce the impacts of hazards. Cranford's Flood Development Ordinance models the State ordinance for development within the flood hazard areas. Additionally, the Township requires an additional 3 feet of freeboard above the base flood elevation for properties located within the flood hazard zone. Per the Stormwater Management Ordinance, stormwater management measures for major development should be designed so that the post-construction peak runoff rates for the current and projected two-, ten-, and 100-year storm events, are 50%, 75% and 80%, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. Substantial damage/improved structures response is conducted via inspection by Building, Engineering, Property Maintenance, or Fire Officials. Notices of violation are issued with follow-up to the responsible party to ensure compliance in accordance with Uniform Construction Code, Uniform Fire Code, and Property Maintenance Code. When an applicant applies for a building permit for home improvements the structure is evaluated for SD/SI. If during storm events structures are damaged, in the past, OEM, building code official, and Engineer have looked at structures for substantial damage determination. If a project is being developed in an FHA zone engineering requirements will indicate that an elevation certificate (EC) is required prior to issuance of a C.O. The Letter of Map Change (LOMC) will require approval from Township floodplain manager. All EC/LOMC are on record in the building department. The township has prepared a Flash Flood map that shows impacted areas outside of the flood plain.
Elizabeth City	The Capital Improvement Plan identifies projects that could prevent or reduce the impacts of natural hazards. The Floodplain Development Ordinance enforces higher freeboard or other standards. The Stormwater Management Ordinance adopted higher standards than the model.
Fanwood Borough	Drainage improvements are included in the yearly update to the Capital Improvement Plan to reduce surface flooding. The borough adopted NJDEP's Stormwater Management Ordinance which is strict for minor development.

Municipality	Ongoing Planned Integration Activities with Hazard Mitigation
Garwood Borough	The Master Plan provides rules/guidelines to keep the borough safe/viable. The Capital Improvement Plan provides guidelines for improvements. Basic Plan Section III – A&B and Basic Plan Section V of the EOP support hazard mitigation. The Stormwater Management Ordinance reduces the amount of water in stormwater sewers. The Sheltering Plan gives direction to reduce confusion, and the Evacuation Plan gives direction to make smooth transitions. The substantial damage/improved structures response helps with emergency situations. The Disaster Debris Management Plan moves/removes debris efficiently and safely. The Post-Disaster Recovery Plan re-establishes normalcy.
Hillside Township	None identified by municipality.
Kenilworth Borough	None identified by municipality.
Linden City	None identified by municipality.
Mountainside Borough	The Floodplain Development Ordinance enforces some higher standards. Borough site for disaster debris (Municipal Pool Parking) has been accepted again until Sept 30, 2029. The borough has a steep slope ordinance.
New Providence Borough	When a property owner in SFHA applies for a building permit, the borough requests the cost of the work and the value of the building to determine if the owners are required to bring substantially damaged/improved structures into compliance. Construction Department monitors properties through site plan review when redevelopment takes place. The borough has a lot grading ordinance that address steep slope runoff to mitigate flood risk.
Plainfield City	The Master Plan incorporates flood mitigation and climate adaptation priorities. The Capital Improvement Plan includes flood infrastructure and emergency backup power. The EOP expanded to include pandemic and severe weather events. The Stormwater Management Plan follows NJDEP BMP Manual for runoff. A Repetitive Loss Plan is to be developed as target initiative.
Rahway City	The Stormwater Management Ordinance is in conformance with the NJDEP model ordinance. The city adopted its Water Conservation Ordinance in 2022.
Roselle Borough	None identified by municipality.
Roselle Park Borough	None identified by municipality.
Scotch Plains Township	None identified by municipality.
Springfield Township	The EOP is kept on the forefront. The Floodplain Development Ordinance encourages sensible development. The Stormwater Management Ordinance is per NJDEP mandate, and the Stormwater Management Plan is per ordinance. The Evacuation Plan lays out clear steps.
Summit City	None identified by municipality.

Municipality	Ongoing Planned Integration Activities with Hazard Mitigation
Union Township	The Capital Improvement Plan addresses projects that reduce impacts from natural hazards. The township adopted the FEMA/NJDEP model for its Floodplain Development Ordinance. The township adopted a steep slope ordinance.
Westfield Town	A section titled "Climate Change Vulnerability Assessment" was added into the Storm Resiliency, Smart Growth, and Environmental Sustainability element of the Master Plan. The Capital Improvement Plan provides resources to continue to upgrade stormwater facilities throughout the town. The Floodplain Development Ordinance regulates construction and land use in flood-prone areas to reduce future flood damage.
Winfield Township	The Stormwater Management Ordinance and Stormwater Management Plan were adopted per state guidelines.

6.0 COUNTY PROFILE



Irving Street Bridge, Rahway, NJ

6.0 COUNTY PROFILE

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.

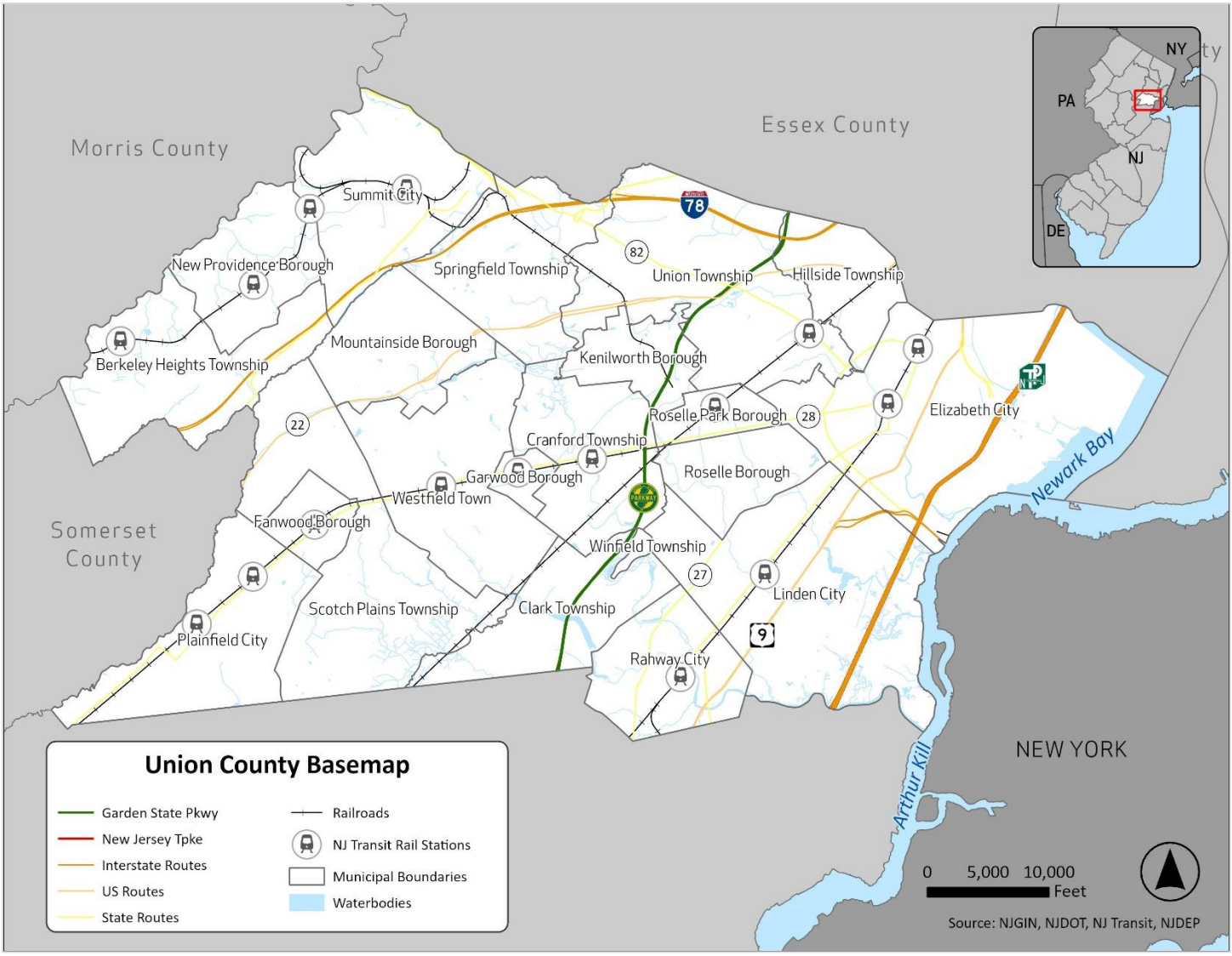
6.1 OVERVIEW

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 in Union County 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



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).

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.

6.2 POPULATION AND THE ECONOMY

According to the 2018-2022 Census ACS survey, Union County has over 570,000 residents (an estimated 572,079), with 6.1% of the population (an estimated 35,176 residents) under 5 years of age, and 14.6% (an estimated 83,680 residents) over age 65. The county overall has experienced an estimated 2.65% population growth over the 2013-2017 and 2018-2022 ACS survey periods.

This trend is also seen in individual municipalities throughout the county; most saw modest growth in population between 2013-2017 and 2018-2022 estimates. Five municipalities saw population decline, all experiencing relatively small losses in population: Berkeley Heights, Clark, Cranford, Springfield, and Winfield. The largest population growth was seen in New Providence, with a nearly 7% population increase during this time.

Table 6.2-1 Union County Total Population

Municipality	Total Population (2013-2017 ACS 5-Year)	Total Population (2018-2022 ACS 5-Year)	Percent Change (%)
Berkeley Heights Township	13,576	13,120	-3.36%
Clark Township	15,607	15,415	-1.23%
Cranford Township	23,972	23,838	-0.56%
Elizabeth City	129,363	135,665	4.87%
Fanwood Borough	7,648	7,723	0.98%
Garwood Borough	4,365	4,542	4.05%
Hillside Township	22,069	22,262	0.87%
Kenilworth Borough	8,235	8,345	1.34%
Linden City	42,230	43,478	2.96%
Mountainside Borough	6,907	6,991	1.22%
New Providence Borough	12,716	13,595	6.91%
Plainfield City	51,097	54,358	6.38%
Rahway City	29,443	29,664	0.75%
Roselle Borough	21,764	22,500	3.47%
Roselle Park Borough	13,709	13,964	1.86%
Scotch Plains Township	24,339	24,740	1.65%
Springfield Township	17,528	17,011	-2.95%
Summit City	22,155	22,555	1.81%
Union Township	58,499	59,956	2.49%
Westfield Town	30,591	30,839	0.81%
Winfield Township	1,525	1,518	-0.46%

UNDERSERVED COMMUNITIES AND SOCIALLY VULNERABLE POPULATIONS

Very young or aging populations can indicate a potentially vulnerable group of people during the preparation for and response to a hazard event. Union County is relatively distributed by age but skews towards an older population. Overall throughout the County, Union has 6.1% of its population under age 5, and 14.6% of its population over the age of 65. Some exceptions to this distribution are seen in Winfield, where 2.2% of the population is under age 5 and 21.3% of the population is over age 65, and Mountainside, where over a quarter of the population is over age 65 (25.4%), and just under 9% (8.9%) is under age 5.

Table 6.2-2 Union County Vulnerable Populations

Municipality	Percent of Population Under Age 5 (2018-2022 ACS 5-Year)	Percent of Population Over Age 65 (2018-2022 ACS 5-Year)
Berkeley Heights Township	5.06%	18.57%
Clark Township	4.72%	21.09%
Cranford Township	5.60%	19.33%
Elizabeth City	7.44%	11.36%
Fanwood Borough	4.45%	16.86%
Garwood Borough	4.47%	20.81%
Hillside Township	5.99%	13.93%
Kenilworth Borough	3.86%	14.54%
Linden City	5.64%	13.74%
Mountainside Borough	8.93%	25.43%
New Providence Borough	5.22%	21.20%
Plainfield City	7.65%	10.76%
Rahway City	7.49%	16.14%
Roselle Borough	4.37%	15.72%
Roselle Park Borough	5.68%	13.38%
Scotch Plains Township	4.82%	17.12%
Springfield Township	4.66%	16.44%
Summit City	5.86%	12.82%
Union Township	4.27%	16.72%
Westfield Town	7.50%	14.46%
Winfield Township	2.17%	21.28%

Union County has no tracts designated under the Community Disaster Resilience Zone (CDRZ) designation – tracts which may be eligible for enhanced hazard mitigation benefits from FEMA for at least five years, and which qualify for more expansive government investments (such as Climate Smart Communities Initiative, which prioritizes CDRZs).

Union County has 277 block groups (2020) in 15 different municipalities labeled as Overburdened Communities (OBC) – a New Jersey designation which identifies areas which have (1) at least 35% low-income households, (2) at least 40% of residents identifying as minority or members of a State-recognized tribal community, *or* (3) at least 40% of households having limited English proficiency. In Union County, the overburdened block groups meet criteria, most commonly, of *Minority* population classification. There are also portions of Union meeting criteria for communities labeled *as Low Income and Minority*, and *Low Income, Minority, and Limited English*, according to OBC.

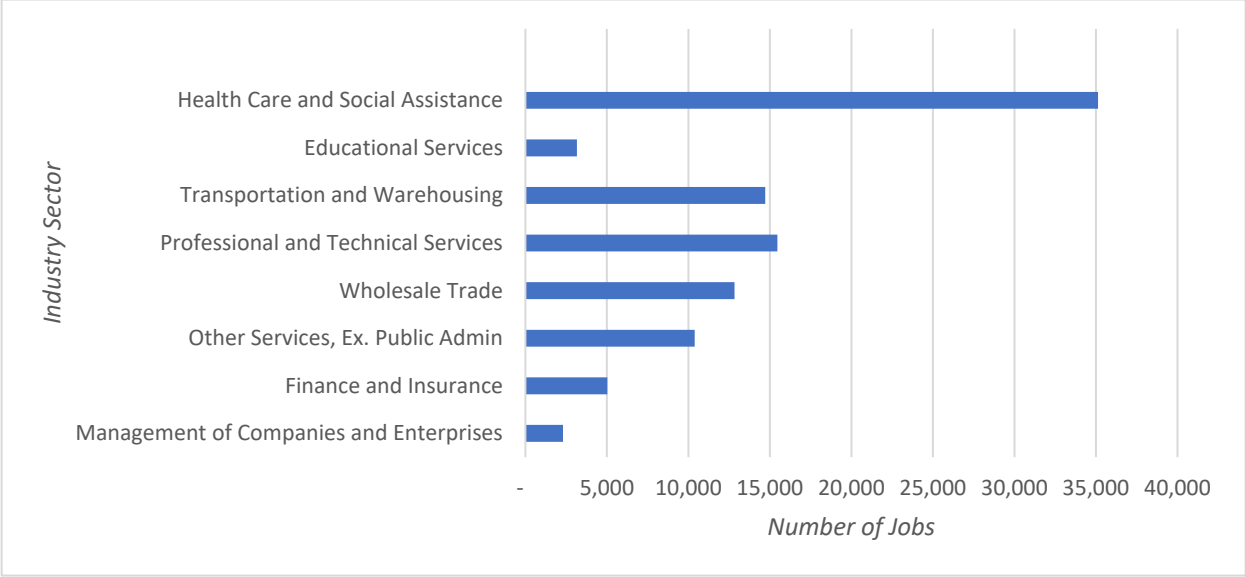
Union County has 43 Census Tracts (2010) in 6 different municipalities identified through the Federally designated Climate and Economic Justice Screening Tool (CEJST), noting communities which are underserved and overburdened by active and legacy pollution and related vulnerabilities. Municipalities with designated CEJST tracts are primarily far eastern (Elizabeth, Linden) or far western (Plainfield) Union County. With these classifications, communities within six Union municipalities meet criteria for areas in need of climate or economic justice under categories of Workforce Development (most common), Climate Change, Housing, Legacy Pollution, Transportation, Water and Wastewater, and Health.

Based on the above designations, the City of Elizabeth is perhaps the municipality in Union County with the most underserved tracts/communities; within Elizabeth, there are 80 block groups that are designated OBC and 26 tracts which are designated CEJST communities. Similarly, the City of Linden has fewer block groups and residents but has the same full coverage of vulnerable communities as designated by OBC/CEJST found within its borders.

ECONOMY

According to the New Jersey Department of Labor and Workforce Development (NJLWD) 2024 New Jersey Quarterly Census of Employment and Wages report, there are 229,052 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 35,125 employees, with an annual payroll of $2,304,912,662. The industry with the highest annual payroll was Professional and Technical Services, $2,472,984,999, with 15,456 employees. **Figure 6.2-1 Jobs by Employment Sector in Union County, 2024** displays the number of jobs by industry sector.

Figure 6.2-1 Jobs by Employment Sector in Union County (2024)



Source: NJLWD 2024 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

6.3 BUILT ENVIRONMENT

LAND USE/LAND COVER

Key land use types are calculated for the entire county of Union and all municipalities within by using the Land Use / Land Cover (LULC) data provided by the New Jersey Department of Environmental Protection (NJDEP). Both data releases in 2015 and 2020 were used for change-over-time comparisons.

According to this NJDEP LULC data for survey year 2020, Union County's over 67,000 acres (including land and water) is primarily classified as urban (developed). This category includes over 55,000 acres (55,723) as of 2020, nearly 83% of the county overall (82.6%). Forest land made up an additional 6,007 acres (8.9% of Union County) as of the 2020 LULC release, and wetlands geographies comprised an additional 4.25% of the county, with 2,865 acres of wetlands throughout Union. Smaller land use categories include water (1,908 acres, 2.8% of the county) and barren land (868 acres, 1.28% of the county). Union has a negligible amount of land classified as agriculture; just 79.8 acres (0.11% of the county) are dedicated to agricultural uses.

These statistics show some slight changes between Land Use/Land Cover in 2020 and an earlier 2015 release. Notably, land classified as 'barren land' grew 11.5% over these two survey periods, from 778.6 acres in 2015 to an estimated 868 acres in 2020. Agricultural land saw a loss of 7.9%, with a 2015 estimate of 86.6 acres dropping to the aforementioned 79.8 acres by 2020 estimates. Forest land also saw a slight loss, with 1.2% decline in this acreage (from 6,802 acres in 2015 to just over 6,000 in 2020). Wetlands experienced a slight decline with a loss of just under 40 acres, resulting in a percentage shift of –1.3% between 2015 and 2020. Urban and water land classifications remained unchanged between NJDEP estimates in 2015 and 2020. These trends point to a potential period of redevelopment over these time periods, as a slight loss in forest, agriculture, and wetlands, coupled with a rise in 'barren land' indicate land being cleared, unused in preparation for future development. **Table 6.3-1 Union County Land Cover Acreage Change by Land Cover, 2015 vs. 2020** displays the changes in land use seen in the County between 2015 and 2020.

Table 6.3-1 Union County Land Cover, 2015 vs. 2020 (NJDEP)

Land Use Type	2015 Acres	2020 Acres	Percent Change (%)
Agriculture	86.6	79.8	-7.9
Barren Land	778.6	868.1	11.5
Forest	6,082.8	6,007.1	-1.2
Urban	55,689.1	55,723.4	0.1
Water	1,910.9	1,908.2	-0.1
Wetlands	2,903.4	2,864.8	-1.3

Land uses in Union County were also assessed using the state's MOD-IV parcel tax database, which allows for land classification into more detailed categories. This dataset was assessed for change-over-time calculations for releases in the years 2016 and 2022.

According to this state-level data set, in 2022, Union County was primarily a residential community, with 47.3% of total land area (25,657 acres) classified as residential land, including apartment residential. Following, public land uses (tax exempt) made up 27.8% of Union (15,077 acres) in 2022. Industrial land made up an additional 5,148 acres (9.49% of Union) in 2022, and commercial land uses made up 8.98% (4,869 acres). Smaller amounts of land are classified as vacant (4.8%, 2,620 acres), railroad property (1.58%, 857.6 acres), and farm land (0.04%, 20 acres).

These classifications show some changes between 2016 and 2022 land use surveys in MOD-IV data. Notably, railroad property, though small in acreage, grew 30.0% between 2016 and 2022, to 857.6 acres from 2016's 659.7 acres. Vacant land saw a growth of 9.7%, growing from 2,387.9 in 2016 to 2,620 in 2022. The data illustrates a decline in agriculture in Union County between these time periods; MOD-IV reports a 39.21% decline in farm land with a 2022 estimate of 20 acres (down from 2016's 32.9 acres). Commercial land also saw a 6.5% decline, and industrial land saw a 3.24% decline. Other categories remained relatively consistent; residential land stayed about the same, though the apartment (multi-family) portion saw a slight increase of 1.88% with nearly 19 new acres of apartment-residential development. Lastly, civic/public (tax exempt) land saw a growth of 2.5%, showing nearly 374 new acres of this land use type in Union County between 2016 and 2022. **Table 6.3-2 Union County Land Use, MOD-IV, 2016 vs. 2022** displays the changes in land use seen in the County between 2016 and 2022 according to this data.

Table 6.3-2 Union County Land Use, MODIV, 2016 vs. 2022 (NJDEP)

Land Use Type	2016 Acres	2022 Acres	Percent Change (%)
Residential	24,740.7	24,632.4	-0.4
Apartment	1,005.4	1,024.3	1.9
Commercial	5,208.2	4,868.9	-6.5
Farm	32.9	20	-39.2
Industrial	5,320.8	5,148.3	-3.2
Civic/Public (Tax Exempt)	14,703.8	15,077.3	2.5
Vacant Land	2,387.9	2,620.2	9.7
Railroad Property	659.7	857.6	30.0

TRANSPORTATION

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.

Union County freight is moved via all forms of transportation: 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).

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 is composed of "the largest containerized, deep-water shipping terminals on the East Coast of the U.S." (Union County Transportation Master Plan 2016).

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 2023, Newark Airport was ranked the 12th busiest commercial airport in the U.S for passenger travel. Additionally, in 2023, Newark Airport carried the second most domestic cargo (about 1.3 million 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).

In addition to the major roadways, Union County also has a network of NJ Transit (NJT) bus stops and routes. NJ Transit bus service operates 25 routes and over 2,100 stops in Union County. There are 16 rail stations in the county that run along four NJT rail lines: Northeast Corridor, Raritan Valley Line, Morristown Line, and Gladstone Branch. The New Jersey Coast Line also runs through the 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).

HOUSING AND NON-RESIDENTIAL CONSTRUCTION

For recent (since 2021) and future (5+ years) major development and infrastructure within each municipality, refer to Section 2.2 HMP Review: Changes in Development.

6.4 ECOSYSTEMS AND NATURAL ASSETS

RESERVATIONS

The Watchung Reservation is the largest nature reserve in Union County, encompassing 6,200 acres. The park is bound by the city of Summit, the borough of Mountainside, and the townships of Berkely Heights, Scotch Plains, and Springfield. The reservation includes many features such as trails, playgrounds, fishing, kayaking, and picnic areas. One key feature is the Watchung Reservation History Trail, a 6-mile trail that visits and identifies sites of historic interest. The stops along the History Trail recall features from the early years of the Watchung Reservation or describe uses of the land before it was incorporated into the park.

COUNTY AND STATE PARKS

Union County's 36 park encompass more than 6,200 acres with many opportunities for passive and active recreation including the Trailside Nature & Science Center, Watchung Stable and The Deserted Village of Feltville.

Briant Pond HydroRaking Project

Union County enlisted the services of a contractor to lead the hydro-raking in Briant Park in Summit, NJ. This will reinvigorate the ecological health and recreational value of Briant Pond. The initial press release stated that hydro-raking operations are scheduled for Monday through Friday to disrupt park use minimally while also progressing the project efficiently. The ultimate goals reflected in this effort are environmental stewardship and community engagement.



7.0 RISK ASSESSMENT

Cranford, NJ

7.0 RISK ASSESSMENT

7.1 OVERVIEW AND CHANGES SINCE 2021

Jurisdictions in Union County are vulnerable to both natural and man-made hazards. For the 2026 plan update, the Steering Committee reviewed the hazards that were included in the 2021 plan, the 2024 NJ State Hazard Mitigation Plan, and the occurrences of hazardous events since the previous update.

The 2026 plan update includes the same 15 natural and 10 man-made hazards as the 2021 plan update. However, in this update, the 'Critical Facilities' section has been renamed to 'Critical Facilities and Community Lifelines', categorizing the essential services serving the communities into the eight FEMA Community Lifelines: Safety and Security; Food, Hydration, and Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials; and Water Systems.

Hazardous events not included at this time may be addressed during future evaluations and updates to the risk assessment if deemed necessary by the Steering Committee.

HAZARD RANKING AND RISK ASSESSMENT UPDATE PROCESS

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 and Magnitude;
- 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 13 hazards were ranked high. The rankings for all 25 hazards can be found in **Table 2.3-2 Hazard Ranking Crosswalk.** 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. A goal of the risk assessment update for the 2026 HMP was to improve the information contained in the jurisdictional appendices to capture the risk facing each community within the planning area.

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 2026 Update, all risk calculations are included in Section 7.0 Risk Assessment.

During the 2026 HMP update many parts of the 2021 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 2026 HMP update was to describe the events and effects of natural hazards on the County since the last Plan update was developed and adopted.

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

7.2 IDENTIFICATION OF HAZARDS

During the planning process for this update to the Hazard Mitigation Plan, numerous sources were consulted to identify hazards of concern in the study area. 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 (NRCS) 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) maintains data about natural hazards in summary format. The NCEI data includes occurrences, dates, injuries, deaths, and costs.

MAJOR DISASTER DECLARATIONS

Union County has received 16 major Presidential Disaster Declarations and nine Emergency Declarations since 1950. Since the last plan update, one major disaster declaration has occurred (Hurricane Ida). The more recent major and emergency declarations (and one non-declared event) are included as part of the summary below.

Table 7.2-1 Recent Hazards and Declared Major Disasters in Union County, New Jersey (1992-2025)

Date	Disaster Declaration	Event	Summary
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	DR-3106	Severe Storms and Flooding	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	DR-1088	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

Date	Disaster Declaration	Event	Summary
			flooding caused an estimated $4 million in residential property damages and $300,000 in infrastructure damages.
9/16/1999	DR-3148	Hurricane Floyd	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	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

Date	Disaster Declaration	Event	Summary
			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 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.
01/22/2016	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.
03/25/2020	DR-4488	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.
09/05/2021	DR-4614	Remnants of Hurricane Ida	On September 2, 2021, Governor Philip D. Murphy requested an expedited major disaster declaration due to the remnants of Hurricane Ida during the period of September 1-3, 2021. The Governor requested a declaration for Individual Assistance; Public Assistance, including direct Federal assistance; and Hazard Mitigation statewide.

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

Although not a FEMA disaster declaration, a flash flood on July 14, 2025, impacted Union County and took two lives in Plainfield City.

7.3 HAZARDS SUMMARY

7.3.1 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 2021 HMP update. The Steering Committee determined that the same 25 hazards posed the greatest threat to Union County. As with the 2021 HMP update, the Steering Committee combined Ice Storm with Severe Weather-Winter Weather. **Table 7.3-1 Hazard Identification** summarizes the hazards included in the 2026 HMP update.

Table 7.3-1 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
Landslide (non-seismic)
Severe Storm – Lightning
Severe Storm – Winter Weather (Includes Ice Storm)
Storm Surge –Hurricane/Nor'easter/Tropical Storm
Wildfire
Human-Caused Hazards
Animal Disease
Civil Unrest
Cyber Attack
Economic Collapse
Hazardous Materials Release – Fixed Site
Hazardous Materials Release – Transportation
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.

7.3.2 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 2024 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 several human-based hazards for the first time within the 2021 HMP update. The 2026 plan update continues to profile these hazards. They are as follows:

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

As with the 2021 HMP update, Union County Division of Emergency Services decided not to profile the following human-based hazards found in the State HMP in the 2026 HMP update, as they were deemed inapplicable or of insufficient risk to Union County:

- Crop Failure
- Fishing Failure
- Harmful Algal Bloom

7.3.3 HAZARD PROFILE

IDENTIFICATION AND CHARACTERIZATION OF ASSETS IN HAZARD AREAS

An inventory of Union County's georeferenced assets (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 for such assets can be assessed using GIS analysis.

Critical Facilities were identified in cooperation with each municipality using FEMA's Community Lifelines as a framework. FEMA created the eight Community Lifelines to contextualize information from incidents, communicate impacts in plain language, and promote a more unified effort across a community that focuses on stabilization of these lifelines during response. The eight categories of community lifelines are:

- Safety and Security: Law Enforcement, Security, Fire Service, Search and Rescue, Government Service, Community Safety
- Food, Hydration, Shelter: Food, Hydration, Shelter, Agriculture
- Health and Medical: Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- Energy: Power Grid, Fuel
- Communications: Infrastructure, Responder Communications, Alerts, Warnings, and Messages, Finance, 911 and Dispatch
- Transportation: Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- Hazardous Materials: Facilities, HAZMAT, Pollutants, Contaminants
- Water Systems: Potable Water Infrastructure, Wastewater Management

These community lifelines must continue to operate before, during, and after an emergency and/or hazard event and/or are vital to health and safety. Community lifelines have been identified as the most fundamental services in each community that when stabilized enable all other aspects of society to function. A total of 884 lifelines were identified for this update. The critical facilities, infrastructure and community lifelines spatial inventory includes assets that, although

not always publicly owned, have been defined as critical in accordance with the above definitions. **Table 7.3-2 Critical Facilities and Community Lifeline Summary for Union County** summarizes the number of identified community lifelines.

Table 7.3-2 Critical Facilities and Community Lifeline Summary for Union County

Jurisdiction	Lifeline Category								
	Safety and Security	Food, Hydration and Shelter	Health and Medical	Energy	Communications	Transportation	Hazardous Materials	Water Systems	Total
Union County Total	675	4	53	29	6	31	16	69	884

Source: Union County HMP Update 2021, Union County municipalities

7.3.4 VULNERABILITY OF ASSETS

All assets throughout Union County are exposed to extreme temperatures, extreme winds, hurricanes and tropical storms, lightning, nor'easters, tornadoes, winter storms, drought and earthquakes. Some hazards have discrete, delineable hazard areas associated with them. In other words, lines can be drawn on a map to show approximate areas that are potentially susceptible to the hazard versus those that are not. For the hazards with delineable hazard areas (i.e., flood and sea level rise), tables showing the exposure of Union County's critical facilities by jurisdiction are included in Appendices Volume I: Jurisdictional Information. Exposure of these assets was determined through GIS analysis of hazard areas using georeferenced point locations for critical facilities, which were aggregated by community lifeline type. The results of this analysis are discussed in each relevant hazard profile.

7.3.5 DAMAGE ESTIMATES

This multi-jurisdictional vulnerability assessment was conducted utilizing FEMA National Risk Index (NRI) data to provide estimates for the potential impact of hazards by using a common, systematic framework for evaluation. In the case of the dam failure hazard, which is not included in the NRI, FEMA's Resilience Analysis and Planning Tool (RAPT) was used to estimate impacts. The results of the multi- jurisdictional vulnerability assessment are provided for each hazard immediately following the Hazard Profiles of each hazard. Below is a brief description of these approaches.

National Risk Index (NRI) Methodology

FEMA's National Risk Index dataset and online tool leverages data on natural hazards and community risk factors to develop a baseline risk measurement for 18 natural hazards by County and Census tract (FEMA, n.d.). Expected annual loss (EAL) is the natural hazards component of the National Risk Index; the EAL score and rating represent the average economic loss in dollars resulting from natural hazards each year for a community when compared to all other communities at the same level. The following formula was used to calculate the EAL:

$$Exposure * Annualized\ Frequency * Historic\ Loss\ Ratio = Estimated\ Potential\ Annual\ Loss$$

Exposure is the representative value of buildings, population, or agriculture potentially exposed to a natural hazard consequence. Annualized frequency is the expected frequency or probability of a natural hazard occurrence per year. Historic loss ratio is the estimated percentage of the exposed building value, population, or agriculture value expected to be lost due to a natural hazard occurrence (FEMA, n.d.).

Risk is presented in terms of EAL in dollars. Building EAL is the predominant measure used across hazards, however, depending on the nature of the hazard, in some instances agricultural EAL, population equivalence EAL, or total EAL (the

sum of building, agricultural and population equivalence EAL) is used. In general, presenting results in the annualized form is useful in three ways:

- This approach accounts for the contribution of potential losses from all future disasters;
- Annualized results for different hazards are readily comparable, thus easier to rank; and
- The use of annualized losses is the most objective approach for evaluating mitigation alternatives.

Loss estimates provided in this vulnerability assessment are based on best available data, and the methodologies applied result in an approximation of risk. These estimates should be used to understand relative risk from hazards and potential losses. Uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from approximations and simplifications that are necessary for a comprehensive analysis (i.e., incomplete inventories, demographics or economic parameters). Additionally, because NRI data is available at the census tract level, in instances where one or more municipalities were located within the census tract, loss estimates were divided equally between all municipalities regardless of population or building density.

Resilience Analysis and Planning Tool (RAPT) Methodology

FEMA's Resilience Analysis and Planning Tool (RAPT) is a data and GIS mapping tool used to understand community risk. RAPT was used in the dam failure section as a vulnerability analysis of dam failure is not within the scope of the HAZUS or NRI methodologies. RAPT was used to conduct a spatial analysis of each high hazard potential dam to vulnerable populations and critical infrastructure within the planning area. In order to understand the impact of a potential dam failure, RAPT's incident analysis tool was used. The tool allows the user to create a buffer zone (or incident area) around an incident, in this case, dam failure, by setting an incident location. A 5-mile buffer was selected to estimate the at-risk area. The tool identifies critical facilities within the buffer zone. Additionally, the population counter tool was used which provides the estimated number of people with a specific characteristic within a drawn shape, by using the same 5-mile buffer around the dam. Findings for each hazard are detailed in the hazard-by-hazard vulnerability assessment that follows each Hazard Profile.

7.3.6 HAZARD RANKING

Ranking hazards helps communities set goals and priorities for mitigation based on their vulnerabilities. A Risk Factor (RF) is a tool used to measure the degree of risk for identified hazards in a particular planning area. RF values were obtained by assigning varying degrees of risk to five categories for each of the hazards profiled. Those categories include: *probability*, *impact*, *spatial extent*, *warning time* and *duration*. Each degree of risk was assigned a value ranging from 1 to 4. The weighting factor is shown below. To calculate the RF value for a given hazard, the assigned risk value for each category was multiplied by the weighting factor. The sum of all five categories equals the final RF value, as demonstrated in the example equation:

Risk Factor Value = [(Probability x .30) + (Impact x .30) +
(Spatial Extent x .20) + (Warning Time x .10) + (Duration x .10)]

Hazards identified as high risk have risk factors greater than 2.5. Risk Factors ranging from 2.0 to 2.4 were deemed moderate risk hazards. Hazards with Risk Factors 1.9 and less are considered low risk.

Table 7.3-3 Risk Factors for Hazard Profiles

Risk	Hazard	Risk Assessment Category					Risk Factor
		Probability (1-4)	Impact (1-4)	Spatial Extent (1-4)	Warning Time (1-4)	Duration (1-4)	
High	Flood	3	3	3	3	2	2.9
	Storm Surge – Hurricane/Nor'easter/Tropical Storm	2	4	3	2	2	2.8
Moderate	High Wind – Straight-Line Winds	3	2	3	3	1	2.5
	Drought	3	1	4	1	4	2.5
	Pandemic	1	3	4	1	4	2.5
	Extreme Temperature–Cold	3	1	4	1	3	2.4
	Extreme Temperature – Heat	3	1	4	1	3	2.4
	Severe Storm – Winter Weather	3	2	3	2	2	2.3
	Power Failure	3	1	3	3	2	2.3
	Earthquake/Geological	1	2	4	4	1	2.2
	Wildfire	2	2	2	3	3	2.2
	Cyber Attack	3	1	2	4	1	2.1
	Economic Collapse	1	2	4	2	2	2.1
	Hazardous Materials Release – Transportation	3	2	1	3	2	2.2
	Hazardous Materials Release – Fixed Site	3	2	1	2	2	2.1
Low	High Wind – Tornado	2	2	1	4	1	1.9
	Terrorism	1	3	1	4	1	1.9
	Civil Unrest	2	2	1	2	2	1.8
	Animal Disease	2	2	1	1	2	1.7
	Hail	3	1	1	2	1	1.7
	Nuclear Hazards	1	2	2	2	2	1.7
	Severe Storm – Lightning	2	1	1	3	1	1.5
	Erosion– Hurricane/Nor'easter/Coastal Storm	2	1	1	1	1	1.3
	Landslide (non-seismic)	1	1	1	4	1	1.3

7.4 DAM FAILURE

7.4.1 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 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 flood waters 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 failure, existing dams are periodically inspected by professional engineers. **Table 7.4-1 New Jersey Dam Inspection Schedule** summarizes the dam inspection schedule for New Jersey, including Union County.

Table 7.4-1 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.

7.4.2 LOCATION, EXTENT AND MAGNITUDE

Location

According to the DEP there are a total of 23 dams in Union County as of 2024. 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 County contains an additional 7 DEP dams database classified structures which are not technically dams.

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 classified structures that are not technically dams within their database (O).

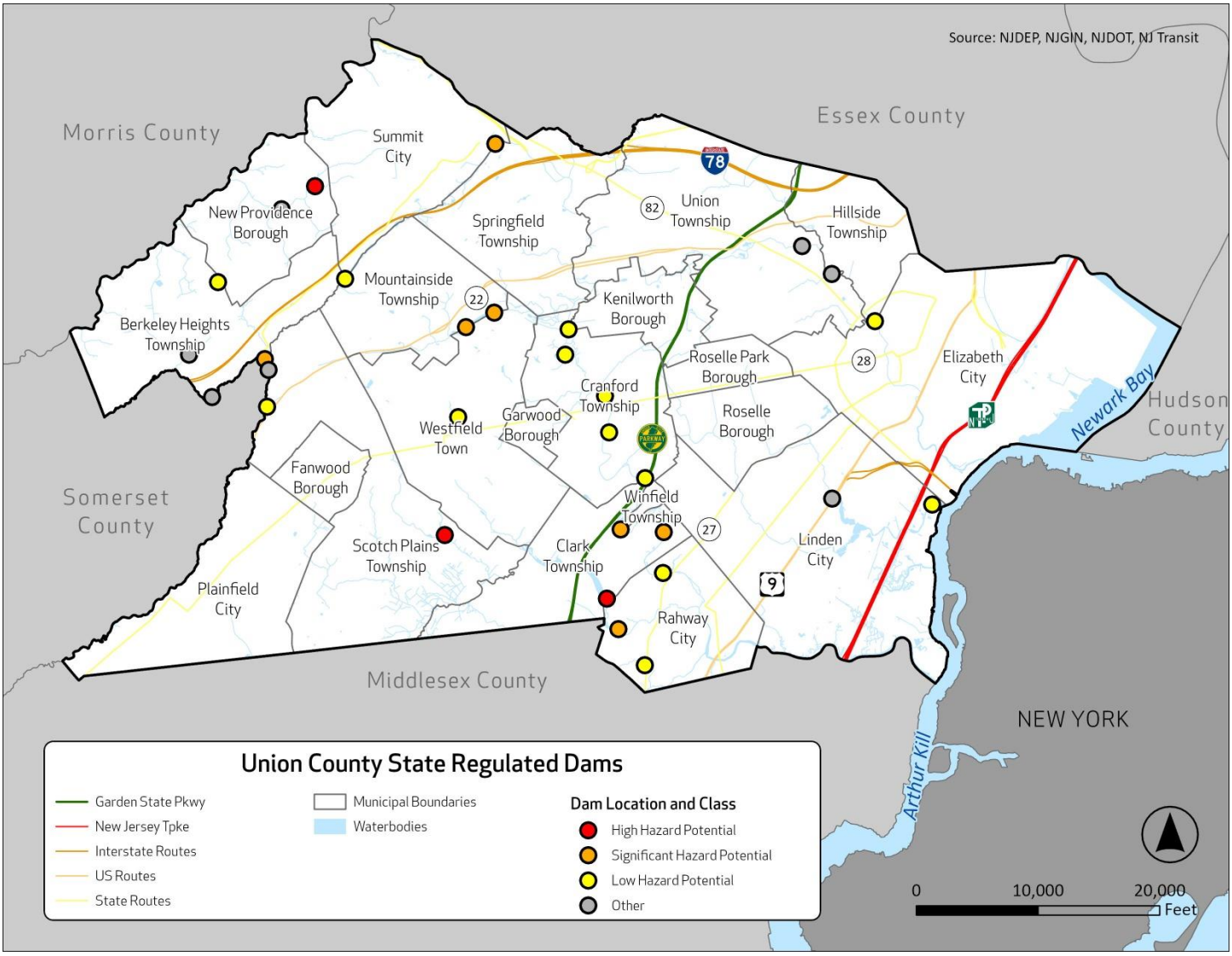
Table 7.4-2 Union County Dams Summary summarizes the number of dams by municipality and hazard class while **Figure 7.4-1 State Regulated Dams within Union County** below shows the location of these structures within Union County.

Table 7.4-2 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	0	5	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	1	1	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
Union County Total	**3**	**7**	**13**	**23**	**7**

Source: 2024 NJDEP–Bureau of Dam Safety and Flood Control

Figure 7.4-1 State Regulated Dams Within Union County



Magnitude

The extent or magnitude of a dam failure event can be measured in terms of the classification of the dam. The NJDEP assigns one of four hazard classifications to state-regulated dams in New Jersey. The classifications relate to the potential for property damage and/or loss of life in the event of a dam failure:

- Class I (High Hazard Potential) - Failure of the dam may result in probable loss of life and/or extensive property damage.
- Class II (Significant Hazard Potential) - Failure of the dam may result in significant property damage; however, loss of life is not envisioned.
- Class III (Low Hazard Potential) - Failure of the dam is not expected to result in loss of life and/or significant property damage.
- Class IV (Small Dam Low-Hazard Potential) - Failure of the dam is not expected to result in loss of life or significant property damage.

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). The Robinson's Branch Reservoir Dam is owned by Union County and as part of this plan update, they moved the priority to high for the action to mitigate the risk of dam failure for the dam. The Clearwater Detention Dam is owned by New Providence Borough and as part of this plan update, they created a new action to repair and maintain the dam. The Shackamaxon Dam is owned by Heritage Golf Group. The Project Team engaged the engineer Jeff Derosier from Derosier Engineering, who reviewed the HMP and offered an update on the dam's inspection status and recent findings.

Table 7.4-3 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
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
Cranford Township	Kenilworth Blvd. Dam	L	Nomaheaan Brook
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

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

Source: 2024 DEP–Bureau of Dam Safety and Flood Control

7.4.3 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, 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 floodwater 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 2026 HMP update, the DEP–Bureau of Dam Safety and Flood Control list and the Association of State Dam Safety Officials (ASDSO) Dam Safety Incident Database were consulted and did not return any additional events beyond those listed above.

7.4.4 PROBABILITY OF FUTURE OCCURRENCES

Dam failures are rare and hard to forecast future occurrence; however, they normally coincide with events that cause them such as earthquakes, landslides, and excessive rainfall and snowmelt. Dam failures in New Jersey are often caused by heavy rains or other precipitation. The probability of dam failure in Union County is low (State HMP).

7.4.5 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 floodwater to more readily 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. The NJ Climate Change Report states that New Jersey's annual precipitation is expected to increase by 4% to 11% by 2050. 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. 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.

7.4.6 VULNERABILITY ASSESSMENT

Dams can fail with little warning. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods can occur within six hours of the beginning of heavy rainfall, and dam failure may occur within hours of the first signs of breaching. Other failures and breaches can take much longer to occur, from days to weeks, as a result of debris jams, the accumulation of melting snow, and the buildup of water pressure on a dam with deficiencies after days of heavy rain, etc. Flooding can occur when a dam operator releases excess water downstream to relieve pressure from the dam.

Dam failure can cause severe downstream flooding, depending on the magnitude of the failure. Other potential secondary hazards of dam failure are landslides around the reservoir perimeter, bank erosion on the rivers, and destruction of downstream habitat. Dam failures can occur as a result of structural failures, such as progressive erosion of an embankment or overtopping and breaching by a severe flood (State HMP). Earthquakes may weaken dams. Floods caused by dam failures have caused loss of life and property damage. Dam and levee failures may also cause the release of hazardous materials into the environment when floodwaters infiltrate development and infrastructure. This may lead to widespread contamination resulting in costly remediation.

All assets located in a dam failure inundation zone could be exposed to the risk of a dam failure. The potential for loss of life is affected by the capacity and number of evacuation routes available to populations living in areas of potential inundation. Vulnerable populations are all populations downstream from dam failures that are incapable of escaping the area within the needed timeframe. This population includes the elderly and young who may be unable to get themselves out of the area of inundation. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on the net economic impact to their family. The population over the age of 65 is also highly vulnerable because they are more likely to seek or need medical attention, which may not be available because of isolation during a flood event and difficulties in evacuating (State HMP).

There is often limited warning time for a dam failure event. While dam failure is rare, when events do occur, they are frequently associated with other natural hazard events such as earthquakes, landslides, or severe weather, which limits their predictability and compounds the hazard. Populations without adequate warning of the event from a television or radio emergency warning system are highly vulnerable to this hazard

Dam and levee failure inundation maps and downstream hazard areas are considered sensitive information and are not made available within the Union County HMP. To approximate and assess vulnerability to dam failure in Union County, the Planning Team used FEMA's online Resilience Analysis and Planning Tool (RAPT) to conduct a spatial analysis of each high hazard dam to vulnerable populations and critical infrastructure within the planning area. In order to assess the impact of a potential dam failure, RAPT's incident analysis tool was used. The tool allows the user to create a buffer zone (or incident area) around an incident, in this case, dam failure, by setting an incident location. A five-mile buffer was selected to estimate the at-risk area. The tool identifies critical facilities within the buffer zone. Additionally, the population counter tool was used which provides the estimated number of people with a specific characteristic within a drawn shape, by using the same 5-mile buffer around the dam.

The table below summarizes the RAPT vulnerability assessment of all three high hazard dams within the County. As shown in the table, Robinson's Branch Reservoir Dam has the most significant impact to People at Risk (PAR) closely followed by Shackamaxon dam which is proximal to a greater amount of critical infrastructure in the county.

Table 7.4-4 Populations at Risk (PAR) and Critical Infrastructure Within a 5-Mile Radius of High Hazard Dam

Dam Name	Total Population	Population 65+	Population with a Disability	Population Below Poverty Line	Population Living in Mobile Homes	Critical Facilities
Clearwater Detention Dam	196,473	32,105	13,112	6,650	182	255
Robinson's Branch Reservoir Dam	383,832	61,921	36,178	22,019	2,142	441
Shackamaxon Dam	360,822	59,258	30,768	23,394	701	465

Source: FEMA RAPT, 2025

7.5 DROUGHT

7.5.1 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. There are several different types of droughts. These are listed below:

- 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 stream flows 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.

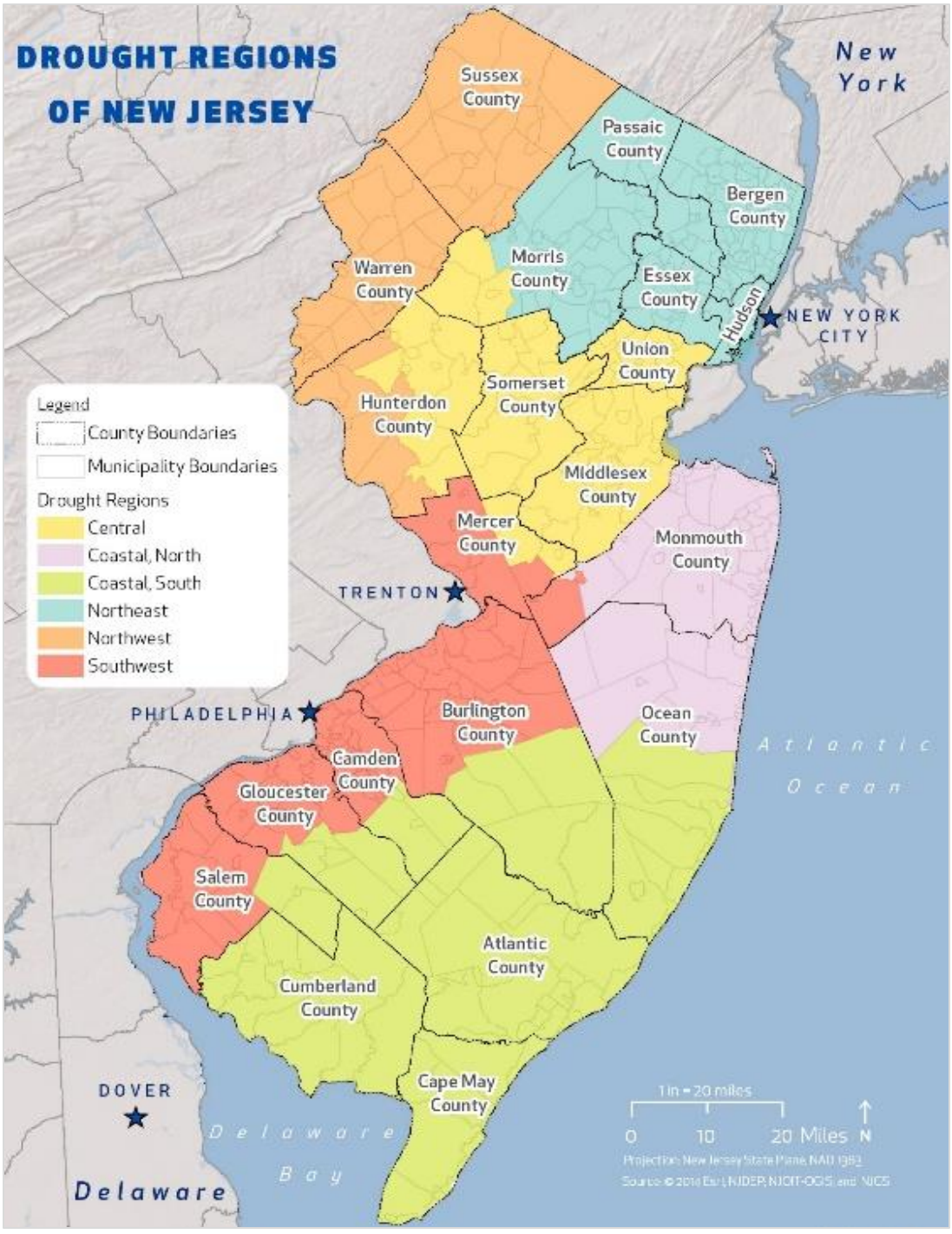
Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. 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.

7.5.2 LOCATION, EXTENT AND MAGNITUDE

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). The drought regions are depicted in the figure below.

Figure 7.5-1 New Jersey Drought Regions



Source: New Jersey State HMP, 2025

EXTENT AND MAGNITUDE

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 indicates 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 7.5-1 Palmer Drought Severity Index** identifies the values used to define the PDSI.

Table 7.5-1 Palmer Drought Severity Index (PDSI)

Palmer Drought Severity Index	Category
-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

7.5.3 PREVIOUS OCCURRENCES AND LOSSES

Despite the 2021 plan update reporting Union County has experienced 11 drought events in the period from 1950 to 2021 according to the NCEI Storm Events Database, a search of the database on May 15, 2025, returned zero results. The database provides no indication as to why these events are no longer to be found. Significant drought events in Union County since 2010 are detailed in the table below containing information carried over from the previous plan and updated with information found in the 2024 State HMP:

Table 7.5-2 Drought Events, Union County, 2010-2025

Date of Event	Description
July to October 2010	On August 5, the NJDEP issued a drought watch for northeast New Jersey. At the height of the drought event in September, over 27 percent of the state was experiencing severe drought conditions while 56 percent and 16 percent of the state was experiencing moderate drought and abnormally dry conditions, respectively. The meteorological summer was the 10th driest (8.65 inches) on record dating back to 1895 in New Jersey and was also the driest summer since 1966
March to June 2012	Lowest PDSI of -3.29 in April, with 5 weeks of the entire state experiencing moderate drought conditions across April and May
May to June 2015	At the height of the drought event in late May, over 29 percent of the state was experiencing moderate drought conditions
October 2016 to April 2017	Drought conditions were the worst faced by New Jersey in 14 years. The entire state was experiencing some level of drought conditions at the height of the drought event in late November and early December, with nearly 38 percent of the state experiencing severe drought conditions, 34 percent experiencing moderate drought, and 28 percent was abnormally dry. NJDEP issued a Drought Warning for much of Northern and Central New Jersey due to the severity of this period of drought

Date of Event	Description
July to December 2022	A statewide Drought Watch was instituted from early August to late December. September was the most severe month, as 67 percent of the state was under moderate drought conditions and an additional 29 percent were under severe drought conditions during the first two weeks of the month.
April 2023	Parts of northern counties experienced moderate drought for around 2 weeks, with the largest areas in Bergen and Passaic Counties.
June 2024 to June 2025	A record dry spell led to driest conditions the state has had in 120 years, with the southern half of the state experiencing the worst conditions.

Source: NJ SHMP, 2024, NOAA NCEI, 2025.

7.5.4 PROBABILITY OF FUTURE OCCURRENCES

Based upon risk factors as well as past occurrences, it is likely that droughts can occur across New Jersey in the future. In addition, as projected temperatures increase, the probability for future droughts will likely increase as well. Therefore, it is likely that droughts will occur in New Jersey of varied severity in the future. Please refer to Section 7.4.5 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of drought events.

7.5.5 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.

7.5.6 VULNERABILITY ASSESSMENT

Because drought impacts large areas and crosses jurisdictional boundaries, all existing and future buildings, facilities and populations are considered to be exposed to this hazard and could potentially be impacted. 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 rainfall.

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

Although drought typically has a negligible impact on building stock and infrastructure, it can present a challenge to community lifelines. Water supply in the county is serviced by public water systems that use groundwater wells, local surface water supplies, and purchased surface water from other parts of the State. The New Jersey Drought Emergency Plan, prepared by the New Jersey Departments of Law and Public Safety and Environmental Protection, fully identifies authority, organization, concept of operations, and responsibilities for any drought emergency and is used as needed in response to potential drought situations. Drought status information is maintained at http://njdrought.org. Drought emergencies are implemented when drought begins to affect residents and businesses.

When emergencies are declared, all residents, including those with private wells, are urged to adhere to mandatory restrictions such as limiting or eliminating lawn watering, driveway washing, and car washing. Often, non-essential business use may be restricted. When waterways approach historic low flows, groundwater supplies may also be affected. **Table 7.5-3 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 7.5-3 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)

POPULATION AND ECONOMY

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.

Crop failure is not a significant concern for Union County, as there is little agricultural activity. The United States Department of Agriculture (USDA) 2022 Census of Agriculture reports a total of 15 farms in the county accounting for a total of 139 acres of farmland (0.2% of the total area of the county). The 2022 market value of agricultural products in the

county totaled $315,000. Using the Agriculture EAL Rate provided by FEMA's NRI of $1 per $74.88 of agriculture value, it is possible to estimate the annual loss of agricultural value to drought. Assuming the exposure of crops was equal to the total value of crops sold ($315,000), the expected annual loss to the county is $4,206.73.

ECOSYSTEMS AND NATURAL ASSETS

Long periods without precipitation can alter the delicate balance of ecosystems. Examples of drought impacts to ecological systems may include reduced plant growth, local species reduction or extinction, and landscape-level transitions. Drought impacts to ecological systems may diminish the resources and services provided by those systems, including water filtration and quality, wildlife habitat, and sufficient water levels for recreation, tourism, and preponderance of aquatic species. High temperatures, high winds, and low humidity can worsen drought conditions and make areas more susceptible to wildfire. The vulnerability of natural systems to withstand or adapt to drought disturbances depends on the sensitivity of the system, exposure to the hazard, and capacity to adapt and recover

7.6 EARTHQUAKE/GEOLOGICAL

7.6.1 HAZARD DESCRIPTION

According to FEMA, an earthquake is "a shaking of the earth's surface by energy waves emitted by slowly moving tectonic plates overcoming friction with one another underneath the earth's surface." Earthquakes are often relatively short duration, but there may be aftershocks and other effects (such as liquefaction) that prolong and exacerbate their effects. Earthquakes can also trigger secondary hazards such as fires, tsunamis, landslides or avalanches. It is important to understand all of the terms associated with earthquakes, which include the following:

- Epicenter: The place on the Earth's surface directly above the point on the fault where the earthquake rupture begins. Once fault slippage begins, it expands along the fault during the earthquake and can extend hundreds of miles before stopping.
- Fault: The fracture across which displacement occurs during an earthquake. The slippage may range from less than an inch to more than 10 yards in a severe earthquake.
- Magnitude: The amount of energy released during an earthquake, which is computed from the amplitude of the seismic waves. A magnitude of 7.0 on the Richter scale indicates an extremely strong earthquake. Each whole number on the scale represents an increase of about 30 times more energy released than the previous whole number represents. Therefore, an earthquake measuring 6.0 is about 30 times more powerful than one measuring 5.0.
- Seismic Waves: Vibrations that travel outward from the earthquake fault at speeds of several miles per second. Although fault slippage directly under a structure can cause considerable damage, the vibrations of seismic waves cause most of the destruction during earthquakes.
- Aftershock: An earthquake of similar or lesser intensity that follows the main earthquake.

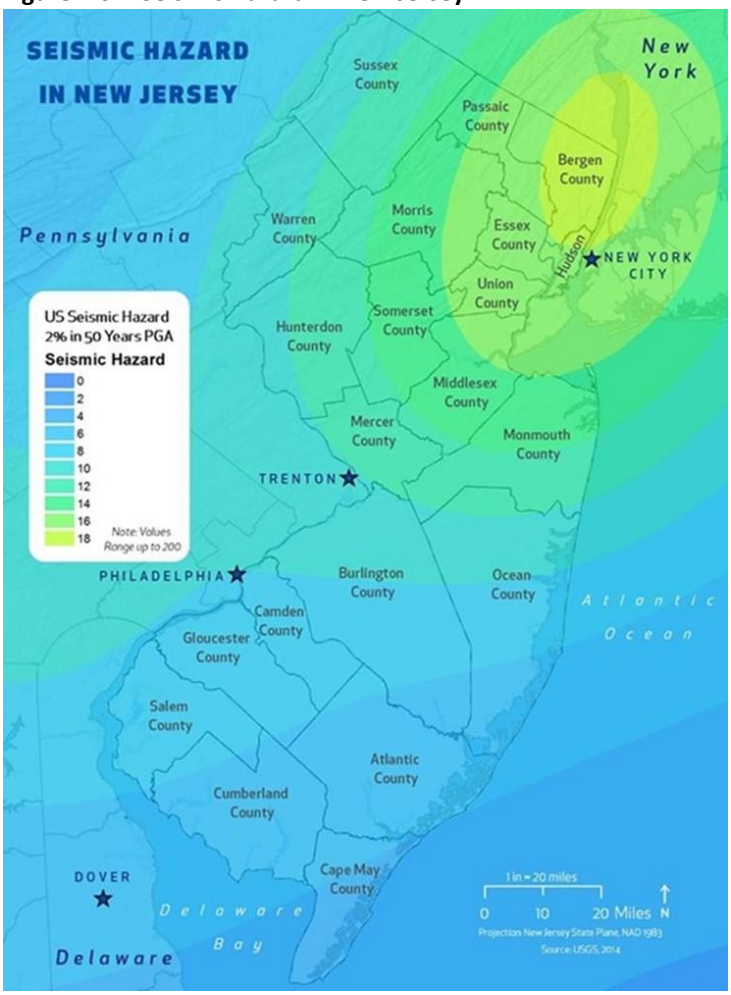
7.6.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

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. Relative to the rest of the county, New Jersey faces low to moderate risk. 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.

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 7.6-1 Seismic Hazard in New Jersey** displays the PGA with a 2% probability of being exceeded over 50 years, for a firm rock site. PGA is a measure of the strength of shaking experienced by a particle on the ground during an earthquake. 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). Discussion of the relationship between PGA and earthquake magnitude and impacts can be found in the following section.

Figure 7.6-1 Seismic Hazard in New Jersey



Source: NJ SHMP 2024

EXTENT AND MAGNITUDE

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally-- total destruction. Although numerous *intensity scales* have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects.[1]

[1] The Modified Mercalli Intensity Scale, USGS Earthquake Hazards Program, http://earthquake.usgs.gov/learn/topics/mercalli.php

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects actually experienced at that place.

The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above. **Table 7.6-1** below displays the **Approximate Relationship Between Magnitude and Intensity.**

Table 7.6-1 Approximate Relationship between Magnitude and Intensity

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: USGS, 2025

Figure 7.6-2 Standard USGS Conversion of MMI To PGA below displays the standard USGS conversion of the Modified Mercali Intensity scale to PGA. The peak ground acceleration (PGA) with a 2% probability of being exceeded over 50 years as shown in Figure 7.6-1 Seismic Hazard in New Jersey generally corresponds to moderate to weak shaking statewide.

Figure 7.6-2 Standard USGS Conversion of MMI to PGA

Near-Source Modified Mercalli Intensity (MMI)	I	II-III	IV	V	VI	VII	VIII	IX	X
Maximum Peak Ground Acceleration. (PGA) in %g	< .17	.17 – 1.4	1.4 - 3.9	3.9 - 9.2	9.2 - 18	18 - 34	34 - 65	65 - 124	> 124
Perceived shaking	Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
Potential Damage	None	None	None	Very Light	Light	Moderate	Moderate / Heavy	Heavy	Very Heavy

Source: Chock, G. & Kindred, Troy & Robertson, Ian & Iinuma, Gen & Nicholson, Peter & Lau, Ernest & Brandes, Horst & Sarwar, Afaq & Medley, Edward & Pino, John & Okubo, Paul & Holmes, William & Hirshorn, Barry & Sumada, Jiro. (2006). Compilation of Observations of the October 15, 2006 Kiholo Bay (Mw 6. 7) and Mahukona (Mw 6.0) Earthquakes, Hawai'i.

7.6.3 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 219 earthquakes with epicenters in New Jersey between 1783 and May 2025. During this 240-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 219 earthquakes, none had an epicenter in Union County.

Figure 7.6-3 Earthquake Epicenters in Northern New Jersey displays historical earthquakes with epicenters in northern New Jersey during this time period between 1783 and May 2025. 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 has occurred within this 25-mile buffer.

Figure 7.6-3 Earthquake Epicenters in Northern New Jersey

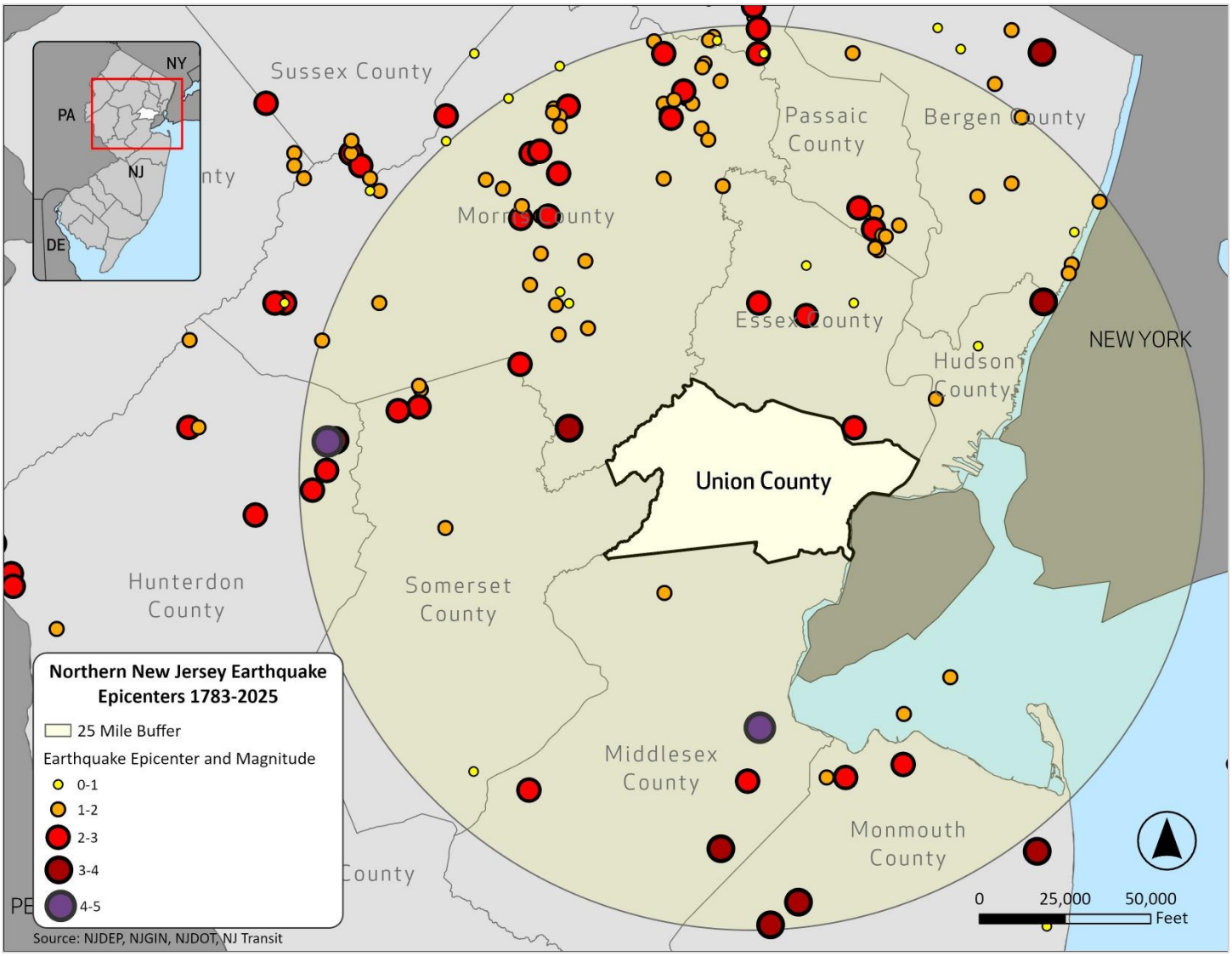


Table 7.6-2 Five Most Recent Earthquakes Within a 25-mile Buffer of Union County, 2017-2025 shows the five most recent earthquakes within a 25-mile buffer of Union County. The most recent event near Union County occurred on April 5, 2024, when a 4.8 magnitude earthquake occurred in Tewksbury Township (Hunterdon County). and **Table 7.6-3 Top Five Magnitude Earthquakes Within a 25-mile Buffer of Union County, 1783-2025** identifies the top five magnitude events within a 25-mile buffer of Union County between 1783 and 2025. The table shows the third largest earthquake within this radius was also the April 5, 2024 earthquake. **Table 7.6-4 Five Closest Earthquakes to Union County, 1783 - 2025** includes the five closest earthquakes to Union County between 1783 and 2025 (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 7.6-2 Five Most Recent Earthquakes within a 25-mile Buffer of Union County, 2017-2025

Event Date	Epicenter	Magnitude
4/5/2024	7.7 km ESE of Califon, NJ	4.8
3/14/2024	5 km NNE of Whitehouse Station, NJ	2.2
8/30/2022	1 km WSW of Lake Telemark, NJ	1.7
8/30/2022	4.2 km W of Morris Plains, NJ	2.3
9/5/2022	93 km ESE of Harvey Cedars, NJ	2.3

Source: DEP, New Jersey Geological and Water Survey, May 2025

Table 7.6-3 Top Five Magnitude Earthquake Events within a 25-mile Buffer of Union County, 1783-2025

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
4/5/2024	7.7 km ESE of Califon, NJ	4.8
09/01/1895	Sayreville, NJ Near South Amboy, NJ	4.1
6/1/1927	Rumson, NJ Near Asbury Park, NJ	3.9

Source: DEP, New Jersey Geological and Water Survey, May 2025

Table 7.6-4 Five Closest Earthquakes to Union County, 1783 - 2025

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
8/14/2015	3.5 km N of Bernardsville, NJ	2.7

Source: DEP, New Jersey Geological and Water Survey, May 2025

7.6.4 PROBABILITY OF FUTURE OCCURRENCES

Earthquakes cannot be predicted and may occur any time of the day or year. The probability of damaging earthquakes affecting Union County and the state as a whole is low. However, there is a definite threat of major earthquakes that could cause widespread damage and casualties. Major earthquakes are infrequent in the State and may occur only once every few hundred years or longer, but the consequences of major earthquakes would be very high. For the purposes of this plan update, the probability of future occurrences for earthquakes is defined by the number of events over a specified period of time. The entire historical record was consulted and there have been zero earthquake-related disasters declared for New Jersey. The historical record indicates 219 earthquakes recorded for New Jersey from 1783 to 2025.

7.6.5 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.

7.6.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

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 7.6-5 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.

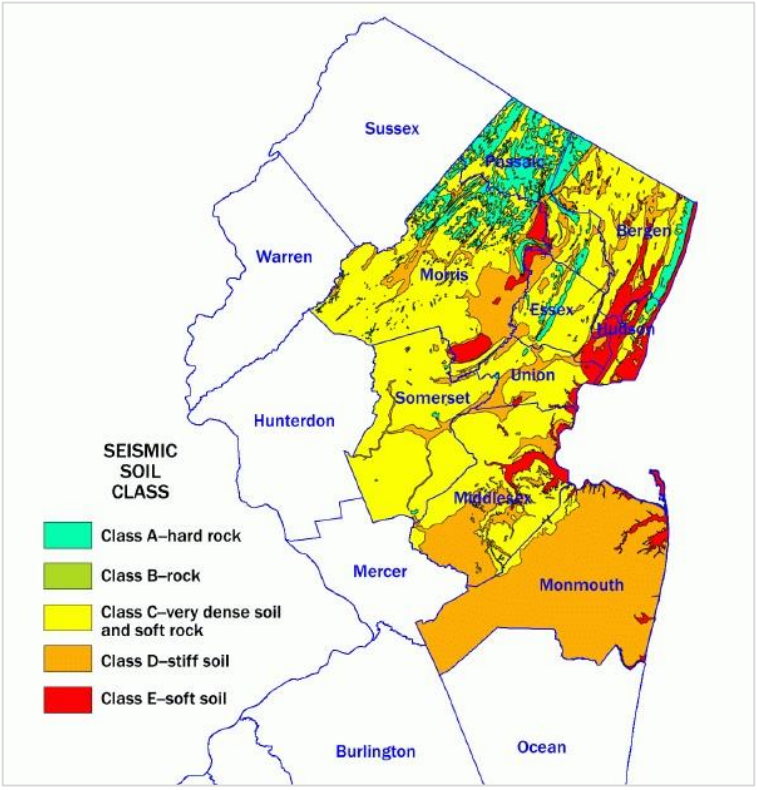
Table 7.6-5 NEHRP Soil Classifications

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

Source: FEMA

Figure 7.6-4 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 7.6-4 Seismic Soils in Northeastern New Jersey



Source: New Jersey Geological and Water Survey, 2014

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.

Table 7.6-6 Expected Annualized Losses from Earthquake by Jurisdiction shows expected annualized losses for the earthquake hazard. This data was derived from FEMA's National Risk Index (NRI). Expected EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality). Loss quantification calculated by the NRI for the earthquake hazard utilizes HAZUS, a geographic information system-based loss estimation tool that FEMA developed.

Table 7.6-6 Expected Annualized Losses from Earthquake by Jurisdiction

Municipality	Expected Annual Losses (Building)	Expected Annual Losses (Total)
Berkeley Heights Township	$30,471.60	$34,020.53
Clark Township	$50,855.50	$61,522.38
Cranford Township	$113,350.60	$142,660.62
Elizabeth City	$348,651.40	$489,425.44
Fanwood Borough	$10,569.40	$12,239.03
Garwood Borough	$20,905.20	$24,714.29
Hillside Township	$73,247.60	$85,155.32
Kenilworth Borough	$50,538.50	$57,473.48

Municipality	Expected Annual Losses (Building)	Expected Annual Losses (Total)
Linden City	$208,100.60	$240,245.11
Mountainside Borough	$32,672.00	$37,006.88
New Providence Borough	$19,994.20	$22,499.93
Plainfield City	$79,769.60	$103,372.64
Rahway City	$77,497.30	$94,050.73
Roselle Borough	$51,758.40	$65,922.36
Roselle Park Borough	$29,886.90	$37,372.99
Scotch Plains Township	$54,070.10	$63,672.39
Springfield Township	$75,225.50	$87,455.76
Summit City	$77,761.40	$90,427.58
Union Township	$236,478.00	$283,912.38
Westfield Town	$106,687.10	$126,347.52
Winfield Township	$1,998.10	$2,852.58
Union County	**$1,750,489.00**	**$2,162,349.94**

Source: FEMA NRI, 2025

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.

POPULATION AND ECONOMY

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.

The entire population is assumed to have equal vulnerability to earthquakes in Union County. The degree of exposure is dependent on many factors, including the age and construction type of the structures people live in, the soil types their homes are constructed on, and their proximity to fault locations. Earthquakes have the potential to impact economies at both the local and regional scale. Economic Losses can include structural and non-structural damage to buildings, loss of business function, damage to inventory, relocation costs, wage loss, and rental loss caused by the repair and replacement of buildings. Roads that cross earthquake-prone soils have the potential to be significantly damaged during an earthquake event, potentially impacting commodity flows. Additionally, economic loss includes business interruption losses associated with the inability to operate a business because of damage sustained during an earthquake, as well as temporary living expenses for those displaced.

ECOSYSTEMS AND NATURAL ASSETS

Earthquakes can impact damage or disturb ecosystems, negatively affecting plant and wildlife. In addition, secondary hazards such landslides, mudslides, slope failure, dam failures, and tsunamis may be triggered by earthquake events which can be harmful to the environment as well.

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

7.7.1 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.

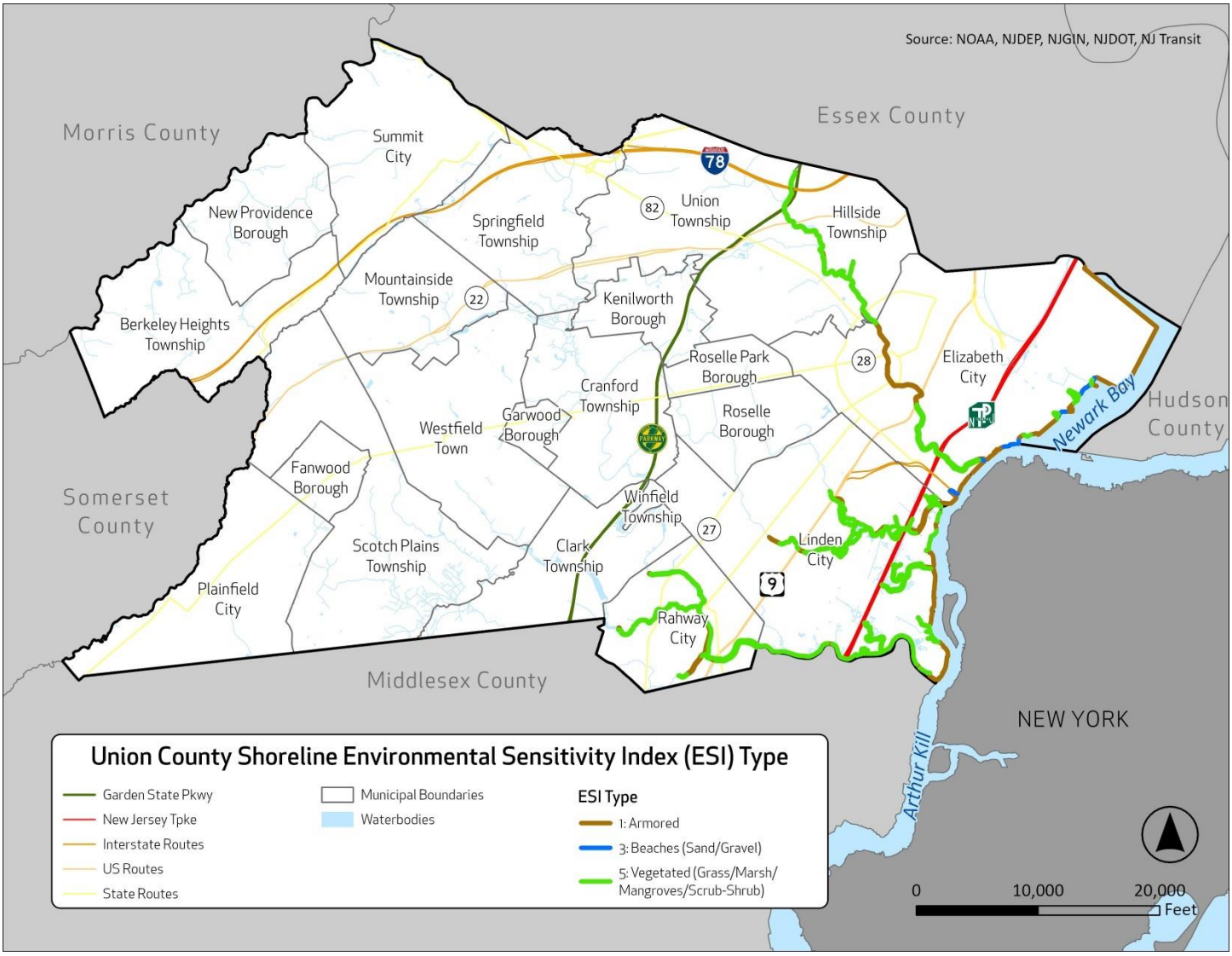
7.7.2 LOCATION, EXTENT AND MAGNITUDE

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 Linden City experience fairly significant erosion problems.

In order to assess the location of shoreline potentially at-risk from coastal erosion within Union County, NOAA's environmental sensitivity index (ESI) was used. ESI Categories are ranked one to ten, where lower rankings represent shorelines that are less susceptible to damage by oiling; and higher rankings become more likely to experience damage by oiling. There are four main different types of shoreline in Union County. Armored (ESI of 1) is the least vulnerable to erosion, followed by Beaches (3), Flats (4) and Vegetated (5) shorelines. Of the shoreline types in the county, these are the most sensitive to coastal erosion. Shorelines can also be a combination of categories. Although this data is primarily used to identify areas most vulnerable to oil spills, it can provide insight into the location and extent of sensitive shorelines within the county. **Figure 7.7-1 Union County Shoreline and Tidally Influenced Municipalities** presents the ESI categories of Union County's coastline.

Figure 7.7-1 Union County Shoreline and Tidally Influenced Municipalities



A GIS analysis was run to calculate the total shoreline of each type within each municipality. **Table 7.7-1** presents **Summary of Shoreline Environmental Sensitivity Index (ESI) by Municipality**. About 71.6% of the total shoreline of Union County is considered environmentally sensitive for the purposes of this analysis (ESI of 3 or above). Linden City had the highest amount of environmentally sensitive shoreline at 104,106.4 feet total, followed by Rahway City at 49,407.7 feet.

Table 7.7-1 Summary of Shoreline Environmental Sensitivity Index (ESI) by Municipality

Municipality	ESI Category	Total Shoreline (Feet)
Elizabeth City	1: Armored	47,973.0
	1: Armored/3: Beaches (Sand/Gravel)	855.0
	1: Armored/4: Flats (Mud/Sand)	1,264.4
	3: Beaches (Sand/Gravel)	2,959.8
	3: Beaches (Sand/Gravel)/4: Flats (Mud/Sand)	2,235.1
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	31,932.9
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored	62.2
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored/4: Flats (Mud/Sand)	370.2

Municipality	ESI Category	Total Shoreline (Feet)
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/3: Beaches (Sand/Gravel)/4: Flats (Mud/Sand)	234.8
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/4: Flats (Mud/Sand)	4,514.8
	Total	**92,402.2**
Hillside Township	1: Armored	1,950.8
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	4,474.0
	Total	**6,424.8**
Linden City	1: Armored	23,877.6
	1: Armored/3: Beaches (Sand/Gravel)	580.2
	1: Armored/3: Beaches (Sand/Gravel)/4: Flats (Mud/Sand)	1,321.3
	1: Armored/5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	678.8
	3: Beaches (Sand/Gravel)	43.9
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	96,583.8
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored	741.2
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored/4: Flats (Mud/Sand)	286.4
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/3: Beaches (Sand/Gravel)	741.5
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/4: Flats (Mud/Sand)	5,709.7
	Total	**130,564.4**
Rahway City	1: Armored	9,370.1
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	49,275.7
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored	1,31.9
	Total	**58,777.7**
Union Township	1: Armored	3,31.5
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	21,717.6
	Total	**22,049.2**
Union County	**1: Armored**	**83,503.0**
	1: Armored/3: Beaches (Sand/Gravel)	**1,435.2**
	1: Armored/3: Beaches (Sand/Gravel)/4: Flats (Mud/Sand)	**1,321.3**
	1: Armored/4: Flats (Mud/Sand)	**1,264.4**
	1: Armored/5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	**678.8**
	3: Beaches (Sand/Gravel)	**3,003.7**
	3: Beaches (Sand/Gravel)/4: Flats (Mud/Sand)	**2,235.1**
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)	**203,984.0**
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored	**935.3**
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/1: Armored/4: Flats (Mud/Sand)	**656.6**
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/3: Beaches (Sand/Gravel)	**741.5**
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/3: Beaches (Sand/Gravel)/4: Flats (Mud/Sand)	**234.8**
	5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub)/4: Flats (Mud/Sand)	**102,24.5**
	Total	**310,218.3**

Source: NOAA 2025

EXTENT AND MAGNITUDE

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 range from years to decades. 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, or beach replenishment) (Woods Hole Sea 2003).

7.7.3 PREVIOUS OCCURRENCES AND LOSSES

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 December 2024 yields 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.

Table 7.7-2 Coastal Erosion Events Since 2010

Date	Corresponding Hazard Event	Description
08/31/2011	Hurricane Irene	Hurricane Irene made landfall (second landfall) as a tropical storm on August 28th in the Little Egg Inlet in southeastern New Jersey. A storm surge of 3-5 feet along the New Jersey shores caused moderate to severe tidal flooding with extensive beach erosion.
10/29/2012	Hurricane Sandy	In late October of 2012, Union County was impacted by Hurricane Sandy, a late season hurricane. Sandy made landfall as a post-tropical cyclone near Brigantine, New Jersey with 70-knott maximum sustained winds. Because of its tremendous size Sandy drove a catastrophic storm surge into the New Jersey and New York coastlines. In New Jersey many areas that had been hit by Hurricane Irene in August 2011 were again battered by strong waves and surge. The barrier islands were breached in a number of places and erosion of the beach and dunes occurred all along the Mid-Atlantic coast. This was the most destructive storm to impact this coastline since an extremely powerful nor'easter in December of 1992. 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.
March 1-8 2013	Nor'easter	Strong wind and flooding caused significant erosion along the barrier islands.

Date	Corresponding Hazard Event	Description
January 23 -30, 2015	Winter Storm	Widespread dune erosion occurred in parts of the Jersey Shore Monday.
October 2, 2015	Nor'easter	High winds and flooding from the nor'easter caused damage to many beaches along the shore. Above normal tidal cycles and onshore flow persisted beyond the storm, creating even more erosion
January 22 -24, 2016	Blizzard	Strong easterly winds combined with high tide levels, resulting in major flooding along parts of New Jersey. In parts of southern New Jersey, coastal flooding was higher than during post tropical storm Sandy in 2012.
August 28 - September 8, 2016	Tropical Storm Hermine	Many beaches along the shore experienced severe erosion. A week after Hermine made its way toward New Jersey, whipping up high waves, the southernmost beaches in Brick Township remain closed because of severe erosion.
March 14, 2017	Nor'easter	Most shore towns experienced at least some beach erosion. This event provided a short window to replenish the beaches before tourist season.
September 5-26, 2017	Hurricane Jose	Of the 66 municipalities and beach areas surveyed after the hurricane, 55 were determined to have minor beach or dune erosion, 11 had moderate beach or dune erosion and 0 had major beach or dune erosion
March 6-7, 2018	Nor'easter	Of the 66 beaches surveyed, 55 were determined to have minor beach or dune erosion and 10 had moderate beach or dune erosion
September 8-12, 2018	Tropical Storm Gordon	None. Of the 66 municipalities and beach areas surveyed, 53 were determined to have minor beach or dune erosion and 13 had moderate beach erosion.
October 8- 13, 2019	Nor'easter/ Subtropical Storm Melissa	Of the 105 areas surveyed, 82 were determined to have minor beach or dune erosion, 15 had moderate beach or dune erosion and 8 had major beach or dune erosion.
August 1-6, 2020	Tropical Storm Isaias	New Jersey experienced strong southernly winds of up to 50mph with gusts over 70mph, heavy rain, and a period of elevated surf and swells. Of the 79 areas surveyed, 75 were determined to have minor beach or dune erosion, and 4 had moderate beach or dune erosion.
August 14- 17, 2020	Tropical Storm Kyle	A low-pressure system that formed southeast of Atlantic City and strengthened enough to be considered a Tropical Storm. Of the 79 areas surveyed, 73 were determined to have minor beach or dune erosion and 6 had moderate beach or dune erosion.
September 11-16 & 18- 23, 2020	Hurricanes Paulette and Teddy	The impacts of Hurricane Paulette along the coast began on September 11th and were felt through the 16th. Short- to medium-period seas began again on September 18th due to Hurricane Teddy and last through the 23rd. Neither storm made landfall in the United States. Of the 79 areas surveyed, 77 were determined to have minor beach or dune erosion and 2 had moderate beach or dune erosion.
December 16-17, 2020	Nor'easter	The storm had sustained winds over 40 mph with gusts up to 60 mph and generated a sea height peak of 24 feet. Elevated tide levels resulted from the astronomical tide phase and a period of strong offshore winds. Of the 79 areas surveyed, 70 were determined to have minor beach or dune erosion, 5 had moderate beach or dune erosion, and 4 had major beach or dune erosion
January 31 – February 2, 2021	Nor'easter	The storm had sustained winds near 50 mph with gusts over 60 mph and generated sea heigh peak of 23 feet. Tides reached minor to moderate flood stage levels due to astronomical tides, strong onshore winds, and the proximity of the storm to the coast. Of the 81 sites surveyed, 54 were determined to have minor beach or dune erosion, 18 had moderate beach or dune erosion, and 9 had major beach or dune erosion

Date	Corresponding Hazard Event	Description
May 28 – May 30, 2021	Nor'easter	The storm generated sustained winds over 40 mph and gust over 50 mph and a sea height peak of 13 feet. Tides reached minor flood stages due to astronomical tide and strong onshore winds. Of the 81 sites surveyed, 70 were determined to have minor beach or dune erosion and 11 had moderate beach or dune erosion.
October 9- 12, 2021	Nor'easter	The storm generated wind gusts over 40 mph and a peak sea height of 15 feet. Tides reached minor flood stage levels due to astronomical tide and moderate onshore winds. Of the 81 sites surveyed, 79 had minor beach or dune erosion and 2 had moderate beach or dune erosion.
August 26 – September 1, 2021	Post Tropical Storm Ida	The storm resulted in wind gusts of up to 69 mph in Burlington and dropped nearly 10 inches of rain in Hillsborough. Heavy rainfall led to severe flash flooding and urban flooding across northern New Jersey and 2 tornadoes were recorded in the southern region of the state. The strongest tornado reached EF-3 level in Gloucester County. In total, the storm caused at least 26 deaths across the state and the flooding resulted in about $8-10 billion of damage. Federal funding totaled nearly $1 billion, with the goal of restoring ecosystems and replenishing beaches, along with other flood control measures.
January 16- 17, 2022	Winter Storm	The storm generated wind gusts over 50 mph and a sea height peak of 23 feet. Tides reached minor flood stage levels due to moderate onshore winds. Of the 81 sites surveyed, 76 had minor beach or dune erosion and 5 had moderate beach or dune erosion
May 6 – 11, 2022	Coastal Storm	Event result in wind gusts of over 50 mph and peak sea heights of 18 feet. Oceanfront and back bay flooding reached minor levels due to strong onshore winds, with several back bay locations close to moderate flood stages. Of the 81 sites surveyed, 68 had minor beach or dune erosion, 5 had moderate beach or dune erosion, and 8 had major beach or dune erosion.
September 29 – October 5, 2022	Hurricane Ian	The storm resulted in a prolonged period of onshore winds, with gusts near 60 mph and peak sea heights of 22 feet. All oceanfront and back bay location reached minor flooding stages, with several approaching moderate flooding due to the several days of strong onshore winds and the proximity of the storm's center to the coast. Of the 81 sites surveyed, 63 had minor beach or dune erosion, 6 had moderate beach or dune erosion, and 12 had major beach or dune erosion.

Source: NOAA NCEI, 2024, NJ SHMP 2024

7.7.4 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.

7.7.5 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. New Jersey's 2020 Scientific Report on Climate Change reported that the state should expect more frequent and intense precipitation events and sea level rise at a rate greater than the global average (NJDEP, 2020). Each of these predictions supports a higher potential occurrence of coastal erosion, making it likely that the impacts of coastal erosion will increase in severity due to future episodic storm events as well as the anticipated slow onset, long-term effects of climate change and sea level rise.

7.7.6 VULNERABILITY ASSESSMENT

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 developed. See the applicable jurisdictional appendices for a more detailed analysis of vulnerabilities and potential impacts of this hazard.

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

Average annual building damages directly attributable to the erosion hazard are considered to be negligible for the purposes of this risk assessment, assuming that ongoing nourishment and shoreline stabilization practices are expected to be maintained, implemented on an ongoing basis, and encouraged to continue.

POPULATION AND ECONOMY

Death and injury are not typically associated with coastal erosion, as erosive processes along the coast occur over long durations during which people in the affected areas have sufficient time to evacuate. Erosion can negatively impact the local economies of communities that rely on the financial benefits of their coastal tourism

ECOSYSTEMS AND NATURAL ASSETS

Beaches, shorelines and wetlands and other coastal ecosystems are important natural resources for Union County. They help protect the coast from storms and flooding, provide habitat for birds, small mammals, reptiles, amphibians, and insects. Coastal erosion can impact a variety of natural systems including beaches, wetlands, marshes, and coastal habitats, degrading their natural functions through loss of land, and conversion to open water areas. Additionally, shoreline hardening, while preventing erosion, can also have a negative impact on natural systems.

7.8 EXTREME TEMPERATURE–COLD

7.8.1 HAZARD DESCRIPTION

The extreme cold hazard can be defined as temperatures that are significantly below normal. The severity of extreme temperature events is measured by temperature, duration and humidity. Most events are for 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 zero degrees Fahrenheit several 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.

7.8.2 LOCATION, EXTENT AND MAGNITUDE

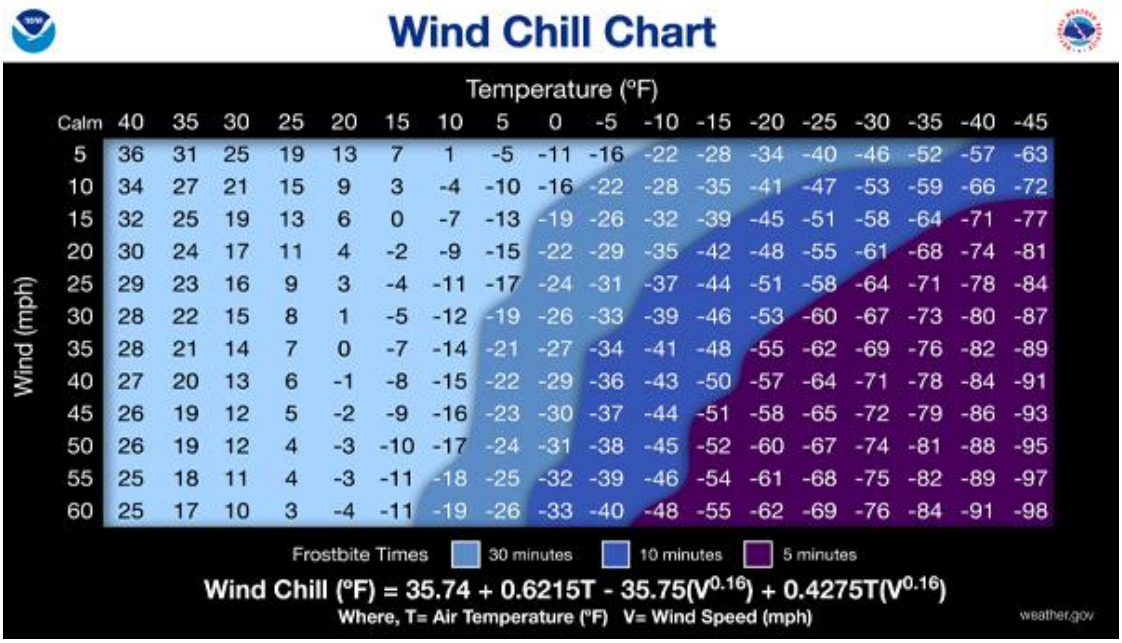
LOCATION

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

EXTENT AND MAGNITUDE

The NWS states that the extent (severity or magnitude) of extreme cold temperatures are generally measured through the Wind Chill Temperature (WCT) Index. Wind Chill Temperature is the temperature that people and animals feel when outside and it is based on the rate of heat loss from exposed skin by the effects of wind and cold. As the wind increases, the body is cooled at a faster rate causing the skin's temperature to drop.

Figure 7.8-1 National Weather Service Wind Chill Chart

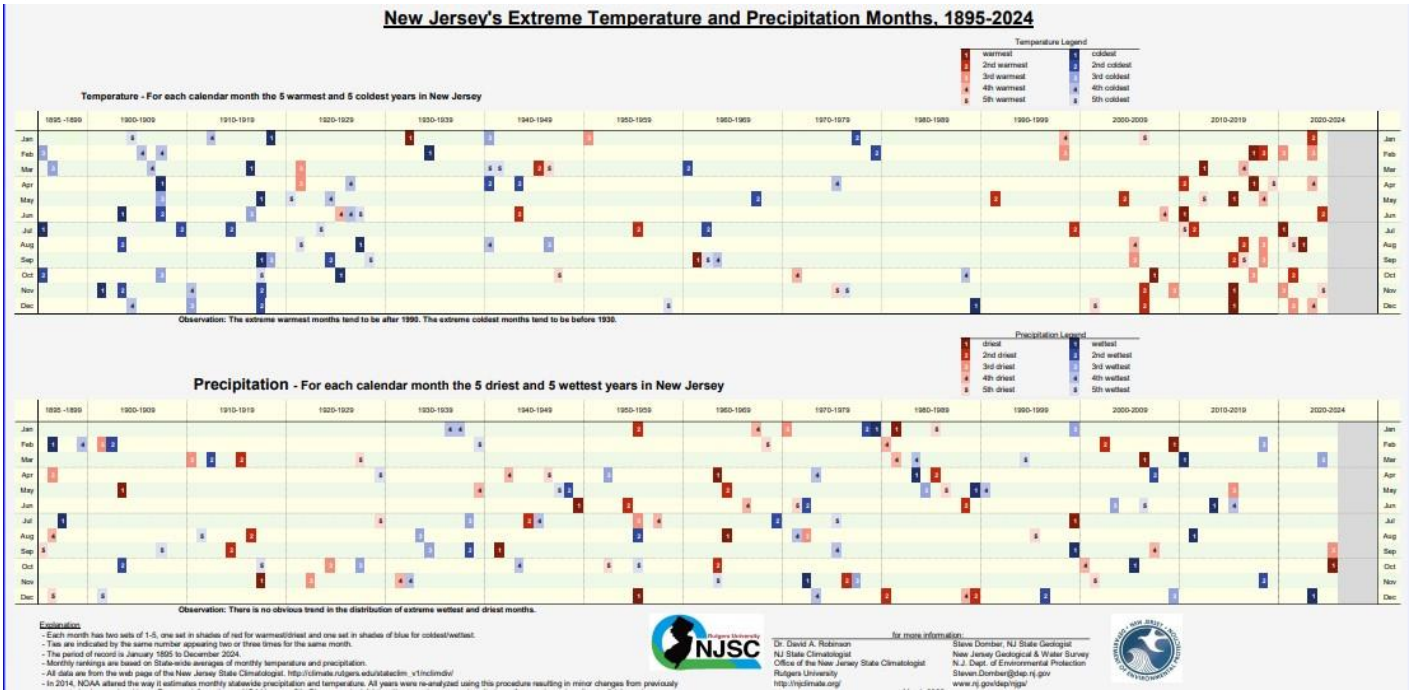


7.8.3 PREVIOUS OCCURRENCES AND LOSSES

Despite the 2021 plan update reporting Union County has experienced three extreme events in the period from 1950 to 2021 according to the NCEI Storm Events Database, a search of the database on May 15, 2025, returned zero results. The database provides no indication as to why these events are no longer to be found.

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 7.8-2 New Jersey's Extreme Temperature and Precipitation, 1895-2024** below shows months with both hot and cold temperature extremes over 129 years for the State of New Jersey. The data shows that the extreme cold months over the past 129 years tend to occur before 1930.

Figure 7.8-2 New Jersey's Extreme Temperature and Precipitation Months, 1895-2024



Source: Office of the New Jersey State Climatologist (ONJSC), March 2025

7.8.4 PROBABILITY OF FUTURE OCCURRENCES

Extreme temperature events will continue to have a high probability of occurrence in Union County, and the probability of future occurrences in Union County is certain. Climate change is expected to have an impact on extreme temperature occurrences. See below for a discussion of the impacts of climate change on future occurrences.

7.8.5 POTENTIAL EFFECTS OF CLIMATE CHANGE

As the climate changes, the number of extreme cold events are expected to decrease, and extreme heat events are anticipated to increase in the State. Global and regional temperatures are expected to continue increasing, with New Jersey warming faster than the rest of the Northeast region and the global average (NJDEP 2020). Although the trend in the State is generally towards warmer temperatures, traditional weather phenomena such as the Polar Vortex may be disrupted leading to events where extremely cold weather patterns can move out of the arctic to lower latitudes such as New Jersey where they may settle, thus the State could continue to experience extreme cold events despite an overall warming.

7.8.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

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. 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). With rare exceptions there are no significant or long-term damages associated with this hazard. There are no significant vulnerabilities to structures from the cold hazard, and no expected recurrent losses. Given the lack of historical data and limited likelihood for structural losses resulting from extreme cold occurrences in Union County, annualizing potential structural losses over a long period of time would most likely yield a negligible annualized loss estimate for the entire County.

POPULATION AND ECONOMY

The entire population of the county faces equal exposure to the extreme cold hazard. Primary impacts of concern for extreme cold temperatures include the life-threatening effects of overexposure hypothermia on people, particularly the elderly and disadvantaged. Although extreme cold related deaths have not occurred in the county, potential casualties resulting from extreme cold could result from a lack of adequate heat, carbon monoxide poisoning from unsafe heat sources and frostbite. The most vulnerable populations to cold casualties are the elderly or infirmed, the homeless, and low-income households, as they may not be able to afford to operate a heat source on a regular basis and may not have immediate family or friends to look out for their well-being.

Other significant impacts include strains on livestock and agriculture which could economically impact communities with agricultural presence although those are few in Union County. Expected annual losses from the extreme hazard category of the NRI are negligible at the municipal level and not included in this section.

ECOSYSTEMS AND NATURAL ASSETS

Extreme cold events can disrupt natural ecosystems. Plant life may be damaged or killed, especially species not adapted to freezing conditions. Wildlife may struggle to maintain body temperature and find food.

7.9 EXTREME TEMPERATURE–HEAT

7.9.1 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.

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 occur every summer in the country. Heat exhaustion and fainting (syncope) are less serious types of illnesses which are not fatal but interfere with a person's ability to work.

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.

7.9.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

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

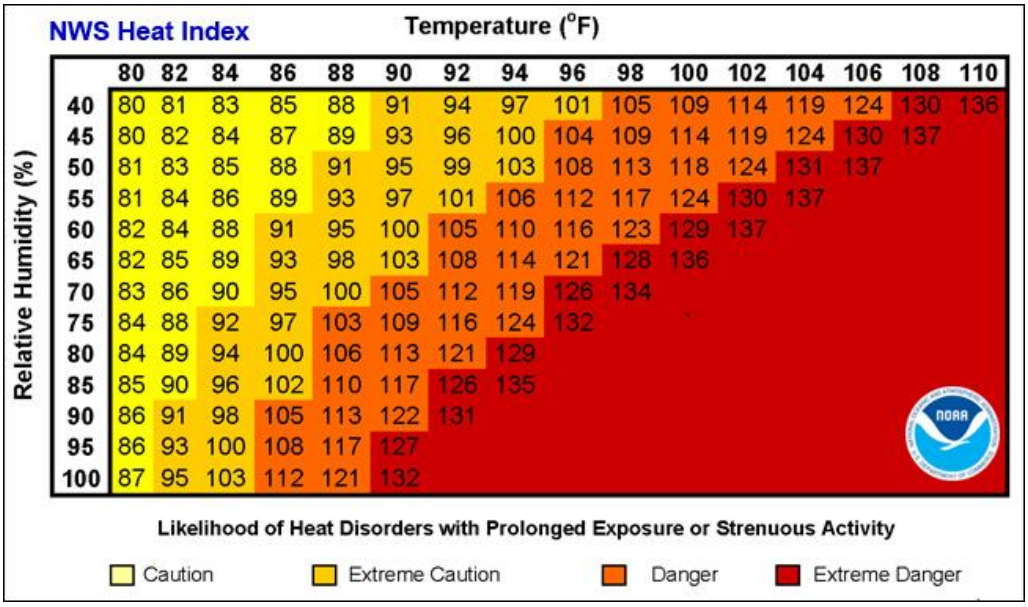
EXTENT AND MAGNITUDE

The severity of extreme heat events is 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 slows evaporation, robbing the body of its ability to cool itself. When heat gain exceeds the level the body can remove through sweat evaporation, 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. **Figure 7.9-1 NWS Heat Index Chart** and **Table 7.9-1 Heat Index Versus Possible Effects** illustrate the heat index and its potential effects on the human body.

Figure 7.9-1 NWS Heat Index Chart



Source: National Weather Service

Table 7.9-1 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

7.9.3 PREVIOUS OCCURRENCES AND LOSSES

The NCEI database indicates there have been 12 recorded extreme temperature events related to heat and excessive heat in Union County during the period 1950–2025. Although the query results begin in 1950, the first reported event in the database was in 2011, despite the 2021 plan update reporting that a similar search returned results as far back as 1995. There are most likely additional extreme heat events prior to 2011 that are not captured in the NCEI database. The database provides no indication as to why there are no events prior to 2011. One can presume that heat events have occurred at an increased rate since 1950; the total number of days over 90 degrees Fahrenheit in the state has increased from 17 to 23 (approximately 36%) according to New Jersey State Health. **Table 7.9-2 Reported Extreme Heat Events, Union County, 2011-2025** lists the extreme heat events from NCEI for Union County.

Table 7.9-2 Reported Extreme Heat Events, Union County, 2011-2025

Date	Location	Hazard Type	Injuries (Direct)	Deaths (Direct)	Property Damage
07/21/2011	County-wide	Excessive Heat	0	0	0
7/18/2012	County-wide	Excessive Heat	0	0	0
07/19/2013	County-wide	Excessive Heat	0	0	0
09/11/2013	Eastern Union	Excessive Heat	0	0	0
7/28/2016	Eastern Union	Heat	17	0	0
8/12/2016	County-wide	Excessive Heat	0	0	0

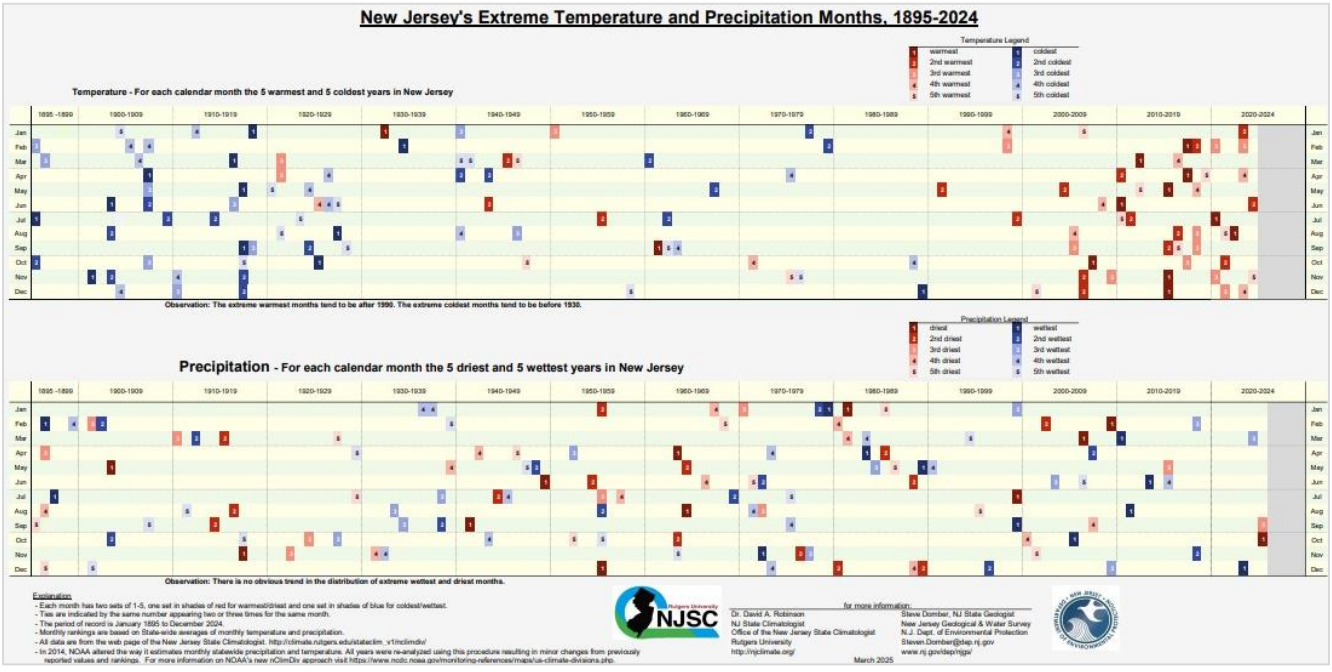
Date	Location	Hazard Type	Injuries (Direct)	Deaths (Direct)	Property Damage
8/13/2016	County-wide	Excessive Heat	0	0	0
7/20/2017	Eastern Union	Heat	0	0	0
7/19/2019	Eastern Union	Heat	0	0	0
7/19/2019	Eastern Union	Excessive Heat	0	0	0
7/20/2019	Eastern Union	Excessive Heat	0	0	0
7/21/2019	Western Union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

Source: NOAA/NCEI, 2025

According to the 2021 plan, the NCEI reported 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 July 3, but sweltering humidity and record-breaking maximum temperatures of around 100°F degrees occurred from Independence Day through July 6. 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.

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 7.9-2 New Jersey's Extreme Temperature and Precipitation Months, 1895-2024** shows months with both hot and cold temperature extremes over the past 129 years for the State of New Jersey. The data shows that the extreme warm months over the past 129 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 7.9-2 New Jersey's Extreme Temperature and Precipitation Months, 1895-2024



Source: Office of the New Jersey State Climatologist (ONJSC), 2024

7.9.4 PROBABILITY OF FUTURE OCCURRENCES

Extreme temperature events will continue to have a high probability of occurrence in Union County, and the probability of future occurrences in Union County is certain. Due to climate change, extreme heat events are becoming more frequent. See section 7.8.5 below for a discussion of the impacts of climate change on future occurrences.

7.9.5 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.

7.9.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

While all of Union County is exposed to extreme temperatures, existing buildings, infrastructure, and critical facilities are not considered vulnerable to significant damage caused by extreme heat Damages from extreme heat is generally confined to effects on humans, although occasionally there may be relatively minor effects on infrastructure such as freezing pipes or electric grids. The County-wide potential impact of the extreme heat hazard is very small, as evidenced by historical records. With rare exceptions there are no significant or long-term damages associated with this hazard. There are no significant vulnerabilities to structures from the cold hazard, and no expected recurrent losses. Given the lack of historical data and limited likelihood for structural losses resulting from extreme cold occurrences in Union County, annualizing potential structural losses over a long period of time would most likely yield a negligible annualized loss estimate for the entire County.

Community lifelines may be impacted in the county during events, especially in the case of a power outage as a result of extreme heat. Facilities without a backup generator may be forced to close until power is restored. Damages can occur when thermal tolerances of various systems are exceeded. Extreme heat can cause softening and traffic- related rutting of paved surfaces; and buckling of railway tracks. Extreme temperatures can place greater demand on utility systems, with possible associated power outages. Prolonged periods of extreme heat can also worsen drought impacts when occurring simultaneously.

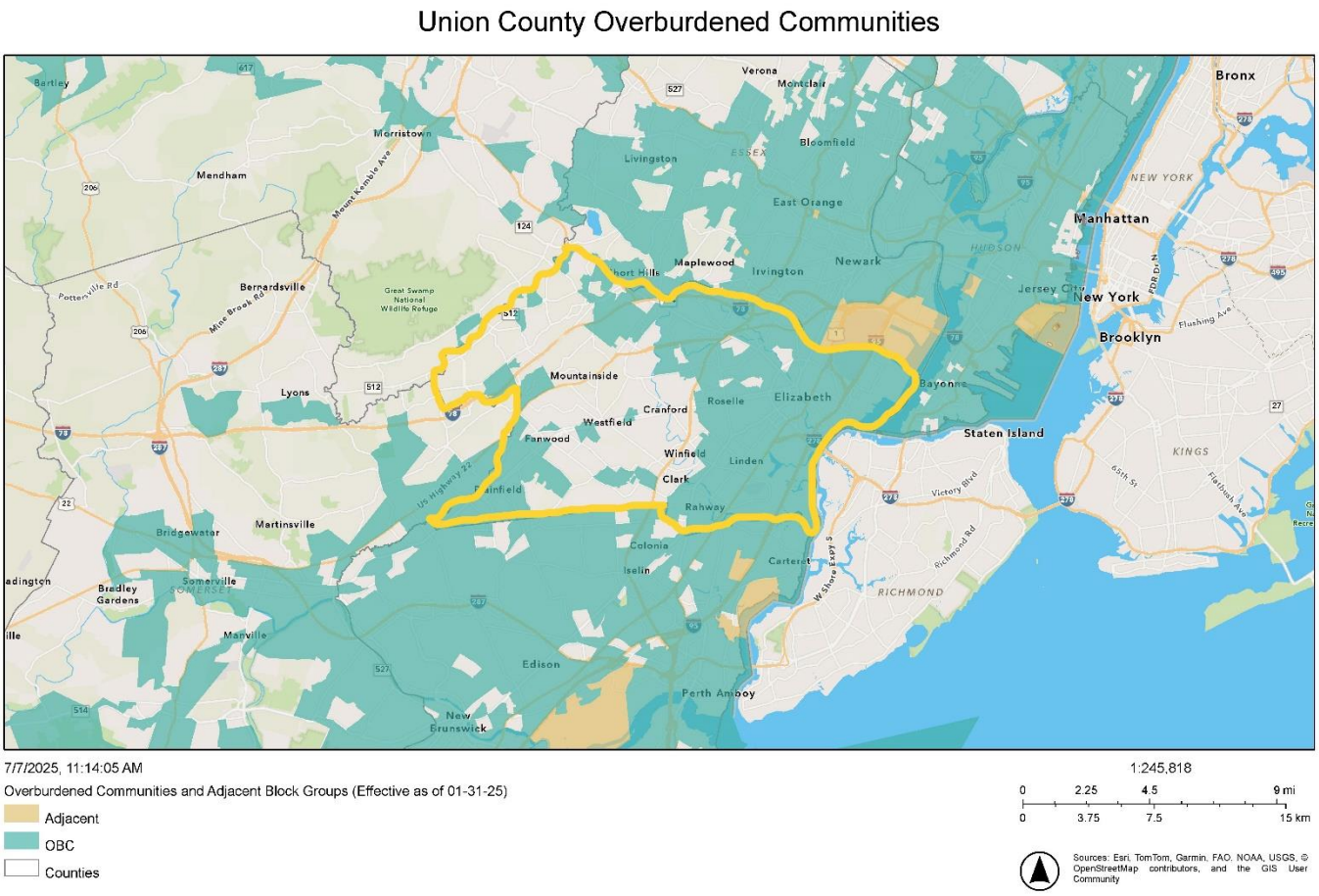
POPULATION AND ECONOMY

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.

Figure 7.9-3 Statewide Overburdened Communities Map



Source: DEP Office of Environmental Justice, EJMAP, 2025

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.

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.

Table 7.9-3 Potential Annualized Losses from Extreme Heat by Jurisdiction (Population Equivalence) below summarizes potential Expected Annual Losses (EAL) in population equivalence by municipality for Heatwave hazard. This data was derived from FEMA's NRI. EAL represents the average economic loss in dollars resulting from natural hazards each year, when expressed in terms of population equivalency, it represents the monetized cost of injury and fatality. Given the lack of historical data and limited likelihood for structural losses resulting from extreme heat in Union County, annualizing potential structural losses over a long period of time would most likely yield a negligible annualized loss estimate for the entire county.

Table 7.9-3 Potential Annualized Losses from Extreme Heat by Jurisdiction (Population Equivalence)

Jurisdiction	Est. Municipal Deaths Related to Heat Exposure	Expected Annual Losses (Population Equivalence)
Berkeley Heights Township	0.01	$118,307.66
Clark Township	0.01	$145,450.95
Cranford Township	0.02	$214,137.59
Elizabeth City	0.12	$1,364,995.45
Fanwood Borough	0.01	$69,623.51
Garwood Borough	0.00	$39,889.78
Hillside Township	0.02	$223,460.90
Kenilworth Borough	0.01	$75,973.50
Linden City	0.04	$435,238.99
Mountainside Borough	0.01	$62,870.73
New Providence Borough	0.01	$122,151.70
Plainfield City	0.04	$487,652.67
Rahway City	0.03	$292,943.92

Jurisdiction	Est. Municipal Deaths Related to Heat Exposure	Expected Annual Losses (Population Equivalence)
Roselle Borough	0.02	$225,839.06
Roselle Park Borough	0.01	$138,986.31
Scotch Plains Township	0.02	$223,611.79
Springfield Township	0.01	$153,773.56
Summit City	0.02	$203,370.64
Union Township	0.05	$556,410.40
Westfield Town	0.02	$277,840.26
Winfield Township	0.00	$14,160.34
Union County	**0.47**	**$5,446,689.70**

Source: FEMA NRI 2025

ECOSYSTEMS AND NATURAL ASSETS

Extreme heat can negatively influence air quality, water quality, and ecosystems such as wetlands and forest. Prolonged events can disrupt food chains, cause disease outbreak, and increase wildfire risk. Extreme heat can also lead to heat casualties in livestock and wildlife from dehydration and heat exhaustion, especially amongst species which can't regulate their temperatures.

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

7.10.1 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:

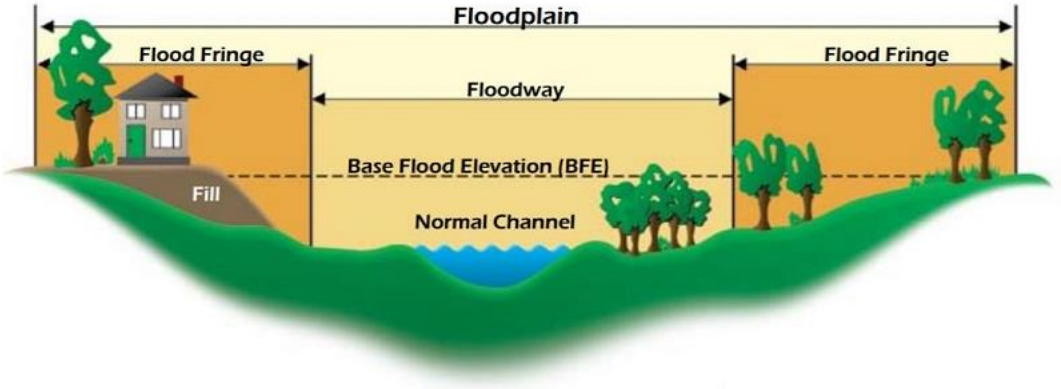
- Riverine flooding (river channel, flash floods, alluvial fan floods, ice-jam floods, dam breaks)
- Local drainage or high groundwater levels
- Fluctuating lake levels
- Coastal flooding (including storm surges)
- Debris flows
- Subsidence

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 7.10-1 Characteristics of a Floodplain** displays an example of a riverine flood plain.

Figure 7.10-1 Characteristics of a Floodplain



Source: FEMA, 2009

Different flooding types experienced in Union County include the following:

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.

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 floods 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.

7.10.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

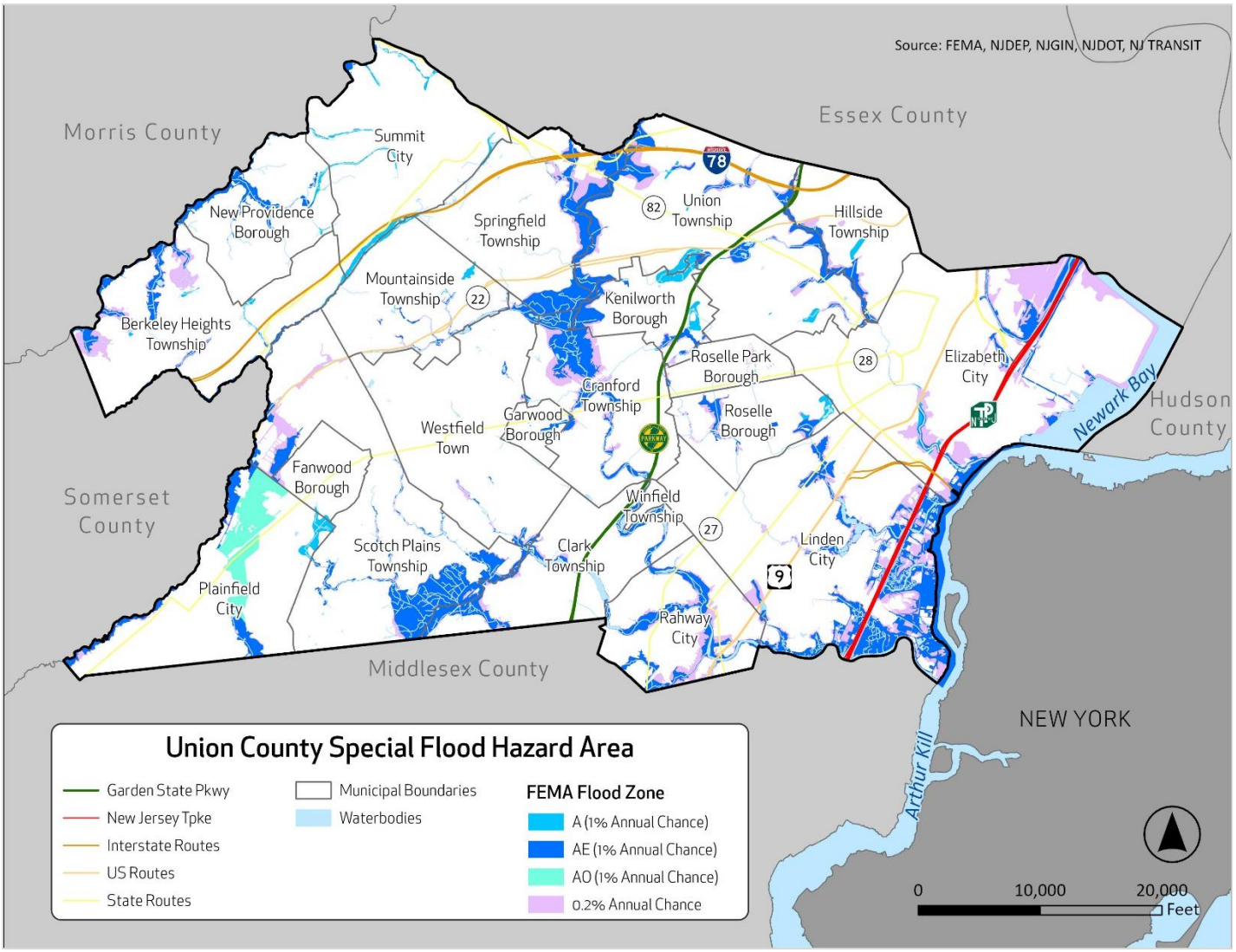
Union County is partially bordered by the Passaic River to the west, Newark Bay and the Arthur Kill to the east. The county is bordered by the Rahway River to the southeast, and the Green Brook River to the southwest. According to the Union County FEMA Flood Insurance Study (dated September 20, 2006), 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 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 7.10-2 Floodplain Map of Union County shows various flood zones in Union County using the best available data, a composite of effective and preliminary FIRMs. 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, particularly on alluvial fans, where shallow flooding average depths are between 1' and 3'.
- **Zone X (Shaded)/(0.2% Annual Chance).** Areas with a 0.2% chance of flooding in any given year.

Figure 7.10-2 Floodplain Map of Union County



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 light 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).

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

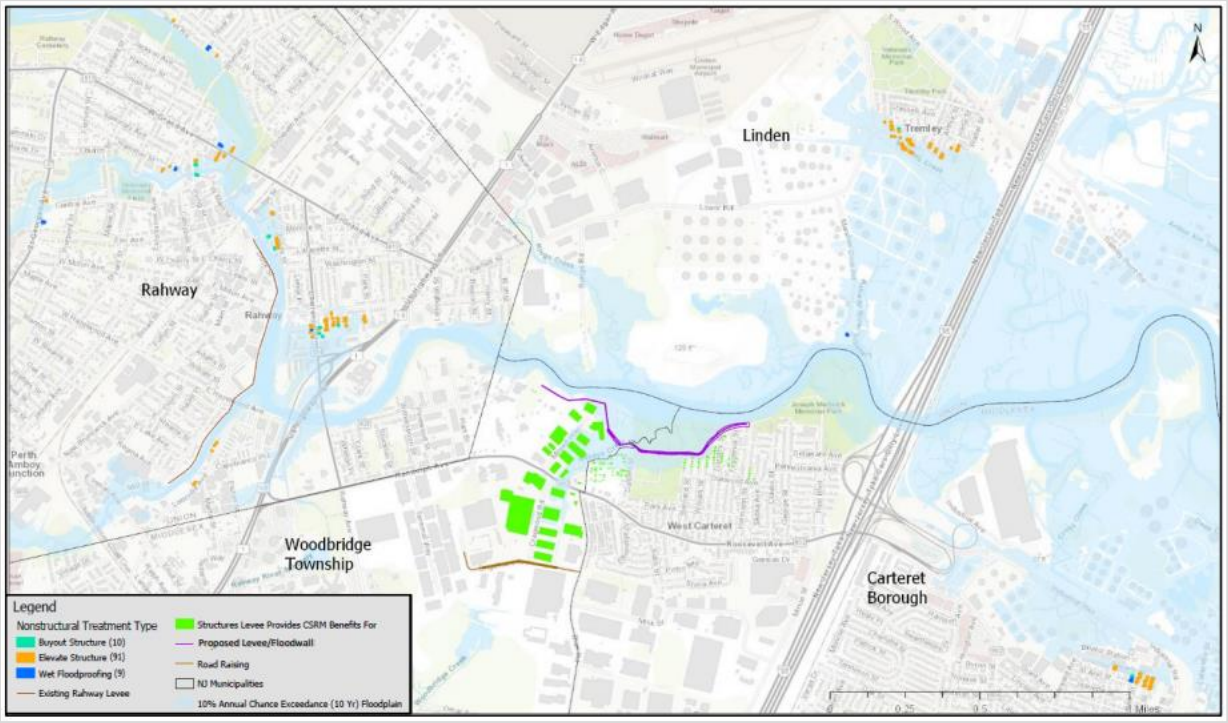
South Mountain Reservation and directly through downtown Millburn. The East Branch originates between West Orange and Montclair and travels South Orange and Maplewood. These two branches converge near Route 78 in Springfield and flow through the Clark and Union Townships and the City of Cranford. The 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.

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.

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 is authorized for construction in Section 401 of the Water Resources Development Act of 2020.

Figure 7.10-3 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. As of May 2025, no further action has been taken by USACE on this project.

Figure 7.10-3 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

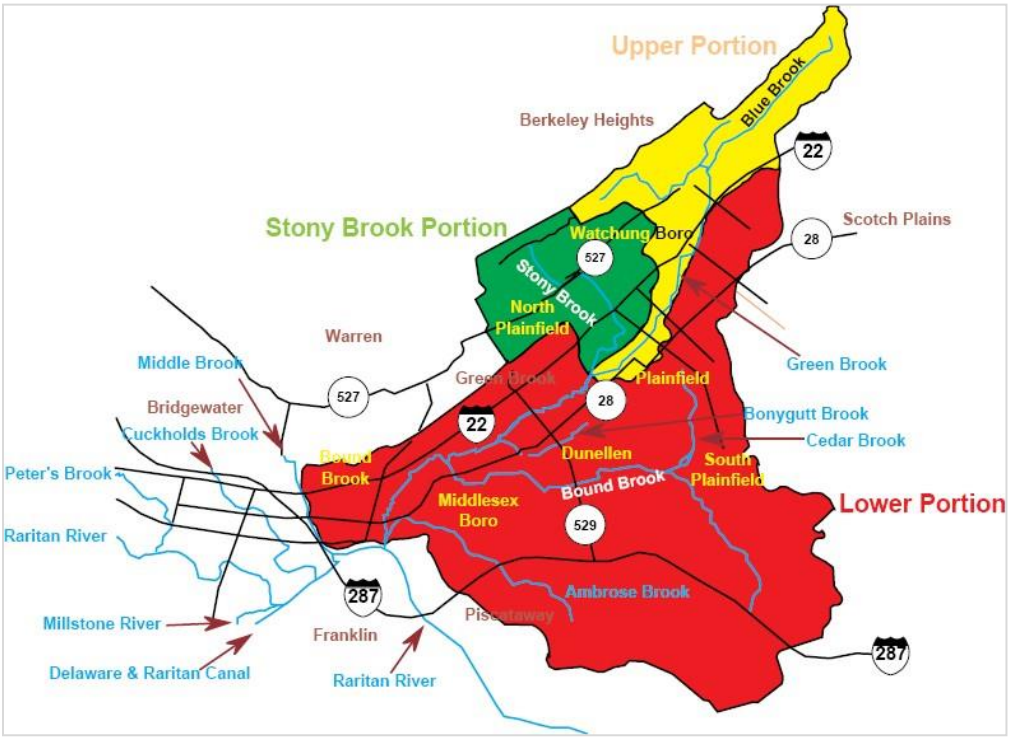
In Union County, efforts from local, state and federal agencies have helped to reduce flooding within municipalities impacted by the Rahway River. In Cranford Township and the Rahway City, floodplain management and infrastructure improvements have contributed to reducing flood related damages. In Cranford 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. **Figure 7.10-4 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 (after 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.

Figure 7.10-4 Green Brook Sub Basin: Upper Portion, Stony Brook Portion, and the Lower Portion



Source: USACE–New York District

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 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.

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 and in 2021 due to Hurricane Ida. Other recent minor flooding events occurred in March 2010 and March 2011. According to the Passaic River Coalition, flooding in the Passaic River Basin is concentrated in the Central Basin (in Nearby Essex and Morris Counties) where large wetlands were formed after the glacial period. Development of these wetlands in many municipalities put homes and businesses at risk.

In the Township of Berkley Heights, the Passaic River flows along the northern town 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 of the tributaries in this area. 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. The U.S. Army Corps of Engineers has been creating plans for flood damage reduction in the Passaic Basin since 1936, with the most recent reevaluation occurring in 2018. However, no major projects have begun construction.

EXTENT AND MAGNITUDE

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.

In the case of riverine flood hazard, once a river reaches flood stage, the flood extent or severity categories used by the NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat:

- Minor Flooding - minimal or no property damage, but possibly some public threat or inconvenience.
- Moderate Flooding - some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary.
- Major Flooding - extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations (NWS 2011).

The extent of flooding associated with a 1% annual probability of occurrence (the base flood or 100-year flood) is used as the regulatory boundary by many agencies. Also referred to as the SFHA, this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities. Many communities have maps that show the extent and likely depth of flooding for the base flood. Corresponding water-surface elevations describe the water elevation resulting from a given discharge level, which is one of the most important factors used in estimating flood damage.

7.10.3 PREVIOUS OCCURRENCES AND LOSSES

To identify past occurrences of flooding in Union County queries were performed using NOAA's NCEI Storm Events Database. The NCEI database indicates that there have been 172 flood events, and 100 days with events, in Union County in the period from 1950 to 2025, with the earliest event appearing in the database occurring in 1996. The database provides no indication of why there were no events logged prior to that year. Since the 2016 HMP update, there have been 43 flood or flash flood events in Union County. If all events occurring on the same day in different locations are combined, there were 15 days with flood or flash flood events from 2021 to 2025. These events are listed in **Table 7.10-1 Flood Events, Union County, 2013-2025** below. No injuries, deaths, or property damage were reported for flood or flash flood events from January 2013 to August 2012; however, there were five injuries during flash floods in September 2021, and a flash flood on July 14, 2025, took two lives in Plainfield. Note that additional flood events not listed in the NCEI database may have occurred and 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 7.10-1 Flood Events, Union County, 2013-2025

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
6/2/2013	Linden City, Elizabeth City	Flash Flood	0	0	0

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
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
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
08/13/2020	Fanwood, Union Township	Flash Flood	0	0	0
07/17/2021	Elizabeth, Union Township	Flash Flood	0	0	0
08/22/2021	Elizabeth	Flash Flood	0	0	0
09/01/2021	Union Township, Elizabeth, Springfield, Summit, Scotch Plains, Kenilworth, Mountainside	Flash Flood	4	0	0

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
09/23/2021	Springfield, Rahway	Flash Flood	1	0	0
05/28/2022	Springfield	Flash Flood	0	0	0
08/22/2022	Scotch Plains, Mountainside	Flash Flood	0	0	0
09/25/2022	Kenilworth	Flash Flood	0	0	0
07/04/2023	Garwood, Springfield, Mountainside, Linden, Springfield, Scotch Plains	Flash Flood	0	0	0
12/18/2023	Rahway, Union Township	Flash Flood	0	0	0
1/13/2024	Eastern Union County	Coastal Flood	0	0	0
08/06/2024	Scotch Plains	Flash Flood	0	0	0
08/18/2024	Garwood, Fanwood, Summit, Mountainside, New Providence, Scotch Plains, Union Township	Flash Flood	0	0	0
07/14/2025	Berkeley Heights, Clark, Cranford, Garwood, Mountainside, Plainfield, Rahway, Roselle, Scotch Plains, Summit	Flash Flood	0	2	0
08/13/2025	Linden	Flash Flood	0	0	0
08/17/2025	New Providence	Flash Flood	0	0	0
		Total	5	2	0

Source: NOAA/NCEI, 2025. Storm Events Database.

In addition to the flood events listed in the NCEI databases between 1950 and 2025, 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. Of this amount, slightly more than $5 million in damages occurred in the Rahway City, where the most significant damages occurred. 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 7.10-2 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 7.10-2 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
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

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).

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. 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". **Table 7.10-3 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 7.10-3 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
Union Township Board of Ed.	$0	$0	$0	$0	$5,456	$0	$5,456
Grand Total	$667,810	$1,781,525	$37,082	$34,146	$156,520	$25,873	$2,702,956

Source: FEMA Region II–Public Assistance Program

Figure 7.10-5 Hurricane Irene, Flooding in Cranford Township



Source: SternAssociates.com

Figure 7.10-6 Hurricane Irene, Flooding in Downtown Cranford



Source: SternAssociates.com

10/29/2012 (DR-4086)- 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).

9/1/2021 (DR-4614) -- Extremely heavy rainfall associated with the remnants of Hurricane Ida overspread northeast New Jersey during the evening of September 1 and continued through the early morning hours of September 2. Rainfall totals ranged from 5-8+ inches across much of the region, with much of that rain falling in just a few hours. The Automated Surface Observing System (ASOS) at Newark Airport recorded 8.44 inches of rain, while the ASOS at Teterboro Airport recorded 7.14 inches. A COOP observer in Harrison recorded 8.72 inches of rain. This resulted in widespread flash flooding leading to numerous road closures and water rescues in addition to extensive river flooding. Statewide thirty people died as a result of the flash flooding – more than in any other state. In Elizabeth in Union County, five people died, four in one flooded basement apartment. In total, Ida, a Category 4 hurricane when it hit Louisiana, was the fourth costliest Atlantic hurricane in the United States, causing $75.25 billion in damage. In New Jersey, according to the state, Ida caused about $2.02 billion in damage. In Union County, 383 businesses had $83.6 million in damage and 2,350 tenants of rental properties filed for FEMA assistance. The state received about $228 million in federal dollars for storm recovery and disaster mitigation.

7.10.4 NATIONAL FLOOD INSURANCE PROGRAM INSURED STRUCTURES AND REPETITIVE LOSS PROPERTIES

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 2025, every incorporated jurisdiction in Union County (except Winfield) was a participating member of the NFIP. Because the NFIP has existed since 1968, flood insurance claims offer a rich source of quantitative information about past flood losses. 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 to cover their losses when a property does flood. Additionally, some homeowners purchase private flood insurance. Data related to private flood insurance claims is not represented in these tables. 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 7.10-4 National Flood Insurance Statistics as of October 17, 2024, Union County, New Jersey provides basic NFIP statistics for all jurisdictions in Union County, current as of October 17, 2024. 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 7.10-4 National Flood Insurance Statistics as of October 17, 2024, Union County, New Jersey

Jurisdiction	Joined NFIP	Total Number of Active Policies	Number of Losses	Total Payments
Berkeley Heights Township	3/1/1978	120	100	$1,482,935.39
Clark Township	12/23/1971	51	125	$2,243,532.52
Cranford Township	6/25/1971	508	1,640	$53,174,837.89
Elizabeth City	5/7/1971	69	328	$7,761,724.25
Fanwood Borough	10/28/1977	18	13	$53,332.91
Garwood Borough	2/1/1977	44	60	$992,827.53
Hillside Township	9/14/1979	32	241	$3,144,720.06
Kenilworth Borough	3/2/1983	62	184	$2,331,415.76
Linden City	11/24/1976	107	341	$7,735,242.78
Mountainside Borough	2/16/1977	21	29	$330,458.77
New Providence Borough	11/23/1973	87	96	$733,659.75
Plainfield City	6/25/1971	715	1,026	$8,656,404.99
Rahway City	12/23/1971	333	1,014	$27,261,907.85
Roselle Borough	7/17/1978	33	461	$6,887,982.40
Roselle Park Borough	6/4/1980	102	84	$758,637.80
Scotch Plains Township	9/30/1977	167	286	$5,783,816.76

Jurisdiction	Joined NFIP	Total Number of Active Policies	Number of Losses	Total Payments
Springfield Township	10/1/1971	118	409	$8,907,251.13
Summit City	2/2/1977	52	101	$814,680.98
Union Township	8/1/1978	184	517	$12,258,707.16
Westfield Town	12/18/1979	86	49	$1,701,351.99
Winfield Township	N/A	0	0	$0.00
Union County Total	-	**2909**	**7,104**	**$153,015,428.67**

Source: FEMA – NFIP Policy and Loss Data by Geography

Table 7.10-5 Community Rating System (CRS) Participation, Union County, NJ, as of April 2024 describes CRS participation by municipality. Out of the 21 municipalities in Union County, five municipalities currently participate in the CRS program: Cranford Township, City of Linden, Rahway City, 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. Linden is Class 8, meaning their NFIP policyholders receive a 10% (in the SFHA) or 5% (outside the SFHA) discount on their flood insurance.

Table 7.10-5 Community Rating System (CRS) Participation, Union County, NJ, as of April 2024

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	10	0	0
Scotch Plains Township	340474	Rescinded	10/1/1994	10/1/1995	10	0	0

Source: Appendix F: Community Rating System, April 1, 2024, NFIP Flood Insurance Manual

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. **Table 7.10-6 Repetitive Loss (RL) & Severe Repetitive Loss (SRL) Statistics** below includes the number of repetitive loss properties and severe repetitive loss properties as well as the total RL and SRL combined. Definitions for RL and SRL are as follows:

- FEMA defines a Repetitive Loss (RL) property as any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978.
- Severe Repetitive Loss is defined 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
    - 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.

This table also contains a column including the total number of mitigated properties in each jurisdiction. Note that the table includes only those jurisdictions that have repetitive loss properties, so not all municipalities are listed. The following two sections go into more depth on either Repetitive Loss statistics or Severe Repetitive Loss statistics.

Table 7.10-6 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	3	1	4	0
Clark Township	8	4	12	0
Cranford Township	181	103	284	9
Elizabeth City	18	2	20	0
Garwood Borough	2	1	3	0
Hillside Township	31	3	34	0
Kenilworth Borough	11	0	11	0
Linden City	22	5	27	0
Mountainside Borough	2	0	2	0
New Providence Borough	7	0	7	0
Plainfield City	74	8	82	0
Rahway City	88	20	108	0
Roselle Park Borough	2	0	2	0
Roselle Borough	36	5	41	0
Scotch Plains Township	19	1	20	0
Springfield Township	13	5	18	0
Summit City	5	1	6	0
Union Township	29	9	38	0
Westfield Town	2	0	2	0
Total	556	168	724	9

Source: Provided by FEMA Region II, 10/17/2024

Flood Risk to Repetitive Loss Properties in Union County

FEMA defines a Repetitive Loss (RL) property as any insurable building for which two or more claims of more than $1,000

were paid by the NFIP within any rolling 10-year period, since 1978. RL property may or may not be currently insured by the NFIP. According to FEMA RL property records there are 556 RL properties located in Union County (as of October 17, 2024). These properties are associated with a total of 1,547 losses and approximately $36.5 million in claims payments under the NFIP since January 1978 (the earliest recorded date of loss).

Table 7.10-7 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	3	0	9	$724,334.30	$80,481.59	2.0%
Clark Township	8	0	22	$282,675.42	$12,848.88	0.8%
Cranford Township	181	1	536	$16,266,725.15	$30,348.37	44.6%
Elizabeth City	18	0	43	$1,463,079.39	$34,025.10	4.0%
Garwood Borough	2	0	5	$369,400.72	$73,880.14	1.0%
Hillside Township	31	0	89	$732,204.98	$8,227.02	2.0%
Kenilworth Borough	11	0	30	$293,829.38	$9,794.31	0.8%
Linden City	22	0	58	$1,493,397.83	$25,748.24	4.1%
Mountainside Borough	2	0	5	$41,476.77	$8,295.35	0.1%
New Providence Borough	7	0	17	$442,394.83	$26,023.23	1.2%
Plainfield City	74	0	197	$1,687,082.22	$8,563.87	4.6%
Rahway City	88	0	247	$9,409,687.26	$38,095.90	25.8%
Roselle Park Borough	2	0	5	$47,870.26	$9,574.05	0.1%
Roselle Borough	36	0	90	$499,243.55	$5,547.15	1.4%
Scotch Plains Township	19	0	54	$1,030,059.27	$19,075.17	2.8%
Springfield Township	13	0	38	$479,258.14	$12,612.06	1.3%
Summit City	5	0	13	$196,828.57	$15,140.66	0.5%
Union Township	29	0	74	$905,376.11	$12,234.81	2.5%
Westfield Town	2	0	4	$37,674.13	$9,418.53	0.1%
Total	**556**	**25**	**1547**	**$36,482,198.61**	**$23,582.55**	---

Source: Provided by FEMA Region II, 10/17/2024

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
- 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.

Fourteen of Union's communities have Severe Repetitive Loss (SRL) properties as of October 2024. These communities and associated SRL statistics are shown in **Table 7.10-8 Summary of NFIP Severe Repetitive Loss Statistics, Union County** below.

Table 7.10-8 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	$62,546.50	$15,636.63	0.2%
Clark Township	4	0	25	$637,258.28	$25,490.33	1.6%
Cranford Township	103	8	451	$21,108,319.60	$46,803.37	51.9%
Elizabeth City	2	0	16	$796,979.31	$49,811.21	2.0%
Garwood Borough	1	0	4	$218,542.73	$54,635.68	0.5%
Hillside Township	3	0	15	$194,801.02	$12,986.73	0.5%
Linden City	5	0	31	$2,056,209.71	$66,329.35	5.1%
Plainfield City	8	0	39	$824,847.66	$21,149.94	2.0%
Rahway City	20	0	103	$4,475,525.34	$43,451.70	11.0%
Roselle Borough	5	0	77	$6,241,969.26	$81,064.54	15.4%
Scotch Plains	1	0	5	$117,326.80	$23,465.36	0.3%
Springfield Township	5	0	26	$778,656.57	$29,948.33	1.9%
Summit City	1	0	4	$74,898.65	$18,724.66	0.2%
Union Township	9	0	48	$3,066,351.22	$63,882.32	7.5%
Total	**168**	**8**	**848**	**$40,654,232.65**	**$47,941.31**	**--**

Source: Provided by FEMA Region II, 10/17/2024

7.10.5 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. 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.

7.10.6 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.

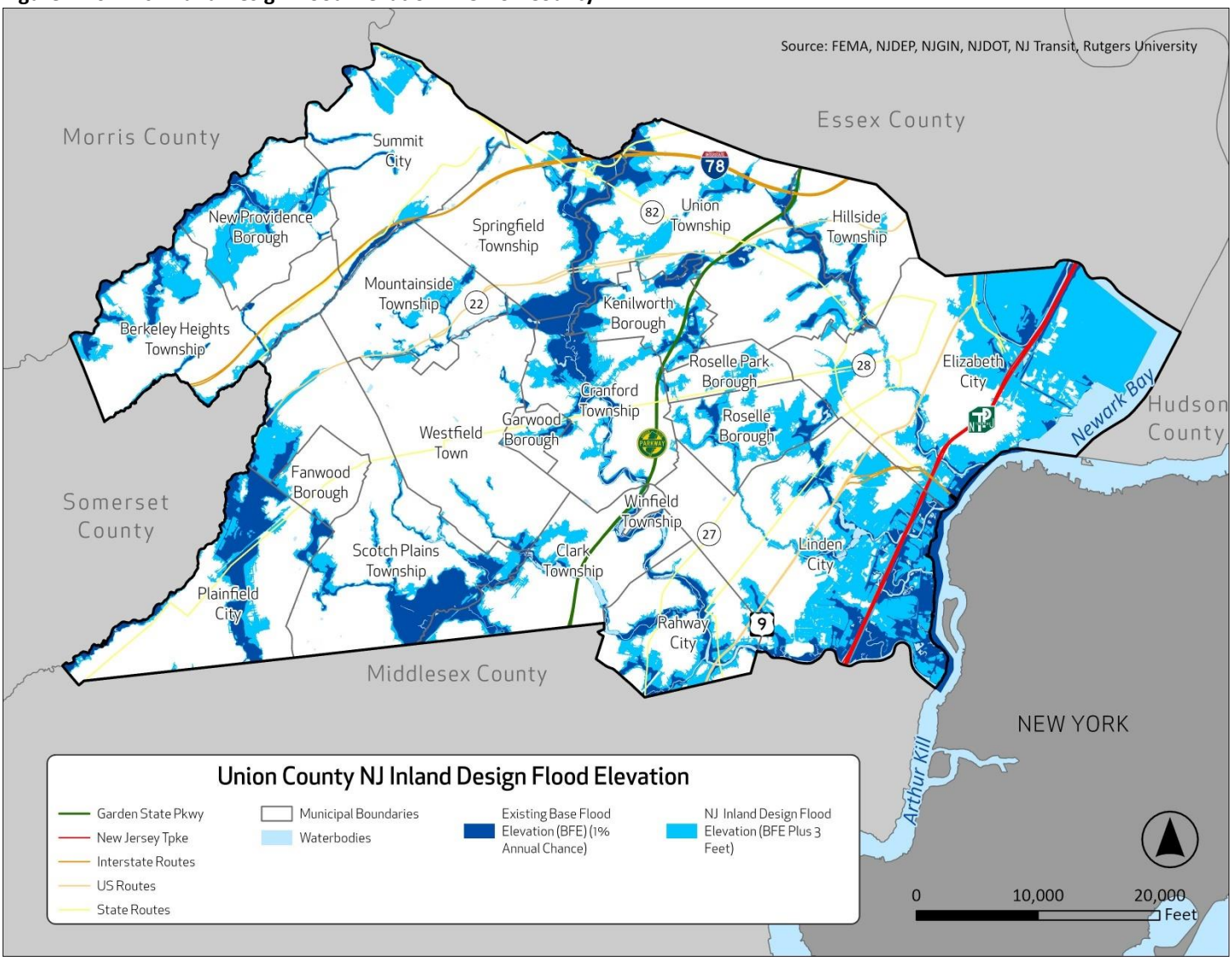
The *2020 New Jersey Scientific Report on Climate* also reports that sea level is rising at a faster rate in New Jersey than in other parts of the world, and coastal New Jersey will experience "sunny day" flooding more often as a result of sea level rise. For more discussion on projected sea level rise in New Jersey, please see the subsection below.

Inland Design Flood Elevation

On July 17, 2023, the New Jersey Department of Environmental Protection (NJDEP) adopted its Inland Flood Protection Rule which, among other actions, establishes a new Design Flood Elevation (DFE) standard for specific types of new

construction and redevelopment. The new DFE is 3 feet above the elevation of the 1% Chance Annual Flood for New Jersey (which is also known as the 100-year flood) or, where NJDEP flood mapping is available, 2 feet above NJDEP's flood hazard area design flood elevation, if that results in a DFE higher than FEMA's 1% flood plus 3 feet. To help visualize the new rule, Rutgers University created the NJ Inland Design Flood Elevation Layer, to be used as a non-regulatory planning tool which helps visualize potential future conditions in the state. **Figure 7.10-7 NJ Inland Design Flood Elevation in Union County** shows the new NJ Inland Design Flood Elevation in bright sky blue in comparison to the existing BFE which is depicted in navy blue. This map is intended to demonstrate the potential impacts of climate change on riverine and inland flooding.

Figure 7.10-7 NJ Inland Design Flood Elevation in Union County

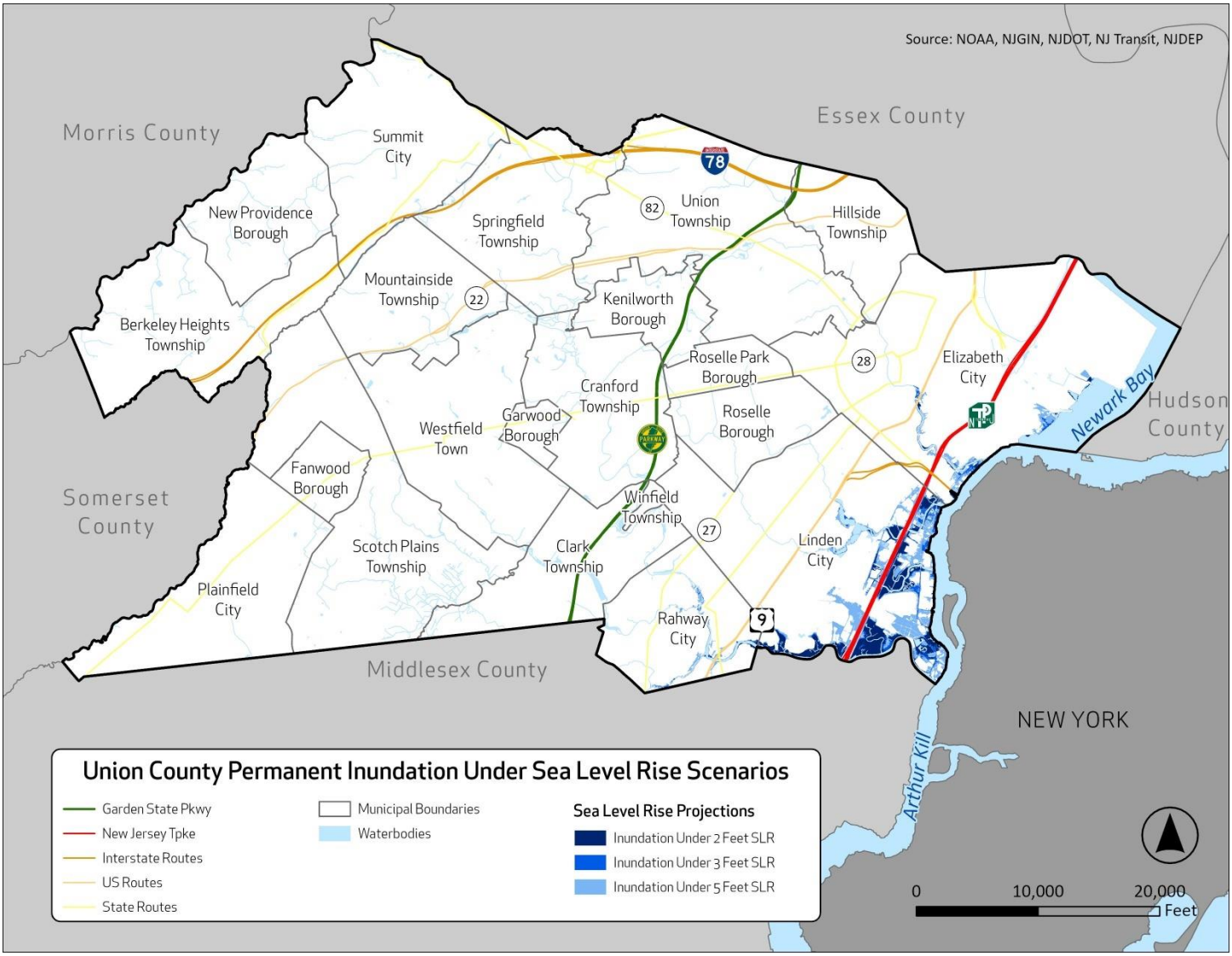


Sea Level Rise

Sea level rise continues to impact areas along the Atlantic coast of New Jersey including communities in Union County that border the Newark Bay or Arthur Kill or contain tidally influenced waters. Effects will reach some low lying and inland communities as rivers such as the Rahway and Elizabeth Rivers that empty into either the Atlantic Ocean or adjoining waterbodies will experience a subsequent rise in their water levels. **Figure 7.10-8 Permanent Inundation Under Sea Level Rise Scenarios in Union County** visualizes three potential flooding from sea level rise scenarios, at the 2-, 3- and 5- foot

levels (measured from current mean higher high water levels), and their resulting areas of permanent inundation in Union County. This map is intended to demonstrate the potential impact of climate change-driven sea level rise in the County.

Figure 7.10-8 Permanent Inundation under Sea Level Rise Scenarios in Union County



7.10.7 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

Flooding is one of the most significant and recurring natural hazards in Union County, with a long history of damage to the built environment. Repeated flood events have caused widespread basement flooding, roadway washouts, damage to building foundations, and infiltration of sewer systems. In communities with older housing stock or dense development, water damage is more difficult to mitigate, and post-flood mold issues create long-term structural and health concerns.

Public infrastructure is also highly vulnerable. Roads, culverts, bridges, and stormwater systems may be overrun or structurally compromised during high-intensity rainfall or prolonged storm events. Critical transportation corridors as well as local NJ Transit lines are frequently disrupted. Water treatment facilities and electrical substations located within or adjacent to floodplains may also be affected, creating cascading service interruptions.

Vulnerability of Development to Flood

In order to assess flood vulnerability, a GIS-based analysis was used to estimate exposure to flood events using FEMA's best available floodplain data in combination with local tax assessor records. The parcel level data was filtered to exclude undeveloped parcels such as open space or vacant parcels to determine the number of parcels in the town which were considered developed. The developed parcels were then intersected with the 1% and 0.2% annual chance floodplain layers to determine the percentage which lie at least partially within the floodplain. **Table 7.10-9 Flood-Related Spatial Information by Jurisdiction, Union County, New Jersey** contains the results of this analysis. Plainfield City, Cranford Township, and Rahway City contained the highest percentage of developed parcels located within the floodplain while Winfield Township, Westfield Township and Summit City contained the lowest. This data helps to understand which municipalities contain the highest exposure to flood hazard and can help in identifying which communities have developed in areas which are more or less flood-prone when compared to total floodplain area numbers.

Table 7.10-9 Flood-Related Spatial Information by Jurisdiction, Union County, New Jersey

Jurisdiction	Number of Developed Parcels	Developed Parcels within 1% Annual Chance Floodplain	Percent Developed Parcels within 1% Annual Chance Floodplain	Developed Parcels within 0.2% Annual Chance Floodplain	Percent Developed Parcels within 0.2% Annual Chance Floodplain
Berkeley Heights Township	4720	476	10.1%	635	13.5%
Clark Township	5246	234	4.5%	239	4.6%
Cranford Township	8072	900	11.1%	1285	15.9%
Elizabeth City	19058	342	1.8%	801	4.2%
Fanwood Borough	2650	84	3.2%	65	2.5%
Garwood Borough	1465	243	16.6%	37	2.5%
Hillside Township	6377	152	2.4%	321	5.0%
Kenilworth Borough	3005	394	13.1%	334	11.1%
Linden City	12085	911	7.5%	825	6.8%
Mountainside Borough	2754	163	5.9%	190	6.9%
New Providence Borough	4027	382	9.5%	0	0.0%
Plainfield City	10517	2719	25.9%	213	2.0%
Rahway City	8227	1075	13.1%	1080	13.1%
Roselle Borough	5795	685	11.8%	584	10.1%
Roselle Park Borough	3649	116	3.2%	235	6.4%
Scotch Plains Township	8034	833	10.4%	887	11.0%
Springfield Township	5317	625	11.8%	727	13.7%
Summit City	6905	306	4.4%	0	0.0%
Union Township	17125	1030	6.0%	1182	6.9%
Westfield Town	9957	86	0.9%	116	1.2%
Winfield Township	703	0	0.0%	1	0.1%
Total	**145,688**	**11,756**	**8.1%**	**9757**	**6.7%**

Source: 2024 NJOGIS Parcels and MOD-IV Composite of New Jersey, FEMA 2025

Table 7.10-10 Expected Annualized Losses from Riverine Flood Hazard by Jurisdiction and **Table 7.10-11 Expected Annual Losses for Coastal Flood Hazard by Jurisdiction** show expected annualized losses for the flood hazard. This data was derived from FEMA's NRI. EAL represents the average economic loss in dollars resulting from natural hazards each year The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.10-10 Expected Annual Losses for Riverine Flood Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$33,856.27	$240,523.92
Clark Township	$18,155.85	$201,077.20
Cranford Township	$65,831.61	$604,844.76
Elizabeth City	$60,072.34	$169,131.45
Fanwood Borough	$3,477.98	$38,907.08
Garwood Borough	$13,645.95	$106,816.07
Hillside Township	$12,648.14	$134,251.78
Kenilworth Borough	$58,216.19	$255,869.57
Linden City	$101,512.14	$378,843.02
Mountainside Borough	$9,736.27	$36,295.48
New Providence Borough	$27,732.12	$195,255.76
Plainfield City	$252,908.50	$3,641,429.91
Rahway City	$72,573.68	$859,054.14
Roselle Borough	$24,424.21	$364,480.50
Roselle Park Borough	$11,802.46	$149,782.04
Scotch Plains Township	$87,556.54	$689,616.42
Springfield Township	$73,752.19	$564,877.78
Summit City	$18,717.07	$119,289.75
Union Township	$112,605.12	$766,999.74
Westfield Town	$5,280.38	$26,765.60
Winfield Township	$0.00	$0.00
Union County Total	**$1,064,506.62**	**$9,544,114.21**

Source: FEMA NRI, 2025

Table 7.10-11 Expected Annual Losses for Coastal Flood Hazard by Jurisdictions

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$0.00	$0.00
Clark Township	$835.69	$1,032.38
Cranford Township	$0.00	$0.00
Elizabeth City	$3,490,393.06	$3,649,981.55
Fanwood Borough	$0.00	$0.00
Garwood Borough	$0.00	$0.00

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Hillside Township	$1,822.51	$2,321.42
Kenilworth Borough	$0.00	$0.00
Linden City	$2,888,126.11	$2,900,060.80
Mountainside Borough	$0.00	$0.00
New Providence Borough	$0.00	$0.00
Plainfield City	$0.00	$0.00
Rahway City	$219,260.55	$269,677.04
Roselle Borough	$7,454.48	$10,645.41
Roselle Park Borough	$0.00	$0.00
Scotch Plains Township	$0.00	$0.00
Springfield Township	$0.00	$0.00
Summit City	$0.00	$0.00
Union Township	$34,963.30	$36,800.35
Westfield Town	$0.00	$0.00
Winfield Township	$0.00	$0.00
Union County Total	**$6,642,858.43**	**$6,870,521.99**

Source: FEMA NRI, 2025

During the planning process of this HMP, jurisdictions were asked to identify critical facilities within their communities using FEMA community lifelines as a framework. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Should these lifelines become disrupted following a hazard event, priority action may be needed to stabilize them during incident response. These facilities were geolocated and intersected with FEMA's Special Flood Hazard Area best available data layer**. Table 7.10-12 Community Lifeline Vulnerability to 1% Annual Chance Flood** and **Table 7.10-13 Community Lifeline Vulnerability to 0.2% Annual Chance Flood** illustrates the percentage of critical facilities located within the 1% and 0.2% floodplain. In accordance with FEMA guidance, all analyses in this plan have been conducted using the best readily available data

Table 7.10-12 Community Lifeline Vulnerability to 1% Annual Chance Flood

Jurisdiction	Total Identified Community Lifelines	Number of Lifelines within 1% Annual Chance Floodplain								
		Communi-cations	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transport-ation	Water Systems	Total
Berkeley Heights Township	14	0	0	0	0	1	1	0	0	2
Clark Township	16	0	0	0	0	0	1	0	0	1
Cranford Township	28	0	1	0	0	0	2	0	1	4
Elizabeth City	51	0	0	0	0	0	0	1	0	1

Jurisdiction	Total Identified Community Lifelines	Number of Lifelines within 1% Annual Chance Floodplain								
		Communi-cations	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transport-ation	Water Systems	Total
Fanwood Borough	4	0	0	0	0	0	0	0	0	0
Garwood Borough	4	0	0	0	0	0	0	0	0	0
Hillside Township	10	0	0	0	0	0	0	0	0	0
Kenilworth Borough	1	0	0	0	0	0	0	0	0	0
Linden City	5	0	0	0	0	0	0	0	0	0
Mountainside Borough	37	0	0	0	0	0	0	0	0	0
New Providence Borough	8	0	0	0	0	1	4	0	0	5
Plainfield City	16	0	0	0	0	1	5	0	0	6
Rahway City	37	0	1	0	0	1	2	0	0	4
Roselle Borough	21	0	0	0	0	0	0	0	0	0
Roselle Park Borough	14	0	0	0	0	0	0	0	0	0
Scotch Plains Township	11	0	0	0	0	0	2	0	0	2
Springfield Township	32	0	0	0	0	0	5	0	0	0
Summit City	21	0	0	0	0	0	0	0	0	0
Union Township	34	0	0	0	0	1	2	0	2	4
Westfield Town	40	0	0	0	0	0	0	0	0	0
Winfield Township	36	0	0	0	0	0	0	0	0	0
Union County Total	**441**	**0**	**2**	**0**	**0**	**5**	**24**	**1**	**3**	**35**

Source: FEMA, Union County Municipalities

Table 7.10-13 Community Lifeline Vulnerability to 0.2% Annual Chance Flood

Jurisdiction	Total Identified Communi-ty Lifelines	Number of Lifelines within 0.2% Annual Chance Floodplain								
		Communi-cations	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transport-ation	Water Systems	Total
Berkeley Heights Township	14	0	0	0	0	0	1	0	0	1
Clark Township	16	0	0	0	0	0	0	0	0	0
Cranford Township	28	0	0	0	0	0	1	0	0	1
Elizabeth City	51	0	0	0	0	0	1	0	0	1
Fanwood Borough	4	0	0	0	0	0	0	0	0	0
Garwood Borough	4	0	0	0	0	0	0	0	0	0
Hillside Township	10	0	0	0	0	0	0	0	0	0
Kenilworth Borough	1	0	0	0	0	0	0	0	0	0
Linden City	5	0	0	0	1	0	3	1	0	5
Mountainside Borough	37	0	0	0	0	1	1	0	0	2
New Providence Borough	8	0	0	0	0	0	0	0	0	0
Plainfield City	16	0	0	0	0	0	0	0	0	0
Rahway City	37	0	0	0	0	0	3	0	1	4
Roselle Borough	21	0	0	0	0	0	0	0	0	0
Roselle Park Borough	14	0	0	0	0	0	0	0	0	0
Scotch Plains Township	11	0	0	0	0	0	5	0	1	6
Springfield Township	32	0	0	0	0	0	2	0	0	2
Summit City	21	0	0	0	0	0	0	0	0	0
Union Township	34	0	0	0	0	0	4	0	2	6
Westfield Town	40	0	0	0	0	0	0	0	0	0
Winfield Township	36	0	0	0	0	0	0	0	0	0

Jurisdiction	Total Identified Community Lifelines	Number of Lifelines within 0.2% Annual Chance Floodplain								
		Communi-cations	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transport-ation	Water Systems	Total
Union County Total	**441**	**0**	**0**	**0**	**1**	**1**	**21**	**1**	**4**	**28**

Source: FEMA, Union County Municipalities

Vulnerability of Development to Sea Level Rise

In order to assess the county's risk to sea level rise (SLR), a GIS-based analysis similar to the analysis performed for flood risk was conducted. This analysis seeks to estimate exposure to flood events using NOAA's sea level rise inundation data in combination with local tax assessor records. The parcel level data was filtered to exclude undeveloped parcels such as open space or vacant parcels to determine the number of parcels in the town which were considered developed. The developed parcels were then intersected with the delineated projection of 2- foot and 5-foot SLR layers to determine the percentage of developed parcels which are at least partially within the SLR inundation areas. **Table 7.10-14** below displays the percent of total land area and percent of developed parcels at risk from sea level rise, it should be noted that the table only includes coastal communities or those with tidally influenced waters, including Elizabeth, Linden and Rahway Cities. This data helps to understand which municipalities contain the highest exposure to flood hazard and can help in identifying which communities have developed in areas which are more or less vulnerable to sea level rise when compared to total land area inundation numbers. For example, Rahway City has the smallest amount of land area exposed to sea level rise, but the highest percent of vulnerable developed parcels.

Table 7.10-14 Sea Level Rise-Related Spatial Information by Jurisdiction, Union County, New Jersey

Jurisdiction	Percent of Parcels considered developed	Percent Developed Parcels within 2ft SLR	Percent Developed Parcels within 5ft SLR	Percent Total Land area within 2ft SLR	Percent Total Land area within 5ft SLR
Elizabeth City	4720	0.7%	1.1%	11.6%	13.3%
Linden City	5246	0.6%	1.4%	8.9%	18.6%
Rahway City	8072	1.1%	2.8%	2.5%	4.9%

Source: 2024 NJOGIS Parcels and MOD-IV Composite of New Jersey, NOAA

During the planning process of this HMP, jurisdictions were asked to identify critical facilities within their communities using FEMA community lifelines as a framework. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Should these lifelines become disrupted following a hazard event, priority action may be needed to stabilize them during incident response. These facilities were geolocated and intersected with NOAA's 5 feet of sea level rise data layer**. Table 7.10-15 Community Lifeline Vulnerability to 5 Feet of Sea Level Rise (SLR)** illustrates the area projected to be permanently inundated under a scenario resulting in 5 feet of sea level rise. There was a single identified community lifeline in this area in Linden City. It should be noted that the table below only communities expected to be impacted by sea level rise.

Table 7.10-15 Community Lifeline Vulnerability to 5 feet of Sea Level Rise (SLR)

Jurisdiction	Total Identified Community Lifelines	Number of Lifelines within 5 feet of SLR								
		Communi-cations	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transport-ation	Water Systems	Total
Elizabeth City	51	0	0	0	0	0	0	0	0	0

Jurisdiction	Total Identified Communi-ty Lifelines	Number of Lifelines within 5 feet of SLR								
		Communi-cations	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transport-ation	Water Systems	Total
Linden City	5	0	0	0	1	0	0	0	0	1
Rahway City	37	0	0	0	0	0	0	0	0	0
Union County Total	**441**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**

Source: NOAA, Union County Municipalities

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.

POPULATION AND ECONOMY

Flooding can be dangerous to human health and livelihood. Flash flooding in particular can be dangerous to persons stuck in cars or basement apartments as seen during Hurricane Ida which caused the death of multiple people in a basement apartment in Elizabeth. Exposure to flood waters can pose health risk due to contamination from sewage and other hazardous substances. The most vulnerable population of those exposed to the hazard include the economically disadvantaged and the elderly. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make evacuation decisions based on the net economic impact to their family. Those over 65 are also more vulnerable because they are more likely to seek or need medical attention which may not be available during a flood event, and they may have more difficulty evacuating.

Flooding can negatively impact the economy, from direct losses such as property damage, business closures, and disruption to commercial transportation functions to indirect losses such as disrupted supply chains, reduced property values, loss of tourism revenue, and negative impacts to agricultural productivity.

ECOSYSTEMS AND NATURAL ASSETS

While some flooding can be beneficial for certain ecosystems, excessive or sudden flooding can have significant negative environmental impacts. Loss of biodiversity and overall habitat degradation can be caused by soil erosion, destruction of vegetation, contamination of water supply by pollutants, leveling of dunes and erosion of beaches, and harm to wildlife.

7.11 HAIL

7.11.1 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, 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 7.11-1 Estimating Hail Size**. Note that penny size (.75" in diameter) or larger hail is considered severe.

Table 7.11-1 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

7.11.2 LOCATION, EXTENT AND MAGNTUDE

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.

EXTENT AND MAGNITUDE

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 7.11-2 Hail Intensity Scales** below combines the two intensity scales.

Table 7.11-2 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
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.

7.11.3 PREVIOUS OCCURRENCES AND LOSSES

NCEI reported 20 hail events in Union County from the period 1950 through 2024. Hailstone sizes from the 20 events ranged in diameter from 0.75 inches to 1.75 inches. No death, injuries, or property damage associated with the hail hazard was reported during this period. According to the NCEI Storm Events database, there have been two hail event in Union County since the last plan update, both of which occurred in 2021 on 6/4/2021 in Fanwood, NJ. Hail during this event was measured to be 1.25 inches in diameter, between quarter and ping pong ball sized.

7.11.4 PROBABILITY OF FUTURE OCCURRENCES

Hailstorms occur regularly in the County but not at the frequency or intensity of thunderstorms across the State. Furthermore, damaging storms that produce golf ball or larger sized hail do not occur every year in New Jersey like they do in the central United States.

7.11.5 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.

7.11.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

There are no known instances of injuries or death from hail events in Union County. Presumably there have been some damages, but most of these are likely addressed by citizens or insurance companies and not reported to NOAA. 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.

Recurrent losses from hail are expected to be relatively minimal, especially compared to other hazards in this plan. **Table 7.11-3 Expected Annualized Losses (EAL) from Hail Hazard by Jurisdiction** shows expected annualized losses for the hail hazard. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.11-3 Expected Annual Losses for Hail Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$52.98	$603.33
Clark Township	$46.63	$687.98
Cranford Township	$77.34	$1,455.58
Elizabeth City	$230.03	$5,973.04
Fanwood Borough	$20.82	$341.46
Garwood Borough	$14.13	$197.84
Hillside Township	$58.60	$984.81
Kenilworth Borough	$29.87	$551.25
Linden City	$132.89	$1,936.89
Mountainside Borough	$30.40	$326.27
New Providence Borough	$43.88	$607.33
Plainfield City	$90.75	$2,342.55
Rahway City	$62.56	$1,281.32

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Roselle Borough	$42.13	$978.35
Roselle Park Borough	$26.50	$602.58
Scotch Plains Township	$81.08	$1,112.03
Springfield Township	$51.27	$762.99
Summit City	$84.92	$1,022.95
Union Township	$151.15	$2,695.44
Westfield Town	$112.35	$1,392.66
Winfield Township	$1.70	$60.39
Union County Total	**$1,492.72**	**$25,917.05**

Source: FEMA NRI

POPULATION AND ECONOMY

The entire population of Union County is considered to face equal exposure to the hail hazard. Hailstorms can pose both health and economic risks. Physically, hailstones can cause injuries such as bruises, fractures, and head trauma, particularly for those caught outdoors or in vehicles during a storm. Slick roads and poor visibility increase the likelihood of accidents. Economically, hailstorms are highly destructive, especially to communities with large agricultural production sectors, where they can decimate crops, damage livestock shelters, and reduce yields, leading to financial strain for farmers.

ECOSYSTEMS AND NATURAL ASSETS

Hailstorms have the potential to damage ecosystems by stripping vegetation, injuring wildlife, and disrupting habitats. Crops, forests, and grasslands suffer, reducing food sources and weakening plant health.

7.12 HIGH WIND–STRAIGHT-LINE WINDS (INCLUDES HURRICANES, NOR'EASTER, TROPICAL STORMS, THUNDERSTORMS)

7.12.1 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.

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.

7.12.2 LOCATION, EXTENT AND MAGNITUDE

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. According to FEMA, wind speeds can reach as high as 160 mph in New Jersey.

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.

EXTENT AND MAGNITUDE

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 7.12-1 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 7.12-1 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

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.

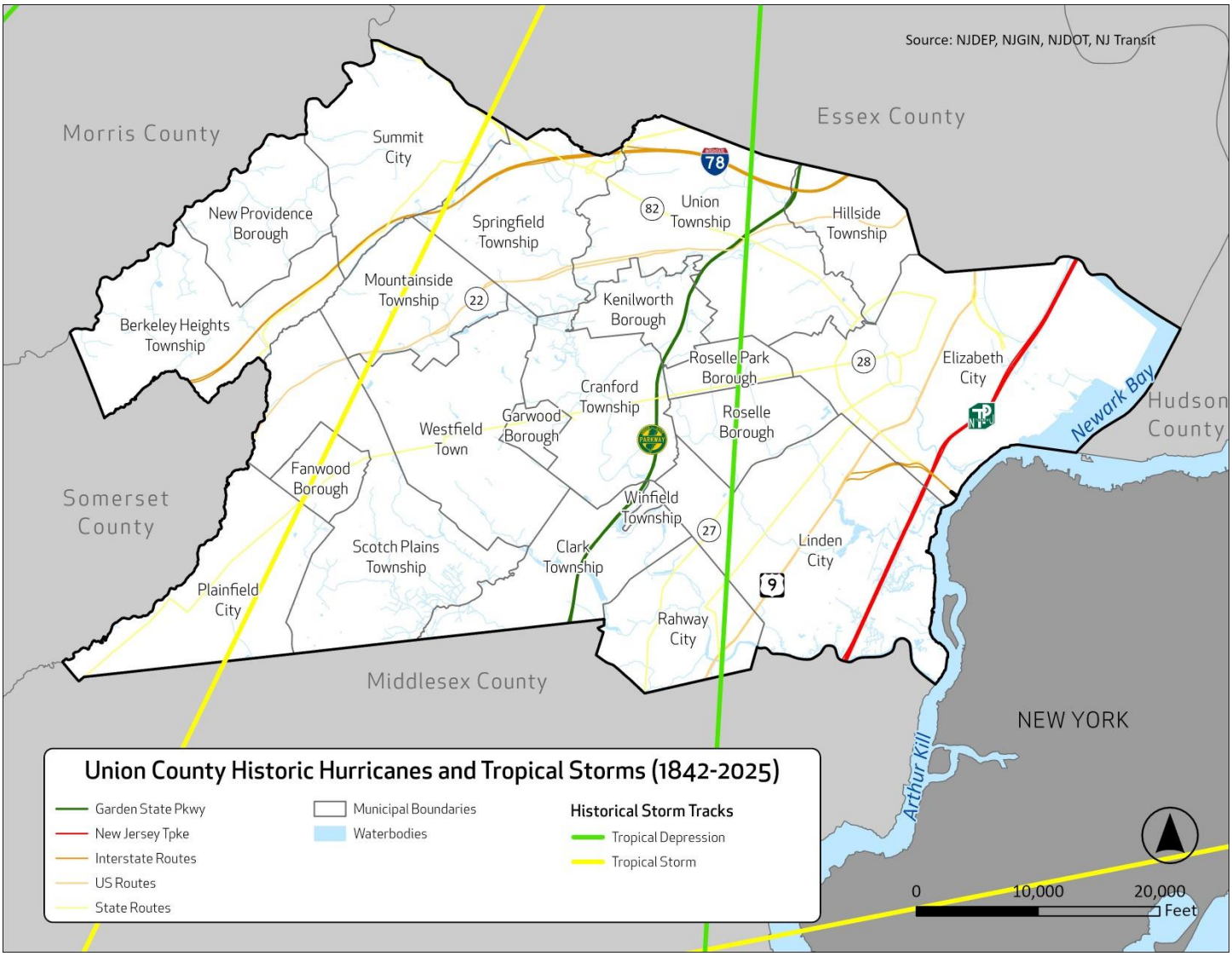
7.12.3 PREVIOUS OCCURRENCES AND LOSSES

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 two tropical storm event and no hurricanes between 1950 and 2025. The events listed in the database include 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. The second tropical storm occurred in July 2020. Hurricane Isaias made landfall in Ocean County on July 3, 2020. By the time the storm impacted Union County it had been weakened to a tropical storm.

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 2025. 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 7.12-1 Hurricanes and Tropical Storms over Union County, 1842-2025 shows the two hurricanes and tropical storms that have tracked over Union County since 1842. 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 second storm pictured on the map was an unnamed storm that occurred in 1863. Despite only two storms tracking directly over the county, as discussed previously within this chapter, Union County has been impacted by many tropical storms.

Figure 7.12-1 Hurricanes and Tropical Storms over Union County, 1842-2025



Source: NOAA. 2020. Coastal Service Center – Historic Hurricane Tracks database

Thunderstorms

Despite the 2021 plan update reporting Union County has experienced 504 thunderstorm wind and high wind events in the period from 1950 to 2021 according to the NCEI Storm Events Database, a search of the database on May 21, 2025, returned only 174 results. The database provides no indication as to the discrepancy behind these numbers. The following table, **Table 7.12-2 High Wind Events (Excluding Tornado Winds) Union County, 2013-2025** summarizes the 45 reported high wind, strong wind, and thunderstorm wind events from January 2013 through July 2025. As mentioned at the beginning of the assessment, Union County is divided into two zones: Western Union and Eastern Union.

Table 7.12-2 High Wind Events (Excluding Tornado Winds) Union County, 2013-2025

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

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
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
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

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
10/16/2019	Eastern Union	High Wind	0	0	$100,000
1/8/2020	Eastern Union	Strong Wind	0	0	$50,000
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
8/27/2020	Elizabeth City	Thunderstorm Wind	0	0	$0
9/30/2020	Western Union	Strong Wind	0	0	$0
11/15/2020	Elizabeth City	Thunderstorm Wind	0	0	$0
3/1/2021	Eastern Union	Strong Wind	0	0	$0
5/6/2021	Mountainside Borough	Thunderstorm Wind	0	0	$4,000
7/6/2021	Clark Township, Elizabeth City, Kenilworth Borough, Mountainside Borough, Roselle Township, Summit City	Thunderstorm Wind	0	0	$66,000
7/14/2021	Summit City	Thunderstorm Wind	0	0	$3,000
7/17/2021	Elizabeth City	Thunderstorm Wind	0	0	$0
8/11/2021	Elizabeth City	Thunderstorm Wind	0	0	$0
2/18/2022	Elizabeth City	Thunderstorm Wind	0	0	$0
3/7/2022	Berkeley Heights Township, Elizabeth City	Thunderstorm Wind	0	0	$20,000
8/7/2022	Linden City, Roselle Township, Elizabeth City	Thunderstorm Wind	0	0	$27,000
6/14/2023	New Providence Borough	Thunderstorm Wind	0	0	$2,000
7/25/2023	Cranford Township, Union Township	Thunderstorm Wind	0	0	$4,000
8/13/2023	Berkeley Heights Township, Fanwood Borough, Summit City	Thunderstorm Wind	0	0	$14,000
9/8/2023	Rahway, Winfield, Roselle	Thunderstorm Wind	0	0	$5,000
9/9/2023	Plainfield	Thunderstorm Wind	0	0	$3,000
02/28/2024	Eastern Union	Strong Wind	0	0	$0
03/11/2024	Countywide	Strong Wind	0	0	$0
6/22/2024	Linden City	Thunderstorm Wind	0	0	$3,000
6/26/2024	Cranford Township	Thunderstorm Wind	0	0	$3,000
7/14/2024	Clark Township	Thunderstorm Wind	0	0	$500
7/16/2024	Berkeley Heights Township, New Providence Borough, Elizabeth City	Thunderstorm Wind	0	0	$2,000
		Total	**3**	**0**	**$1,000,500**

Source: NOAA/NCEI. 2025. Storm Events Database.

The NWS, NOAA, and the NCEI do not specifically track nor'easter events, but information can be found in other data sources such as new articles or the State HMP. Based on these sources, some of the larger nor'easter events occurred in

years 1993, 1996, 2006, 2007, and 2009. An additional two Nor'easter events were recorded in the NCEI Storm Events Database, classified as Winter Storms, on January 26, 2015, and January 28, 2022. These nor'easters brought heavy snow and strong winds to eastern Union County, but no injuries, deaths, or property damage as a result of either event was reported.

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.

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.

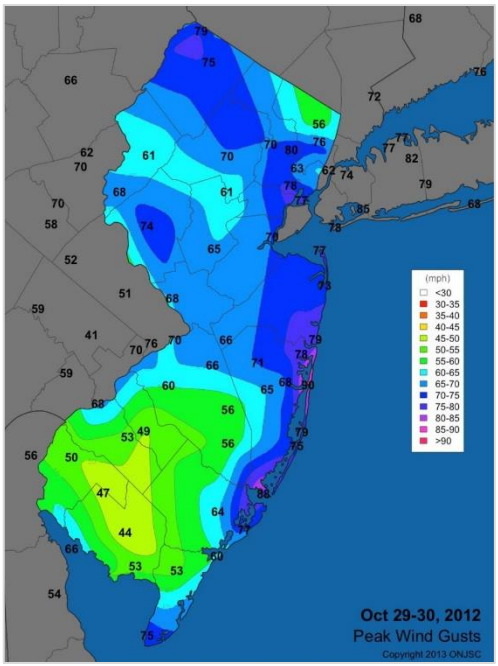
November 7, 2012 (Nor'easter). A strong Nor'easter caused high winds along the coast, heavy snow in east central New Jersey and ten foot waves along the ocean front and minor tidal flooding along the ocean front. The event caused setbacks with restoration efforts near and along coastal areas caused by 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 7.12-2 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 7.12-2 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 7.12-3 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 7.12-3 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.

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.

7.12.4 PROBABILITY OF FUTURE OCCURRENCE

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. With multiple thunderstorms, high winds, and strong wind events each year, the probability of high wind from storm or straight line events is certain.

7.12.5 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. 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.

7.12.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

The entire extent of the county is considered equally vulnerable to the high wind hazards. Potential impacts are widespread, though generally not life-threatening. Many structures in the County are vulnerable to high winds, but this is predominately related to trees and tree limbs falling on buildings, rather than direct wind damage to them. Because such losses are generally 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. Potential impacts to community lifelines include transportation and energy lifelines. Downed trees can result in road closures and power outages impacting disaster response and recovery.

Table 7.12-4 Expected Annualized Losses (EAL) from Hurricane Hazard by Jurisdiction shows expected annualized losses for the high wind- straight line wind hazard (hurricanes, nor'easters, and tropical storms). Expected annual losses from straight line winds that are not from hurricanes, nor'easters, and tropical storms can be found below in Table 7.12-4. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable. For the purposes for the NRI, hurricane is defined as a tropical cyclone or localized, low-pressure weather system that has organized thunderstorms but no front (a boundary separating two air masses of different densities) and maximum sustained winds of at least 74 miles per hour (mph). The NRI hurricane data also include tropical storms for which wind speeds range from 39 to 74 mph.

Table 7.12-4 Expected Annual Losses (EAL) for Hurricane Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$512,185.36	$515,659.53
Clark Township	$450,696.41	$454,753.79
Cranford Township	$747,461.13	$754,494.99
Elizabeth City	$2,420,556.58	$2,458,257.78
Fanwood Borough	$200,821.11	$202,846.57
Garwood Borough	$136,609.89	$137,773.00
Hillside Township	$566,117.65	$571,977.17
Kenilworth Borough	$288,769.07	$291,327.26
Linden City	$1,286,864.49	$1,298,284.73
Mountainside Borough	$293,950.41	$295,796.59
New Providence Borough	$424,208.30	$427,773.42
Plainfield City	$876,446.73	$890,683.79
Rahway City	$604,785.00	$612,499.65
Roselle Borough	$407,146.78	$413,071.54

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Roselle Park Borough	$256,090.90	$259,735.82
Scotch Plains Township	$783,875.62	$790,398.02
Springfield Township	$495,659.29	$500,149.70
Summit City	$820,901.76	$826,835.59
Union Township	$1,460,624.19	$1,476,372.02
Westfield Town	$1,086,059.35	$1,094,160.95
Winfield Township	$16,456.23	$16,827.83
Union County Total	**$14,136,286.26**	**$14,289,679.73**

Source: FEMA NRI

Table 7.12-5 Expected Annualized Losses (EAL) from Strong Wind Hazard by Jurisdiction shows expected annualized losses from the high wind - straight line wind hazard. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable. The NRI defines Strong Wind as damaging winds, often originating from thunderstorms, that are classified as exceeding 58 mph.

Table 7.12-5 Expected Annual Losses (EAL) from Strong Wind Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$19,640.60	$90,155.56
Clark Township	$17,287.43	$99,792.70
Cranford Township	$28,672.32	$155,203.11
Elizabeth City	$85,928.34	$805,772.40
Fanwood Borough	$7,717.31	$48,980.55
Garwood Borough	$5,238.53	$28,879.71
Hillside Township	$21,725.25	$140,918.38
Kenilworth Borough	$11,073.33	$55,812.91
Linden City	$49,276.66	$281,431.50
Mountainside Borough	$11,272.02	$48,533.52
New Providence Borough	$16,267.95	$88,720.16
Plainfield City	$33,645.36	$323,379.80
Rahway City	$23,195.48	$180,026.60
Roselle Borough	$15,619.30	$136,081.02
Roselle Park Borough	$9,824.87	$83,959.65
Scotch Plains Township	$30,059.02	$162,585.54
Springfield Township	$19,009.05	$110,145.08
Summit City	$31,482.91	$152,072.06
Union Township	$56,039.69	$373,071.88
Westfield Town	$41,652.00	$206,317.55

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Winfield Township	$631.04	$8,184.12
Union County Total	**$535,258.47**	**$3,580,023.80**

Source: FEMA NRI

POPULATION AND ECONOMY

All residents of Union County are subject to the effects of high wind. High wind events may threaten safety, damage buildings, and impact the economy, including loss of business function, damage to inventory, relocation costs, wage loss, and rental loss due to the repair/replacement of buildings. Recovery and clean-up costs can also be costly and impact the economy as well. In addition, downed trees, damaged buildings, and debris carried by high winds can lead to injury or loss of life.

ECOSYSTEMS AND NATURAL ASSETS

Extreme winds can damage ecosystems by uprooting trees, destroying habitats, accelerating soil erosion, and reshaping landscapes. Over time, trees develop strength and flexibility, known as wind firmness; however, windstorms can exceed a tree's wind firmness. When this happens, trees can break or blow over. Root damage can make trees more susceptible to fungi and insects and wound (debarking) can make trees more susceptible to disease or insect pests. Disturbed forestland is also more vulnerable to wildfire, pests, and invasive species (American Forest Foundation, n.d.a).

7.13 HIGH WIND–TORNADO

7.13.1 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.

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. 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.

Tornadoes in the dissipating stage can appear like narrow tubes, or ropes, twisting into all manner of curls, twists, and s-shapes. These tornadoes 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.

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.

7.13.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

The entirety of Union County is susceptible to the tornado hazard. A map of previous occurrences is available as **Figure 7.13-1 Union County Tornadoes, 1950-2025.**

EXTENT AND MAGNITUDE

The severity and duration of tornadoes is a function of several factors, including weather conditions and topography 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.

Table 7.13-1 The Enhanced Fujita Tornado Scale shows the Enhanced Fujita Scale for Tornadoes which was developed to measure tornado strength and associated damages.

Table 7.13-1 The Enhanced Fujita Tornado Scale

Category	Wind Speed (MPH)	Description of Damage
EF0	65-85	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
EF1	86-110	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.
EF2	111- 135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
EF3	136-165	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
EF4	166-200	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
EF5	200+	Incredible damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 m (109 yd); trees debarked; steel reinforced concrete structures badly damaged.

Source: FEMA 2007

7.13.3 PREVIOUS OCCURRENCES AND LOSSES

The NCEI reports a total of 13 tornadoes in Union County between 1950 and 2025. The databases documented seven F0 and six F1 tornados. In total, these events resulted in three injuries and nearly $10 million in reported damages. These events are listed in the table below:

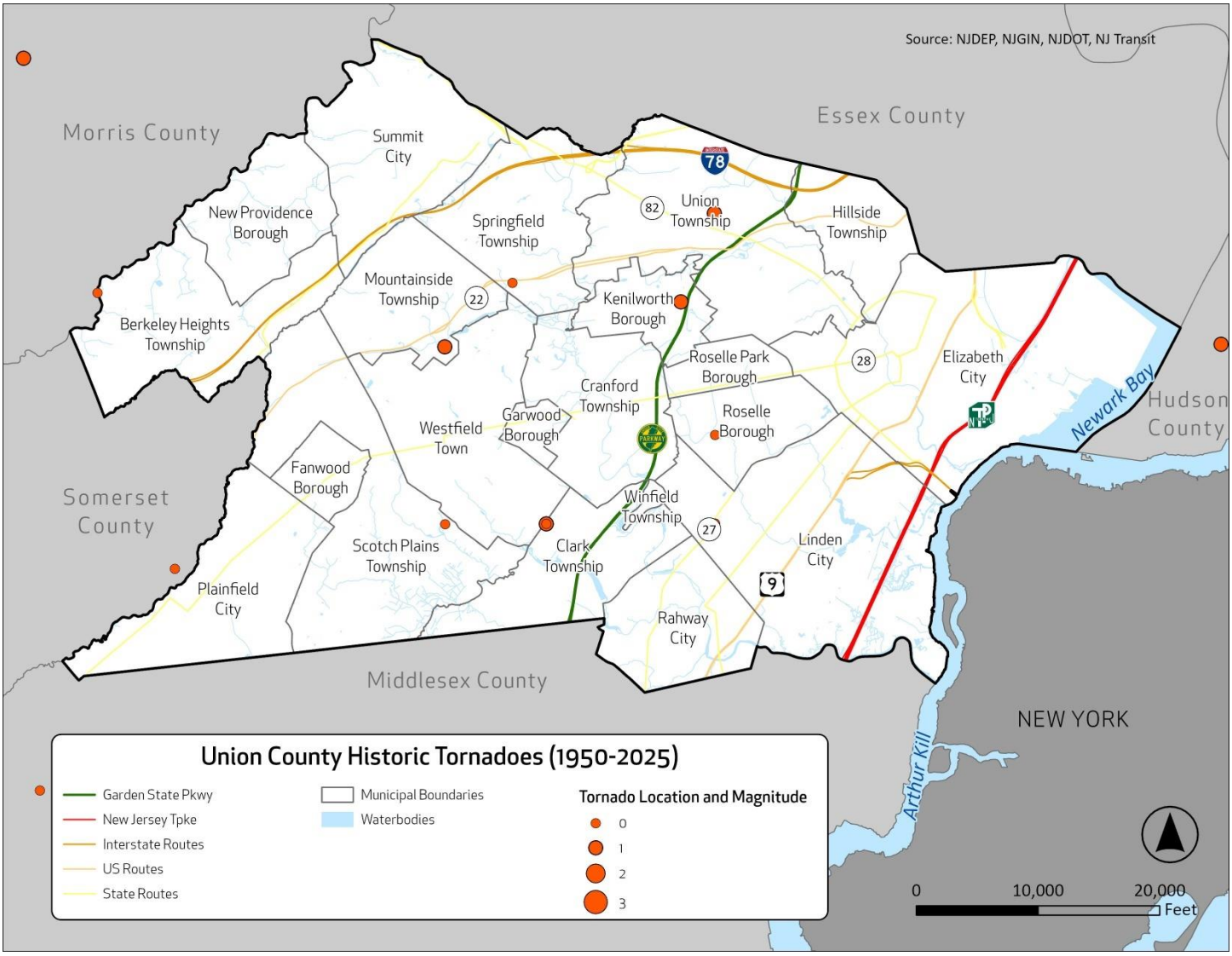
Table 7.13-2 Tornado Events, Union County, 1950-2025

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
4/5/1952	Union County	Tornado	0	0	$2,500
6/29/1973	Union County	Tornado	0	0	$2,500
10/5/1985	Union County	Tornado	0	0	$0.00
7/14/1987	Union County	Tornado	0	0	$0.00
7/26/1987	Union County	Tornado	0	0	$0.00
5/23/1988	Union County	Tornado	0	0	$0.00
11/16/1989	Union County	Tornado	0	0	$0.00
10/18/1990	Union County	Tornado	0	3	$2,500,000
7/15/1992	Union County	Tornado	0	0	$0.00
7/26/1994	Union County	Tornado	0	0	$5,000,000
9/7/1998	Plainfield	Tornado	0	0	$1,500,000
9/7/1998	Clark	Tornado	0	0	$550,000
7/1/2013	Berkeley Heights	Tornado	0	0	$20,000
8/7/2019	Cranford	Tornado	0	0	$117,000
Total	--	--	0	3	$9,692,000

Source: NOAA/NCEI. 2025. Storm Events Database.

Figure 7.13-1 Union County Tornadoes, 1950-2025 identifies tornado locations in Union County between 1950 and 2025. The tornado data is from the National Weather Service's Storm Prediction Center and appears to only include some of the past events when compared to those listed in the Storm Events Database.

Figure 7.13-1 Union County Tornadoes, 1950-2025



7.13.4 PROBABILITY OF FUTURE OCCURRENCES

It is likely that Union County will continue to experience weak to moderate tornado events, though their frequency of occurrence will continue to be fairly low. In New Jersey, tornadoes are more likely to occur during the months of March through August and tend to form in the late afternoon and early evening

7.13.5 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 7.14.5 for a discussion of the effects of climate change on thunderstorms.

7.13.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINE

Potential effects of tornados include direct impacts on structures and (perhaps more significantly) power interruptions. People living in manufactured or mobile homes are most vulnerable 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. 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.

Impacts to community lifelines include strains on emergency responders who are called upon for search and rescue, to tend to the injured, assist in evacuations, and to close roads and direct traffic. Transportation, communications, safety and security community lifelines could be affected by an incident. Tornadoes can damage power lines, utility poles, and transformers, leading to widespread outages that can last for extended periods of time and potentially cause cascading problems.

Table 7.13-3 Expected Annualized Losses (EAL) from Tornado Hazard by Jurisdiction shows expected annualized losses for the high wind- tornado hazard. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.13-3 Expected Annual Losses (EAL) from Tornado Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$60,416.10	$121,591.38
Clark Township	$53,177.10	$124,753.48
Cranford Township	$88,197.66	$197,951.57
Elizabeth City	$261,818.17	$886,981.88
Fanwood Borough	$23,738.88	$59,536.28
Garwood Borough	$16,114.03	$36,623.63
Hillside Township	$66,828.11	$170,232.58
Kenilworth Borough	$34,062.87	$72,869.09
Linden City	$151,594.66	$352,997.59
Mountainside Borough	$34,673.37	$66,998.85
New Providence Borough	$50,041.12	$112,896.09
Plainfield City	$103,495.02	$354,850.42
Rahway City	$71,350.58	$207,407.31
Roselle Borough	$48,045.86	$152,550.88
Roselle Park Borough	$30,221.86	$94,536.54
Scotch Plains Township	$92,475.31	$207,503.04
Springfield Township	$58,474.34	$137,544.22
Summit City	$96,843.20	$201,458.74
Union Township	$172,381.23	$447,415.13
Westfield Town	$128,132.60	$271,006.43
Winfield Township	$1,941.12	$8,493.69
Union County Total	**$1,644,023.19**	**$4,286,198.81**

Source: FEMA NRI, 2025.

POPULATION AND ECONOMY

All residents of Union County are subject to the effects of tornadoes, although they are relatively uncommon in this part of the country. Tornadoes can cause physical injuries, including fractures, head injuries, and blunt force trauma. They can also cause fatalities, especially in communities that are unprepared. Children, the elderly and those with disabilities are especially vulnerable. Additionally, tornadoes can cause both direct and indirect losses to the economy through the destruction of businesses, roads, crops, and other assets as well as disruption to production and labor supply. Rebuilding and recovery costs can be significant following a tornado event. As mentioned previously, tornadoes may disproportionately impact those living in mobile homes, a population that tends to be on the lower end of the socioeconomic spectrum.

ECOSYSTEMS AND NATURAL ASSETS

The most significant effect of tornado on ecosystems and natural assets is habitat destruction. Depending on intensity and scale, tornados can uproot trees and even flatten entire sections of forest, disrupting ecosystems and causing displacement of wildlife. There is also potential for debris carried by tornados to cause contamination from hazardous material.

7.14 LANDSLIDE (NON-SEISMIC)

7.14.1 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.

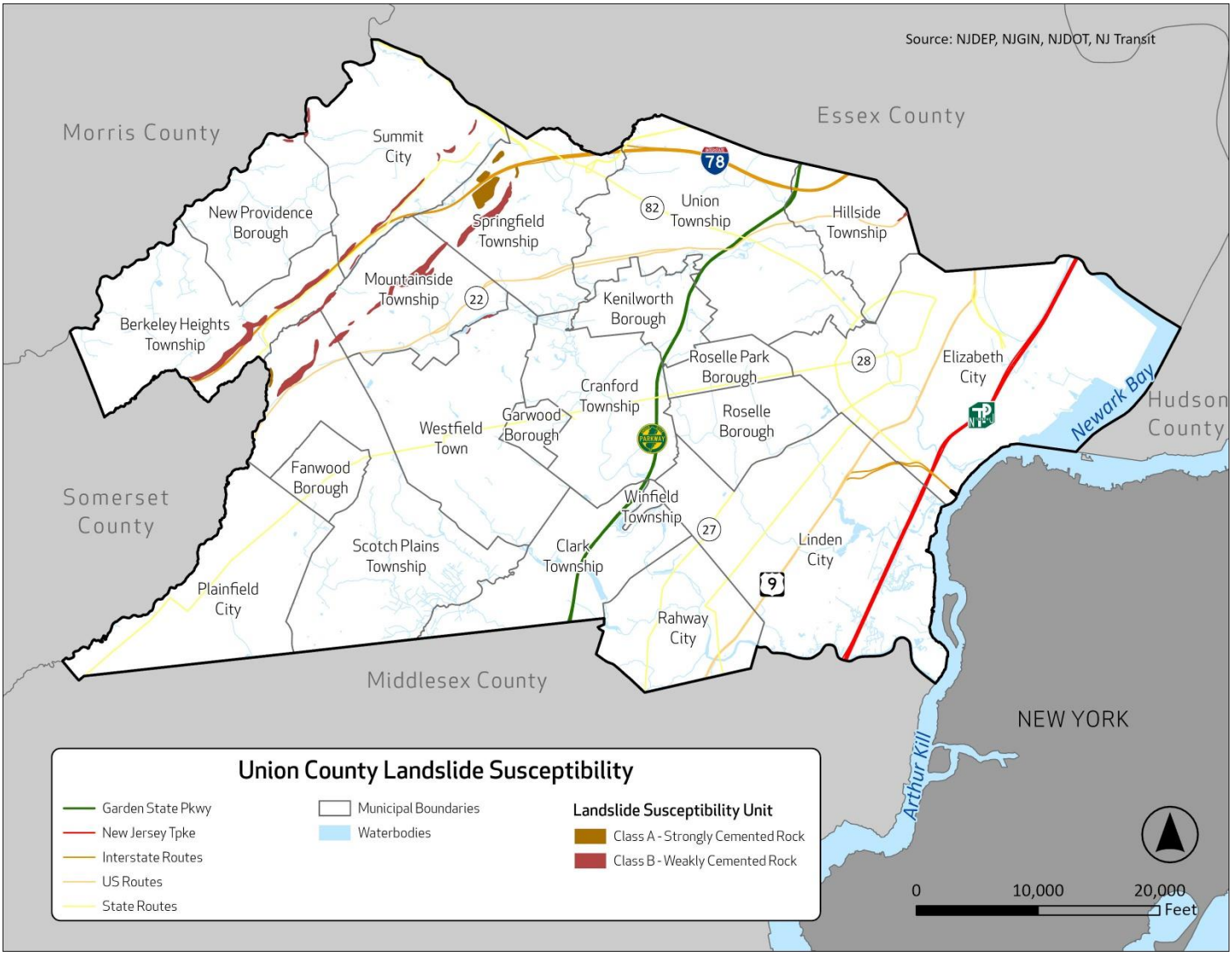
7.14.2 LOCATION, EXTENT AND MAGNITUDE

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 7.14-1 Union County Landslide Susceptibility 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 7.14-1 Union County Landslide Susceptibility Map



Source: New Jersey Geological and Water Survey

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 7.14-1 Union County Landslide Susceptibility Map** identifies the landslide susceptibility areas in Union County based on the color-coded landslide classes.

As shown in **Table 7.14-1 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 7.14-1 NJGWS-Defined Landslide Susceptibility by Jurisdiction** is ordered by percent of total land area in NJGWS-defined landslide susceptibility area.

Table 7.14-1 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

EXTENT AND MAGNITUDE

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. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high. Landslides occur when the slope or soil stability changes from stable to unstable, which may be caused by earthquakes, storms, volcanic eruptions, erosion, fire, or additional human-induced activities.

7.14.3 PREVIOUS OCCURRENCES AND LOSSES

The NJGWS indicates there have been 373 landslides statewide in New Jersey between 1782 and May 2025. 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 7.14-2 Union County Landslides, 1782-May 2025** identifies the landslides that have occurred 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 7.14-2 Union County Landslides, 1782-May 2025

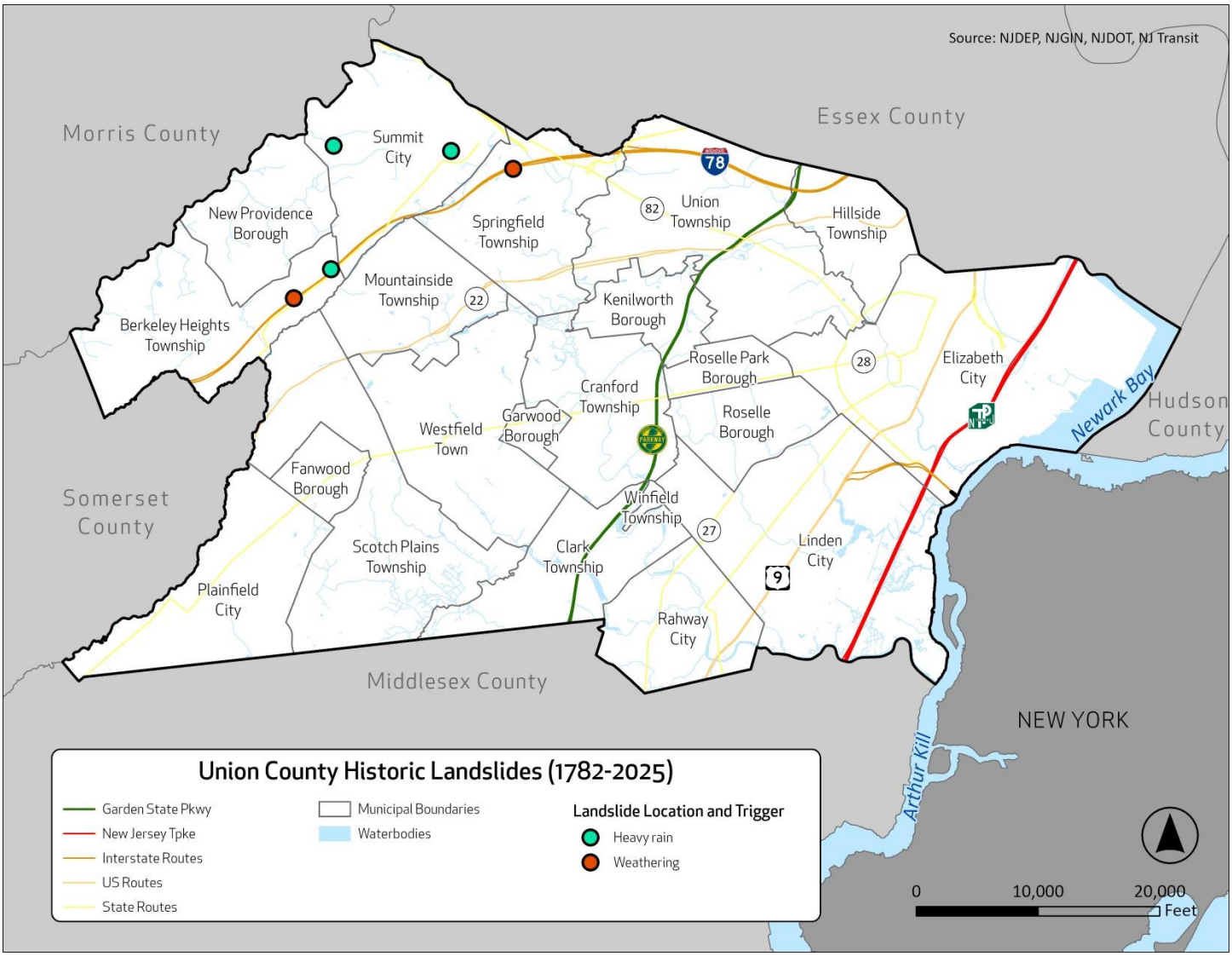


Table 7.14-2 Recent Landside Events in Union County, 1782-May 2025 summarizes the landslide events in Union County through May 2025.

Table 7.14-2 Recent Landslide Events in Union County, 1782-May 2025

Municipality	Event Date	Landslide Type	Cause	Injuries	Deaths	Property Damage	Material Quantity/ Length	Description
Berkeley Heights Township	1983	Slump	Heavy Rain	0	0	No	N/A	200-foot-long slump, fill material failure after heavy rain during construction of interstate 78, trees were knocked down, estimated location.

Municipality	Event Date	Landslide Type	Cause	Injuries	Deaths	Property Damage	Material Quantity/ Length	Description
Summit City	08/17/1991	Debris Fall	Heavy Rain	0	0	No	N/A	NJ Transit railroad operations were shut down between Murray Hill and Sumit when a debris flow triggered by heavy rain covered railroad tracks. Estimated location.
Summit City	08/28/2011	Debris Fall	Heavy Rain	0	0	Yes	400 yards	NJ Transit rail road tracks in Summit south of Edgewood Road covered by a debris flow during Tropical Storm Irene. Temporary closure of tracks.
Berkeley Heights Township	02/2010	Rockfall	Weathering	0	0	Unknown	10 CY	Rockwall along Rt. 78 WB, estimated location.
Springfield Township	02/2017	Rockfall	Weathering	0	0	No	1 CY	

Note: Exact dates unknown.
Source: DEP, New Jersey Geological and Water Survey, May 2025

7.14.4 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. The probability of future landslides having a significant impact on property and life in the planning area is relatively low. Please refer to Section 7.13.5 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of landslide events.

7.14.5 POTENTIAL EFFECTS OF CLIMATE CHANGE

Data to estimate the probability of future occurrences of landslides is not available at the time of this plan update; however, the frequency of hazards such as earthquakes, heavy rain, floods, or wildfire events, are known to trigger landslides and can be used as an indicator of future landslide events. Of these hazards, frequent heavy rain events are most likely to precipitate landslides because ground saturation before a significant storm is a necessary prerequisite for a major landslide event.

Based on past occurrences in Union County and landslide susceptibility as described in Section 7.13.2 Location, Extent and Magnitude, it is likely that Union County will continue to experience landslides. In addition to climate change (explained below), future development may also impact the frequency of landslide events.

7.14.6 VULNERABILITY ASSESSMENT

According to the NJGWS (as shown in **Figure 7.14-1 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.

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

Secondary effects of landslides include the disruption of transportation route, power and communication failure, and the destabilization of building foundations

Table 7.14-3 Expected Annualized Losses (EAL) from Landslide Hazard by Jurisdiction shows expected annualized losses for the landslide hazard. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.14-3 Expected Annual Losses (EAL) from Landslide Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$8,222.21	$9,209.50
Clark Township	$1,484.77	$1,781.23
Cranford Township	$4,090.30	$4,456.58
Elizabeth City	$10,312.56	$12,409.78
Fanwood Borough	$0.00	$0.00
Garwood Borough	$0.00	$0.00
Hillside Township	$0.00	$0.00
Kenilworth Borough	$665.53	$673.56
Linden City	$6,432.43	$6,737.60
Mountainside Borough	$8,027.20	$9,065.60
New Providence Borough	$3,389.07	$4,343.03
Plainfield City	$2,737.46	$3,621.28
Rahway City	$0.00	$0.00
Roselle Borough	$0.00	$0.00
Roselle Park Borough	$0.00	$0.00
Scotch Plains Township	$10,040.93	$11,859.98
Springfield Township	$5,464.66	$6,853.72
Summit City	$29,016.39	$33,616.62
Union Township	$6,951.39	$8,390.85
Westfield Town	$8,165.10	$9,380.68
Winfield Township	$0.00	$0.00
Union County Total	**$105,003.56**	**$122,401.13**

Source: FEMA NRI

POPULATION AND ECONOMY

The population within the landslide areas may be vulnerable, especially those located downslope of the identified hazard areas. When populations are impacted, the landslide hazard can result in injury and even death. The health hazards associated with landslides and mudflows include rapidly moving water and debris that can lead to trauma; broken electrical, water, gas, and sewage lines that can result in injury or illness; and disrupted roadways and railways that can endanger motorists and disrupt transport and access to health care.

ECOSYSTEMS AND NATURAL ASSETS

Landslide events disrupt and damage ecosystems, by destroying terrestrial and riverine habitats, changing topography, and causing soil and sediment runoff.

7.15 SEVERE STORM – LIGHTNING

7.15.1 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.

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 among 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 as well. 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.

7.15.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

Lightning occurs over the entire planning area, particularly during the spring and summer months.

EXTENT AND MAGNITUDE

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.

7.15.3 PREVIOUS OCCURRENCES AND LOSSES

There were 13 instances of lightning reported in the NCEI Storm Events Database for Union County from 1950 to 2025. The database provides no indication as to why there are no events prior to 1964, 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. These events are listed in **Table 7.15-1 Lightning Events, Union County, 1950-2025**.

Table 7.15-1 Lightning Events, Union County, 1950-2025

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
07/14/1996	Plainfield City	Lightning	0	0	$0
06/20/1998	Scotch Plains Township	Lightning	0	0	$0
11/20/2000	Plainfield City	Lightning	0	0	$0
05/29/2001	Linden City	Lightning	1	0	$0
06/11/2001	Elizabeth City	Lightning	0	0	$0
07/23/2008	Springfield Township	Lightning	0	0	$1,000
06/26/2009	Kenilworth	Lightning	0	0	$2,500
07/29/2009	Elizabeth City	Lightning	0	0	$2,000
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
06/25/2023	Cranford Township	Lightning	0	0	$0
09/09/2023	Plainfield City	Lightning	0	0	$15,000
Total			1	0	$54,500

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.

7.15.4 PROBABILITY OF FUTURE OCCURRENCES

Based on previous occurrences, lightning 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. Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.16.5 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of lightening events.

7.15.5 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.

7.15.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

Lightning strikes can cause damage to buildings, critical facilities, and infrastructure, largely by igniting a fire. Lightning can strike communications equipment (i.e., radio or cell towers, antennae, satellite dishes, electrical transformers, etc.) and hamper communication and emergency response. Because it cannot be predicted where lightning may strike, all existing and future buildings and facilities are considered to be exposed to this hazard and could potentially be impacted.

That said, 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. According to the NCEI Storm Events Database, from 1950 to July 2025 in Union County there were no deaths, one injury, and $54,500 in property damages related to lightning. The 2016 plan update reported that the NCEI contained an additional event taking place on June 3, 1995 in Rahway City which resulted in two million dollars of property damage. The NCEI provides no explanation for why this event is no longer in the database, although the planning team has encountered this issue with the NCEI across hazards. 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.

Table 7.15-2 Expected Annualized Losses (EAL) from Lightning Hazard by Jurisdiction shows expected annualized losses for the Lightning hazard. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.15-2 Expected Annual Losses (EAL) from Lightning Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Berkeley Heights Township	$82.50	$1,415.51
Clark Township	$80.42	$1,816.64
Cranford Township	$132.46	$2,786.28
Elizabeth City	$445.53	$17,250.07
Fanwood Borough	$34.84	$879.07
Garwood Borough	$24.36	$521.89
Hillside Township	$106.82	$2,786.87

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses- Total
Kenilworth Borough	$48.89	$938.84
Linden City	$250.21	$5,370.60
Mountainside Borough	$52.22	$833.35
New Providence Borough	$68.99	$1,460.65
Plainfield City	$163.78	$6,560.14
Rahway City	$108.17	$3,409.82
Roselle Borough	$70.18	$2,524.05
Roselle Park Borough	$44.03	$1,547.82
Scotch Plains Township	$137.78	$2,880.69
Springfield Township	$83.49	$1,901.64
Summit City	$134.86	$2,479.70
Union Township	$249.33	$6,568.25
Westfield Town	$191.72	$3,624.59
Winfield Township	$2.86	$157.94
Union County Total	**$2,513.43**	**$67,714.41**

Source: FEMA NRI

POPULATION AND ECONOMY

All populations are considered to be at equal risk from lighting strike; however, members of the general public who are outdoors are particularly vulnerable during an event. Historical impacts in Union County from 1950 to July 2025 have included a single reported injury and no deaths from this hazard. About 100 deaths and 500 injuries are reported annually across the U.S. from this hazard.

ECOSYSTEM AND NATURAL ASSETS

Lightning strike can lead to wildfire, especially during dry or drought conditions, which can harm ecosystems. Impacts of additional hazards associated with thunderstorms such as strong, straight-line winds and hail also apply. For more information about the impacts of those hazards, refer to their respective sections in this risk assessment.

7.16 SEVERE STORM – WINTER WEATHER

7.16.1 HAZARD DESCRIPTION

Winter weather can produce storm events where the dominant type of precipitation only occurs 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

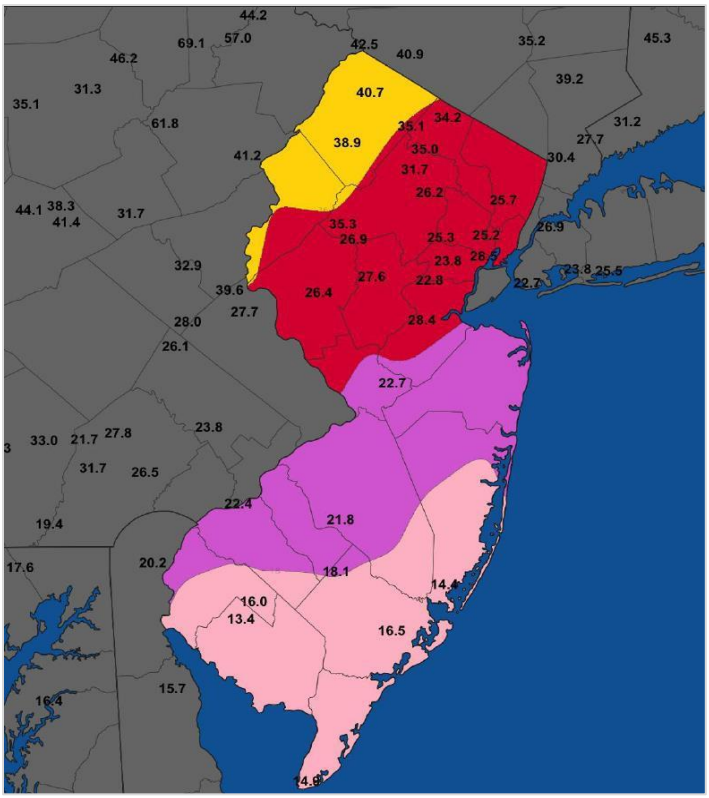
  - Mountainous areas-12” or more in a 12-hour period or 18” or more in a 24-hour period
- **Blizzard:** A storm with considerable falling and/or blowing snow combined with sustained winds or frequent gusts of 35 mph or greater that frequently reduces visibility to less than one-quarter mile.
- **Ice storm:** An ice storm is a storm which results in the accumulation of at least . 25” of ice on exposed surfaces. They create hazardous driving and walking conditions. Tree branches and powerlines can easily snap under the weight of the ice

7.16.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

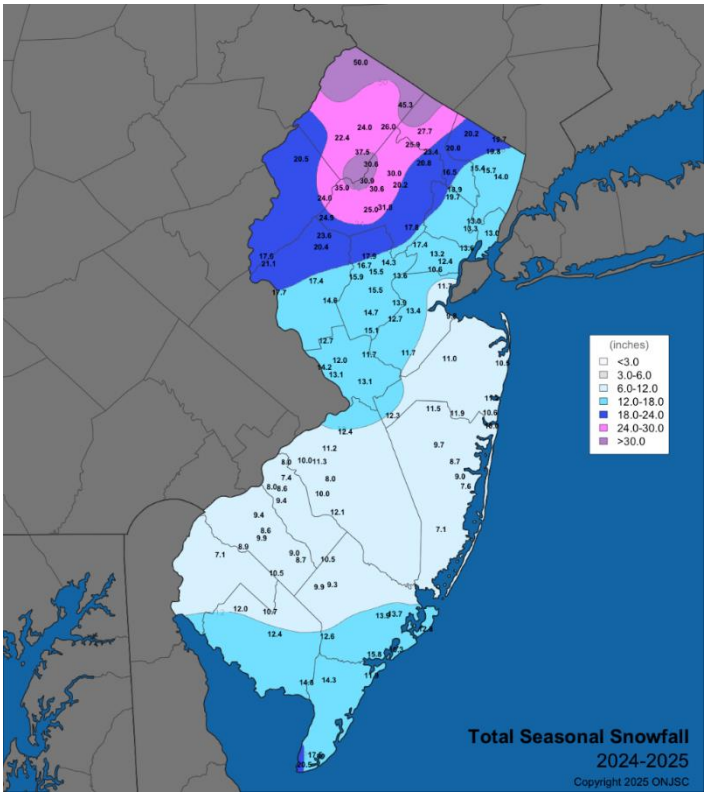
The potential for severe winter weather is uniform for the entire planning area. All people and assets are considered to have the same degree of exposure. Seasonal snowfall in New Jersey varies from an average of about 13" in Cumberland County to as much as 40" in parts of Sussex County. There is, however, significant variation from year to year. February is the month when maximum accumulations on the ground are usually reached. **Figure 7.16-1 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 7.16-2 Total Seasonal Snowfall, 2024-2025** shows the total seasonal snowfall in New Jersey for the 2024-2025 winter season. Union County had between 12 and 18”.

Figure 7.16-1 Average Seasonal Snowfall in New Jersey, 1981-2010



Source: Office of the New Jersey State Climatologist

Figure 7.16-2 Total Seasonal Snowfall, 2024-2025



Source: Office of the New Jersey State Climatologist

EXTENT AND MAGNITUDE

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 on 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 20023Census). **Table 7.16-1 Regional Snowfall Index (RSI)** identifies the five ranking categories and RSI Values.

Table 7.16-1 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. 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 May 2025. 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. 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.

7.16.3 PREVIOUS OCCURRENCES AND LOSSES

To identify past occurrences of severe winter weather in Union County queries were performed using NOAA's NCEI Storm Events Database. The NCEI database indicates that from 1950 to 2025, there have been two blizzard events, one ice storm event, 14 heavy snow events, 14 winter storm events, and 23 winter weather events with the earliest event appearing in the database occurring in 2010. The database provides no indication of why there were no events logged prior to that year, although the 2021 plan update reported events reaching back to 1994. There is no indication why those events no longer appear in a search of the database. Severe winter weather has certainly occurred prior to those dates. The blizzards in December 2010 and October 2011 both received Major Disaster Declarations in Union County.

Table 7.16-2 Summary of Winter Storm Events Impacting Union County, 2013-2025 summarizes some of the major winter storm events that have impacted Union County since 2010.

Table 7.16-2 Summary of Winter Storm Events impacting Union County, 2013-2025

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

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
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
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
12/16/2020	County-wide	Winter Storm	0	0	$0
2/1/2021	County-wide	Winter Storm	0	0	$0
2/7/2021	Western Union	Winter Weather	0	0	$0
2/18/2021	Eastern Union	Winter Weather	0	0	$0
1/5/2022	Eastern Union	Winter Weather	0	0	$0
1/6/2022	County-wide	Heavy Snow	0	0	$0
1/28/2022	County-wide	Winter Storm	0	0	$0
2/13/2022	Western Union	Winter Weather	0	0	$0
2/25/2022	Western Union	Winter Weather	0	0	$0
2/27/2023	County-wide	Winter Weather/Heavy Snow	0	0	$0

Date	Location	Hazard Type	Injuries	Deaths	Property Damage
2/13/2024	County-wide	Heavy Snow	0	0	$0
2/17/2024	County-wide	Winter Weather	0	0	$0
12/20/2024	Western Union	Winter Weather	0	0	$0
1/19/2025	County-wide	Winter Weather	0	0	$0
2/8/2025	County-wide	Winter Weather	0	0	$0

Source: NOAA/NCEI Storm Events Database. 2025.

7.16.4 PROBABILITY OF FUTURE OCCURRENCES

Based on previous occurrences the probability of winter storm events occurring in Union County in the future is certain. The months of January, February, March, April, October, November, and December are typically when a vast majority of New Jersey has been observed to receive measurable snow. Please refer to Section 7.15.5 Potential Effects of Climate Change below for a discussion of how climate change may alter the frequency of winter weather and ice storm events.

7.16.5 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.

7.16.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

All residents of Union County are subject to the effects of winter weather. Potential impacts are widespread, though generally not life-threatening. The two most significant risks from winter weather in Union County are traffic accidents and power losses. 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.

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 generally 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.

Table 7.16-3 Expected Annualized Losses (EAL) from the Winter Weather Hazard by Jurisdiction shows expected annualized losses for severe winter weather. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.16-3 Expected Annual Losses (EAL) from Winter Weather Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses -- Total
Berkeley Heights Township	$681.93	$5,652.50
Clark Township	$592.97	$6,317.31
Cranford Township	$995.89	$9,949.78
Elizabeth City	$2,913.48	$52,019.66
Fanwood Borough	$269.50	$3,194.04
Garwood Borough	$182.94	$1,858.51
Hillside Township	$721.99	$8,761.06
Kenilworth Borough	$382.15	$3,543.23
Linden City	$1,636.99	$17,294.84
Mountainside Borough	$393.63	$3,034.52
New Providence Borough	$567.69	$5,698.83
Plainfield City	$1,172.89	$21,658.67
Rahway City	$765.04	$11,307.61
Roselle Borough	$519.05	$8,643.68
Roselle Park Borough	$326.49	$5,326.57
Scotch Plains Township	$1,049.68	$10,442.51
Springfield Township	$663.82	$7,123.09
Summit City	$1,098.94	$9,641.69
Union Township	$1,918.32	$23,994.61
Westfield Town	$1,454.54	$13,125.23
Winfield Township	$20.97	$530.39
Union County Total	**$18,328.89**	**$229,118.31**

Source: FEMA NRI, 2025.

POPULATION AND ECONOMY

There is potential for injury and death during winter storms when individuals are exposed to the cold for a prolonged period resulting in hypothermia or frostbite. Additionally, injury or death may occur from accidents on icy roads or blizzards when driving conditions are unsafe, or even from slipping and falling while walking on icy surfaces. The human impact of winter storms tends to be exacerbated in areas of social vulnerability (for example, low income, and a high proportion of the very young and/or very old). The economy could be impacted when businesses are forced to close due to winter storm conditions. When a winter storm occurs late in the season and results in extremely low temperature, there is also risk for crop damage, negatively impacting harvest in agricultural communities.

ECOSYSTEMS AND NATURAL HAZARDS

Winter storms can cause damage to vegetation through tree breakage from heavy snow or ice build-up. Prolonged storms can affect food availability for certain species causing scarcity resulting in wildlife mortality or disruptions to natural cycles.

For a risk analysis related to extreme cold temperatures, please refer to 7.7.6 Vulnerability Assessment under 7.7 Extreme Temperature-Cold.

7.17 STORM SURGE (INCLUDES HURRICANES, NOR'EASTERS, TROPICAL STORMS)

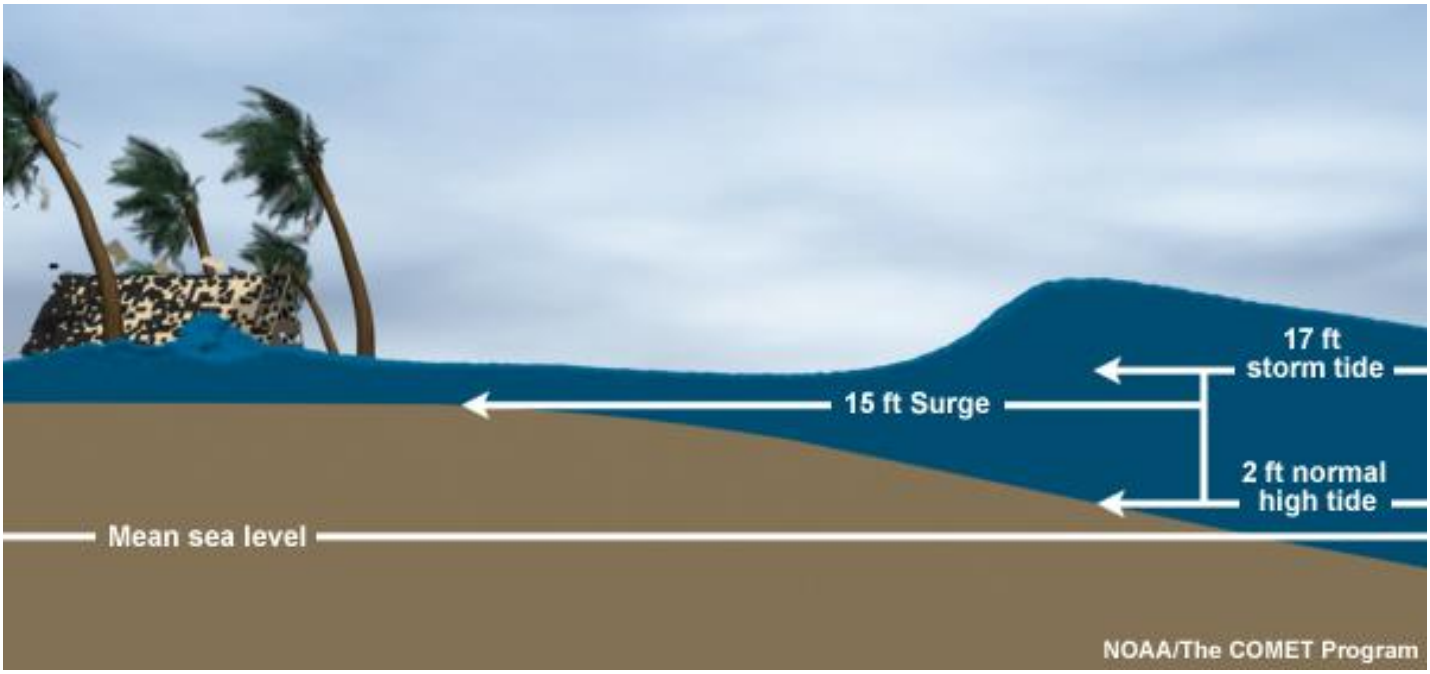
7.17.1 HAZARD DESCRIPTION

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 7.17-1 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 7.17-1 Storm Surge



Source: NOAA

7.17.2 LOCATION, EXTENT AND MAGNITUDE

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 surge hazard associated with hurricanes and other severe storms has historically been

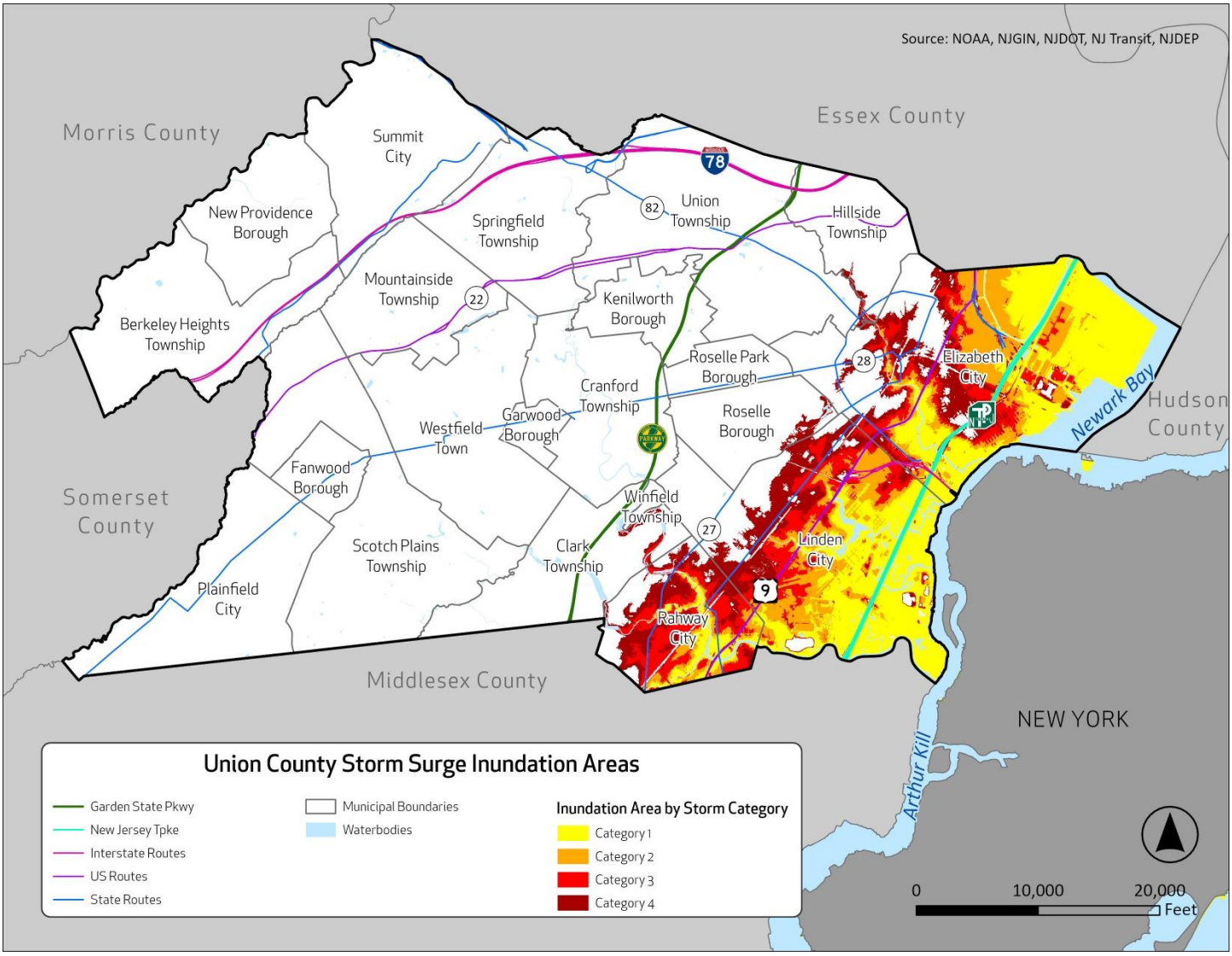
responsible for coastal flooding and erosion along the New Jersey coastline. In Union County, the area along the Arthur Kill in the far eastern part of the county has the greatest vulnerability to storm surge, simply because of its location.

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 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 7.17-2 Union County SLOSH Maximum of Maximum (MOM) Storm Surge Limit, Hurricane Categories 1-4** 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 7.17-2 Union County SLOSH Maximum of Maximum (MOM) Storm Surge Limit, Hurricane Categories 1-4



EXTENT AND MAGNITUDE

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 an 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 7.17-1 Factors that Influence the Severity of Storm Surge** highlights the factors that can influence the severity of coastal storms.

Table 7.17-1 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

Factor	Effect
	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.

Source: NOAA

7.17.3 PREVIOUS OCCURRENCES AND LOSSES

To identify past occurrences of flooding in Union County queries were performed using NOAA's NCEI Storm Events Database. Prior to 2016, 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 been no storm surge events and two coastal flooding events that impacted Union County between 1950 and 2025, with the earliest event occurring in 2012. Presumably this is due to the change in categorization and instances of storm surge or coastal flood occurred prior to 2012.

One of the storm surge events in Union County detailed in the NCEI 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 Tremley Point neighborhood within 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 sources 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 7.17-3 Hurricane Sandy Storm Surge Inundation Map-Union County through **Figure 7.17-5 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.

Figure 7.17-3 Hurricane Sandy Storm Surge Inundation Map – Union County

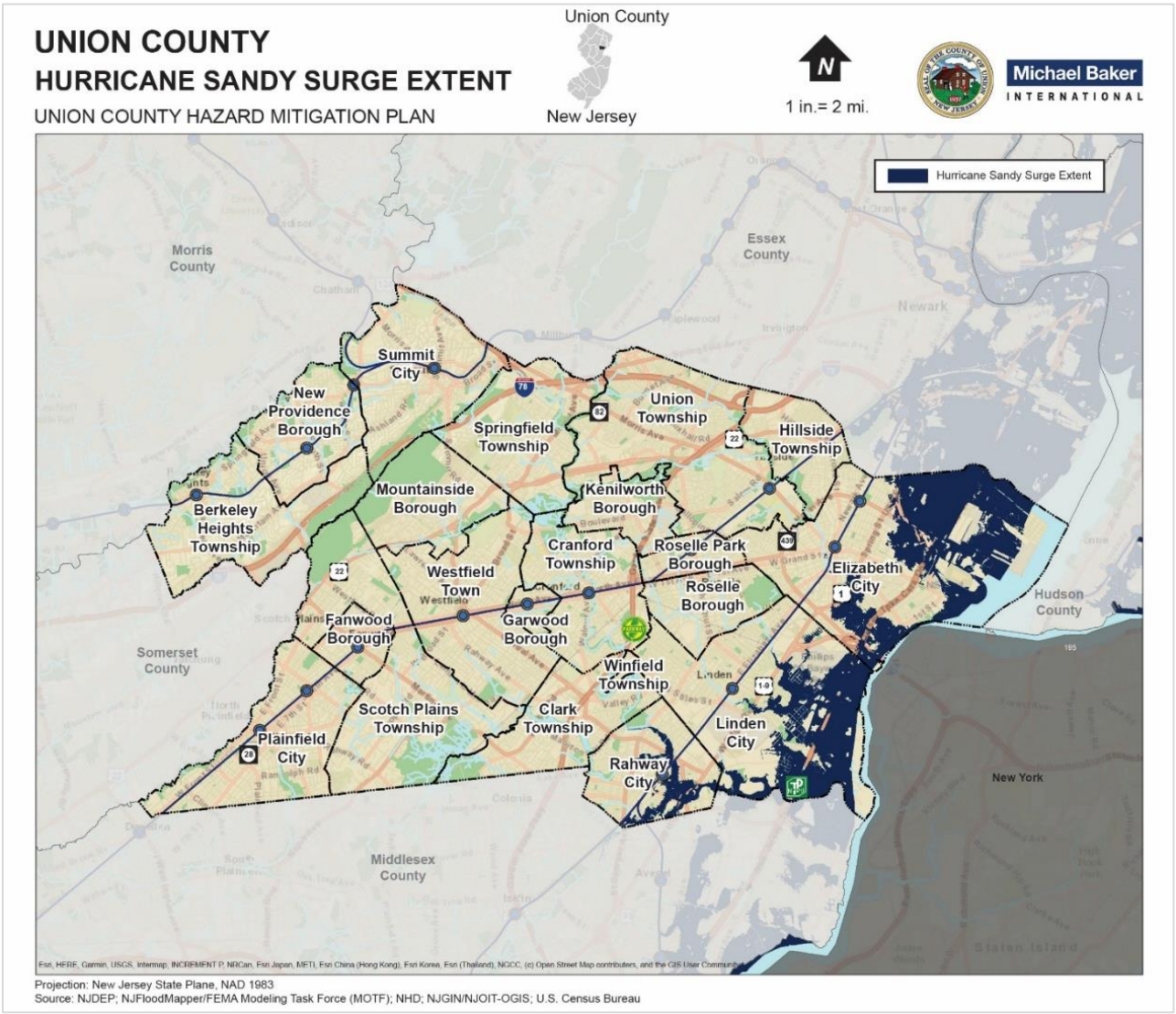


Figure 7.17-4 Hurricane Sandy Storm Surge Inundation Map – Union County-Group 2

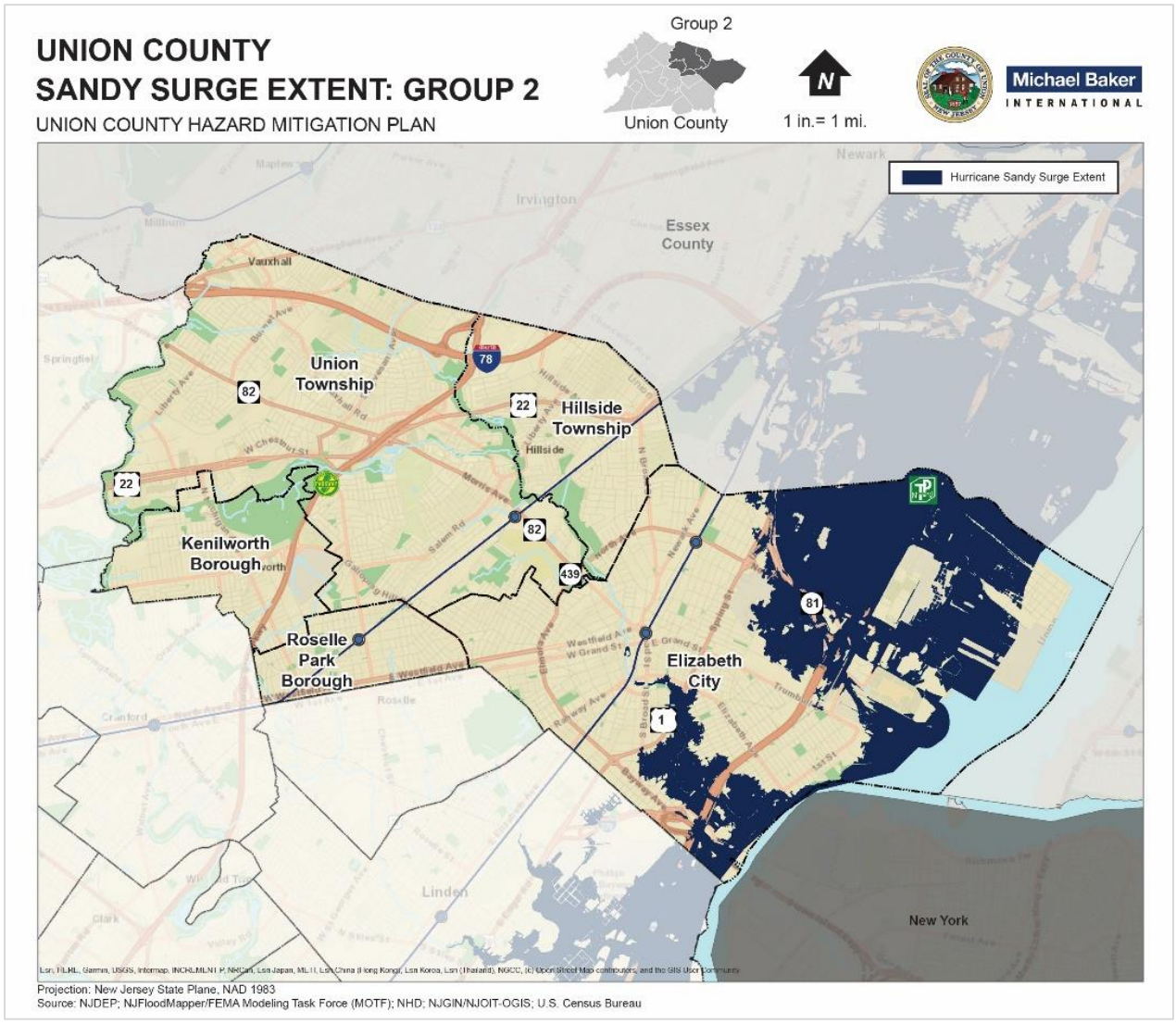
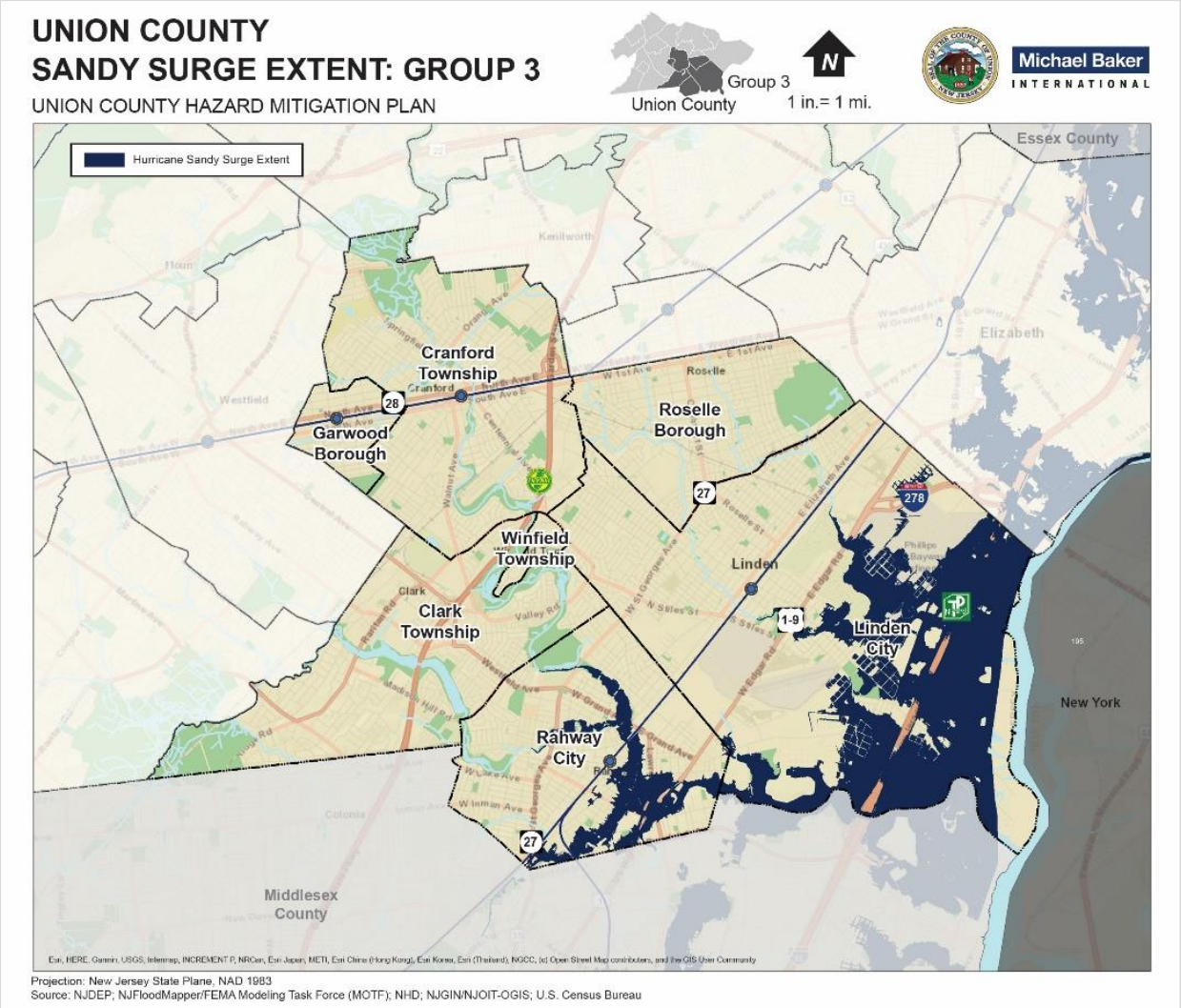


Figure 7.17-5 Hurricane Sandy Storm Surge Inundation Map – Union County-Group 3



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 7.17-2 Sandy Impacts.**

Table 7.17-2 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

7.17.4 PROBABILITY OF FUTURE OCCURRENCES

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.

7.17.5 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.

7.17.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

Storm surge: Storm surge can flood homes, businesses, and critical facilities, leading to structural damage and water damage including mold growth. Additionally, roads, bridges, and utilities can be submerged or washed away, disrupting transportation networks. Emergency services, hospitals, energy utilities and communication networks can also be severely affected, delaying response efforts and recovery.

POPULATION AND ECONOMY

Impacts to the general public include evacuation and sheltering needs, as well as emergency response for those who shelter in place or are injured during the event. Local economies can be impacted by direct losses like damage to property and infrastructure, as well as indirect impacts like business disruptions and reduced tourism. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to their family and may not have funds to evacuate. The population over the age of 65 is also more vulnerable, and they may physically have more difficulty evacuating. The elderly population are considered most vulnerable because they require extra time or outside assistance during evacuations. Also, they are more likely to seek or need medical attention, which may not be available because of isolation during a storm event.

ECOSYSTEMS AND NATURAL ASSETS

Storm surge can destroy beaches and dunes, transporting sand inland and burying vegetation. It can also negatively disrupt coastal habitats, especially estuaries and wetlands which perform vital ecosystem functions. Storm surge that reaches and impacts development or infrastructure may cause the release of hazardous substances such as heating fuel and sewage into the environment which may end up in surface or ground water contaminating potable water supplies.

7.18 WILDFIRE

7.18.1 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 resources. 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.

7.18.2 LOCATION, EXTENT AND MAGNITUDE

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. Union County contains several areas which are considered part of the Wildland Urban Interface (WUI). According to FEMA, the WUI is the zone of transition between unoccupied land and human development. It is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. The incidence of wildland fires, sometimes with catastrophic results of loss of life and property, is of particular concern in the ever burgeoning suburban, semi-rural, and rural zones. The WUI is often further distinguished into two WUI types based on housing and development density:

- Interface: High-density development adjacent to undeveloped wildland vegetation.
- Intermix: Lower-density housing mingled with undeveloped wildland vegetation. The risk from wildfire is greatest in intermix areas.

The US Forest Service integrated U.S. Census and USGS National Land Cover Data to map the Federal Register definition of WUI for the conterminous United States**. Figure 7.18-1 Wildland Urban Interface Classification of Union County** shows the WUI for Union County as of 2020. This area is primarily located in the less developed and more mountainous terrain in the western portion of the county.

Figure 7.18-1 Wildland Urban Interface Classification of Union County

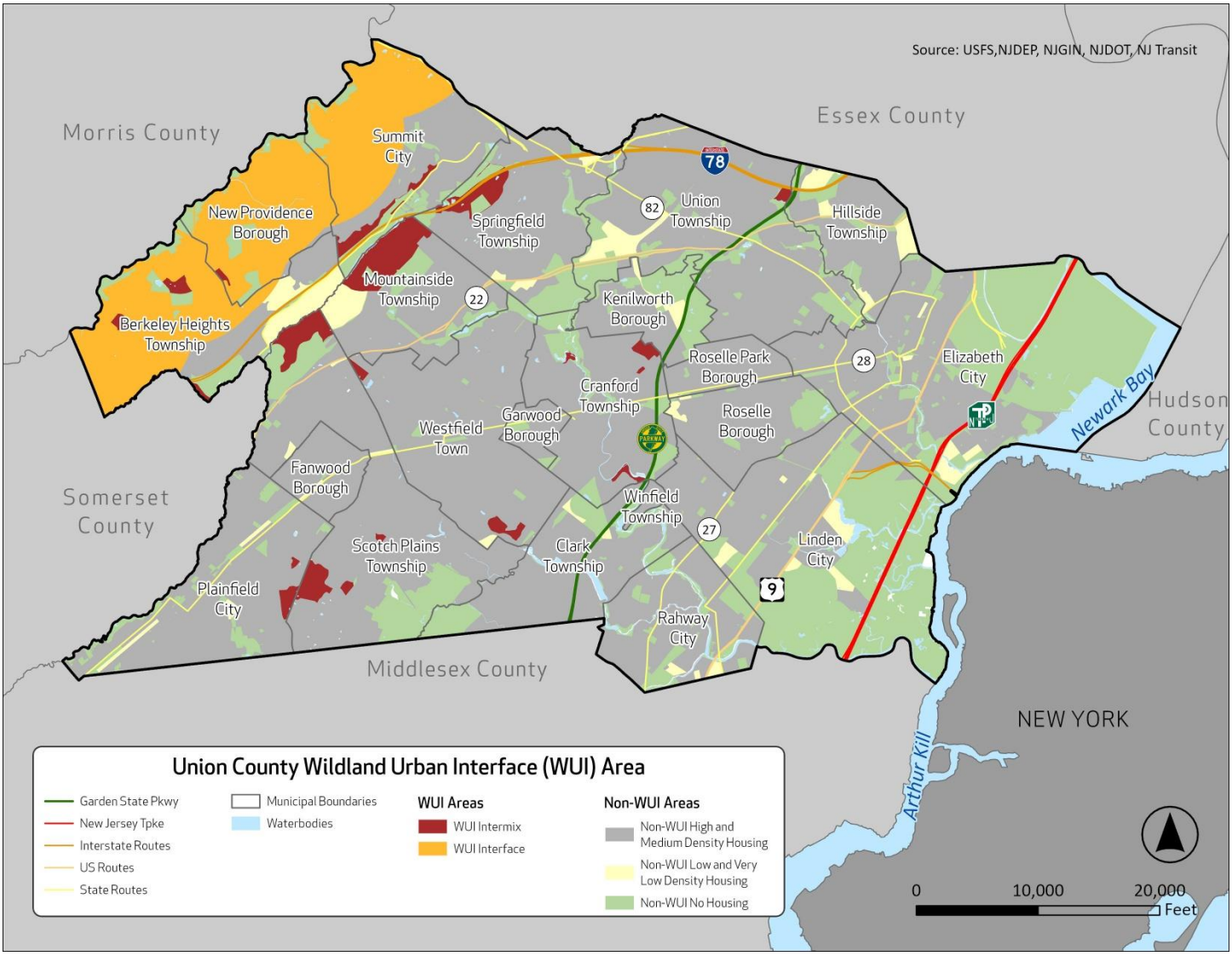


Table 7.18-1 Union County Wildland Urban Interface Area by Jurisdiction below summarizes the area of the wildland urban interface in the county y jurisdiction. Berkeley Heights Township contains the largest amount of WUI area, comprised of interface and intermix, at 2,857.3 acres followed by New Providence Borough and Summit City

Table 7.18-1 Union County Wildland Urban Interface Area by Jurisdiction

Jurisdiction	Number of Acres in WUI Area		
	Intermix	Interface	Total
Berkeley Heights Township	376.3	2481.0	2,857.3
Clark Township	29.9	0	29.9
Cranford Township	65.2	0	65.2
Elizabeth City	0	0	0
Fanwood Borough	0	0	0
Garwood Borough	0	0	0

Jurisdiction	Number of Acres in WUI Area		
	Intermix	Interface	Total
Hillside Township	0	0	0
Kenilworth Borough	0	0	0
Linden City	0	0	0
Mountainside Borough	304.8	0	304.8
New Providence Borough	0	2,126.9	2,126.9
Plainfield City	192.0	0	192.0
Rahway City	0	0	0
Roselle Borough	0	0	0
Roselle Park Borough	0	0	0
Scotch Plains Township	291.9	0	291.9
Springfield Township	181.5	0	181.5
Summit City	0	1757	1,757
Union Township	26.6	0	26.6
Westfield Town	60.1	0	60.1
Winfield Township	0	0	0
Union County Total	**1528.3**	**6364.8**	**7893.2**

Source: USFS, 2025

EXTENT AND MAGNITUDE

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.

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 **Table 7.18-2 Wildfire Intensity Scale.**

Table 7.18-2 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 resources 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 resources are not available to protect your home or property.
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 resources 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

7.18.3 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 sources were reviewed to identify past wildfire events in New Jersey including the NJFFS, the NCEI and other open sources of data. The NCEI indicates there have been no significant wildfires in Union County between 1950 and 2025. Review of additional data sources 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. According to the New Jersey Forest Fire Service, Union County ranks near the bottom of average annual fire incidents and number of acres burned in New Jersey.

7.18.4 PROBABILITY OF FUTURE OCCURRENCES

The likelihood of wildfires is difficult to predict in a probabilistic manner. The probability of future wildfires depends on local weather conditions; outdoor activities like camping, burning debris, and construction; and the degree of cooperation with fire prevention measures. Although Union County's fire risk has historically been low, given the numerous factors that can impact wildfire potential, the likelihood of a fire event starting and sustaining itself should be gauged by professional fire managers daily. Historical data may not accurately reflect future probability due to climate change. Please refer to Section 7.17.5 Potential Effects of Climate Change below for a discussion of how climate change may increase the frequency of wildfire events.

7.18.5 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. 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.

7.18.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

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

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. 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 7.18-3 Expected Annualized Losses (EAL) from the Wildfire Hazard by Jurisdiction shows expected annualized losses for wildfire in the county. This data was derived from FEMA's National Risk Index (NRI). EAL represents the average economic loss in dollars resulting from natural hazards each year. The table includes EAL for buildings as well as total EAL which includes building damage as well as damage to agriculture and population equivalency (the monetized cost of injury and fatality) where applicable.

Table 7.18-3 Expected Annual Losses (EAL) from Wildfire Hazard by Jurisdiction

Jurisdiction	Expected Annual Losses – Building	Expected Annual Losses -- Total
Berkeley Heights Township	$0.00	$0.00
Clark Township	$454.67	$461.22
Cranford Township	$254.79	$255.23
Elizabeth City	$78.83	$81.12
Fanwood Borough	$0.00	$0.00
Garwood Borough	$9.28	$9.46
Hillside Township	$1,152.93	$1,175.23
Kenilworth Borough	$0.00	$0.00
Linden City	$242.74	$242.74
Mountainside Borough	$0.00	$0.00
New Providence Borough	$271.60	$274.34
Plainfield City	$569.95	$579.05
Rahway City	$78.27	$80.57
Roselle Borough	$35.59	$36.74
Roselle Park Borough	$0.00	$0.00
Scotch Plains Township	$2,628.77	$2,655.49
Springfield Township	$1,117.99	$1,136.71
Summit City	$131.41	$133.80
Union Township	$415.52	$423.31
Westfield Town	$381.62	$386.48
Winfield Township	$0.00	$0.00
Union County Total	$7,824.69	$7,932.93

Source: FEMA NRI

POPULATION AND ECONOMY

Population vulnerability to wildfire in Union County is largely concentrated in suburban and rural areas near wooded landscapes. Residents in communities such as Berkeley Heights Township, New Providence Borough and Summit City are at higher risk due to proximity to forested lands and a higher prevalence of single-family homes on larger, vegetated lots. While population density in these areas is relatively low compared to some other areas of the county, the spread-out development pattern increases exposure and complicates evacuation or emergency response during fire events.

Vulnerable groups include:

- Elderly residents or those with limited mobility living in more isolated or less accessible properties.

- Homeowners without adequate fire protection measures or insurance coverage.
- Those living in structures with flammable building materials or landscaping that does not meet fire-safe guidelines.

The economic impact of wildfires in Union County is generally limited to localized damage and emergency response costs, but even small-scale fires can result in property loss, temporary displacement, and costly fire-suppression efforts. Recreation-based economic activity in county parks or nature centers, such as Watchung Reservation, may be disrupted by fire incidents or smoke-related closures. Repeated events could also reduce real estate values in high-risk zones over time.

ECOSYSTEMS AND NATURAL ASSETS

Wildfire can have both damaging and regenerative effects on Union County's ecosystems, depending on fire severity and frequency. Natural areas such as the Watchung Range contain fire-adapted ecosystems, but intense or unplanned fires can result in habitat loss, tree mortality, and disruption of ecological succession.

Brush fires and forest fires may threaten biodiversity in Union County by threatening nesting areas, wildlife corridors, and understory vegetation. Invasive species can gain a foothold in recently burned areas, altering habitat composition and resilience. Post-fire erosion is a concern on steep slopes in Union County and can increase sedimentation into waterways and degrade water quality, a particular concern in watersheds which provide public drinking water.

7.19 ANIMAL DISEASE

7.19.1 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 have adverse animal health issues. Additionally, the threat to public health from 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 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. 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 7.19-1 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 7.19-1 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: NJ State HMP, 2024

For a more detailed description of animal diseases in New Jersey, please see the 2024 New Jersey State Hazard Mitigation Plan.

7.19.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

Union County does not have significant agricultural lands and therefore does not have a significant livestock population; however, 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.

EXTENT AND MAGNITUDE

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 7.19-1 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 7.19-1 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, 2017

7.19.3 PREVIOUS OCCURRENCES AND LOSSES

Between 1989 and 2025, New Jersey had 8,723 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, 2025). **Table 7.19-2 Animal Disease Incidents in New Jersey** outlines animal disease events in the State but does not include all incidents.

Table 7.19-2 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
2017	Eastern Equine Encephalitis (EEE)	State Total	In 2017, 6 cases of EEE were reported
2017	WNV	State Total	In 2017, 2 equine cases of WNV were reported.
2018	EEE	State Total	In 2018, 5 cases of EEE were reported.
2018	WNV	State Total	In 2018, 13 avian cases and 1 equine case of WNV was reported.
2019	EEE	State Total	In 2019, 11 cases of EEE were reported.
2020	WNV	State Total	In 2020, 1 avian case of WNV was reported.
2021	WNV	State Total	In 2021, 13 avian cases of WNV were reported
2024	Highly Pathonogenic Avian Influenza (HPAI)	State Total	More than 140 sick or dead snow geese and Canada geese, as well as lower numbers of raptors and other avian scavengers, have been reported from more than 30 locations in the state.
2025	Highly Pathonogenic Avian Influenza (HPAI)	Union County	On 2/21/2025, HPAI was confirmed in a Union County live bird market. This was the first positive HPAI case for domestic poultry in New Jersey since 2023.

Source: NJSHMP 2024, USDA APHIS, 2022a and 2022b, NJDA

The Federal Emergency Management Agency (FEMA) has not issued any disaster declarations resulting from animal disease incidents.

7.19.4 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.

7.19.5 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).

7.19.6 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 is 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 many 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, crops, 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. 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 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 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.

7.20 CIVIL UNREST

7.20.1 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.

7.20.2 LOCATION, EXTENT AND MAGNITUDE

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.

EXTENT AND MAGNITUDE

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.

7.20.3 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, MN. 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 protests were smaller in scale 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 7.20-1 Civil Unrest Incidents in Union County outlines civil disturbances affecting Union County. FEMA has made no presidential disaster declarations related to civil unrest.

Table 7.20-1 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: NJSHMP 2024

7.20.4 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.

7.20.5 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.

7.20.6 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, instances 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 unrest 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.

7.21 CYBER ATTACK

7.21.1 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.

7.21.2 LOCATION, EXTENT AND MAGNITUDE

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.

EXTENT AND MAGNITUDE

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 7.21-1 Threat of Malware to Different Systems** describes the malware that can impact different systems.

Table 7.21-1 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 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.

Threat	Description of Malware
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

7.21.3 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).

Starting in 2016, New Jersey began releasing the annual statistics on cyber breaches in the state. The information released details breaches that involve unauthorized access to personal information, such as a name, social security number, driver's license number, bank account, etc. In 2023, the New Jersey Cybersecurity and Communications Integration Cell documented over 4,100 ransomware attacks worldwide that were publicly listed on the respective threat actors' leak sites and elsewhere. The ransomware victim lists contained 60 New Jersey public and private sector organizations. In 2024, the State Police had 514 data breaches reported to them. Of these, 149 were reported by public agencies. The number of threats reported has remained fairly constant as compared to 2023 (542) and 2021 (531).

Known instances of cyber-attack in Union County include 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.

During the municipal meetings held in the planning process phase of the 2026 update, several Union County municipalities reported phishing or ransomware cyber-attack instances that have occurred in the last few years. As a result, these municipalities implemented awareness training and/or increased cyber security measures.

7.21.4 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 comments of former FBI director Louis Freeh, 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 the number of cyber-attack attempts are increasing, municipalities have also been investing in capabilities to reduce the vulnerability to cyber-attack.

7.21.5 POTENTIAL EFFECTS OF CLIMATE CHANGE

This plan does not recognize the link between cyber-attack and climate change.

7.21.6 VULNERABILITY ASSESSMENT

IMPACTS

A cyber-attack can have potentially severe consequences. The following are potential impacts.

Table 7.21-2 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.

Source: NJSHMP 2024

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.

EXPOSURE AND DAMAGES

For the purposes of this Plan, the entire population of Union County 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.

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).

According to a 2018 report from the White House Council of Economic Advisers, malicious cyber activity including cyberterrorism cost the U.S. economy between $57 billion and $109 billion in 2016. These costs represent approximately 0.3% to 0.6% of the total GDP in the United States. Estimates are that this number has increased in the years since, although a more recent federal government report is unavailable.

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 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.

7.22 ECONOMIC COLLAPSE

7.22.1 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.

7.22.2 LOCATION, EXTENT AND MAGNITUDE

LOCATION

An 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.

EXTENT AND MAGNITUDE

Economic Collapse is often accompanied by social chaos and civil unrest. See Section 7.19 Civil Unrest for extent information regarding civil unrest.

7.22.3 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 & 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

According to the New Jersey Department of Labor and Workforce Development, the decline in employment at the onset of the COVID-19 pandemic (February 2020 through April 2020) "was unprecedented in recent history and scale-braking in nature"(NJDLWD, 2021). Mandatory business closures to stop the spread of the virus resulted in the loss of 720,000 jobs (17% of all jobs) in New Jersey; more the half of jobs losses were concentrated in leisure and hospitality (-201,000 or 28% of lost jobs), retail trade (-104,000 jobs), and healthcare (-101,000 jobs). This decline was the steepest since the Great Depression (NJDLWD, 2021).

That said, this two-month sharp decline was followed by a sharp increase in jobs after business reopened. By September 2020, New Jersey regained 340,000 of lost jobs. The economy steadily improved, and New Jersey added 423,000 jobs through June 2021 (59.2% of lost jobs). Nationally, economic recovery has been much faster than previous recessions (NJDLWD, 2021).

The COVID-19 pandemic also fundamentally disrupted supply chains by changing the nature of demand for goods and services. As businesses closed and households moved to virtual school and workplace settings, online ordering sharply increased. There was also a sharp increase in demand for personal protective equipment (PPE), cleaning supplies, food and household items with a sharp decrease in demand for restaurant and office supplies. Supply chain issues resulted from production line and business stoppages; container vessel movements were cancelled in June and July 2020, then cargo volumes sharply increased once production started up again later in the pandemic.

To respond to supply chain issues, the public and private sectors collaborated. The New Jersey Food and Supply Chain team (the New Jersey Food Council, the Governor's Office, the New Jersey Economic Development Authority, North Jersey Transportation Planning Authority (NJTPA), Port Authority of New York and New Jersey, Conrail, the Community Food Bank of New Jersey, and other organizations) ensured households, especially the increasing number of food insecure households, had the food and household supplies they needed. NJTPA also partnered with metropolitan planning organizations in surrounding states to make sure rest stops along highways stayed open or reopened, and truckers had

the information they needed to continue work. The Council on Port Performance (CPP) also met to address cargo issues (NJTPA, 2021). Section 7.25 Pandemic also discusses the impacts of the COVID-19 pandemic on the economy.

7.22.4 PROBABILITY OF FUTURE OCCURRENCES

The probability of an economic collapse is 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.

7.22.5 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.

7.22.6 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.

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.

7.23 HAZARDOUS MATERIALS RELEASE–FIXED SITE

7.23.1 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 with those hazardous materials that occur at facilities which are known as fixed site. The next section, 7.23 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. 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.

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.

7.23.2 LOCATION, EXTENT AND MAGNITUDE

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 7.23-1 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 7.23-1** includes only the Union County jurisdictions that contain active hazardous waste handlers as reported by the USEPA RCRAInfo database.

Table 7.23-1 Union County Resource Conservation and Recovery Act (RCRAInfo) Hazardous Waste Summary

Jurisdiction	Active Hazardous Waste Handlers
Berkeley Heights Township	13
Clark Township	15
Cranford Township	12
Elizabeth City	98
Fanwood Borough	0
Garwood Borough	13
Hillside Township	25
Kenilworth Borough	22
Linden City	115
Mountainside Borough	11
Murray Hill Neighborhood	4
New Providence Borough	8
Plainfield City	14
Rahway City	31
Roselle Borough	12
Roselle Park Borough	2
Scotch Plains Township	7
Springfield Township	17
Summit City	13
Union Township	65
Westfield Town	5
Total	505

Source: USEPA. 2025. 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 May 20, 2025, there are 119 active and archived NPL and non-NPL sites in Union County in the USEPA's Superfund Enterprise Management System. Of these 119 sites, 83 sites are archived, and 36 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 7.23-2 Known Contaminated Sites in Union County** shows the number of Known Contaminated Sites in Union County by municipality.

Table 7.23-2 Known Contaminated Sites in Union County

Jurisdiction	Number of Sites
Berkeley Heights Township	17
Clark Township	25
Cranford Township	35
Elizabeth City	222
Fanwood Borough	13
Garwood Borough	15
Hillside Township	60
Kenilworth Borough	31
Linden City	145
Mountainside Borough	2
New Providence Borough	19
Plainfield City	57
Rahway City	52
Roselle Borough	30
Roselle Park Borough	17
Scotch Plains Township	18
Springfield Township	32
Summit City	34
Union Township	114
Westfield Town	30
Winfield Township	0
Total	968

Source: DEP 2025, Known contaminated site list for New Jersey.

EXTENT AND MAGNITUDE

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

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.

7.23.3 PREVIOUS OCCURRENCES AND LOSSES

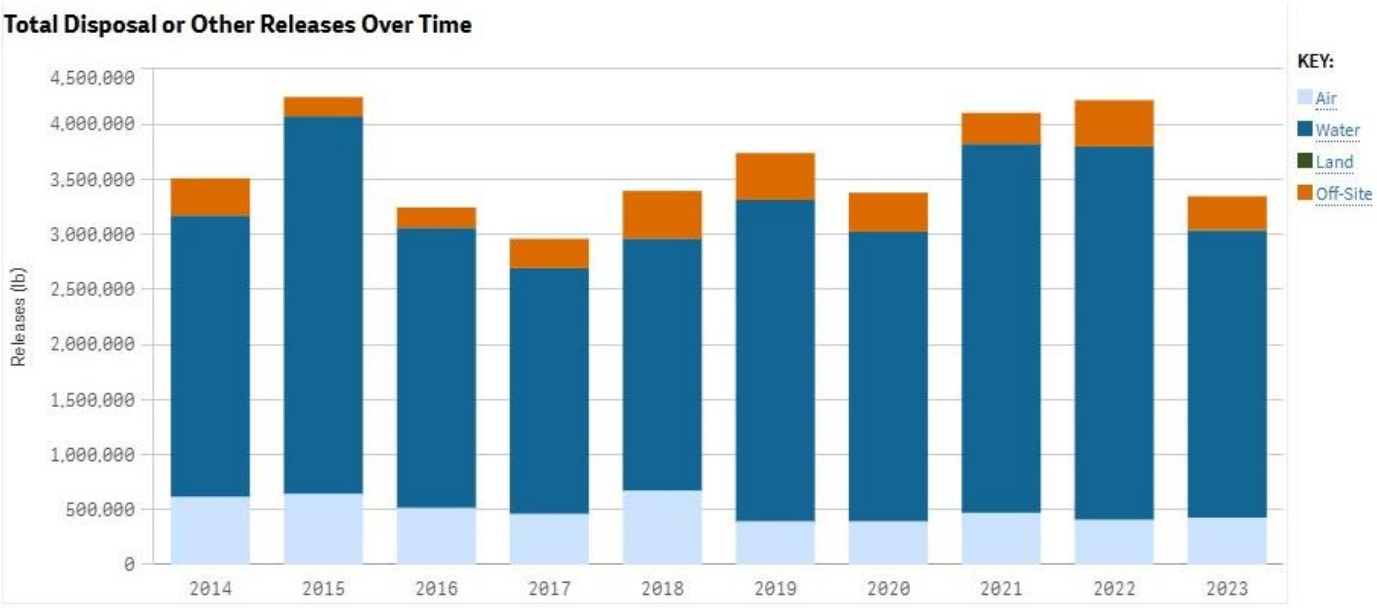
To identify past occurrences for fixed sites in Union County, the Toxic Release Inventory Explorer database was queried from the EPA's website. Beginning in 1986, as part of the Emergency Planning and Community Right-to-know Act (EPCRA), certain industries as well as federal facilities have been required 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 2021 HMP update, the TRI database was queried for the years 2013 through 2019 for Union County. The results of the query can be found in the 2021 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 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 7.23-1 Union County Toxic Release Inventory Trend: 2014-2023** illustrates that from 2014 to 2023 fluctuated somewhat but the trend remained fairly constant. The 2016 plan update reported the trend from the 1980s to 2011. That plan showed that 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 7.23-1 Union County Toxic Release Inventory Trend: 2014– 2023



Source: Right-to-Know Network – Toxic Release Inventory

For the 2026 HMP update, the TRI database was queried for the years 2020 through 2023 for Union County. The results have been aggregated by jurisdiction rather than by year and are reported in **Table 7.23-3 Union County Toxic Release Inventory: 2020-2023 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 2020 to 2023, Union County facilities released nearly 15 million pounds. The highest quantity of release during this time period was in Linden City, with over 14 million pounds released in this jurisdiction alone.

Table 7.23-3 Union County Toxic Release Inventory: 2020 – 2023
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)
Clark Township	6,073	62	6,135
Elizabeth City	1,945	717,265	719,210
Kenilworth Brough	8,893	1,845	10,738
Linden City	13,647,955	621,441	14,269,396
Rahway City	6,830	781	7,611
Roselle borough	8	16,263	16,271
Union Township	13,160	5,139	18,299
Watchung Borough	6	-	6
Union County Total	**13,684,869**	**1,362,796**	**15,047,665**

Source: US EPA – Toxic Release Inventory Database, November 2020

7.23.4 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.

7.23.5 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.

7.23.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

A fixed-site hazardous materials release can have severe consequences for the built environment, infrastructure, and community lifelines. When dangerous substances escape from industrial facilities, storage sites, or chemical plants, they can corrode buildings, contaminate water systems, and disrupt essential services.

In terms of the built environment, hazardous chemicals can degrade construction materials, leading to weakened structures and unsafe conditions. Contaminated soil and air pollution can accelerate deterioration in buildings and public spaces, making cleanup and restoration expensive and time-consuming.

Infrastructure such as utility systems may be severely affected. Toxic spills can infiltrate underground pipelines and water supply networks, making them unsafe for public use. Chemical contamination can force closures of transportation routes, disrupt power grids, and damage wastewater treatment systems, leading to long-term operational challenges.

POPULATION AND ECONOMY

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.

ECOSYSTEMS AND NATURAL ASSETS

A fixed-site hazardous materials release has the potential to contaminate soil, water, and air, harming ecosystems and reducing biodiversity. The impact varies based on the type of contaminant and the environmental conditions surrounding the site. Heavy metals, petroleum products, and toxic chemicals can remain in the ground for decades, requiring extensive remediation. These substances can poison wildlife, disrupt food chains, and degrade natural habitats. Polluted waterways cause fish kills and unsafe drinking water, while soil contamination affects plant growth and agriculture.

7.24 HAZARDOUS MATERIALS RELEASE – TRANSPORTATION INCIDENTS

7.24.1 HAZARD DESCRIPTION

Hazardous materials release-transportation incidents refer to uncontrollable releases of hazardous materials during transport, which pose a risk to 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 7.22 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 7.24-1 Hazardous Material Incidents by Transportation Mode Totals, 2015-2024** below shows that transportation related hazardous materials incidents are much more likely to occur on highways than through any other mode of transportation.

Table 7.24-1 Hazardous Material Incidents by Transportation Mode Totals, 2015-2024

Mode of Transportation	Number of Incidents	Associated Deaths	Associated Injuries	Damages
Air	15,234	0	78	$2,585,059
Highway	206,155	64	985	$495,275,840
Railway	4,501	0	361	$1,143,870,218
Water	89	0	19	$5,860,143
Total	225,979	64	1,443	$1,647,591,260

Source: Hazardous Materials Information System, USDOT, 2025.

7.24.2 LOCATION, EXTENT AND MAGNITUDE

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).

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.

EXTENT AND MAGNITUDE

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.

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.

7.24.3 PREVIOUS OCCURRENCES AND LOSSES

In order to identify past hazardous material transportation incidents for Union County, 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 915 hazardous materials incidents in Union County from November 1989 to May 20, 2025. Of these incidents, 722 have occurred in Elizabeth City and 113 in Linden City. There have been no injuries or fatalities during this time. Of these incidents, 701 have occurred on highways, 141 have occurred in water travel, 34 have occurred on rail and 34 have occurred during air travel.

Please note that **Table 7.24-2 USDOT PHMSA Hazardous Materials Incident Report Summary for Union County, 1989-May 2025** only includes municipalities in which there have been historical hazardous materials incidents.

Table 7.24-2 USDOT PHMSA Hazardous Materials Incident Report Summary for Union County, 1989-May 2025

Jurisdiction	Number of Incidents	Total Damages
Berkeley Heights Township	1	$10.00
Clark Township	3	$271,500.00
Cranford Township	2	$60,348.00
Elizabeth City	722	$1,137,764.00
Hillside Township	10	$340,950.00
Kenilworth Borough	10	$38,585.00
Linden City	113	$342,778.00
New Providence Borough	1	$2,005.00
Plainfield City	3	$7,551.00
Rahway City	18	$30,666.00
Roselle Borough	1	$2,600.00
Springfield Township	2	$65,200.00

Jurisdiction	Number of Incidents	Total Damages
Summit City	3	$51,301.00
Union Township	26	$129,753.00
Union County Total	**915**	**$2,481,011.00**

Source: USDOT PHSA, 2025. Hazmat Incident Report Tool.

7.24.4 PROBABILITY OF FUTURE OCCURRENCE

As shown in the previous occurrences section, the main transportation mode experiencing hazardous material release is roadways. 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.

7.24.5 POTENTIAL EFFECTS OF CLIMATE CHANGE

Please refer to section 7.22.5 Potential Effects of Climate Change.

7.24.6 VULNERABILITY ASSESSMENT

BUILT ENVIRONMENT, INFRASTRUCTURE AND COMMUNITY LIFELINES

A hazardous materials release during transportation can cause widespread damage to buildings, roads, and essential infrastructure. Hazardous spills can cause fires, explosions, or chemical contamination that damages buildings, roads, and nearby properties. There are no significant vulnerabilities to structures from hazardous materials releases, however, infrastructure such as highways, railways, and bridges can be shut down due to contamination, disrupting supply chains and transportation networks. Waterways affected by spills may require extensive cleanup, and toxic runoff can infiltrate drinking water sources. Community lifelines such as emergency responders and health services be overwhelmed by the incident. First responders must coordinate containment efforts while managing potential evacuations.

POPULATION AND ECONOMY

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.

ECOSYSTEMS AND NATURAL ASSETS

A transportation related hazardous materials release has the potential to contaminate soil, water, and air, harming ecosystems and reducing biodiversity. The impact varies based on the type of contaminant and the environmental conditions surrounding the release site. Heavy metals, petroleum products, and toxic chemicals can remain in the ground for decades, requiring extensive remediation. These substances can poison wildlife, disrupt food chains, and degrade natural habitats. Polluted waterways cause fish kills and unsafe drinking water, while soil contamination affects plant growth and agriculture.

7.25 NUCLEAR HAZARDS

7.25.1 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.

7.25.2 LOCATION, EXTENT AND MAGNITUDE

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 All three stations are located in the south of the state. Oyster Creek Nuclear Generating Station in Ocean County stopped generation in the fall of 2018. Most of Union County was within the 50-mile ingestion pathway zone of the Indian Point Energy Center in Buchanan, New York, however that facility was permanently shut down in 2021. Regardless, decommissioned nuclear plants can still present challenges with the potential to impact communities.

EXTENT AND MAGNITUDE

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.

7.25.3 PREVIOUS OCCURRENCES AND LOSSES

No major nuclear incidents have occurred in New Jersey. In the past there have been two alerts at Oyster Creek and one alert at Salem/Hope Creek site (Christiansen [NJEOM] 2013).

7.25.4 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).

7.25.5 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).

7.25.6 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 50 miles of any active nuclear facility.

7.26 PANDEMIC

7.26.1 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).

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).
- 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).

7.26.2 LOCATION, EXTENT AND MAGNITUDE

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

COVID-19 spreads when an infected person breathes out droplets and very small particles that contain the virus. Other people can breathe in these droplets and particles, or these droplets and particles can land on others' eyes, nose, or mouth. In some circumstances, these droplets may contaminate the surfaces they touch. Anyone infected with COVID-19 can spread it, even if they do NOT have symptoms. COVID-19 can even spread from people to animals in some situations. Factors such as close contact, poor ventilation, lack of masking, and prolonged exposure increase the risk of transmission (CDC 2025).

EXTENT AND MAGNITUDE

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 such as Union County. 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.

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 section 4.22 for the Federal and New Jersey Pandemic Phases and Situations in detail.

VACCINATION RATES IN UNION COUNTY

In Union County, approximately 92.6% of children in Pre-K, Kindergarten, First Grade, Sixth Grade, and Transfers were immunized during the 2023-2024 school year, down slightly from 93.2% during the 2022-2023 school year according to the New Jersey Department of Health Communicable Disease Service *Annual Immunization Status Reports*. Of all students, approximately 2.3% were granted Provisional Admittance, 2.4% claimed a Religious Exemption, 2.5% were deemed Out of Compliance and 0.2% of enrolled children claimed a Medical Exemption.

7.26.3 PREVIOUS OCCURRENCES AND LOSSES

Table 7.26-1 Previous Pandemic Occurrences provides details on pandemic events that have impacted New Jersey.

Table 7.26-1 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 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.

Date(s) of Event	Event Type	Area Affected	Description
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.
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).

Date(s) of Event	Event Type	Area Affected	Description
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.
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.
January 20, 2020 - May 11, 2023*	Coronavirus Disease 2019 (COVID-19)	Statewide	The first confirmed case of COVID-19 in the U.S. was in Washington State on January 21, 2020; the first confirmed case in New Jersey was reported on March 4, 2020. From March 2020 to August 24, 2023, there have been 2,588,728 confirmed cases of COVID 19 in New Jersey. During that period, 172,973 people have been hospitalized with confirmed cases and 36,242 have died in deaths associated with COVID-19.

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
*Note: This date shows the incident period of the New Jersey COVID-19 Pandemic as defined by the FEMA Disaster Declaration. As of May 28, 2025, people are still becoming infected with COVID-19.

A Closer Look at the COVID-19 Pandemic

On March 9, 2020, Governor Murphy declared a state of emergency and public health emergency in New Jersey. Then, on March 12, Governor Murphy recommended the cancellation of all public gatherings of more than 250 people in New Jersey, effective immediately. On March 21, the Governor ordered all non-essential retail businesses in the state to close until further notice. Over the coming weeks, the Governor continued to announce restrictions on activities throughout the state to combat the spread of the virus. Schools were moved to virtual platforms and aid organizations were set up. Mandatory use of face coverings or masks were also imposed to stop the transmission of the disease (Fallon, 2020).

From March 2020 through August 24, 2023, the largest number of confirmed cases of COVID-19 were found in Bergen County (276,396 cases), Essex County (263,280 cases), and Middlesex County (249,738 cases). The highest rates of COVID-19 infection include Passaic County (32,495 cases per 100,000 residents), Essex County (30,482 cases per 100,000 residents), and Monmouth County (29,703 cases per 100,000 residents). The highest mortality rates include Ocean County (519 deaths per 100,000 residents), Passaic County (472 deaths per 100,000 residents) and Essex County (439 deaths per 100,000 residents). During this period, Union County had 29,011 cases per 100,000 residents and 436 deaths per 100,000 residents.

7.26.4 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.

7.26.5 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.

7.26.6 VULNERABILITY ASSESSMENT

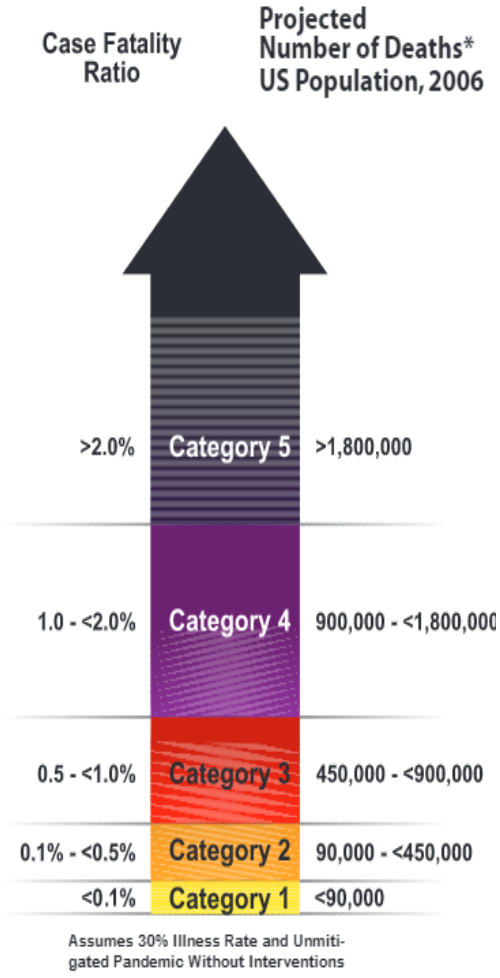
IMPACTS

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.

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 7.26-1 Pandemic Severity Index** illustrates the five categories of the PSI.

Figure 7.26-1 Pandemic Severity Index



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 on the origin of the virus and the amount of time needed to identify the virus.

Source: NJDOH 2012

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. In addition to life and safety, a pandemic would have a significant impact on the economy in Union County. There is the potential for shutdowns and social distancing requirements such as those experienced during the COVID-19 pandemic which could harm local businesses and lead to an increase in unemployment, especially in the services sector of the economy.

7.27 POWER FAILURE

7.27.1 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.

7.27.2 LOCATION, EXTENT AND MAGNITUDE

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: 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 2018 – 2023 American Community Survey (ACS), 20,849 occupied housing units across Union County are heated with electricity. This represents 10.3% 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.

EXTENT AND MAGNITUDE

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.

7.27.3 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 in the state are summarized in **Table 7.27-1 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 7.27-1 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.

Date(s) of Event	Event Type	Description
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.
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.
10/2/2015 to 10/3/2015	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,

Date(s) of Event	Event Type	Description
		Governor Murphy 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.
8/6/2021	Thunderstorm wind	111,000 Jersey Central Power & Light (JCP&L) lost power following damaging thunderstorms that swept through the northern and central parts of the state.
8/19/2024	Thunderstorm Wind	Over 600 residences in and around Union Township were without power for nearly 24 hours after a large oak tree fell and brought down wires and at least one utility pole near the Union Township Middle School.

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

7.27.4 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 7.27-1, 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.

7.27.5 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 7.11 High Wind-Straight-Line Winds and 7.12 High Wind-Tornado for more information on the effects of climate change on these hazards.

7.27.6 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 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 7.10 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 $174 per person per day (FEMA 2020).

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 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.

7.28 TERRORISM

7.28.1 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.

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.

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).

7.28.2 LOCATION, EXTENT AND MAGNITUDE

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.

EXTENT AND MAGNITUDE

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).

7.28.3 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.

7.28.4 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 7.28-1 New Jersey's Assessed Threat Level in 2025 is taken from the New Jersey Office of Homeland Security and Preparedness' 2025 Terrorism Threat Assessment, which visualizes the Assessed Threat Level of various terrorist organizations and extremists in New Jersey.

7.28.5 POTENTIAL EFFECTS OF CLIMATE CHANGE

This plan does not recognize a link between climate change and terrorism.

7.28.6 VULNERABILITY ASSESSMENT

IMPACTS

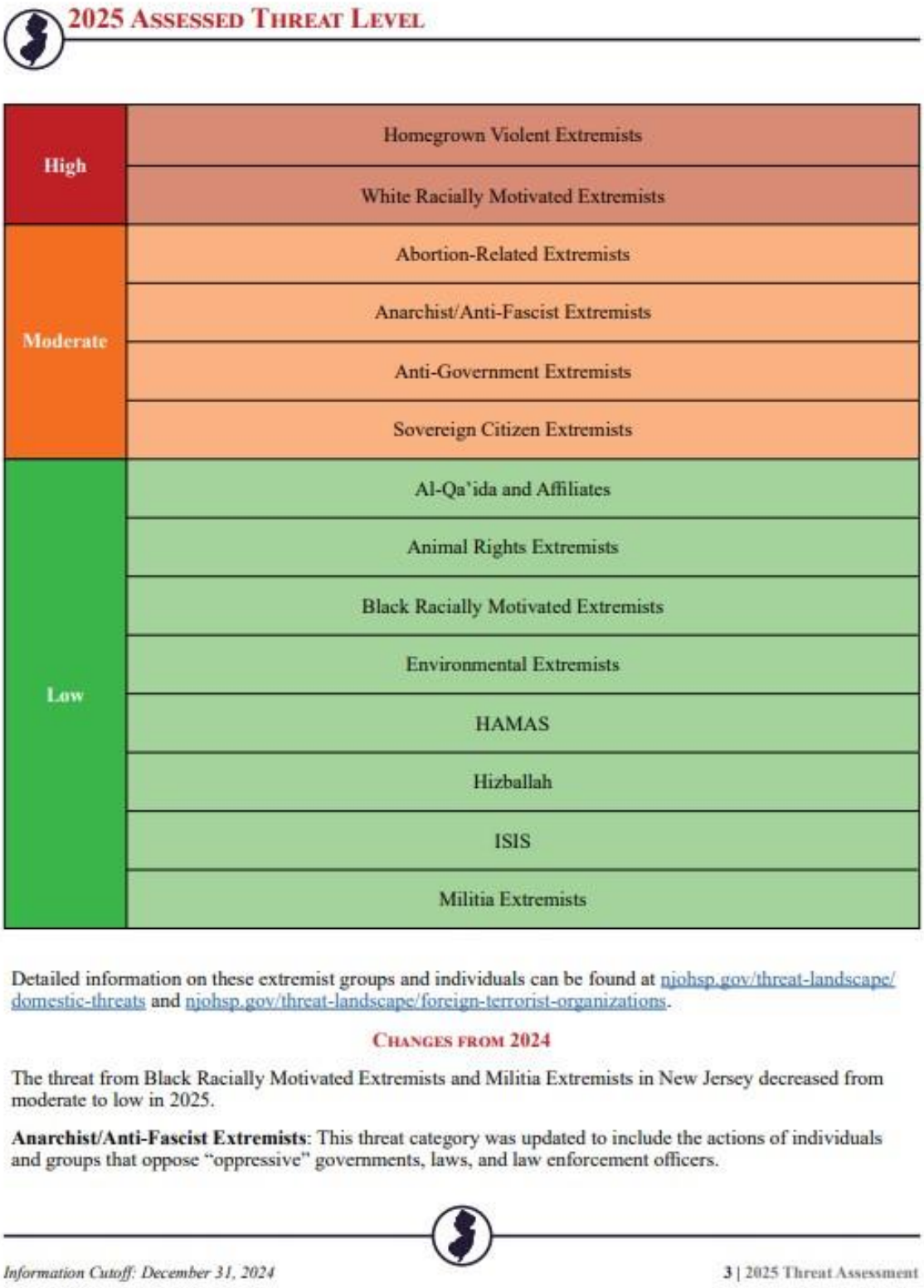
The effect of a terrorism event can vary depending on the type of attack and the magnitude of the event or events. A terrorism event can cause public fear regarding the use of mass transportation or leaving their homes in the event of a biological or nuclear attack. Communication systems, both public 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 resources 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.

Figure 7.28-1 New Jersey's Assessed Threat Level in 2025



2025 Assessed Threat Level

High	Homegrown Violent Extremists
	White Racially Motivated Extremists
Moderate	Abortion-Related Extremists
	Anarchist/Anti-Fascist Extremists
	Anti-Government Extremists
	Sovereign Citizen Extremists
Low	Al-Qa'ida and Affiliates
	Animal Rights Extremists
	Black Racially Motivated Extremists
	Environmental Extremists
	HAMAS
	Hizballah
	ISIS
	Militia Extremists

Detailed information on these extremist groups and individuals can be found at njohsp.gov/threat-landscape/domestic-threats and njohsp.gov/threat-landscape/foreign-terrorist-organizations.

Changes from 2024

The threat from Black Racially Motivated Extremists and Militia Extremists in New Jersey decreased from moderate to low in 2025.

Anarchist/Anti-Fascist Extremists: This threat category was updated to include the actions of individuals and groups that oppose "oppressive" governments, laws, and law enforcement officers.

Information Cutoff: December 31, 2024

3 | 2025 Threat Assessment

Source: NJOHSP 2025

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



Linden, NJ

8.0 PLAN ADOPTION

8.1 PLAN ADOPTION

The Union County HMP was submitted to the New Jersey State Hazard Mitigation Officer on April 17, 2026. It was forwarded to FEMA for final review on May 20, 2026. FEMA granted approval-pending-adoption on June 10, 2026. **Full approval from FEMA was received on July 15, 2026.**

Once FEMA granted approval-pending-adoption on June 10, 2026, the Project Team coordinated with Union County, each of the 21 municipalities, and Special Districts with mitigation actions in this plan, to adopt a resolution of the Union County HMP. The Project Team provided a resolution template to each municipality to streamline the adoption process. The Resolution Template is included in Appendix B.

All adopted resolutions are in Appendix E – Local Resolutions.



9.0 PLAN MAINTENANCE

Watchung Reservation, Mountainside, NJ

9.0 PLAN MAINTENANCE

9.1 PROCESS SUMMARY

A formal plan maintenance process for monitoring, evaluating, and updating the HMP must take place to ensure that the HMP, and specifically the mitigation strategy, remains current and relevant. Updates are required every five years from the date the plan is approved, which occurs after FEMA completes its plan review and determines that all requirements have been adequately addressed, known as “Approvable Pending Adoption." Participating jurisdictions then each move forward with formally adopting the plan. For multi-jurisdictional plans, FEMA considers the plan approval date to be the date of the first jurisdictional adoption.

Regularly scheduled evaluations during the five-year cycle are important to assess the effectiveness of the program and to reflect changes that may affect mitigation priorities. This evaluation process must keep the public engaged throughout the plan's ongoing implementation. Union County has opted to pursue a very similar strategy as the previous plan update for the next five years (2026 – 2031) although some changes have been made to account for new FEMA guidance released in 2023.

The Union County Division of Emergency Services will continue to take the lead role in coordinating the overall plan maintenance effort, with ongoing support and feedback from the Steering Committee. This section explains who will be responsible for maintenance activities and what those responsibilities entail. It also provides a methodology and schedule of maintenance activities including a description of how the public will be involved on a continued basis.

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9.2 MONITORING THE PLAN

Monitoring implementation and evaluating effectiveness of the mitigation strategy are tasks effectively accomplished together. Monitoring implementation involves tracking progress and reasons for lack of progress. It is important to document successes on a regular basis. For instance, it is typically difficult to list all public outreach activities conducted over a five-year period unless you have a log to monitor outreach. Recognizing lack of progress provides the opportunity to change the approach and evaluate the mitigation strategy. Evaluating effectiveness complements monitoring because it is a chance for evaluating both progress and lack of progress. When projects are accomplished, it is helpful to consider whether they were successful in accomplishing the intended goal and objective. For instance, did grant-related outreach increase the number of residents gaining access to mitigation project funding? If so, the action might be continued and, if not, a new or revised action may be considered. Evaluating lack of progress provides the chance to consider whether new resources might be needed or if the action might be discontinued because it is not feasible or a current priority.

Union County intends to monitor implementation and evaluate effectiveness of the mitigation strategy through a combination of efforts by both the Union County Division of Emergency Services and municipal representatives. The Union County Division of Emergency Services will host an annual meeting to review the plan, inviting municipal representatives and key stakeholders. Prior to the meeting, the County will distribute the Annual Progress Report (Appendix D), to

complete and submit prior to or at the meeting. Appendix D – Annual Progress Report also includes an Annual Progress Log for the County to use to track the responses from the municipalities.

As part of this plan update, Appendix D - Annual Progress Report was consolidated to align with the discussions the Project Team held with each municipality in the Winter of 2024/2025. The Report asks the following questions:

1. Did any significant hazard events occur within the past year? Any changes to your hazards of concern?
2. Have there been any reports, studies, or documentation of change in potential hazards, that you are aware of?
3. Have there been any major changes in growth or development?
4. Is your community currently updating or creating any land use, development, housing or other planning documents? If so, how is the hazard mitigation plan being integrated or referenced in that effort?
5. Are there any mitigation projects underway or completed? Any actions that no longer are applicable or needed?
6. Are there any new projects you would like to add to your mitigation strategy?
7. Have you engaged the public on hazard mitigation? If so, how?

Issues that arise during monitoring and evaluation which require changes to the risk assessment, mitigation strategy, and other components of the plan will be used in two ways. First, they will be used to improve implementation between plan updates and may warrant amendments to the plan components dependent on their urgency. Second, new information will be incorporated during future plan updates. If there is information provided in relation to an action the community would like to take during the five-year period, that would be more time-sensitive than informing future plan updates and would require an amendment.

9.3 UPDATING THE PLAN

The Union County Multi-Jurisdictional HMP will be updated every five years, as required by the Disaster Mitigation Act of 2000. Union County may also select to update the plan following a disaster event that impacts how the County and municipalities want to implement the mitigation strategy. All plan updates will be led by the Union County Division of Emergency Services. Future plan updates will account for any new hazard vulnerabilities, special circumstances, or new information that becomes available, specifically from the Annual Progress Reports.

9.4 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 County's hazard mitigation 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.

These activities were reviewed as part of the 2016 Plan Update and selected again for the 2026 to 2031 planning cycle:

- Union County Division of Emergency Services will continue to maintain the mitigation planning website.
- 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.

APPENDICES VOLUME I. JURISDICTIONAL INFORMATION

Vol I. 1 Berkeley Heights, Township of

Vol I. 2 Clark, Township of

Vol I. 3 Cranford, Township of

Vol I. 4 Elizabeth, City of

Vol I. 5 Fanwood, Borough of

Vol I. 6 Garwood, Borough of

Vol I. 7 Hillside, Township of

Vol I. 8 Kenilworth, Borough of

Vol I. 9 Linden, City of

Vol I. 10 Mountainside, Township of

Vol I. 11 New Providence, Township of

Vol I. 12 Plainfield, City of

Vol I. 13 Rahway, City of

Vol I. 14 Roselle, Borough of

Vol I. 15 Roselle Park, Borough of

Vol I. 16 Scotch Plains, Township of

Vol I. 17 Springfield, Township of

Vol I. 18 Summit, City of

Vol I. 19 Union, Township of

Vol I. 20 Westfield, Town of

Vol I. 21 Winfield, Township of

Vol I. 22 Special Districts

Vol I. 23 Union, County of

1 - TOWNSHIP OF BERKELEY HEIGHTS

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Anthony Padovano	**OEM Coordinator**	**Primary Contact, Municipal Meeting, Coordination, Input and Review**
Danny Cuocci	Deputy OEM Coordinator	Input and Review
Allie Deegan	Deputy OEM Coordinator	Input and Review
Mayor Angie Devanney	Mayor	Input and Review
Liza Viana	Township Administrator	Input and Review
Tom Solfaro	Township Engineer	Input and Review
Joe Popolo	Fire/Buildings Official	Input and Review

COMMUNITY OVERVIEW

Overview

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. In 1888, a railroad station was built in Plainfield Avenue, helping advance the growth of the Township. While the economy previously focused on mills, factories, and tourism, technological industries arrived in the 20th century with Bell Labs and the development of the transistors at the Murray Hill site. Berkeley Heights is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Berkeley Heights is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) made up 50% of the total land use and covered 1,186.6 acres of land. Civic/public (tax exempt) and commercial uses also accounted for significant portions, comprising 30% and 12% respectively. Despite the prevalence of commercial land in the Township, it saw a 10% decrease from 2016 to 2022, declining from 467.9 to 419.2 acres.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 69% of the area in 2020. The forest category followed, accounting for 26% of the total land area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	3	3	<1%
Barren Land	19.2	16.1	-16%
Forest	1059.7	1053.6	-1%
Urban	2733.8	2745.2	<1%
Water	27.4	27.4	<1%
Wetlands	161.5	159.4	-1%

Recent Major Development and Infrastructure from 2021 to Present

The Terrace at Berkeley Heights was completed in 2021. This development contains 20 units and is not located within the floodplain. Additionally, construction of Woodcrest at Berkeley Heights, a luxury 55+ rental apartment community of 196 units as well as Modera Berkeley Heights, a 173-luxury apartment community at 1 Lone Pine Drive, was recently completed. Another development, Berkeley Crossing by Elite properties consisting of two developments of 10 and 45 units was opened. The Toll Brothers' 67 luxury Carriage Homes and Condos, including 20 affordable-housing condos, at 110 Roosevelt Avenue was completed. Most recently completed in 2025 was the Clarus, a mixed-use development with 211 total units,

including 32 affordable housing units, located between Lone Pine and Sherman Avenues. This development is located within the regulatory floodplain.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years
The Park, a 12-story corporate park consisting of offices, 328 rental residential units and parking lots, is undergoing construction. It is located in the Interstate 78 corridor.

Demographics & Vulnerable Population

Berkeley Heights Township has a total population of an estimated 13,120 residents, of which 5.1% are under age 5 and 18.6% are over age 65. The Township experienced a moderate population loss in the ACS survey periods of 2013-2017 and 2018-2022, with an estimated -3.4% population shift. With an aging population making up nearly one in five of the Township population, Berkeley Heights may focus hazard mitigation efforts on populations with mobility needs, uneven access to resources, and limited social networks, which make pre-disaster engagement challenging (FEMA, 2023). There are no areas of Berkeley Heights meeting designation criteria for CDRZ or CEJST identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	13,120
Population Change since 2017	-3.36%
Percent of Population Age < 5	5.06%
Percent of Population > 65	18.57%

HAZARD IDENTIFICATION

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, and the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as 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 4.0.

High	Medium	Low
Natural Hazards		
Erosion - Hurricane/Nor'easter/Coastal Storm	Drought	Earthquake/Geological
Flood	High Wind- Tornado	Extreme Temperature – Cold
High Wind – Straight-line Winds	Severe Storm – Lightning	Extreme Temperature – Heat
	Severe Storm – Winter Weather (Includes Ice Storm)	Dam Failure
	Wildfire	Hail
		Landslide (Non-Seismic)
		Storm Surge – Hurricane/Nor'easter/Tropical Storm
Human-made Hazards		
Power Failure	Cyber Attack	Animal Disease
	Hazmat Release – Fixed Site	Civil Unrest
	Hazmat Release – Transportation	Economic Collapse
		Nuclear Hazard
		Pandemic
		Terrorism

Hazard Ranking Explanation

The Township did not incur any significant damage due to an earthquake or winter storm. Additionally, no heating or cooling stations were used by residents during this planning period. As a result, the Township ranked all the three hazards as low. In light of increasing vulnerability to phishing attacks, Township personnel recently underwent trainings on cyber-attacks. As a result, the Township ranked cyber attack as medium. It also ranked hazmat release – fixed site and hazmat release – transportation as medium because of the presence of a shoreline plant which received two hazardous deliveries

since the last plan update, as well as the presence of I-78 which traverses the Township. High wind – tornado and severe storm – lightning were also ranked medium because the Township has received warnings due to high-speed winds and experienced lightning events during Hurricane Ida along with another heavy rainfall event in July 2024. Generally, the Township is experiencing drier summers, more frequent and heavier rainfall, and diminishing snowfall events.

Significant Hazard Events Since Last Plan Update

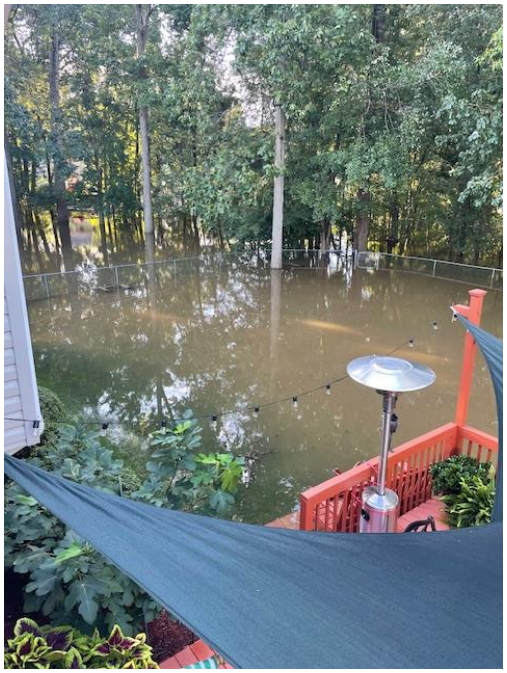
The Township experiences significant flooding due to heavy rainfall. Apart from Hurricane Ida, a heavy rainfall event in July/August of 2024 and 2025 gave rise to considerable flooding, overflowing streams and culverts and causing damage to roads and other infrastructure. Areas experiencing flooding are Chaucer Drive, Evergreen Road, Robins Avenue, and Springfield Avenue. Shadow Lane and the area by the Passaic River also get flooded during heavy rainfall. The Township had applied for FEMA assistance to mitigate flooding in Locust Avenue and Evergreen Road; however, FEMA's response was that cleaning up the areas post-flooding is more cost-efficient. Additionally, Bridge Street by the sewer plant is prone to flooding.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to increase both the intensity and frequency of flooding in Berkeley Heights. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and heavy rainfall are likely to increase. This will exacerbate existing vulnerabilities, particularly those induced by flooding from the Passaic River, Chaucer Drive Brook, Snyder Avenue Brook, and Robin Avenue Brook. In turn, the flooding may increase soil erosion, especially the regulatory floodplains that occupy a significant part of the Township. The current drainage system, which already may be undersized to handle severe storms, may become even more overwhelmed, leading to more frequent and severe flooding events and expansion of existing coverage when standing water does occur.

Additionally, higher temperatures and prolonged heatwaves could increase risks of extreme temperature events, which may become more frequent and harder to manage, particularly for the Township's nearly 19% population over 65. Aging infrastructure, already leading to standing water points during heavy rains, could be further strained by more severe storms, leading to compounding impacts of roadway flooding and potential power outages.





Flooding along Riverbend Rd (sent to the project team by members of the public)

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Berkeley Heights Township	
Number of Policies In-Force:	120
Total Losses:	100
Total Payments:	$1,482,935.39
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	$0.00
Number of SRL Properties:	5
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	15
SRL – Total Paid:	$801,460.56

Vulnerability of the Built Environment

The Township of Berkeley Heights has six significant areas of Special Flood Hazard Area. Four of them are tributaries to the Passaic River, which constitutes the northern border of the community and generally flows in north-east to south-west direction; the streams are called Chaucer Drive Brook and its unnamed tributary, Snyder Avenue Brook, and Robin Avenue Brook. The other two SFHA zones are associated are the Branch of Green Brook, which is found along the southern border of the Township; and the Branch of Blue Brook, a stream that constitutes the other part of southern Township boundary and is a tributary to the Green Brook. Both the Green Brook Branch and the Blue Brook Branch intersect the Township; they flow in southwestern and southeastern direction, respectively. 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.

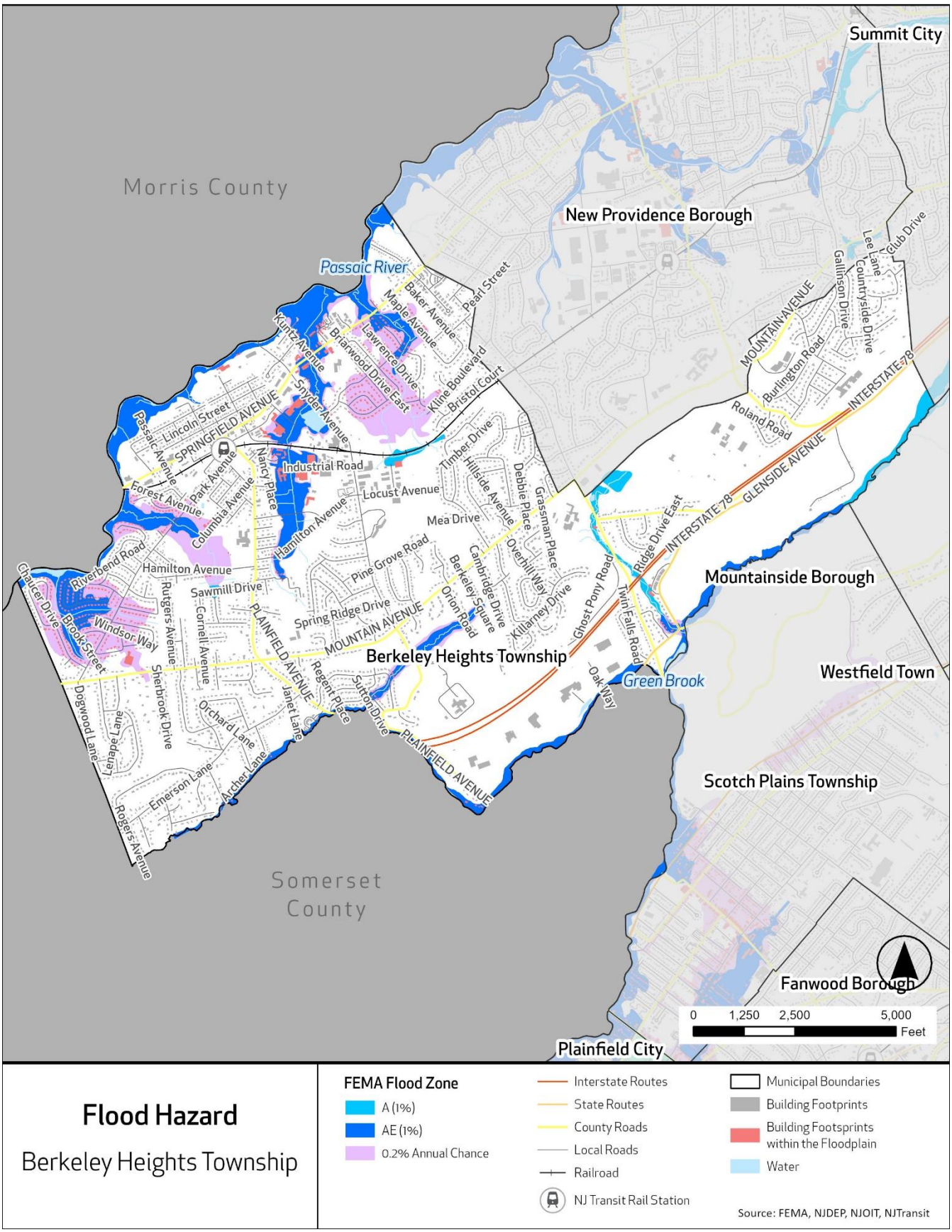
Approximately 8.9 percent of the total area of Berkeley Height lies within the 1% annual chance floodplain as defined by FEMA. An additional 6.2 percent of the area of the municipality is in the 0.2% annual chance floodplain.

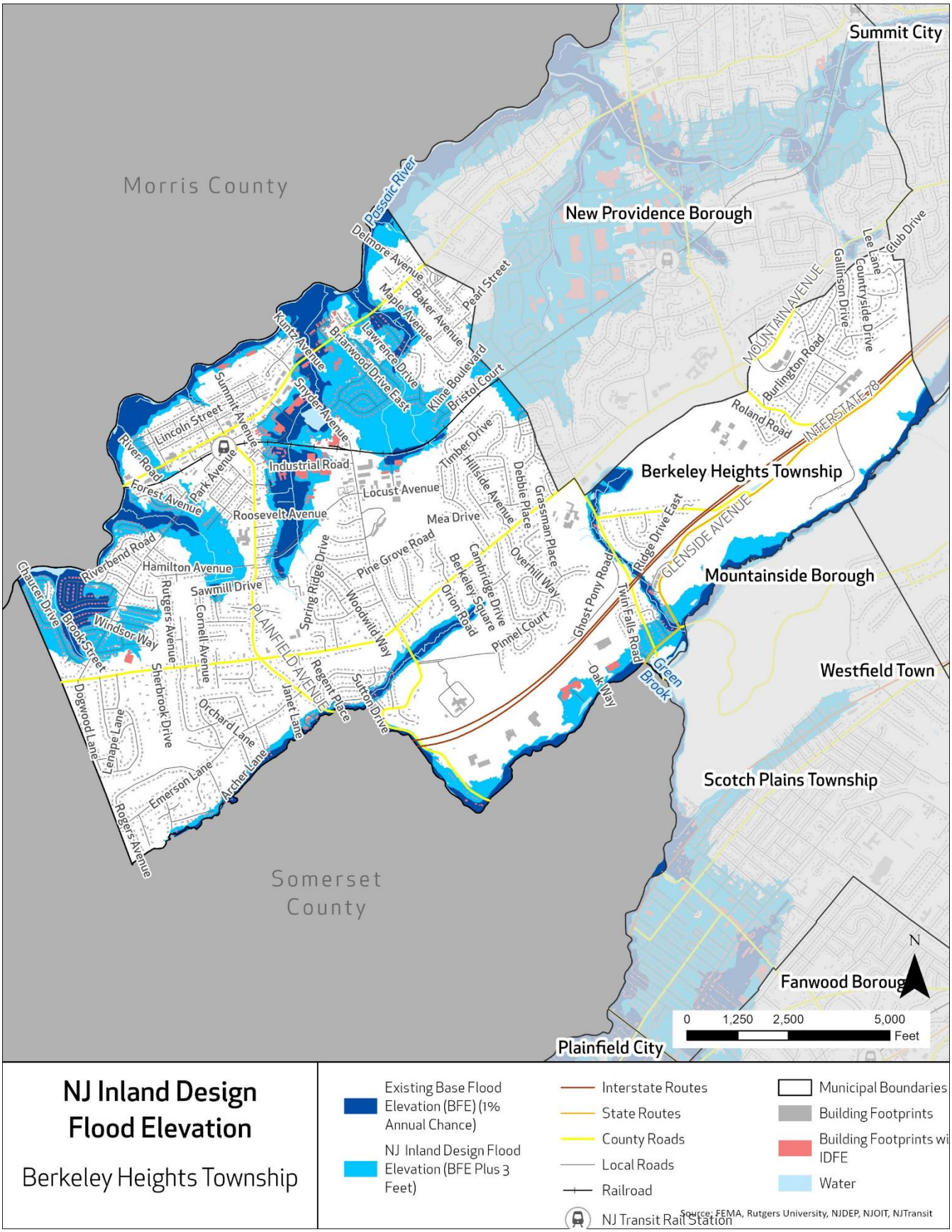
About 77 percent of Berkeley Heights is considered developed. Of the developed parcels of the town, 10.1 percent fall at least partially within the 1% annual chance floodplain and 13.5 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that development in the Township has taken place in areas which may be slightly more flood prone than the Township on average.

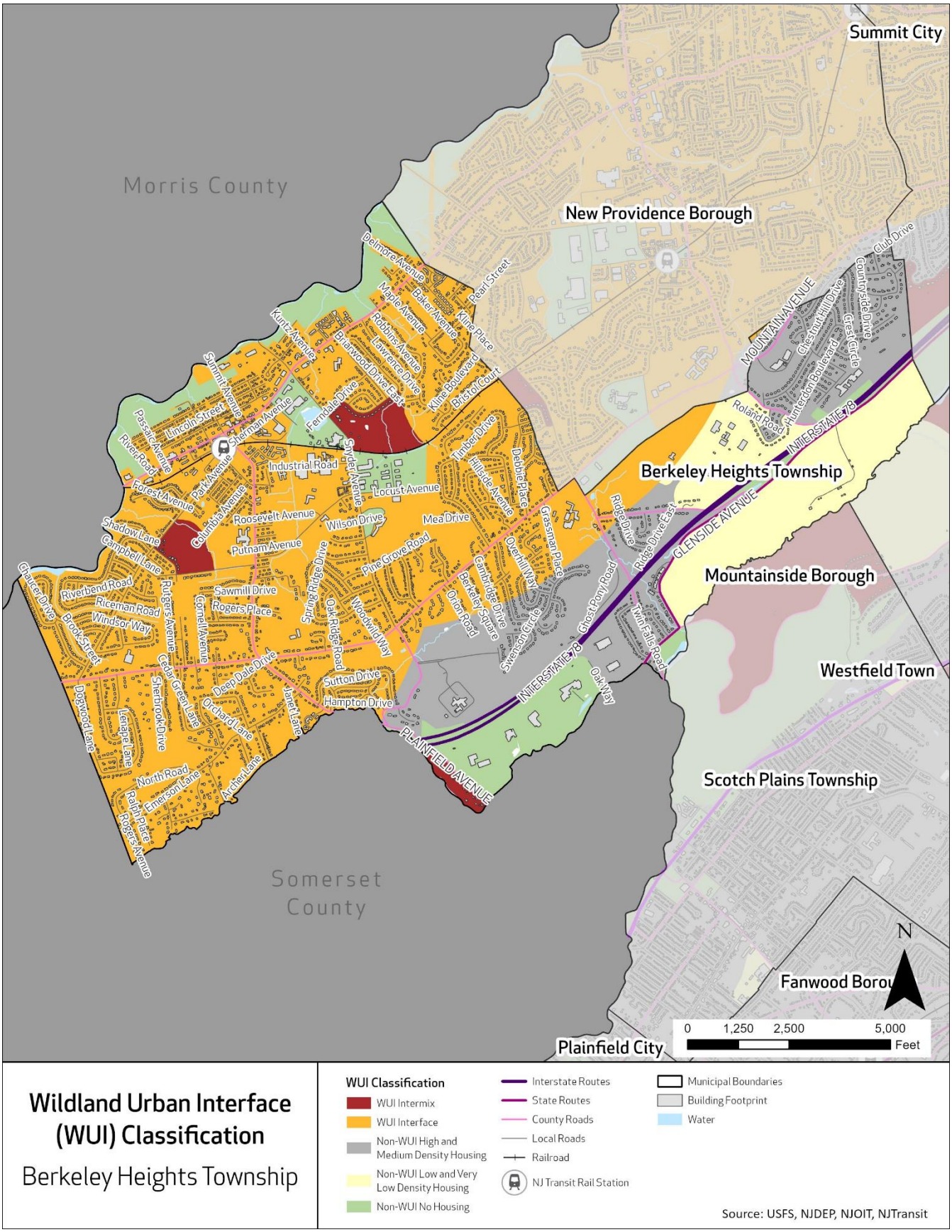
	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	10.1%	13.5%
Exposed Land Area	8.9%	6.2%

During the planning process, Berkeley Heights Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 39 total facilities. Of these facilities, three are within the floodplain.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Safety and Security	1	1
Health and Medical	1	-


Morris County
Somerset County
Summit City
New Providence Borough
Mountainside Borough
Berkeley Heights Township
Westfield Town
Scotch Plains Township
Fanwood Borough
Plainfield City
Green Brook
Passaic River
Pearl Street
Baker Avenue
Maple Avenue
Kuntz Avenue
Briarwood Drive East
Lawrence Drive
Kline Boulevard
Bristol Court
Snyder Avenue
Lincoln Street
SPRINGFIELD AVENUE
Passaic Avenue
Park Avenue
Forest Avenue
Columbia Avenue
Nancy Place
Industrial Road
Hamilton Avenue
Locust Avenue
Timber Drive
Hillside Avenue
Debbie Place
Grassman Place
Mea Drive
Pine Grove Road
Cambridge Drive
Berkeley Square
Overhill Way
Killarney Drive
Ghost Pony Road
Twin Falls Road
Ridge Drive East
INTERSTATE-78
GLENSIDE AVENUE
Roland Road
Burlington Road
MOUNTAIN AVENUE
Gallinson Drive
Countryside Drive
Lee Lane
Club Drive
Riverbend Road
Chaucer Drive
Brook Street
Windsor Way
Hamilton Avenue
Sawmill Drive
Rutgers Avenue
Cornell Avenue
Sherbrook Drive
Dogwood Lane
Lenape Lane
Orchard Lane
Emerson Lane
Archer Lane
Rogers Avenue
Spring Ridge Drive
MOUNTAIN AVENUE
PLAINFIELD AVENUE
Orion Road
Regent Place
Janet Lane
Sutton Drive
Oak Way
PLAINFIELD AVENUE
0 1,250 2,500 5,000
Feet
Flood Hazard
Berkeley Heights Township
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
Interstate Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Summit City
Morris County
New Providence Borough
Passaic River
Delmore Avenue
Maple Avenue
Baker Avenue
Pearl Street
Kintz Avenue
Briarwood Drive East
Lawrence Drive
Kline Boulevard
Bristol Court
Snyder Avenue
Summit Avenue
Lincoln Street
River Road
Park Avenue
Forest Avenue
Industrial Road
Locust Avenue
Timber Drive
Hillside Avenue
Debbie Place
Grassman Place
Roosevelt Avenue
Mea Drive
Pine Grove Road
Spring Ridge Drive
Berkeley Square
Cambridge Drive
Overhill Way
Orion Road
Pinnel Court
Woodwild Way
Riverbend Road
Hamilton Avenue
Sawmill Drive
Chaucer Drive
Brook Street
Windsor Way
Rutgers Avenue
Cornell Avenue
PLAINFIELD AVENUE
Regent Place
Sutton Drive
Janet Lane
Sherbrook Drive
Orchard Lane
Dogwood Lane
Tenape Lane
Emerson Lane
Archer Lane
Rogers Avenue
Somerset County
Berkeley Heights Township
MOUNTAIN AVENUE
Gallimson Drive
Lee Lane
Countryside Drive
Club Drive
Burlington Road
Roland Road
INTERSTATE 78
Ridge Drive East
GLENSIDE AVENUE
Mountainside Borough
Ghost Pony Road
Twin Falls Road
Oak Way
Green Brook
Westfield Town
Scotch Plains Township
Fanwood Borough
Plainfield City
N
0 1,250 2,500 5,000
Feet
NJ Inland Design Flood Elevation
Berkeley Heights Township
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Interstate Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit


Summit City
Morris County
New Providence Borough
Berkeley Heights Township
Mountainside Borough
Westfield Town
Scotch Plains Township
Fanwood Boro
Plainfield City
Somerset County
Delmore Avenue
Maple Avenue
Baker Avenue
Pearl Street
Kline Place
Kline Boulevard
Bristol Court
Kunz Avenue
Briarwood Drive East
Robbins Avenue
Lawrence Drive
Ferndale Drive
Summit Avenue
Lincoln Street
Sherman Avenue
Passaic Avenue
River Road
Park Avenue
Industrial Road
Snyder Avenue
Locust Avenue
Timber Drive
Debbie Place
Hillside Avenue
Grassman Place
Overhill Way
Forest Avenue
Columbia Avenue
Roosevelt Avenue
Wilson Drive
Mea Drive
Shadow Lane
Campbell Lane
Putnam Avenue
Pine Grove Road
Spring Ridge Drive
Oak Ridge Road
Woodwind Way
Cambridge Drive
Berkeley Square
Orion Road
Swenson Circle
Ridge Drive
Ridge Drive East
GLENSIDE AVENUE
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Riceman Road
Windsor Way
Brook Street
Rutgers Avenue
Cornell Avenue
Sawmill Drive
Rogers Place
Cedar Green Lane
Deep Dale Drive
Sutton Drive
Hampton Drive
Orchard Lane
Janet Lane
Sherbrook Drive
Dogwood Lane
Lenape Lane
North Road
Emerson Lane
Archer Lane
Ralph Place
Rogers Avenue
PLAINFIELD AVENUE
N
0
1,250
2,500
5,000
Feet
Wildland Urban Interface (WUI) Classification
Berkeley Heights Township
WUI Classification
WUI Intermix
WUI Interface
Non-WUI High and Medium Density Housing
Non-WUI Low and Very Low Density Housing
Non-WUI No Housing
Interstate Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprint
Water
Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Berkeley Heights Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2022	The climate change-related hazard vulnerability assessment in the Master Plan was developed in accordance with data and research noted in the Union County Hazard Mitigation Plan (HMP) 2021 Update Draft, climate change resources published by the NJDEP, and the Municipal Snapshot developed by Rutgers NJ Climate Change Resource Center.
Capital Improvement Plan	X		2026	Contains Wastewater Treatment Plant Upgrades, annual stream cleaning
Local Emergency Operations Plan/Continuity of Operations Plan	X		2023	
Floodplain Development Ordinance	X		03/2023	
Floodplain Management Plan		X		
Stormwater Management Ordinance	X		2025	Complies with NJDEP green infrastructure and runoff control standards.
Stormwater Management Plan	X		2005	
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X		2024	Our tree ordinance, modeled after the state ordinance, places strict standards on tree removal and tree replacement, to improve stormwater runoff and reduce flooding

Administrative and Technical Capabilities

Berkeley Heights Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Construction Official Joe Popolo
Grant Writer	X		Township Administrator Liza Viana, Township Grants Committee
Staff trained to support mitigation	X		Anthony Padovano Jr
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Berkeley Heights Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Reverse 911, Social Media, Township Website, local media (TAPinto Berkeley Heights)
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Berkeley Heights Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank	X		West Side Drainage Project, which includes Saw Mill Stormwater Project, plus several projects at the waste water treatment plant
Other state municipal assistance or grant programs	X		State DOT funds to preserve roadways by mitigating flooding in several areas of town
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities	X		Township consistently seeks state and federal appropriations & other funds to help with mitigating flooding and other hazard mitigation.

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the previous Hazard Mitigation Update, the Township of Berkeley Heights has constructed a new Municipal Complex which hosts our Police Division, Library, Recreation Department and finally our Buildings Department. In addition, our Township has prioritized removing hazardous dead trees that would impact power loss and cleaned out waterways to prevent flooding. It has also committed to clearing out clogged waterways on Township property. During the next five years, the Township will be focusing on continuing the above actions as mentioned above and also continue resident emergency notifications/preparedness for significant weather and or terrorist events.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
01-01	Acquire Homes at Robbin's Avenue and Springfield Intersection.	Acquire homes at Robbin's Avenue and Springfield intersection.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm		Berkeley Heights OEM	FEMA	$1,000,000.00		Completed	
01-02	Flood-proof Town Hall Building Which Houses Police Department/Data Storage.	Flood-proof Town Hall Building which houses Police Department/Data Storage.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm		Berkeley Heights Engineer	Municipal Budget	$200,000.00		Completed	
01-03	Flood-proof the Department of Public Works (DPW).	Flood-proof the DPW.	Flood	High	Berkeley Heights DPW	FEMA HMA	N/A	3 - 4 years	Removed	Area hasn't experienced significant flooding.
01-04	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.	Flood, Storm Surge–Hurricane/Nor'easter/Tropical Storm, High Wind–Straight-Line Winds		Berkeley Heights Engineer& Facility Administrator	FEMA	$75,000.00		Completed	
01-05	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of	The ordinance represents the minimum standards and expectations, except where noted otherwise. A municipality may choose stronger or additional measures in order	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0	1 - 2 years	Completed	Plan was revised in March 2023.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	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.	to address local water quality and flooding conditions as well as other environmental community needs. The sample ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.								
01-06	Flood-proof Homes Along 400 and 600 River Road.	Flood-proof homes along 400 and 600 River Road.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	High	Berkeley Heights Engineer	FEMA HMA	$150,000.00	1 year	Completed	Berkeley Crossing (Apartment Complex) at 663 Springfield Avenue, which is perpendicular to River Road, is flood proofed. The complex is currently open and accepting new residents.
01-07	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.	Flood	High	Township Administrator	Capital funds	$35,000,000.00	2 years	Completed	Construction of new Townhall completed in 2021, and the remaining facilities don't flood.
01-08	Upgrade and Improve Summit Road and Sussex Road Drainage Ditch	Upgrade and improve the stormwater management system for Summit Road as a result of this drainage ditch.	Flood, Storm Surge, Hurricane, Nor'easter, Tropical Storm, Severe Storm	High	Engineering and DPW	Capital Funds, FEMA, HMA	$100,000.00	1 year	Completed	This project is continuous based upon storms.

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
01-09	Upgrade and Improve the Stormwater Management System Along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Riverbend Road.	Upgrade and improve the stormwater management system along Shadow Lane, Chaucer Drive, Stuart Lane, Cornwell Court, Brook Street, and Riverbend Road to control flooding in repetitive loss areas.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Berkeley Heights Engineer	FEMA HMA	$300,000.00	3 years	Carried Forward	Passaic River outfalls project ongoing as of Summer 2026 along Chaucer and Riverbend to reduce flooding.
01-10	Upgrade and Improve the Stormwater Management System for 35 Cottage Street/Autumn Lake Healthcare for flooding on township-owned property due to overgrown waterways not otherwise deemed the responsibility of a private property owner.	Upgrade and improve the stormwater management system for 35 Cottage Street/Autumn Lake Healthcare for flooding on township-owned property due to overgrown waterways not otherwise deemed the responsibility of a private property owner.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Berkeley Heights OEM, DPW	Capital Improvement Plan	$150,000.00	2 years	Carried Forward	
01-11	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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$2,500.00	1 year	Ongoing	Outreach conducted through Township social media, website posts, TAPinto Berkeley Heights (local media).

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
01-12	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.	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	This project is continuous based upon storms.
01-13	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.	Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds, Power Failure	Medium	DPW	Municipal Budget	$500,000.00	5 + years	Ongoing	Dead trees are actively being removed, and dangerous utility poles are removed during storm events.
01-14	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 proper-ties. Berkeley Heights Township will support these projects as interested homeowners come forward and will work with home-owners to mitigate their properties.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Low	Affected homeowners	FEMA, NJ State Blue Acres, HMA	$1,000,000.00	Ongoing	Carried Forward	No elevations or acquisitions have taken place so far.
01-15	Explore NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Rejoin NFIP CRS Program to reduce flood insurance premiums for homeowners.	Flood	Low	Township OEM	Municipal Budget	$25,000.0	1 - 2 years	Ongoing	No update, Township will look into program.
01-16	Mitigate flooding, using strategies such as, but not limited to, elevating, or relocating Township-owned	Mitigate flooding, using strategies such as, but not limited to, elevating, or relocating township-owned structures listed as RL/SRL proper-ties.	Flood	Low	Affected Township-owned buildings	FEMA HMA	$1,000,000.00	Ongoing	Carried Forward	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	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.									
01-17	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.	Flood	High	Township	FEMA HMA, federal appropriation through EPA or U.S. Department of Agriculture	$75,000.00	1 year	Ongoing	In some areas, riprap prevents debris from clogging pipes. Seeking federal funding with adjacent towns for stream clearing and erosion control.
01-18	Conduct De-Snagging at Locust Avenue Culvert	Conduct de-snagging effort to prevent stones and debris build-up that may contribute to flooding within the Township.	Flood, Storm Surge, Hurricane, Nor'easter, Tropical Storm, Severe Storm	High	Engineering and DPW	Municipal Budget, FEMA, HMA, & other sources where possible	$15,000.00	5+ years	Ongoing	This project is continuous based on storms.
01-19	Conduct De-Snagging at 23 Evergreen Drive	Conduct de-snagging effort in stream to prevent stones and debris build-up in and around catch basins that may contribute to flooding within the Township.	Flood, Storm Surge, Hurricane, Nor'easter, Tropical Storm, Severe Storm	High	Engineering and DPW	Municipal Budget, FEMA, HMA, & other sources where possible	$15,000.00	5+ Years	Ongoing	This project is continuous based on storms.
01-20	Conduct De-Snagging at Hamilton Avenue and Roosevelt Avenue Creek	Conduct de-snagging effort to prevent stones and debris build-up within the creek bed that contributes to flooding within the Township.	Flood, Storm Surge, Hurricane, Nor'easter, Tropical Storm, Severe Storm	High	Union County DPW, Berkeley Heights Engineering, DPW	FEMA and HMA, & other sources where possible	$100,000.00	5+ years	Ongoing	Stream constantly backs up and floods out the roadway.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
01-21	Upgrade and Improve Stormwater Management System at Three Locations	Upgrade and improve the stormwater management system for Hillcrest Road, Arden Court, and Saw Mill Drive.	Flood, Storm Surge, Hurricane, Nor'Easter, Tropical Storm, Severe Storm	High	Engineering and DPW	FEMA, HMA	$2,000,000.00	5+ years	Ongoing	This project is continuous based upon storms.
01-22	Upgrade and Improve the stormwater management system for Hampton Drive, Sutton Drive, Whitney Drive, and Regent Place.	Upgrade and Improve the stormwater management system for Hampton Drive, Sutton Drive, Whitney Drive, and Regent Place. Also, de-snagging effort to prevent stones and debris build-up that may contribute to flooding within the Township.	Flood, Storm Surge, Hurricane, Nor'easter, Tropical Storm, and Severe Storm	High	Engineering and DPW	FEMA and HMA	$500,000.00	5+ years	Ongoing	This project is continuous based on storms.
01-23	Upgrade and improve the stormwater management system for Briarwood Drive, Lawrence Drive, Robbins Avenue, and Greenbriar Drive.	Upgrade and improve the stormwater management system for Briarwood Drive, Lawrence Drive, Robbins Avenue, and Greenbriar Drive. Also, de-snagging effort in stream to prevent stones and debris build-up that may contribute to flooding within the Township.	Flood, Storm Surge, Hurricane, Nor'easter, Tropical Storm, and Severe Storm	High	Engineering and DPW	Capital Funds, FEMA, HMA	$250,000.00	5+ Years	Ongoing	This project is continuous based on storms.

2 – TOWNSHIP OF CLARK

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Mike Nenortas	**OEM Coordinator**	**Primary Contact, Steering Committee Kick-Off Meeting, Municipal Workshop 1, Municipal Meeting**
Jame Ulrich	Business Administrator	Municipal Meeting
Rich O'Connor	Township engineer	Municipal Meeting

COMMUNITY OVERVIEW

Overview

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. 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 is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Clark is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 51% of the total parcels, and covering nearly 1,115 acres of land. Civic/public (tax exempt) and commercial uses also accounted for significant portions, comprising 33% and 9% respectively of the total land use in the same year. From 2016 to 2022, the area under apartment use increased notably, rising from 17.1 acres to 50.3 acres. During this period commercial use also increased markedly by more than 50%, from 133.8 acres to 210.6 acres total. Unclassified parcels also increased from 6 acres to 47 acres during this period, a 700% increase.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share of land use in Clark, making up nearly 80% of the area in 2020. The forest, wetlands, and water categories followed, accounting for 8%, 6%, and 5% of the total land area, respectively.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	3	3	>0%
Barren Land	20.1	25.3	26%
Forest	223	219.8	-1%
Urban	2292.6	2290.7	0%
Water	136.5	136.3	0%
Wetlands	175.8	175.9	0%

Recent Major Development and Infrastructure from 2021 to Present

A luxury apartment complex at 35 Walnut Avenue was completed in mid-2023. The development includes 177 units including 28 affordable units. The complex is near the Rahway River but not located within the floodplain. The township reports that the development could worsen runoff impacts downstream.

Completed in 2023 was a 48-unit development on Raritan Road. This is located higher up and not in the floodplain. Also completed in 2023 was the Hyatt Hills golf course at 1300 Raritan Rd.

Union County has begun planning the Clark Reservoir Project, a project to preserve the natural landscape of the Clark Reservoir while adding recreational amenities like walking paths, duck boats, and a fishing pier.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years
None identified.

Demographics & Vulnerable Population

Clark Township has an estimated population of 15,415, with 4.7% of these residents estimated to be under age 5 and 21.1% over age 65. Clark has experienced moderate population loss in the period between ACS surveys of 2013-2017 and 2018-2022, with an estimated -1.2% population shift. Within the township, there is one block group identified by overburdened (OBC) criteria, noting a community potentially vulnerable meeting criteria of Minority populations. This block group is in the township's northeast. There are no areas of the township meeting designation criteria for CEJST or CDRZ identification.

With an aging population making up nearly 21 percent of their total community, Clark may focus hazard mitigation efforts on those with robust messaging and engagement for older residents, evacuation plans inclusive of populations with mobility issues, and resilient networks for resource accessibility post-disaster.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	15,415
Population Change since 2017	-1.2%
Percent of Population Age < 5	4.7%
Percent of Population > 65	21.1%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
	Natural Hazards	
Flood	High Wind – Straight-line Winds	Dam Failure
	Severe Storm – Lightning	Drought
	Severe Storm – Winter Weather (Includes Ice Storms)	Earthquake/Geological
		Erosion- Hurricane/ Nor'easter/Coastal Storm
		Extreme Temperature – Cold
		Extreme Temperature – Heat
		Hail
		High Wind - Tornado
		Landslide (Non-Seismic)
		Wildfire
	Human-made Hazards	
	Cyber Attack	Animal Disease
	Hazmat Release – Fixed Site	Civil Unrest
	Hazmat Release – Transportation	Economic Collapse
	Power Failure	Nuclear Hazard
		Pandemic
		Terrorism

Storm surge - hurricane/ nor'easter/tropical storm was ranked as N/A.

Hazard Ranking Explanation

Storm surge - hurricane/ nor'easter/tropical storm is N/A to Clark Township as it is inland and does not contain any tidally influenced bodies of water.

Cyberattack has increased to medium from low in the last plan update as the township feels that threats are increasing. Hazmat hazards are ranked as medium. Hazmat - transport is especially a concern with the railway lines passing through Clark which are used to transport hazardous materials. Power failure is ranked as medium. Officials report that power is lost about a dozen times each year. The power failure is mostly related to storms and heat and is due to old infrastructure.

Dam failure is ranked as low as dams in the township were rebuilt within the last 10 years. Erosion is ranked low and the township reports that sediment is more of an issue than erosion. The township has seen wildfires along the railroad tracks.

Significant Hazard Events Since Last Plan Update

Similar to many towns in Union County, the most significant event since the last plan update was Ida. Township officials report that there was 8 to 10 feet of water on the street on Valley Road on the west side of the Rahway River (the east side of the river is higher up). During Ida, flooding occurred in areas that never flooded before, including Valley Road School, Georgia Lane, Terminal Avenue, and Linda and Sycamore Lanes. Roads and homes were affected.

The township does not report any additional significant events during this period, other than sporadic minor flooding issues during heavy rains.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to impact the risks and hazards faced by the Township of Clark. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and heavy rainfall are likely to increase. This will exacerbate existing vulnerabilities, particularly in areas prone to flooding such as the area near the Pumpkin Patch Brook. Additionally, potential future development identified by the township (such as the Hyatt Hills Golf Course) or development upstream within the watershed could increase the amount of runoff entering the Pumpkin Patch Brook, the Rahway River, and the Robinson Branch exacerbating the issue of flooding. Actions identified by the township's mitigation strategy, such as conducting a study to improve flood control in the Pumpkin Patch Brook area (Action 02-07) have the potential to address potential impacts of climate change.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Number of Policies In-Force:	51
Total Losses:	125
Total Payments:	$2,243,532.52
Number of RL Properties:	8
Number of Mitigated RL Properties:	0
RL – Total Losses:	22
RL – Total Paid:	$282,675.42
Number of SRL Properties:	4
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	25
SRL – Total Paid:	$637,258.28

Vulnerability of the Built Environment

Clark Township has three significant areas of Special Flood Hazard Area (SFHA). One of them is along the Rahway River, meandering along the northeastern jurisdictional boundary. The other major SFHA zone is the Robinsons Branch, which can be divided into two segments; the lower, regulated reach is the Middlesex reservoir, controlled by 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 a very wide floodplain that Clark shares with neighboring Scotch Plains Township. The third SFHA zone is the Pumpkin Patch Brook, a tributary of Robinsons Branch, located in the southwestern corner of the township and frequently inundated by the backflow from Robinsons Branch. Based on the available NFIP claims, most of the flood losses seem to 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, not identified as flooding sources.

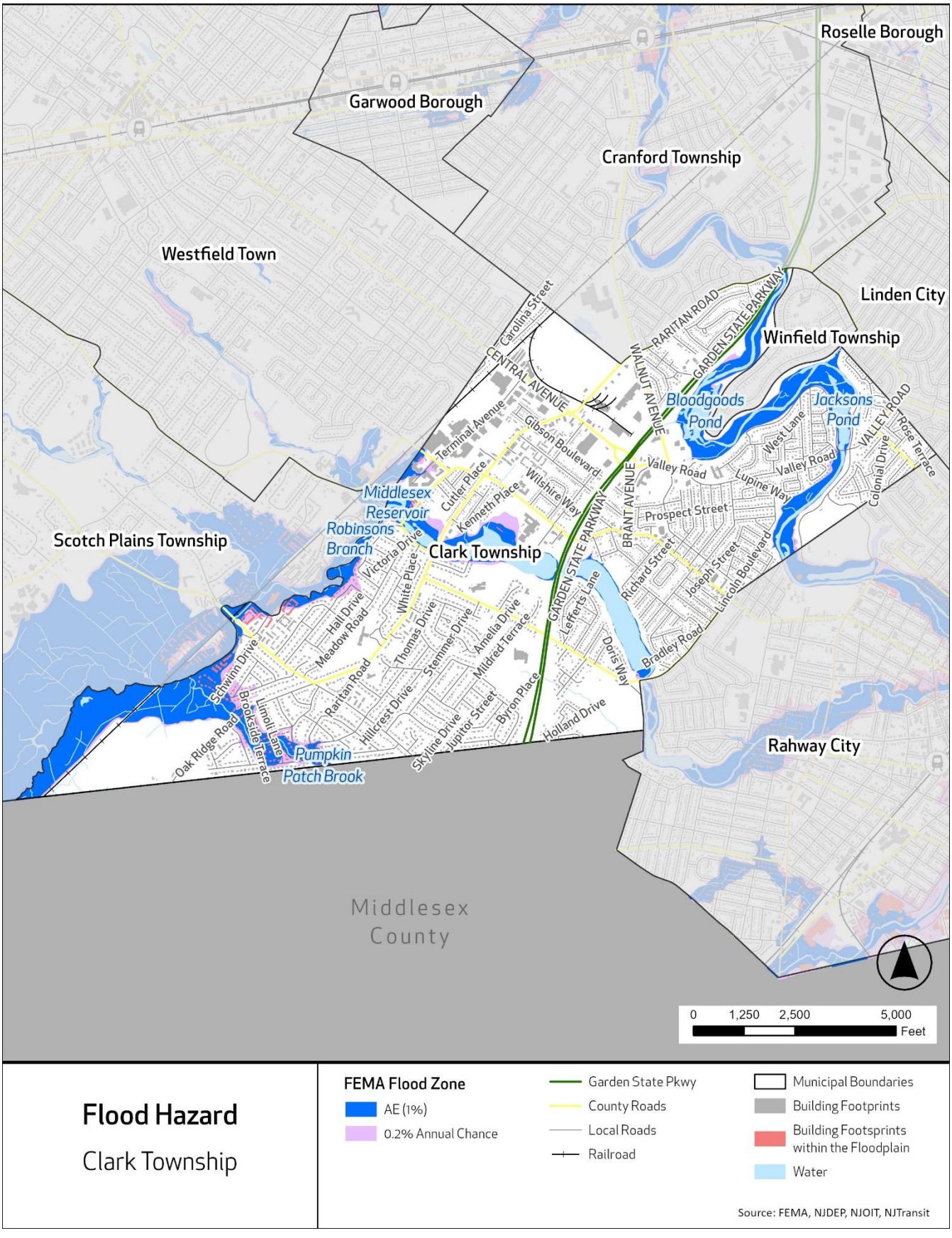
Approximately 14.7 percent of the total area of Clark Township lies within the 1% annual chance flood zone as defined by FEMA. An additional 2.4 percent of the area of the municipality is in the 0.2% annual chance flood zone.

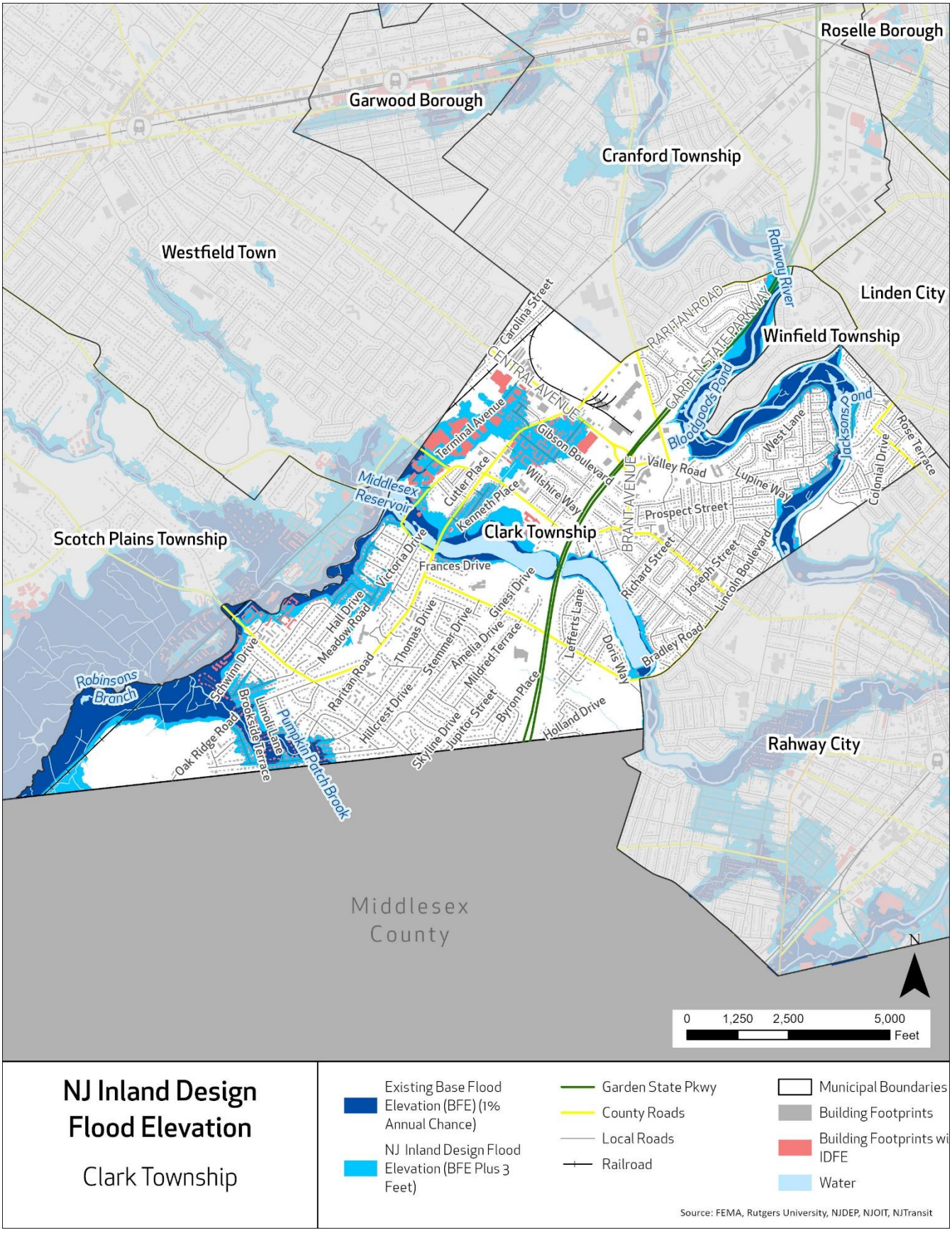
About 81.3 percent of Clark is considered developed. Of the developed parcels of the town, 4.5 percent fall at least partially within the 1% annual chance flood zone and 4.6 percent are at least partially within the 0.2% annual chance flood zone. This illustrates that development in the municipality has generally occurred in areas that are less prone to flooding.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	4.5%	4.6%
Exposed Land Area	14.7%	2.4%

During the planning process, Clark Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The township identified 23 total facilities. Of these facilities, only one is within the floodplain.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Safety and Security	1	-


Roselle Borough
Garwood Borough
Cranford Township
Westfield Town
Linden City
Winfield Township
Scotch Plains Township
Clark Township
Rahway City
Middlesex County
Carolina Street
CENTRAL AVENUE
RARITAN ROAD
GARDEN STATE PARKWAY
WALNUT AVENUE
Bloodgoods Pond
Jacksons Pond
Terminal Avenue
Gibson Boulevard
Cutler Place
Kenneth Place
Wilshire Way
Valley Road
West Lane
Lupine Way
VALLEY ROAD
Rose Terrace
Colonial Drive
BRANT AVENUE
Prospect Street
Richard Street
Joseph Street
Lincoln Boulevard
Middlesex Reservoir
Robinsons Branch
Victoria Drive
White Place
Hall Drive
Meadow Road
Thomas Drive
Stemmer Drive
Amelia Drive
Mildred Terrace
Lefferts Lane
Doris Way
Bradley Road
Schwinn Drive
Brookside Terrace
Limoli Lane
Raritan Road
Hillcrest Drive
Skyline Drive
Jupitor Street
Byron Place
Holland Drive
Oak Ridge Road
Pumpkin Patch Brook
0 1,250 2,500 5,000 Feet
Flood Hazard
Clark Township
FEMA Flood Zone
AE (1%)
0.2% Annual Chance
Garden State Pkwy
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Roselle Borough
Garwood Borough
Cranford Township
Westfield Town
Linden City
Winfield Township
Scotch Plains Township
Clark Township
Rahway City
Middlesex County
Rahway River
Raritan Road
Garden State Parkway
Central Avenue
E Carolina Street
Terminal Avenue
Gibson Boulevard
Middlesex Reservoir
Cutler Place
Kenneth Place
Wilshire Way
Valley Road
Brant Avenue
Prospect Street
Bloodgoods Pond
Jacksons Pond
West Lane
Lupine Way
Colonial Drive
Rose Terrace
Lincoln Boulevard
Joseph Street
Richard Street
Bradley Road
Frances Drive
Victoria Drive
Hall Drive
Meadow Road
Thomas Drive
Stemmer Drive
Ginesi Drive
Amelia Drive
Mildred Terrace
Lefferts Lane
Doris Way
Holland Drive
Byron Place
Jupiter Street
Skyline Drive
Hillcrest Drive
Raritan Road
Schwinn Drive
Robinsons Branch
Brookside Terrace
Limoli Lane
Pumpkin Patch Brook
Oak Ridge Road
N
0 1,250 2,500 5,000
Feet
NJ Inland Design Flood Elevation
Clark Township
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Garden State Pkwy
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footprints wi
IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Clark Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2023	
Capital Improvement Plan				
Local Emergency Operations Plan/Continuity of Operations Plan	X		2023	In process for 2025 update
Floodplain Development Ordinance	X		2023	No higher standards are enforced.
Floodplain Management Plan	X			
Stormwater Management Ordinance	X			
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan	X			
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Clark Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		FPA is a full-time municipal employee.
Grant Writer		X	
Staff trained to support mitigation		X	
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Clark Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Township uses Nixle, email, TV 36, and the town website contains information for reducing hazard vulnerability.
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Clark Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

The Township of Clark continues to make investments in hazard mitigation. The Police Department has been outfitted with rescue vests, and the Fire Department has purchased additional boats and water rescue suits for high water rescues. Inspection and maintenance of Pumpkin Patch waterway is completed twice per year. Storm water management is a critical requirement for all construction and improvements within the Township of Clark. The township is currently reviewing grant opportunities to consider improvements to the Pumpkin Patch area to reduce flash flooding. Areas around Rahway Park are part of a larger plan including numerous communities along the Rahway River.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
02-01	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.	All Hazards	Medium	Township	Municipal funds	$100,000 ($50k for each)		Complete	
02-02	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.	Dam Failure	High	Union County	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	$0.00	2 years	Complete	The bridge has been rebuilt by Union County. Union County is the owner of this high hazard potential dam and the county updated their mitigation strategy to undertake a detailed engineering study for this dam.
02-03	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 - 2 years	Complete	New Stormwater Control Ordinance was adopted in 2023.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Jersey Stormwater Best Management Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8									

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
02-04	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.	All Hazards	Medium	Township	Grants/Capital Funds	$60,000	1 - 2 years	Ongoing	No progress to report. The library has agreed to serve as shelter recently.
02-05	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.	All Hazards	Low	Township	Municipal Budget	$2500/yr	Yearly	Ongoing	The Township conducts hazard outreach 2-3 times a year at community events such as police night out and citizens night out. Also send pamphlets to schools.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
02-06	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)	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.	Flood	High	Township	FEMA HMA	$30,000,000	5 - 10 years	Ongoing	No progress to report.
02-07	Conduct a Study of Pumpkin Patch Brook to Identify New Actions to Improve Flood Control in the Area.	Coordinate with nearby township to conduct a study of Pumpkin Patch Brook to identify new actions to improve flood control in the area.	Flood	High	Clark OEM	Municipal Budget	$2,500,000	1 - 5 years	Ongoing	

3 – TOWNSHIP OF CRANFORD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Matthew Nazzaro	**OEM Coordinator**	**Primary Contact, Steering Committee Kick-Off Meeting, Municipal Workshop 1, Municipal Meeting**
Chris Polito	Deputy OEM Coordinator	Steering Committee Kick-Off Meeting, Municipal Workshop 1
Ryan Elliot	DPW Superintendent / Deputy OEM Coordinator	Municipal Meeting
Lavona Patterson	Township Administrator	Coordination, Input and Review
Kevin Boyer	Township Engineer	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

The Township of Cranford has a total area of 4.87 square miles and is located in central Union County, New Jersey. Today Cranford is characterized as a residential community with a large commuter base. It is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Cranford is primarily a residential community, with MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 57% of the total land use, and covering nearly 1,331 acres of land. Commercial and civic/public (tax exempt) uses also accounted for significant portions, covering 175.6 acres and 673.7 acres of land respectively in the same year. From 2016 to 2022, the area classified as vacant increased slightly from 31.4 acres to 52.2 acres.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up nearly 77% of the area in 2020. The wetlands and forest categories followed, accounting for 11% and 9% of the total land area, respectively.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	6.3	6.3	<1%
Barren Land	9.2	11.4	24%
Forest	262.4	259.5	-1%
Urban	2613	2613.5	<1%
Water	57.5	57.7	<1%
Wetlands	169.5	169.5	<1%

Recent Major Development and Infrastructure from 2021 to Present

Apartments at 750 Walnut were recently constructed. These are 272 units on over 38 acres. There are three buildings. In addition, there are also two commercial warehouses. Post-Irene there was a nearly 300-unit development at 235 Birchwood. The street here floods due to the creek that runs along it. There is a catch basin, but it has not been tested yet by a severe storm. The multi-unit development at 235 Birchwood falls within the NJ Inland Design Flood Elevation zone which is FEMA's 1% annual chance floodplain + 3 feet (NJFloodMapper).

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

On South Avenue between High Street and Walnut Avenue, there is going to be a four-story mixed-use development going in. It falls within the flood zone. On Chestnut Street, another brownstone residential is going in. There will be parking on the first floor and residential above it. Around 30 units will be constructed. Additionally, the township got its next round of state affordable housing obligation and has a redevelopment zone.

Demographics & Vulnerable Population

Cranford Township has an estimated 23,838 residents, of which 5.6% is estimated to be under age 5, and 19.3% is over age 65. The township's population has remained steady over the recent ACS survey periods (2013-2017, 2018-2022), with an estimated -0.56% shift. Within Cranford, there is one block group meeting designation for overburdened communities (OBC) by *Minority* indicators. This block group is in central Cranford along NJ Route 28. No areas of Cranford Township meet designation criteria for CDRZ or CEJST identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	23,838
Population Change since 2017	-0.56%
Percent of Population Age < 5	5.60%
Percent of Population > 65	19.33%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Flood	Extreme Temperature – Cold	Drought
Erosion – Hurricane/Nor'easter/Coastal Storm	Extreme Temperature - Heat	Earthquake/Geological
Dam Failure	Severe Storm – Winter Weather (Includes Ice Storms)	Hail
		High Wind – Straight-line Winds
		High Wind – Tornado
		Landslide (Non-Seismic)
		Severe Storm – Lightning
		Storm Surge – Hurricane/Nor'easter/Tropical Storm
		Wildfire
Human-made Hazards		
	Hazmat Release - Transportation	Animal Disease
	Pandemic	Civil Unrest
		Cyber Attack
		Economic Collapse
		Hazmat Release – Fixed Site
		Nuclear Hazard
		Power Failure
		Terrorism

Hazard Ranking Explanation

The highest-ranked hazards in the township continue to be flood, erosion, and dam failures. Severe flooding events happen a couple of times a year, and erosion is associated with the flooding along the Rahway River that Cranford Township experiences. Dam failure is also a high risk due to the potential for dike failure. Hazmat release related to transportation is

a significant risk as there is a pipeline that runs along the Conrail railway. There is also Norfolk Southern which transports a lot of hazardous materials. Power failure was previously not applicable, but now it presents a low level of concern. The township has two substations. Storm surge is a low risk; however, the river goes into Arthur Kill which can cause it to become tidal.

Significant Hazard Events Since Last Plan Update

The township has seen two or three 50-year storm events a year and 100-year storm events every five years. The last 500-year storm event was Hurricane Ida in 2021. During Ida, the township deployed portable pumps. There were no hazards that displaced people from their homes, only road closures and basement flooding. Ida started as a flash flood, and it removed multiple cars. The township's engineering consultant (Colliers) advised citizens where not to park during these flash floods events. Lenape Park often floods; it goes from being an open field to a lake. The Rahway River current is strong and it tunnels under Kenneth. When the river takes the sharp right turn towards the center of the township, large amounts of water continue to run straight. The township acknowledges that it requires the basin of the river to be larger.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Cranford Township	
Number of Policies In-Force:	508
Total Losses:	1640
Total Payments:	$53,174,837.89
Number of RL Properties:	17
Number of Mitigated RL Properties:	17
RL – Total Losses:	78
RL – Total Paid:	$3,590,293.21
Number of SRL Properties:	329
Number of Mitigated SRL Properties:	17
SRL – Total Losses:	1108
SRL – Total Paid:	$42,318,193.91

Vulnerability of the Built Environment

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.

Approximately 16.7 percent of the total area of Cranford lies within the 1% annual chance floodplain as defined by FEMA. An additional 7.5 percent of the area of the municipality is in the 0.2% annual chance floodplain.

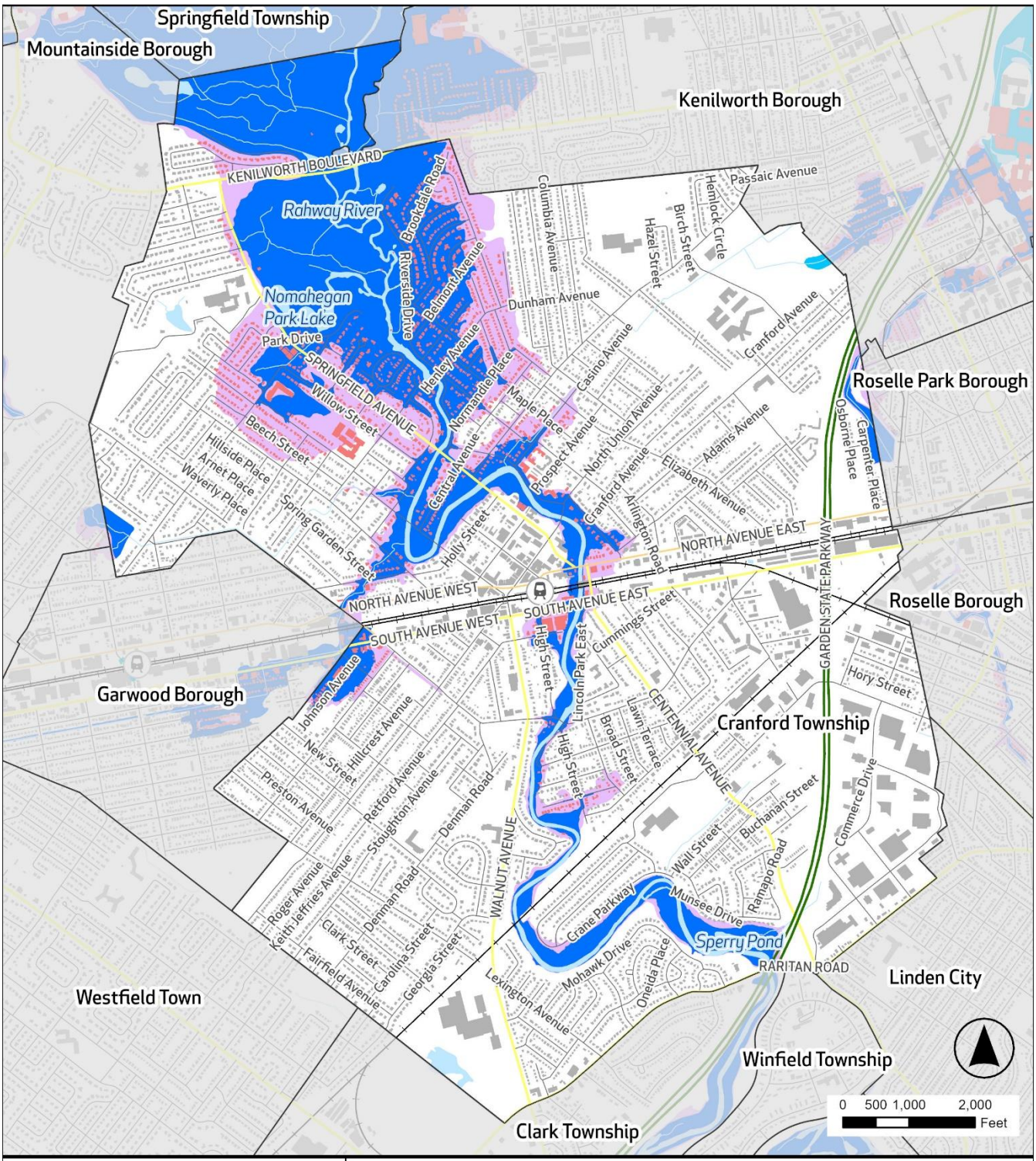
About 99.8 percent of Cranford is considered developed. Of the developed parcels of the town, 11.1 percent fall at least partially within the 1% annual chance floodplain and 15.9 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

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 Avenue. Due to land use and topography within the township, any additional overflow from the Rahway results in dangerous and often destructive flooding.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	11.1%	15.9%
Exposed Land Area	16.7%	7.5%

During the planning process, Cranford Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The township identified 49 total facilities. Of these facilities, five are within the floodplain.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Energy	1	-
Safety and Security	2	1
Water Systems	1	-



Flood Hazard

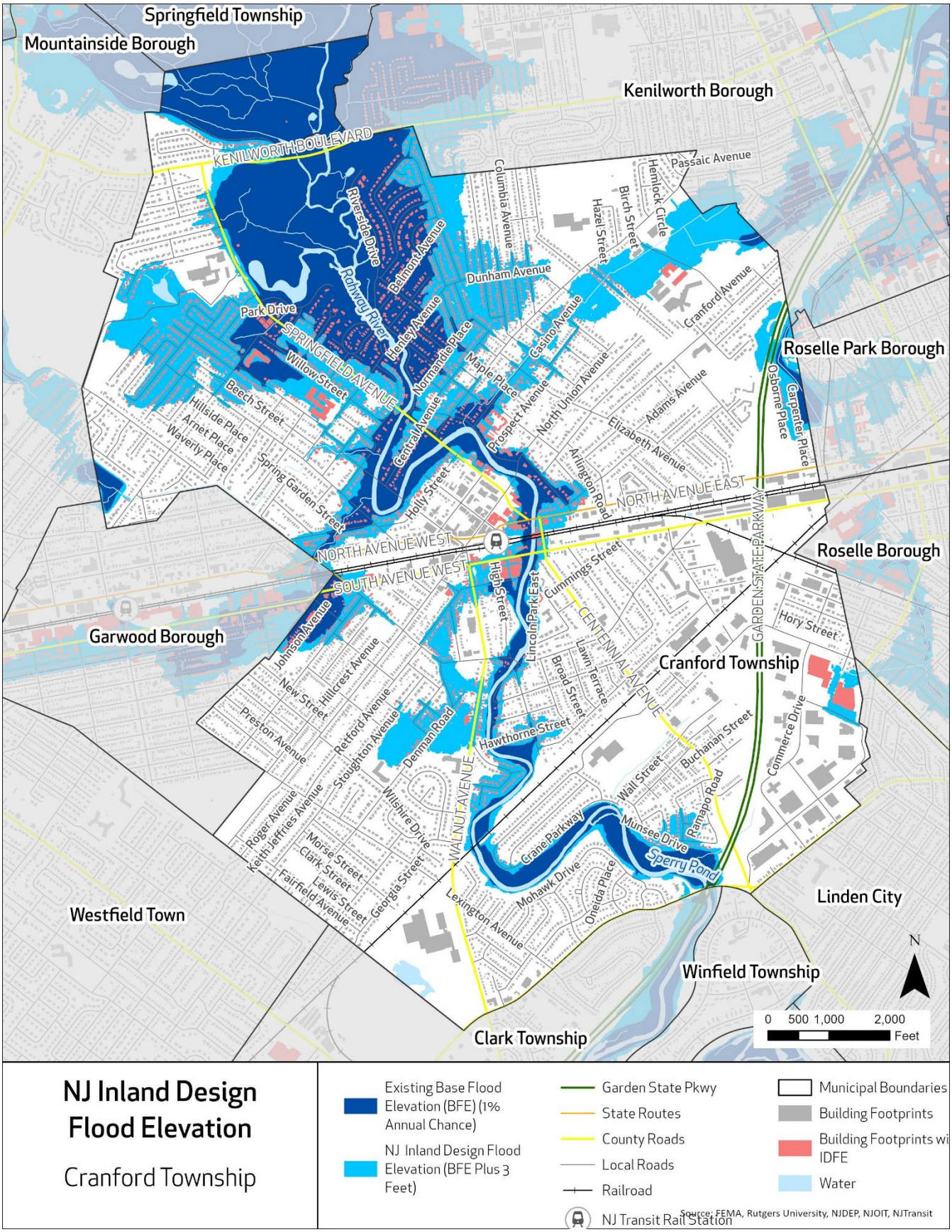
Cranford Township

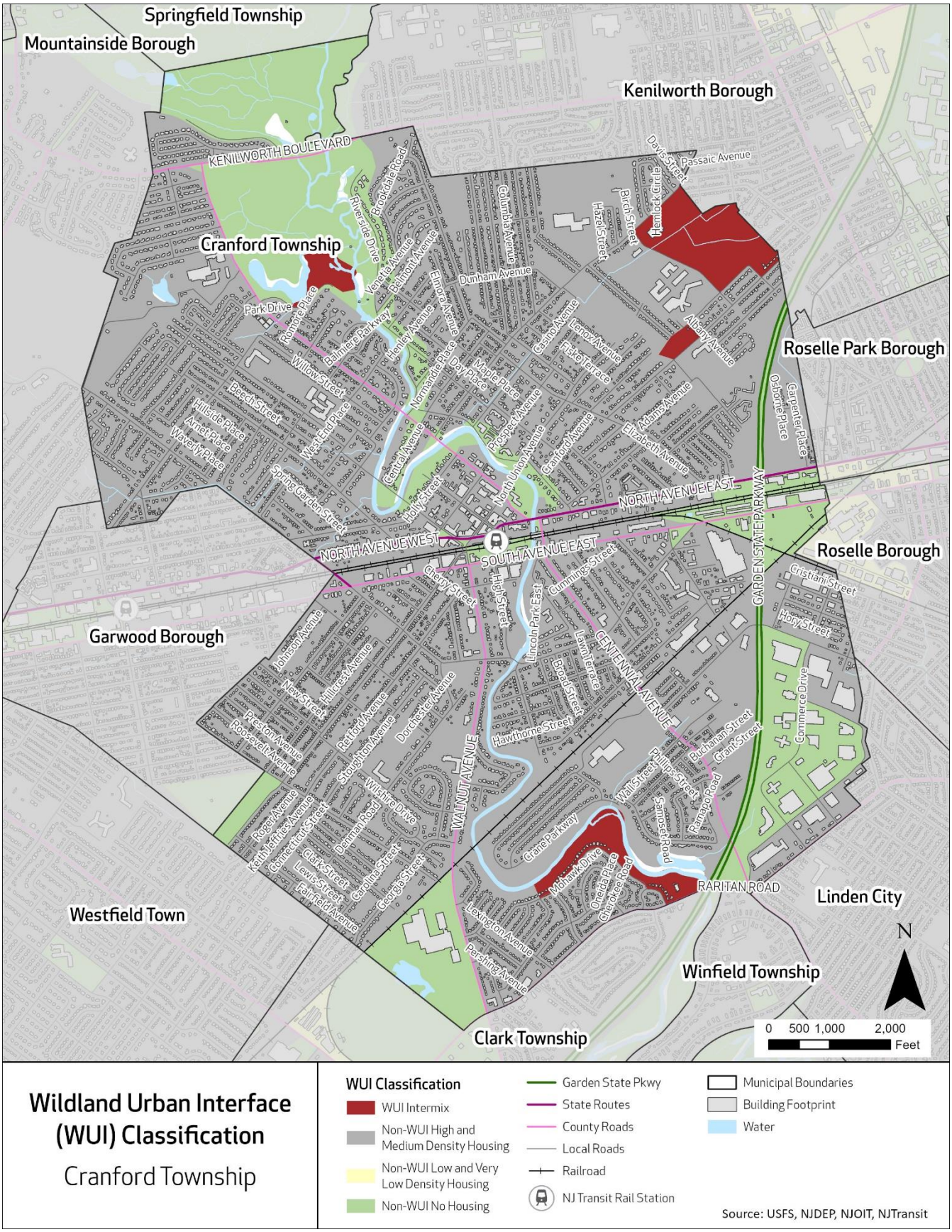
FEMA Flood Zone
- A (1%)
- AE (1%)
- 0.2% Annual Chance

- Garden State Pkwy
- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit


Springfield Township
Mountainside Borough
Kenilworth Borough
Roselle Park Borough
Roselle Borough
Garwood Borough
Cranford Township
Westfield Town
Linden City
Winfield Township
Clark Township
KENILWORTH BOULEVARD
SPRINGFIELD AVENUE
NORTH AVENUE WEST
NORTH AVENUE EAST
SOUTH AVENUE WEST
CENTENNIAL AVENUE
WALNUT AVENUE
GARDEN STATE PARKWAY
Passaic Avenue
Columbia Avenue
Hemlock Circle
Birch Street
Hazel Street
Riverside Drive
Belmont Avenue
Dunham Avenue
Rahway River
Park Drive
Henley Avenue
Normandie Place
Maple Place
Casino Avenue
Cranford Avenue
Willow Street
Beech Street
Hillside Place
Arnet Place
Waverly Place
Spring Garden Street
Central Avenue
Prospect Avenue
North Union Avenue
Adams Avenue
Elizabeth Avenue
Arlington Road
Osborne Place
Carpenter Place
Holly Street
High Street
Lincoln Park East
Cummings Street
Lawn Terrace
Broad Street
Hory Street
Commerce Drive
Buchanan Street
Wall Street
Ramapo Road
Munsee Drive
Sperry Pond
Crane Parkway
Mohawk Drive
Oneida Place
Hawthorne Street
Denman Road
Johnson Avenue
New Street
Hillcrest Avenue
Preston Avenue
Retford Avenue
Stoughton Avenue
Roger Avenue
Keith Jeffries Avenue
Wilshire Drive
Morse Street
Clark Street
Lewis Street
Fairfield Avenue
Georgia Street
Lexington Avenue
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Cranford Township
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Garden State Pkwy
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Cranford Township

WUI Classification

- WUI Intermix
- Non-WUI High and Medium Density Housing
- Non-WUI Low and Very Low Density Housing
- Non-WUI No Housing

- Garden State Pkwy
- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprint
- Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Cranford Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2019	
Capital Improvement Plan	X		2024	Identifies projects that, if implemented, could prevent and reduce the impacts of hazards.
Local Emergency Operations Plan/Continuity of Operations Plan	X		2023	
Floodplain Development Ordinance	X		2023	Cranford's Flood Development Ordinance models the State ordinance for development within the flood hazard areas. Additionally, the Township requires an additional 3 feet of freeboard above the base flood elevation for properties located within the flood hazard zone.
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		2024	Stormwater management measures for major development should be designed so that the post-construction peak runoff rates for the current and projected two-, ten-, and 100-year storm events, are 50%, 75% and 80%t, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed.
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan		X		
Substantial Damage/Improved Structures Response	X			Via inspection by Building, Engineering, Property Maintenance, or Fire Officials. Notices of violation are issued with follow-up to the responsible party to ensure compliance in accordance with Uniform Construction Code, Uniform Fire Code, and Property Maintenance Code. When an applicant applies for a building permit for home improvements the structure is evaluated for SD/SI. If during a storm events structures are damaged, in the past OEM, building code official, and Engineer have looked at structures for substantial damage determination.
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			If a project is being developed in an FHA zone engineering requirements will indicate that an EC is required prior to issuance of a C.O. The LOMC will require approval from Township floodplain manager. All EC/LOMC are on record in the building department.
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X			The township has prepared a Flash Flood map that shows impacted areas outside of the flood plain.

Administrative and Technical Capabilities

Cranford Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		The named floodplain administrator is the building code official, Gary Junkroft, who is a full-time employee of the township. He receives assistance from outside consultants. The outside consultant has a CFM.
Grant Writer	X		An outside consultant provides these services.
Staff trained to support mitigation		X	
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		There is a mutual aid agreement in place with Union County regarding the Orchard Brook project.
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		The township has various volunteer-based committees which help with various aspects of the township, for example floodplain and the environmental committee.
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Cranford Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Cranford OEM can send Nixle alerts which can be broadcast over social media and/or emails.
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)	X		

Financial Capabilities

Within the last five years, Cranford Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA	X		
FEMA Public Assistance	X		
FEMA HMGP	X		
Non-FEMA Federal Funding Programs	X		NJDOT Municipal Aid Grants (Roadway & Drainage improvements), NJDOT LTPF Grant (Pedestrian Improvements), CDBG Funding (ADA ramp improvements)
Other FEMA resources		X	
NJ Infrastructure Bank	X		The township used I-Bank for the Phase 2B Project in Cranford.
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, our flood mitigation strategy has prioritized enhancing stormwater management systems and reinforcing critical infrastructure to reduce flood risks. Over the next five years, we will focus on undertaking a river desilting projects to increase water flow and transport capacity, expanding our stormwater management capabilities and expanding green infrastructure to improve water absorption and reduce runoff. These measures are crucial for safeguarding our community and ensuring resilience against future flooding.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
03-01	Flood-proof First Aid Squad.	Flood-proof First Aid Squad.	Flood		Cranford Municipality Engineer or Fire Chief				Withdrawn	
03-02	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.	Flood		Cranford Municipality Engineer or Administrator	Municipal Insurance money and FEMA funding after Irene.	$200,000.00		Completed	
03-03	Purchase and Install Backup Generator for Fire Department.	Purchase and Install Backup Generator for Fire Department.	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	
03-04	Flood-proof the Property Adjacent to Orchard Brook.	Coordinate with property owner regarding flood proofing of property adjacent to Orchard Brook.	Flood		Cranford OEM		$180,000.00		Withdrawn	
03-05	Upgrade Gate System at Hansel's Dam.	Upgrade gate system at Hansel's Dam.	Flood		Cranford OEM	Township Funded	$1,200,000.00		Completed	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
03-06	Inflow and Infiltration Phase 1	Installation of approximately 3,000 LF of storm conveyance pipe and associated drainage structures.	Flood		Cranford Township Engineering Department		$478,983.62		Completed	
03-07	Cranford Avenue Drainage Improvements	Improvements include roadway reconstruction, milling and paving, HMA overlay, base repair, curb installation, modular block retaining walls, construction of ADA-compliant ramps, upgrading inlets with eco curb pieces, driveway replacement, grading and drainage improvements	Flood		Cranford Township Engineering Department		$1,255,826.68		Completed	
03-08	Kensington Avenue and Edgar Avenue Drainage Improvements	Installation of approximately 850 LF of storm conveyance pipe and associated drainage structures. Improvements also included, milling and paving, HMA overlay, base repair, curb installation, and construction of ADA-compliant ramps.	Flood		Mott MacDonald, LLC		$49,750.00		Completed	
03-09	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.	Flood		Cranford Township Engineering Department		$15,000,000.00		Withdrawn	

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
03-10	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	Flood	High	Cranford Municipality Engineer	FEMA HMA	$8,000,000.00	4 years	Ongoing	Park Avenue, Bellemere, Hampton, and Springfield have not been completed. Hearing, Glenwood, and Edgewood are partial
03-11	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).	Flood	High	Cranford Municipality Engineer	FEMA HMA	$1,000,000.00	1 - 2 years	Ongoing	South Union is done. Orchard Brook just got approved. Casino Brook was looked at through the stormwater study, but it is too expensive for not being able to suffice a 25/50 year storm
03-12	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.	Flood, Dam Failure	High	Cranford Municipality Engineer	FEMA HMA	$2,000,000.00	2 years	Ongoing	Added to dike two years ago. It is an issue of who owns it.
03-13	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.	Flood	Very High	USGS	Municipal Budget	Staff time	1 year	Ongoing	Highest priority

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
03-14	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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$1,000.00	1 year	Ongoing	Ongoing effort. Township works with their engineering consultant to alert citizens where not to park during severe storm events. The Township also has a YouTube channel with informational videos, social media, and the township website.
03-15	Modify the Sluice Gate Control at the Stormwater Pump Station on Riverside Drive.	Sluice Gate Control Modification at Stormwater Pump Station.	Flood	Low	Cranford DPW	Municipal Budget	$50,000.00	1 year	Ongoing	
03-16	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.	Flood	Medium	USACE	Federal	$10,000,000.00	5 + years	Ongoing	Mayor is in contact with USACE.
03-17	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.	Flood	High	USACE	FEMA HMA	$3,100,000	5 + years	Ongoing	No acquiring just elevation. The county acquired private property at the end of park drive. In the past five years there have been about 35-45 repetitive loss properties in total that have been elevated.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
										Most were through the FEMA elevation grant, but others did it on their own out of pocket.
03-18	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.	Flood	High	USACE	FEMA HMA	$85,000.00	5 + years	Ongoing	
03-19	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.	Flood	Medium	DPW		$50,000.00	1 year	Ongoing	
03-20	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	All Hazards	Medium	Township Administrator and IT Provider	Capital and/or Homeland Security Grants	TBD	1 year	New	Ongoing effort. A bunch has been done by the it department
03-21	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.	Flood, Severe Storm–Winter Weather (Ice Storm), Erosion–Hurricane/Nor'easter/Coastal Storm	High	Engineering	Federal/ TBD	$4,000,000.00	5 + years	New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
03-22	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 de	Flood	High	Township	FEMA HMA	$1,500,000.00	1 - 5 years	New	
03-23	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	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$50,000.00	1 - 2 years	New	
03-24	NJDOT FY2024 Cummings Street, Thomas Street and Hillside Avenue Roadway Improvements	Project work shall include road reconstruction, HMA milling and paving, full depth pavement repair, installation of concrete curb, driveway repairs, grading and drainage improvements, construction of ADA curb ramps, striping, and site restoration.	Flood, Pedestrian Safety		Cranford Engineering Department	NJDOT	$805,070.35		Ongoing	
03-25	South Avenue and Chestnut Street Express Sewer	Project will install an underground culvert/pipe which will serve as an express stormwater for upstream areas with a direct discharge into the Rahway River to mitigate localized downstream flooding.	Flood		Cranford Engineering Department	State & Union County	$3,100,000		New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
03-26	Hamilton Ave Roadway Reconstruction	Roadway reconstruction, curbing, and drainage improvements to address overland flow and localized flooding to surrounding properties.	Flood	Medium	Cranford Engineering Department	Municipal Budget	$600,000	Summer/Fall 2026 Construction	New	Project design is complete; construction pending 2026 budget.

4 – CITY OF ELIZABETH

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Daniel Loomis	**City Engineer**	**Primary Contact, Municipal Workshop 1, Municipal Meeting, Coordination, Input and Review**
Tim Stapfer	Police Department	Municipal Workshop 1
John F. Papetti, Jr.	Director of Public Works	Municipal Meeting, Input and Review
Steven R. Rinaldi	Supervising Engineer	Municipal Meeting
Patrick Byrnes	Fire Director	Input and Review
Bridget S. Anderson	Business Administrator	Input and Review
Mark Colicchio	Health Officer	Input and Review

COMMUNITY OVERVIEW

Overview

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. 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. Elizabeth is a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. According to the MOD-IV dataset, civic/public (tax exempt) property increased by over 200 acres since 2016 and, as of 2022, accounted for 44% of the property in the city. The next most common is residential (including apartments), which makes up 26%, or 1,475.6 acres, of property. Commercial, industrial, vacant, and railroad property each makes up less than 10% of the city, and Elizabeth has no farm land.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 84.3% of the area in 2020. Water accounts for almost 12% of the city. Barren land, forest, and wetlands each accounts for fewer than 150 acres, or less than 1.7%, of the city.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	-
Barren Land	194.8	77.2	-60%
Forest	152.4	147.2	-3%
Urban	7382.4	7509.1	2%
Water	1053.9	1053.1	-<1%
Wetlands	122.2	119.1	-3%

Recent Major Development and Infrastructure from 2021 to Present

There has been significant development in the City of Elizabeth. It has included 10 affordable units at 823-827 East Jersey Street; eight two-family dwellings at 100 First Street; two warehouse building consisting of 300,000 SF at 827-907 Newark Avenue; 17 dwelling units at 308-312 West Jersey Street; 20 affordable units at 828 East Jersey Street; four warehouse buildings consisting of 277,440 SF at Tern Landing; 122,446 SF self-storage building at 165 Division Street; 86 dwelling units at 705-713 Newark Avenue; 61 dwelling units at 538-550 Morris Avenue; 9 two-family dwellings at 111-121 Miller Street; 12 dwelling units at 30-34 Bank Street; 12 dwelling units at 731-735 New Point Road; and 267 dwelling units and 11,000 SF commercial space at 100 Union Street called Vinty.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

There is also substantial anticipated development in Elizabeth. This includes a 148-room hotel at 33-37 West Grand Street; 10 affordable units at 1033-1039 East Jersey Street; 7 dwelling units and 940 SF retail at 140 Jefferson Avenue; 12 dwelling units at 26-30 Elm Street; 94 dwelling units, 2,131 SF retail, and 2,789 SF bakery at 581-599 Pennsylvania Avenue; 164,352 SF warehouse with 8,774 SF of office at 711 Lidgerwood Avenue; 145 dwelling units and 14,600 SF of commercial at 59-81 & 74-82 Livingston Street; a 102-seat restaurant at 735-739 Edgar Road; 19 dwelling units at 420-242 Westminster; 19 dwelling units at 225-229 Broad Street; 16 dwelling units at 424-432 Rahway Avenue; 78 dwelling units at 69-73 West Jersey Street; 16 dwelling units at 463-467 Madison Avenue; 27 dwelling units and 5,960 SF medical office at 748-762 Spring Street; 14 dwelling units and 600 SF retail at 836-842 Spring Street; 24 dwelling units at 170-176 First Street; and a 258-unit apartment building with approximately 3,000 square feet of retail space at 250 Union Street.

Demographics & Vulnerable Population

The City of Elizabeth has an estimated 135,665 residents. Of this population, an estimated 7.4% are under age 5, and 11.4% are over age 65. The city saw an estimated 4.9% population growth over the ACS survey periods between 2013-2017 and 2018-2022. A population growth rate of nearly five percent can indicate potential hazard vulnerability to changing landscape conditions including development and redevelopment, densification, and potentially, increased strain on local resources.

Within the city, nearly every community meets qualifications for overburden according to OBC criteria – of Elizabeth's 81 block groups, 80 are identified as potentially vulnerably overburdened due to characteristics of *Minority* (20 block groups), *Low Income and Minority* (38 block groups), and *Low Income, Minority, and Limited English* (22 block groups) categories. Elizabeth's entirety also meets criteria for CEJST designations, with 26 census tracts identified for vulnerability in qualities of *Climate Change, Housing, Legacy Pollution, Transportation,* and *Water and Wastewater.* There are no portions of Elizabeth which have been identified under CDRZ criteria.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	135,665
Population Change since 2017	4.87%
Percent of Population Age < 5	7.44%
Percent of Population > 65	11.36%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Extreme Temperature – Heat	Drought	Dam Failure

High	Medium	Low
Flood	Earthquake/Geological	High Wind – Tornado
Severe Storm – Winter Weather (Includes Ice Storms)	Erosion – Hurricane/ Nor'easter/Coastal Storm	Landslide (Non-Seismic)
Storm Surge – Hurricane/ Nor'easter/ Tropical Storm	High Wind – Straight-line Winds	Severe Storm – Lightning
Extreme Temperature – Cold		Hail
Human-made Hazards		
	Hazmat Release – Fixed Site	Animal Disease
	Hazmat Release – Transportation	Civil Unrest
	Pandemic	Cyber Attack
	Power Failure	Economic Collapse
	Terrorism	Nuclear Hazard
		Wildfire

Hazard Ranking Explanation

Straight-line winds are at a medium level of concern. In June 2024, during a hot dry spell, straight-line winds came through and downed trees. The property and utilities damage cost hundreds of thousands of dollars. Droughts remain at a medium level of concern. They do not occur frequently, but the impact is high. Extreme heat is at a high level of concern because of the urban heat effect. The city opens cooling centers a few times per year.

Coastal erosion, at a medium level of concern, can cause damage to levees. The city lost the revetment along Arthur Kill during Superstorm Sandy, Rip-rap washed into the channel but was replaced with larger stone through the Public Assistance Program. Hail is at a low level of concern. In the past, the city had to send out a plow to remove hail from the street. Storm surge remains at a high level of concern because it has the potential for widespread effects.

There are a hazardous materials waste processing plant and petroleum processing plants, which keep hazardous materials at a medium level of concern. The city has acquired more generators since the last plan. Power failure is at a medium level of concern. Terrorism has been raised from a low to a medium level of concern; someone placed bombs in trashcans near the New Jersey Transit train station in the city; additionally, the airport's presence in the city increases the likelihood of terrorism.

Significant Hazard Events Since Last Plan Update

In September 2021, Elizabeth experienced harsh effects from Hurricane Ida. Some parts of the city saw eight to ten feet of water, and there were four deaths. The portion of the city along the river was flooded; there was also inland flooding. It was worst at the northern end of the Elizabeth River. The water gauge hit three times the level of a 100-year storm. About 1,000 homes and five municipal facilities were damaged, and debris removal cost over $1,000,000.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

City of Elizabeth	
Number of Policies In-Force:	69
Total Losses:	328
Total Payments:	$7,761,724.25
Number of RL Properties:	1
Number of Mitigated RL Properties:	1
RL – Total Losses:	4
RL – Total Paid:	$39,675.21
Number of SRL Properties:	26

Number of Mitigated SRL Properties:	1
SRL – Total Losses:	70
SRL – Total Paid:	$2,842,472.60

Vulnerability of the Built Environment

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.

Approximately 9.3 percent of the total area of the City of Elizabeth lies within the 1% annual chance floodplain as defined by FEMA. An additional 10.2 percent of the area of the municipality is in the 0.2% annual chance floodplain.

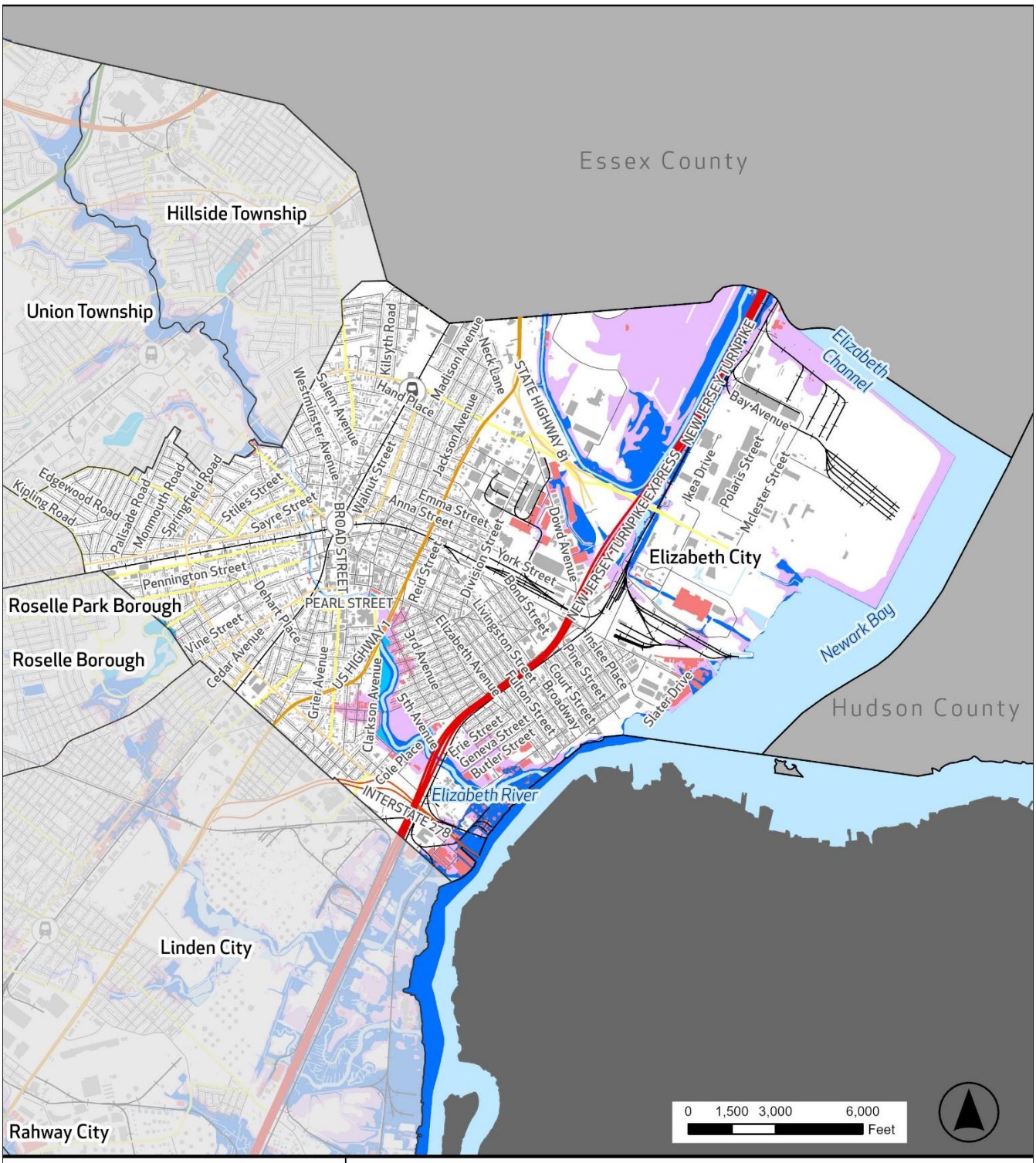
About 99.8 percent of Elizabeth is considered developed. Of the developed parcels of the city, 1.8 percent fall at least partially within the 1% annual chance floodplain and 4.2 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that development the municipality has generally occurred in areas that are less prone to flooding.

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.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	1.8%	4.2%
Exposed Land Area	9.3%	10.2%

During the planning process, the City of Elizabeth identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 143 total facilities. Of these facilities, two are within the floodplain and one is within the area of inundation under 5 feet of sea level rise.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain	Number Within 5 feet of Sea Level Rise
Safety and Security	-	1	-
Transportation	1	-	1



Flood Hazard

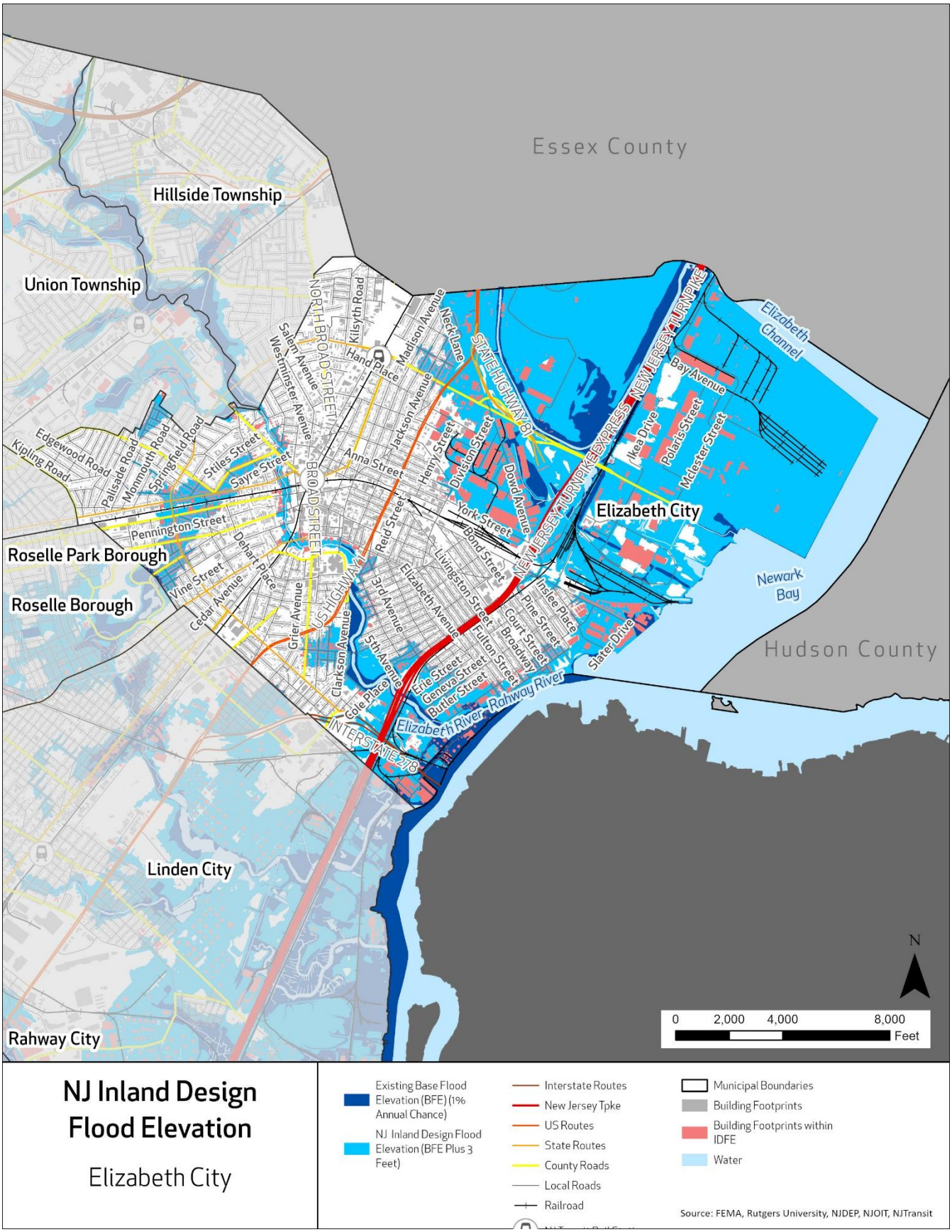
Elizabeth City

FEMA Flood Zone
- A (1%)
- AE (1%)
- 0.2% Annual Chance

- Interstate Routes
- New Jersey Tpke
- State Routes
- US Routes
- County Roads
- Local Roads
- Railroad

- NJ Transit Rail Station
- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit


Essex County
Hillside Township
Union Township
Elizabeth City
Roselle Park Borough
Roselle Borough
Linden City
Rahway City
Hudson County
Newark Bay
Elizabeth Channel
Elizabeth River
Rahway River
NORTH BROAD STREET
BROAD STREET
STATE HIGHWAY 81
NEW JERSEY TURNPIKE
NEW JERSEY TURNPIKE EXPRESS
US HIGHWAY 1
INTERSTATE 278
Kilsyth Road
Hand Place
Madison Avenue
Neck Lane
Salem Avenue
Westminster Avenue
Jackson Avenue
Henry Street
Division Street
Dowd Avenue
Anna Street
Reid Street
York Street
Bond Street
Livingston Street
Elizabeth Avenue
Fulton Street
Broadway
Court Street
Pine Street
Inslee Place
Slater Drive
Bay Avenue
Ike Drive
Polaris Street
Mclester Street
Edgewood Road
Kipling Road
Palisade Road
Monmouth Road
Springfield Road
Stiles Street
Sayre Street
Pennington Street
Dehart Place
Vine Street
Cedar Avenue
Grier Avenue
Clarkson Avenue
3rd Avenue
5th Avenue
Gole Place
Erie Street
Geneva Street
Butler Street
N
0 2,000 4,000 8,000
Feet
NJ Inland Design Flood Elevation
Elizabeth City
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Interstate Routes
New Jersey Tpke
US Routes
State Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footprints within IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Permanent Inundation Under Sea Level Rise (SLR) Scenarios

Elizabeth City

- Inundation Under 5 Feet SLR
- Inundation Under 3 Feet SLR
- Inundation Under 2 Feet SLR
- Interstate Routes
- New Jersey Tpke
- State Routes
- US Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station
- Municipal Boundaries
- Water
- Buidling Footprint
- Building Footprint within SLR area

Source: FEMA, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The City of Elizabeth has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2020	
Capital Improvement Plan	X		SFY 2025	It identifies projects that could prevent or reduce the impacts of natural hazards.
Local Emergency Operations Plan/Continuity of Operations Plan	X		2024	
Floodplain Development Ordinance	X		April 26, 2023	It enforces higher freeboard or other standards.
Floodplain Management Plan		X		
Stormwater Management Ordinance	X		June 26, 2024; Yes	It adopted higher standards than the model.
Stormwater Management Plan	X		December 2025	
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan	X			
Substantial Damage/Improved Structures Response	X			This will be addressed through the construction permit application process.
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			They are tracked through construction permit submissions.
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies	X			There are a number of redevelopment plans and studies throughout the City
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

The City of Elizabeth has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Pedro Pons, full-time employee, Construction Official, is the Floodplain Administrator and CFM; Daniel Loomis, City Engineer, is a CFM Alex Hechevarria, full-time employee, Asst. Construction Official and CFM
Grant Writer	X		
Staff trained to support mitigation	X		The Department Director associated with mitigation action whether it be the Police Department, Fire Department, Health Department, Public Works Department, etc. has been trained for certain mitigation actions
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		
Organizations that work with socially vulnerable or underserved populations	X		These organizations have been involved in hazard mitigation planning/projects or storm recovery in the past.

Education and Outreach Capabilities

The City of Elizabeth has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Public Information Office, local website
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, the City of Elizabeth has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP	X		
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank	X		
Other state municipal assistance or grant programs	X		Municipal ARPA Funds
Evaluation process on the prioritization of risk reduction projects against other local activities	X		Cost-benefit analysis
Other ongoing efforts to build additional financial capabilities	X		Continually seeking additional grant funding

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, the City of Elizabeth has focused on enhancing flood resilience, improving emergency response capabilities and upgrading critical infrastructure to mitigate natural hazard risks. Key completed actions include improving drainage systems, enhancing backup power, increasing emergency response efficiency and responding to a global pandemic. Over the next five years, the City of Elizabeth will continue to improve drainage systems, implement an advanced emergency alert system, increase power resiliency, and improve public outreach amongst other actions to safeguard the residents of Elizabeth.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
04-01	Upgrade and/or Repair Ursino Dam.	Upgrade and/or repairs of the local dam.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Dam Failure	High	City Engineer and DPW	Union County, Municipal Budget	$500,000.00	2021	Completed	This project was completed in 2021. $140,000 of the funding came from Union County, and the rest was funded by the city.
04-02	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.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	NJIB	$2,600,000.00		Completed	This was completed on December 10, 2024.
04-03	Upgrade and Repair Storm Drains and Sewers along Decker Ave.	Upgrade and repair of storm drains and sewers along Decker Ave. to eliminate backups.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm		City Engineer and DPW	American Rescue Plan	$2,400,000.00		Completed	This was completed on May 3, 2024.
04-04	Conduct a Citywide Public Communication Campaign to increase Emerging Disease Outbreaks and Epidemics.	Conduct a citywide public communication campaign to increase emerging disease outbreaks and epidemics. 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.	Pandemic	High	Health Officer	CARES, FEMA	$100,000.00		Completed	This was completed in May 2023.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
04-05	Construct an Emergency Response Ambulance Canopy.	Construct an emergency response ambulance canopy to provide overhead protection for emergency vehicles during severe winter weather events.	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature	Medium	Fire Director and DPW	Municipal Budget, Union County	$489,000.00	1 - 5 years	Completed	This was funded through a municipal aid matching grant with Union County. It was completed on October 30, 2023.
04-06	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.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 - 2 years	Completed	This was completed on June 26, 2024.

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
04-07	Reduce or Eliminate Local Flooding via the Dowd Avenue Pump Station.	Reduce or eliminate local flooding via the Dowd Avenue Pump Station.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	FEMA HMA	$25,000,000.00	Ongoing	Ongoing	This flooding has been substantially mitigated, but the city needs a regional pump station to pump street water on Progress Street and complete this action.
04-08	Upgrade, Repair, and Maintain Sewers and Drainage Along	Upgrade, repair and maintain the sewers and drainage along Trumbull Street to manage stormwater.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	State of New Jersey DCA	$30,000,000.00	Ongoing	Ongoing	With State funding, sewer lining will be installed at the end of Trumbull

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Trumbull Street to Manage Stormwater (Trumbull Street Regional Stormwater Management Project).									Street. This project is currently under construction.
04-09	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer, DPW and Joint Meeting of Essex and Union Counties	FEMA HMA	$3,000,000.00	Ongoing	Ongoing	Requires efforts by the facility owner. The city will support this effort.
04-10	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$8,600,000.00	Ongoing	Ongoing	The city entered into an agreement with the Borough of Roselle Park through which the Borough is to remove the stormwater in this area. This is scheduled to be completed by 2029. The stormwater removal should alleviate the problem, but if not, the city will consider further plans.
04-11	Reduce or Eliminate Local Flooding Along Maple Avenue/Routes 1&9.	Reduce or eliminate local flooding along Maple Avenue/Routes 1&9.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	FEMA HMA	$3,000,000.00	Ongoing	Ongoing	State coordination is required.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
04-12	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	FEMA HMA	$3,000,000.00	Ongoing	Ongoing	State coordination is required.
04-13	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.	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	The city completed the sewer separation six years ago but still has to complete updates to the pump station, like installing a generator. There is no known timeline around this.
04-14	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.	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	This will be ongoing for the foreseeable future. The city is installing transfer switches and plug connections for the use of portable generators each time it improves a traffic signal. The current pace is to complete two signals per year. There are 150 total to complete. Traffic signal improvements cost $30,000 per signal, and each

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
										generator costs $2,000.
04-15	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.	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	This action is ongoing. Every time the city upgrades a facility and the facility does not have a generator or has an antiquated one, the city replaces it.
04-16	Minimize Extreme Heat Casualties and Deaths through Public Awareness and Outreach.	Minimize extreme heat casualties and deaths through public awareness and outreach.	Extreme Temperature	High	Health Officer and Emergency Operations Coordinator	Municipal Budget	$100,000.00	Ongoing	Ongoing	Ongoing awareness campaigns during winter and summer months
04-17	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.	Earthquake/Geological	Low	Emergency Operations Coordinator	Municipal Budget	$100,000.00	Ongoing	Ongoing	
04-18	Reduce or Eliminate Flooding Around Third Avenue and Atlantic Street.	Reduce or eliminate flooding around Third Avenue and Atlantic Street.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	NJIB	$14,000,000.00	Ongoing	Ongoing	This action is in progress. The city is building a 1.3-million-gallon storage tank underground using NJIB funds.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
										This will reduce flooding and combined sewer overflow.
04-19	Construct Atlanta Plaza Floodwall.	Construct Atlanta Plaza Floodwall.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Low	City Engineer and DPW	FEMA HMA	$30,000,000.00	Ongoing	Ongoing	The concepts were completed in previous years, but the project's cost is high and priority level is low.
04-20	Upgrade, Repair, and Separate Combined Sewers in the Bayway Area.	Upgrade, repair, and separate combined sewers in the Bayway Area.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$6,000,000.00	Ongoing	Ongoing	This is part of the combined sewer overflow long-term control plan. Design will be started in three to four years.
04-21	Flood-proof Firehouse Engine #1 on Broad Street.	Flood-proof Firehouse Engine #1 on Broad Street.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Fire Director and DPW	FEMA HMA	$10,000,000.00	Ongoing	Ongoing	The city is considering construction of a new firehouse for $30,000,000. If that does not happen, the city will continue using Firehouse Engine #1 on Broad Street. This firehouse's damage from Ida and was repaired, but the city may look at flood mitigation actions for the property.
04-22	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.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	Municipal Budget	$2,000,000.00	Ongoing	Ongoing	The city installed a new generator at the pump station but needs to perform the upgrades and repairs. The

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
										generator cost $500,000, and the remainder of the project is estimated to cost $1,500,000.
04-23	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	Municipal Budget	$40,000,000.00	Ongoing	Ongoing	Wet weather treatment facility - $40 million project.
04-24	Install a New Generator at Trenton Avenue.	Install new generator at Trenton Avenue to ensure continuity of operations during power failure.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	FEMA HMA, Municipal Budget	$750,000.00	Ongoing	Ongoing	
04-25	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW; possibly Union County	FEMA HMA, FEMA PA, Municipal Budget	$1,000,000.00	Ongoing	Ongoing	This needs to be constructed on platforms, and a funding source needs to be determined.
04-26	Reduce or Eliminate Local Flooding on Pennington Street.	Reduce or eliminate local flooding on Pennington Street.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	FEMA HMA, Municipal Budget	$2,000,000.00	Ongoing	Ongoing	Local sewer improvements that reduce flooding in the neighborhood were complete. With high intensity storms, there is still flooding there. This is still on-going for larger storms and requires coordination the Joint Meeting of Essex and Union Counties (local WWTP).

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
04-27	Purchase and Install a Generator at the Municipal Marina.	Purchase and install a generator at the municipal marina to fuel public emergency watercrafts.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Low	City Engineer and DPW	FEMA HMA, Municipal Budget	$500,000.00	Ongoing	Ongoing	Funding required
04-28	Upgrade and Repair the Elizabeth River Flood Control Project.	Upgrade and repair the Elizabeth River Flood Control Project.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Dam Failure	High	City Engineer and DPW	FEMA HMA, Municipal Budget	$2,000,000.00	Ongoing	Ongoing	This is an ongoing upgrade and maintenance project. One phase of it was awarded in March 2025 and is almost complete.
04-29	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.	All Hazards	Low	Emergency Operations Coordinator and City Engineer	Municipal Budget	$500,000.00	Ongoing	Ongoing	Funding required
04-30	Provide for Infectious Disease Control Through Emergency Communication and Temporary Points of Distribution Sites (PODS).	Provide for infectious disease control through public notifications of disease. Provide Points of Distribution Sites (PODS).	Pandemic	High	Health Officer and Emergency Operations Coordinator	Municipal Budget	$500,000.00	Ongoing	Ongoing	The notifications and public vaccination sites were achieved during the COVID-19 pandemic using CARES and FEMA funds. This action will remain ongoing in case another pandemic occurs. About $2,000,000 in CARES funds were utilized, and $1,200,000 in FEMA funds in response to the COVID-19 pandemic.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
04-31	Design and Construct a New Firehouse Outside of the Flood Zone.	Design and construct a new firehouse outside of flood zone.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Fire Director and DPW	Municipal Budget	$30,000,000.00	Ongoing	Ongoing	The quote for a firehouse outside the flood zone came to $30 million. The address is 665 South Broad Street. The firehouse's construction is a high priority.
04-32	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.	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature	Medium	Department of Health & Human Services and Emergency Operations Coordinator	Municipal Budget	$100,000.00	Ongoing	Ongoing	Ongoing awareness campaigns during winter and summer months
04-33	Upgrade, Repair and Maintain Brick Sewers and Watermains.	Upgrade, repair and maintain brick sewers and watermains to control flooding and prevent water main breaks. Add sewer lining.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA, NJIB	$20,000,000.00	1 - 5 years	Ongoing	This is an ongoing project with money from the State. Some of this work is currently being funded with the same NJ DCA money for Trumbull Street that is currently under construction. This will remain as a long-term action item.
04-34	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	Earthquake/Geological	Low	Emergency Operations Coordinator	Municipal Budget	$100,000.00	1 - 5 years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
		temporary shelters and muster areas after major earthquakes.								
04-35	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.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	City Engineer and DPW	Municipal Budget	$500,000.00	1 - 5 years	Ongoing	Funding required
04-36	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.	Flood, Power Failure, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$10,000,000.00	1 - 5 years	Ongoing	A study is currently being completed to determine the appropriate mitigation strategies.
04-37	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.	All Hazards	Medium	Police and Emergency Operations Coordinator	Homeland Security grants	$2,500,000.00	1 - 5 years	Ongoing	A conceptual plan has been completed, and the city is currently appropriating local funding for design and construction.
04-38	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	City Engineer and DPW	FEMA HMA	$5,000,000.00	1 - 5 years	Ongoing	Funding required - Some of this work is currently being funded with the same NJ DCA money for Trumbull Street that is currently under construction. This will remain as a long-term action item.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
04-39	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.	Flood	High	OEM	FEMA HMA	TBD	Ongoing	Ongoing	In 2020, there were 23 RL/SRL properties, all of which except for five were added after 2000 and have not had claims in decades. Nothing has been done on RL/SRL properties.
04-40	Improve Citywide Shelters' Preparedness for Extreme Heat and Extreme Cold Events.	Improve the 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.	Extreme Temperature	High	Department of Health & Human Services	Municipal Budget	$100,000.00	Ongoing	Ongoing	This is an ongoing effort when facilities are renovated.
04-41	Elizabeth River Flood Early Warning System.	Work with NJOEM/state police, Rutgers, and USGS to develop an early warning system. Install three tornado sirens throughout the city by the end of 2024. The three sirens' reach is comprehensive of the city. An educational component will come once the sirens are done.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	OEM	FEMA HMGP	$2,000,000	Ongoing	New	The city is working with the NJOEM, Rutgers, and the USGS to develop a predictive flood model to provide advance warning of floods using weather forecasts. The project should be complete in 2026/2027.

5 – BOROUGH OF FANWOOD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
John Piccola	**Fire Chief**	**Primary Contact, Steering Committee Kick-Off Meeting, Municipal Meeting**
Jesse Moehlman	Borough Administrator	Municipal Meeting, Input and Review
Daniel Kranz	Deputy Coordinator / Police Lieutenant	Input and Review
Clinton Cicksen	Deputy Coordinator / DPW Director	Input and Review

COMMUNITY OVERVIEW

Overview

The Borough of Fanwood is 1.3 square miles and is situated in the western half of Union County. It is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Fanwood is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 80% of the total land use, and covering 543.2 acres of land. Civic/public (tax exempt) land use accounted for the second greatest portion of the borough, comprising 7% of the total land use in the same year. From 2016 to 2022, there was negligible change in the land use composition of the borough.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 97% of the area in 2020. The forest category followed, accounting for about 3% of the total land area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	-
Barren Land	0	2.8	<1%
Forest	22.1	22.1	<1%
Urban	833.7	830.9	<1%
Water	0	0	-
Wetlands	1.7	1.7	<1%

Recent Major Development and Infrastructure from 2021 to Present

Recent development includes three locations. 40 S Ave which is a mixed-use construction with 30 residential units. The new development Soho is a four-story development with approximately 80-100 residential units along with commercial units on the bottom. Carano Square on 105 S. Ave is two buildings with over 150 units. All three locations experience no flooding.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

There is one mixed-use development going in at 383 S. Ave. This will include about 15-20 residential units and is outside the flood zone.

Demographics & Vulnerable Population

Fanwood Borough has an estimated population of 7,723, of which 4.5% are estimated to be under 5 years of age and 16.9% are over age 65. Fanwood's population remained steady over the ACS survey periods between 2013-2017 and 2018-2022, with an estimated .98% population increase. There are no parts of Fanwood which meet designation criteria for CDRZ, CEJST, or OBC identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	7,723
Population Change since 2017	0.98%
Percent of Population Age < 5	4.45%
Percent of Population > 65	16.86%

HAZARD IDENTIFICATION

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 high, medium, low, or no concern. The following include the borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
	Natural Hazards	
	Flood	Drought
	Hail	Earthquake/Geological
	High Wind – Straightline Winds	Erosion – Hurricane/Nor'easter/Coastal Storm
	High Wind - Tornado	Extreme Temperature – Cold
	Severe Storm – Lightning	Extreme Temperature - Heat
	Severe Storm – Winter Weather (Includes Ice Storm)	Landslide (Non-Seismic)
		Wildfire
	Human-made Hazards	
	Cyber Attack	Animal Disease
	Hazmat Release – Transportation	Civil Unrest
	Pandemic	Economic Collapse
		Hazmat Release – Fixed Site
		Nuclear Hazard
		Power Failure

Storm surge – hurricane, nor'easter, tropical storm and dam failure were ranked as N/A

Hazard Ranking Explanation

Severe storms related to winter weather have decreased from high in the last plan update to medium. This is mainly attributed to the lack of need for heating and cooling centers in the borough. For this reason, extreme heat and cold also remain low-ranked hazards. Cyber-attacks became a medium-ranked hazard from a low-ranked hazard in the last plan as cyber-attacks against municipalities are becoming more frequent. Flooding is a medium-ranked hazard as it is the most frequent hazard in the borough. However, this is mainly due to stormwater drainage rather than river overflow. Dam failure and storm surge are both not applicable. This is due to the fact Fanwood is not located near the ocean and has no dams.

Significant Hazard Events Since Last Plan Update

The most significant hazard in the past five years has been flooding associated with stormwater issues. There needs to be a larger pipe size. Heavy rain leads to flash flooding, but after 30 minutes the water goes down.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Fanwood Borough	
Number of Policies In-Force:	18
Total Losses:	13
Total Payments:	$53,332.91
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

Vulnerability of the Built Environment

There are no distinct SFHA (Special Flood Hazard Areas) in Fanwood, with exception of its extreme southwestern and southeastern corners, where there is a slight overlap with the 1% and 0.2% annual chance floodplains of Cedar Brook and Branch 22 of Robinsons Branch, respectively. Compared to most other jurisdictions in Union County, Fanwood has a relatively very small area of floodplain but has numerous and undefined localized flooding sources. Although it is difficult to deduce potential severity accurately, it is safe to assume that the extent of flooding in Fanwood is low; in more severe events such as tropical cyclones and nor'easters, some areas along the southern borough boundary can expect to have more severe flooding, but that would be predominantly a function of the aforementioned streams.

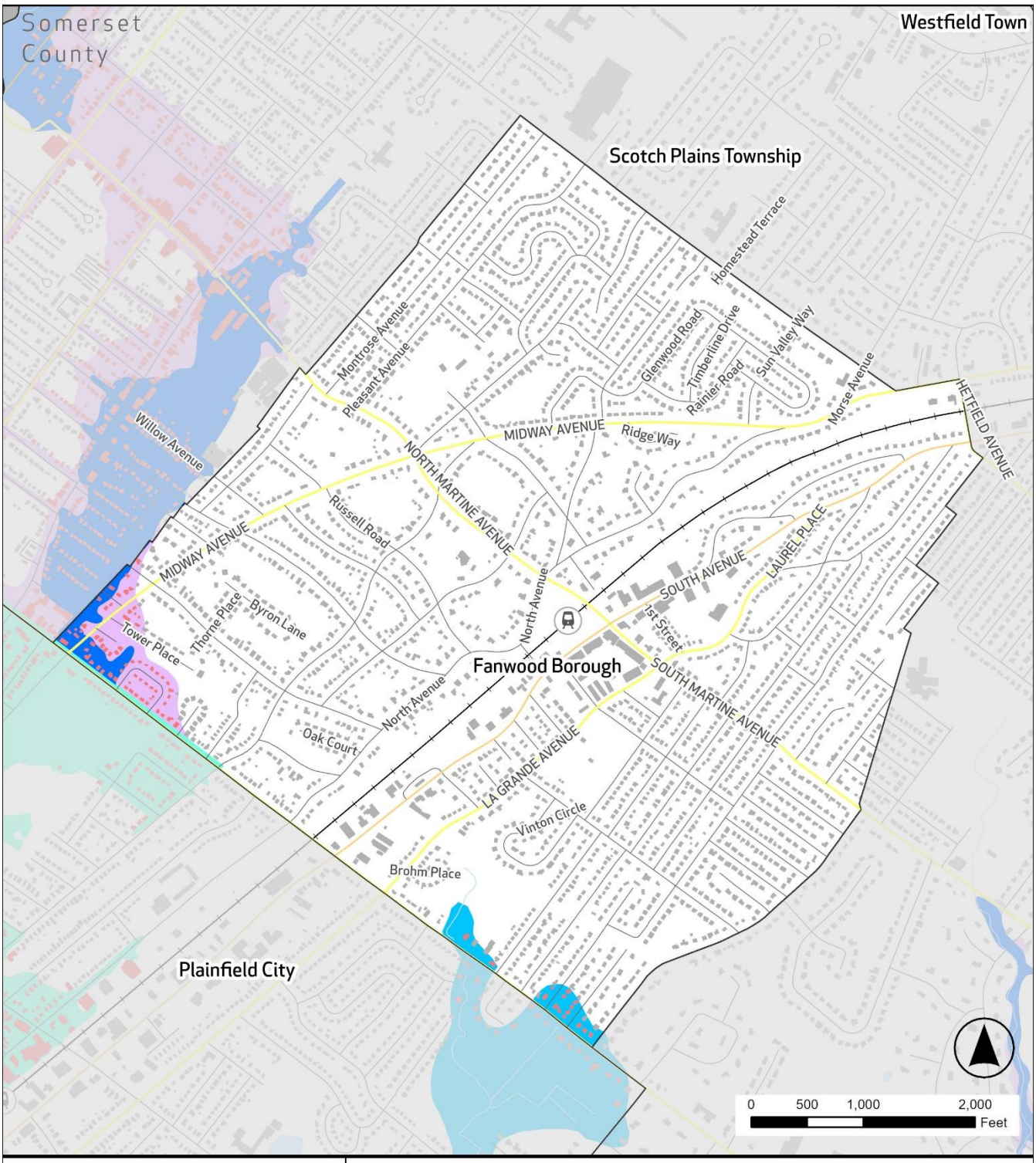
Approximately 1.5 percent of the total area of Fanwood Borough lies within the 1% annual chance floodplain as defined by FEMA. An additional 1.3 percent of the area of the municipality is in the 0.2% annual chance floodplain.

About 95.7 percent of Fanwood is considered developed. Of the developed parcels of the town, 3.2 percent fall at least partially within the 1% annual chance floodplain and 2.5 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	3.2%	2.5%
Exposed Land Area	1.5%	1.3%

During the planning process, Fanwood Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The borough identified nine total facilities. Of these facilities, none are within the floodplain.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-



Flood Hazard

Fanwood Borough

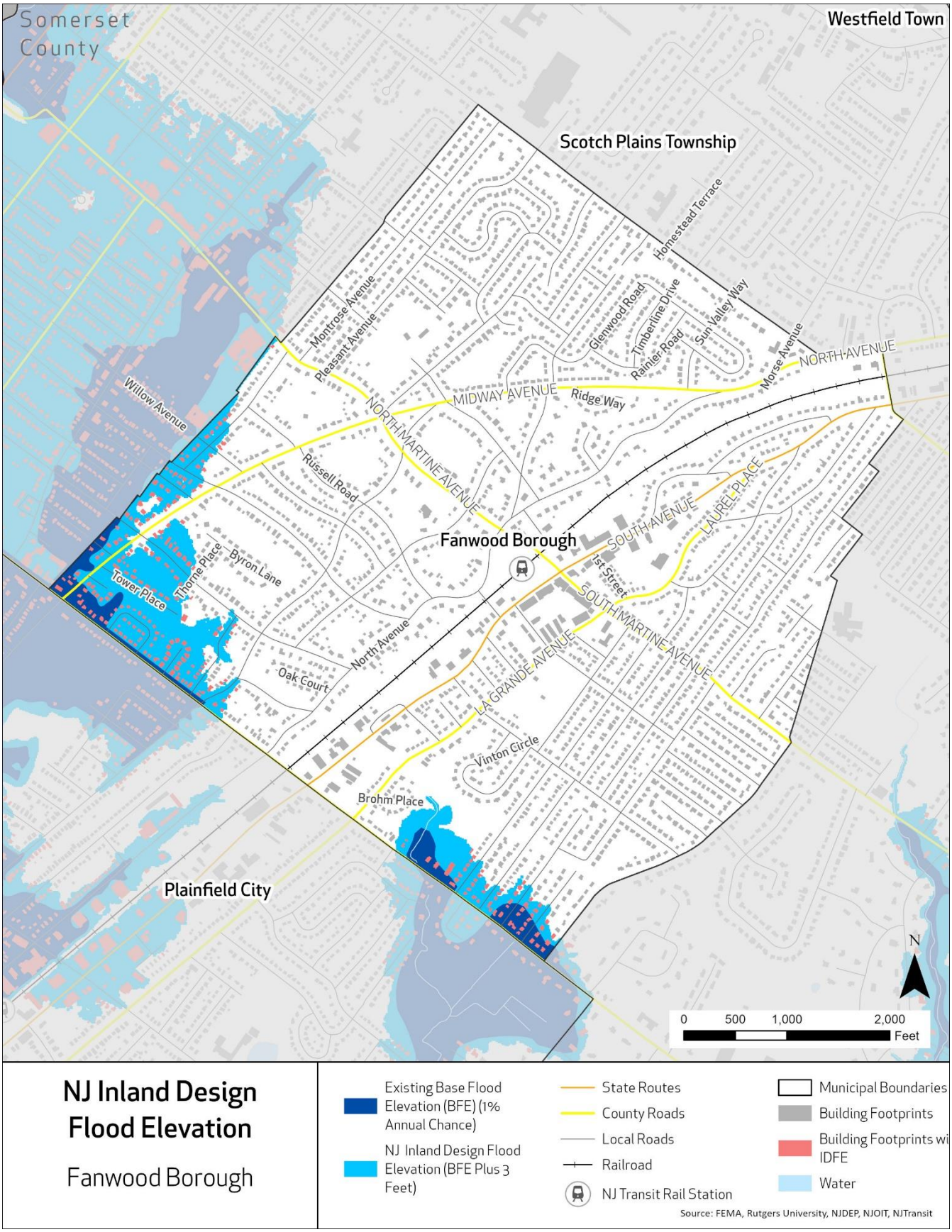
FEMA Flood Zone

- A (1%)
- AE (1%)
- AO (1%)
- 0.2% Annual Chance

- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit


Somerset County
Westfield Town
Scotch Plains Township
Fanwood Borough
Plainfield City
Homestead Terrace
Montrose Avenue
Pleasant Avenue
Glenwood Road
Timberline Drive
Rainier Road
Sun Valley Way
Morse Avenue
NORTH AVENUE
Willow Avenue
MIDWAY AVENUE
Ridge Way
NORTH MARTINE AVENUE
Russell Road
SOUTH AVENUE
LAUREL PLACE
Thorne Place
Byron Lane
Tower Place
1st Street
SOUTH MARTINE AVENUE
North Avenue
Oak Court
LA GRANDE AVENUE
Vinton Circle
Brohm Place
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Fanwood Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Fanwood Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		1998	
Capital Improvement Plan	X		2024	Drainage improvements are included in the yearly updated to reduce surface flooding
Local Emergency Operations Plan/Continuity of Operations Plan		X		
Floodplain Development Ordinance		X		
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		2023	Adopted NJDEP's ordinance which is strict for minor development
Stormwater Management Plan		X		
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change				
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation	X			Flood Zone Ordinance
Other ordinance and regulation that mitigate the impacts of natural hazards	X			Currently undergoing mitigation study per NJDEP MS4 permit requirements

Administrative and Technical Capabilities

Fanwood Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Antonios Panagopoulos, Borough Engineer
Grant Writer		X	
Staff trained to support mitigation	X		Engineering/Zoning/Construction department
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Fanwood Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		
StormReady		X	

Education and Outreach Capability	Yes	No	Explanation
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Fanwood Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

The Borough of Fanwood continuously monitors and critiques all storms with an after-action meeting with OEM officials. It continuously clears storm drains before and after events throughout the Borough. All road projects, especially in flood prone areas, and extra inlets and piping are added as needed to move water from the roadway. Prior to storms, all debris is removed when needed. The Borough continues to educate the community about storm water management and will spend up to $1,000.00 in education and other incidentals pertaining to hazard mitigation. Currently, Forest Road Park building at 200 Forest Road is being updated with storage space to include bedding, to act as a temporary shelter, and/or charging station as needed. A whole building generator is also being installed in 2025. The historic train station at 232 North Avenue will be used, as needed, as an information center. All evacuation routes, which are county roads, are closely monitored and cleared as needed by the Borough of Fanwood DPW and Union County DPW. The Borough will not assist in elevating structures. The Borough is working on an update for its master plan, which is due to include a vulnerability assessment.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
05-01	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.	Extreme Temperature	High	Borough	Municipal Budget	$75,000.00		Withdrawn	Withdrawn. LaGrande Park is no longer a warming station.
05-02	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	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	N/A	1 - 2 years	Completed	Updated and adopted the new ordinance.

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
05-03	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.	All Hazards	High	OEM Coordinator, in coordination with County	Borough funds	$1,000.00	1 year	Ongoing	Ongoing commitment to the borough to increase communications and education especially as new residents move in.
05-04	Purchase and Install 2 Portable Light Towers.	Purchase and install 2 portable light towers for rescues at night or during a power outage.	All Hazards	Medium	Borough	Municipal Budget	$30,000.00	Ongoing	Ongoing	No progress made so far since last plan
05-05	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.	Flood	High	Borough and Property Owners	FEMA HMA	Unknown	Ongoing	Ongoing	The Borough will not be acquiring, elevating or relocating buildings at this time
05-06	Construct Forest Road Park Building Including Generator to Serve as Temporary Shelter	Currently, Forest Road Park building at 200 Forest Road is being updated with storage space to include bedding, to act as a temporary shelter, and/or charging station as needed. A whole building generator is also being installed in 2025.	All Hazards	High	Borough	ARP Grant Funds	$89,000.00	July 2025	New	

6 – BOROUGH OF GARWOOD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Ken Capobianco	OEM Coordinator	Primary Contact, Municipal Meeting
Jen Blumenstock	Mayor	Coordination, Input, and Review
John Arthur	Administrator	Coordination, Input, and Review
Clint Dicksen	Director, Department of Public Works	Coordination, Input, and Review

COMMUNITY OVERVIEW

Overview

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. 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 is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Garwood is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 55.5% of the total land use, and covering nearly 175 acres of land. Commercial and civic/public (tax exempt) uses also accounted for significant portions, comprising 21.6% and 14.3% respectively of the total land use in the same year. From 2016 to 2022, the area under industrial land use decreased notably, falling from 17.5 acres to 6.6 acres.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up nearly 95% of the area in 2020. Barren land followed, accounting for about 3% of the total land area in 2020. The Borough saw a 12.5-acre decrease in urban land and an equal increase in barren land between 2015 and 2020.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	N/A
Barren Land	0	12.5	N/A
Forest	10.1	10.1	0%
Urban	405.7	393.2	-3%
Water	0	0	N/A
Wetlands	0	0	N/A

Recent Major Development and Infrastructure from 2021 to Present

296 luxury apartments called Vermella were completed at 450 South Avenue.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

There is anticipated development at 15-31 North Avenue and 75-93 North Avenue. At the latter, plans for an apartment building have been approved.

Demographics & Vulnerable Population

Garwood Borough has a total estimated population of 4,542, of which 4.5% is estimated to be under age 5, and 20.8% is estimated as over age 65. The borough experienced an estimated growth of 4.1% in population over the ACS survey periods between 2013-2017 and 2018-2022. A larger share of population over 65 (as with Garwood's over 1:5) may indicate local vulnerabilities to hazard events both before and after a disaster occurs – these populations may have mobility needs, uneven access to resources, and limited social networks that makes pre-disaster engagement challenging (FEMA, 2023). Additionally, a growth rate of over four percent can highlight potential vulnerabilities to a changing local landscape which should be included in hazard mitigation efforts.

There are no parts of Garwood Borough which meet designation criteria for CDRZ, CEJST, or OBC identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	4,542
Population Change since 2017	4.05%
Percent of Population Age < 5	4.47%
Percent of Population > 65	20.81%

HAZARD IDENTIFICATION

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 borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
	Natural Hazards	
Severe Storm – Winter Weather (Includes Ice Storms)	Extreme Temperature – Cold	Dam Failure
	Extreme Temperature – Heat	Drought
	Flood	Earthquake/Geological
	High Wind – Straight-line Winds	Erosion – Hurricane/ Nor'easter/Coastal Storm
	High Wind – Tornado	Hail
		Landslide (Non-Seismic)
		Severe Storm – Lightning
		Wildfire
	Human-made Hazards	
	Cyber Attack	Animal Disease
	Pandemic	Civil Unrest
	Terrorism	Economic Collapse
		Hazmat Release – Fixed Site
		Hazmat Release – Transportation
		Nuclear Hazard

Power failure and storm surge – hurricane/ nor'easter/tropical storm were ranked N/A.

Hazard Ranking Explanation

Extreme temperatures, both cold and heat, increased from a low level of concern to a medium; the borough has vulnerable populations affected by extreme temperatures.

Significant Hazard Events Since Last Plan Update

Hurricane Ida affected Garwood Borough in September 2021. July 2025 storms caused significant flooding on North and South Avenues; these main thoroughfares of Union County were impassable.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Garwood Borough	
Number of Policies In-Force:	44
Total Losses:	60
Total Payments:	$992,827.53
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	0
Number of SRL Properties:	3
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	9
SRL – Total Paid:	$587,943.45

Vulnerability of the Built Environment

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.

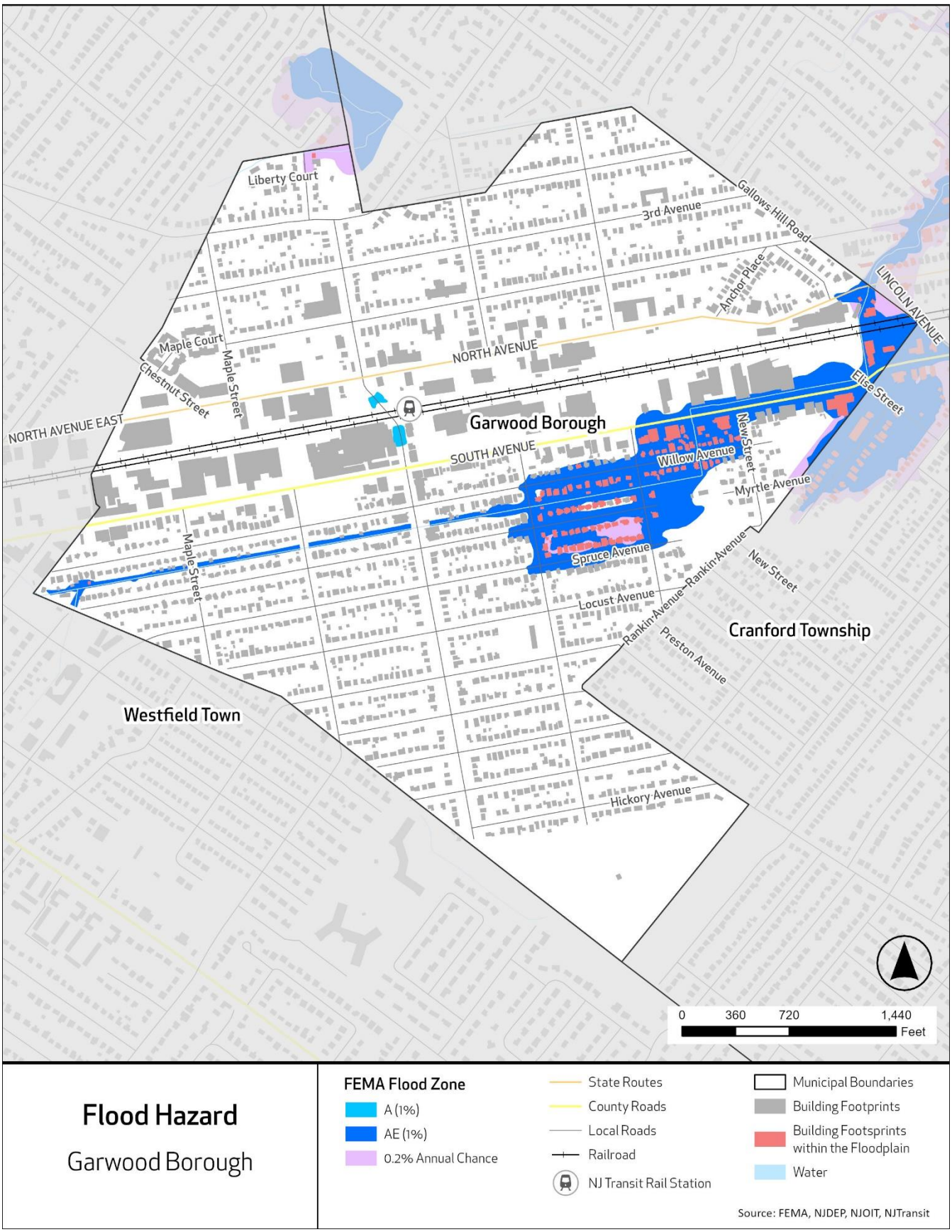
Approximately 8 percent of the total area of Garwood Borough lies within the 1% annual chance floodplain as defined by FEMA. An additional 0.8 percent of the area of the municipality is in the 0.2% annual chance floodplain.

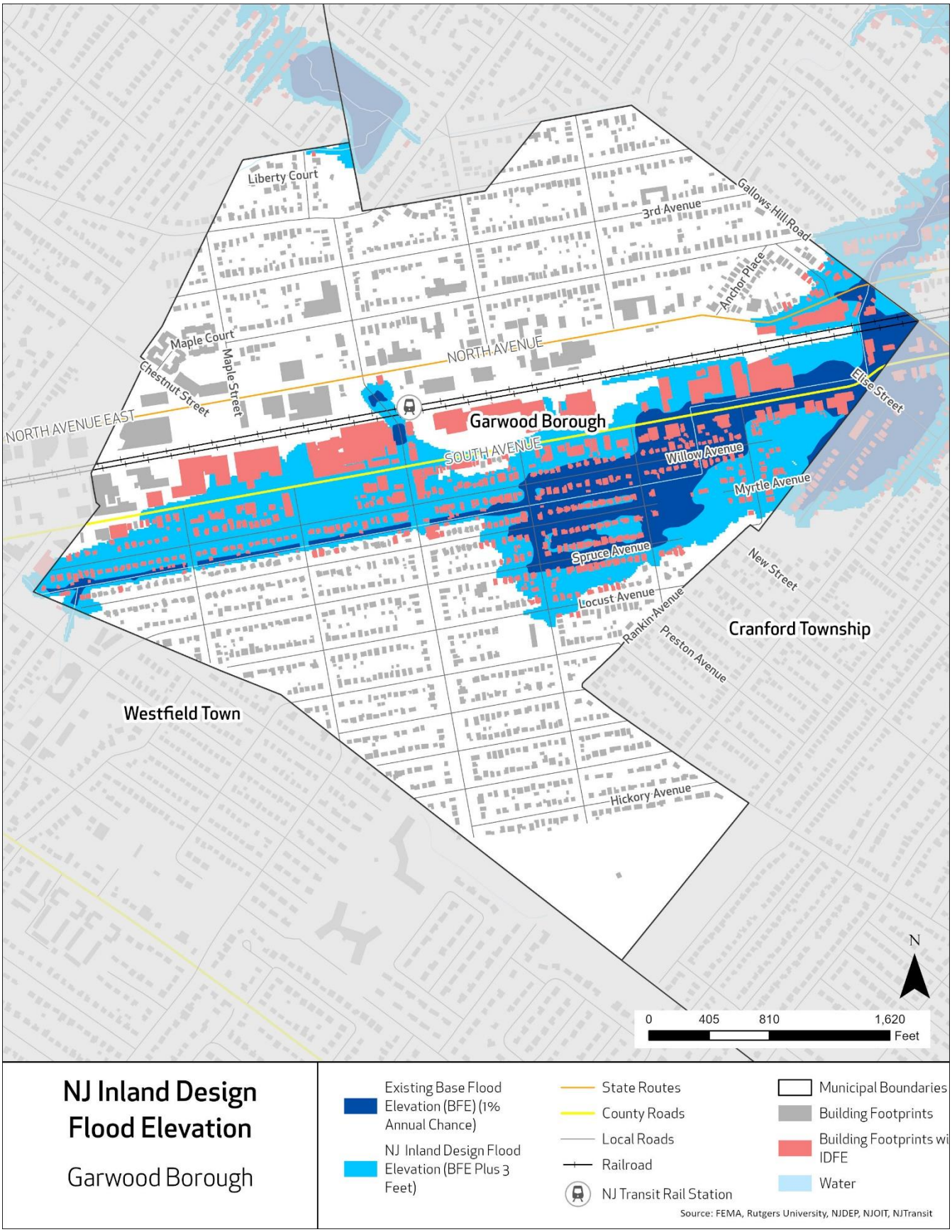
About 89.6 percent of Garwood is considered developed. Of the developed parcels of the town, 16.6 percent fall at least partially within the 1% annual chance floodplain and 2.5 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that development of the municipality is generally in areas that are more prone to flooding.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	16.6%	2.5%
Exposed Land Area	8.0%	0.8%

During the planning process, Garwood Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified nine total facilities. Of these facilities, none are within the floodplain.

	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-


Liberty Court
3rd Avenue
Gallows Hill Road
Anchor Place
LINCOLN AVENUE
Maple Court
Chestnut Street
Maple Street
NORTH AVENUE
NORTH AVENUE EAST
Elise Street
Garwood Borough
SOUTH AVENUE
Willow Avenue
New Street
Myrtle Avenue
Maple Street
Spruce Avenue
Rankin Avenue
New Street
Locust Avenue
Rankin Avenue
Cranford Township
Preston Avenue
Westfield Town
Hickory Avenue
0 360 720 1,440
Feet
Flood Hazard
Garwood Borough
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Liberty Court
3rd Avenue
Gallows Hill Road
Anchor Place
Maple Court
Chestnut Street
Maple Street
NORTH AVENUE
NORTH AVENUE EAST
Elise Street
Garwood Borough
SOUTH AVENUE
Willow Avenue
Myrtle Avenue
Spruce Avenue
New Street
Locust Avenue
Rankin Avenue
Preston Avenue
Cranford Township
Westfield Town
Hickory Avenue
N
0
405
810
1,620
Feet
NJ Inland Design Flood Elevation
Garwood Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi
IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Garwood Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2025	Rules/guidelines to keep borough safe/viable
Capital Improvement Plan	X		2025	Guidelines for improvements
Local Emergency Operations Plan/Continuity of Operations Plan	X		2024	Basic Plan Section III – A&B Basic Plan Section V
Floodplain Development Ordinance	X			Minimize public and private losses
Floodplain Management Plan	X			Minimize public and private losses
Stormwater Management Ordinance	X			Reduce amount of water in storm water sewers
Stormwater Management Plan	X			SAA
Watershed Management Plan		X		
Sheltering Plan	X		2024	Gives direction to reduce confusion
Evacuation Plan	X		2024	Gives direction to make smooth transition
Substantial Damage/Improved Structures Response	X			Helps with emergency situations
Repetitive Loss Plan	X		2021	
Disaster Debris Management Plan	X		2024	Move/remove debris efficiently and safely
Tracking elevation certificates and/or Letter of Map Change	X			
Post-Disaster Recovery Plan	X		2024	Re-establish normalcy
Current/recent redevelopment plans or studies				
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation	X			Ongoing conversations
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Garwood Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		
Grant Writer	X		
Staff trained to support mitigation	X		
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		
Organizations that work with socially vulnerable or underserved populations	X		

Education and Outreach Capabilities

Garwood Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		
StormReady	X		
Firewise USA		X	

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week	X		
Community Rating System (CRS)	X		

Financial Capabilities

Within the last five years, Garwood Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA	X		
FEMA Public Assistance	X		
FEMA HMGP	X		
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs	X		
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, the Borough has made strides in strengthening its defenses against natural hazards. We are adopting modern FEMA standards and reinforcing backup power at key facilities, these efforts have laid the groundwork for a more resilient community. Looking ahead, the Borough is setting its sights on the future—prioritizing initiatives that confront the growing challenges of climate change, including rising sea levels. Over the next five years, it plans to expand mitigation strategies by refining flood maps and implementing state-of-the-art emergency alert systems. These actions reflect the Borough's strong commitment to protecting residents and supporting sustainable growth in an ever-changing environment.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
-	-	-	-	-	-	-	-	-	-	-

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$15,000	1 year	Ongoing	This is done through the police, schools, the borough's social media page, and Nixle. One recent event for which it was done was the Garwood Rocks National Night Out.
06-02	Purchase and Install Generators for Multiple Critical Facilities	The Borough is pursuing generators for multiple critical	All Hazards	High	OEM	FEMA HMA, Municipal Budget	$575,000.00	1 - 2 years	Ongoing	Particularly, the borough is looking for

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	to Use as Warming/Cooling Stations and Maintain Critical Borough Operations.	facilities to use as warming/cooling stations and maintain critical Borough operations.								a new generator at the Senior Center Housing Project and Lincoln School. It recently acquired a generator at Borough Hall.
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.	Flood	High	Affected homeowners	FEMA HMA	$1,000,000	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.	Flood	High	OEM/Borough Engineer	Grants	$400,000.00	1 year	Ongoing	This may happen at Garwood Recreation Field.
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	All Hazards	Medium	OEM	Capital Improvement	$45,000.00	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
		respond to emergencies.								
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.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$6,000	1 - 2 years	Ongoing	
06-07	Increase the Flow of Garwood Brook to Mitigate Repetitive Flooding.	Remove silt, vegetation, choke points.	Flood	Medium	OEM/Borough Engineer	Grants	$400,000.00	1 year	New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
06-08	Relocate DPW into a Building Outside of the SFHA.	Include an emergency operations center.	Flood	Medium	OEM/Engineer/Council	Grants	$1,000,000.00	3-5 years	New	
06-09	Install an Automated Flood Alerts System and flashing warnings and signs	Increase notification times/safety. Install a remote sign system with water sensors.	Flood	High	OEM/DPW/Police/Engineer	Grants	$60,000.00	1 year	New	Advance warning is very important to public safety.
06-10	Develop a debris management plan.	A plan is needed due to no storage area in borough.	Severe Storm – Winter Weather (Includes Ice Storms), Flood, Building Collapse	Medium	OEM/DPW/Engineer	Borough Funds	The cost is on a use basis as needed.	1 year	New	The borough uses a private contractor for debris removal.
06-11	Install a railroad crossing type barrier.	Install a railroad crossing type barrier that can be deployed across the roadway by municipal employees to prevent crossing when the other side is unsafe for travel, e.g., in times of flooding.	All Hazards	Medium	OEM/DPW/Police/Engineer	TBD	TBD	TBD	New	Vehicles often drive around cones and barrels. These traffic control items often float away in the swift water on the street during flooding conditions making them ineffective.

7 - TOWNSHIP OF HILLSIDE

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Mary Dawkins	**OEM Coordinator**	**Primary Contact, Municipal Workshop 1, Municipal Meeting**
Kevin Moran	Deputy OEM Coordinator	Alternative Point of Contact, Municipal Meeting

COMMUNITY OVERVIEW

Overview

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. 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. After WWII, industry grew, and Hillside has been home to both Bristol-Myers Squibb and Lionel Trains. Hillside is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Hillside is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 48% of the total land use, and covering nearly 675 acres of land. Civic/public (tax exempt) and industrial uses also accounted for significant portions, comprising 24% and 18% respectively of the total land use in the same year. From 2016 to 2022, the most significant change in land use was that of vacant land, which almost doubled in acreage from 23.6 to 42. This still, however, makes up just 3% of land use in the township.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 93% of the area in 2020. The forest and wetlands categories followed, each accounting for 3% of the total land area. There is no land used for agriculture in the township.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	N/A
Barren Land	0	1.8	N/A
Forest	49.2	46.9	-5%
Urban	1660.8	1661.3	<1%
Water	12.7	12.8	1%
Wetlands	57.9	57.8	-<1%

Recent Major Development and Infrastructure from 2021 to Present

None identified.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years
An outdoor pool at Central Avenue and a new library at Memorial Drive began construction in 2025. The Spray Park Phase of the outdoor pool project opened in August 2025, and pool construction began in mid-September 2025. The police department will expand into the existing library, while ground broke for the new library in August 2025.

At 1350 Liberty Avenue, senior housing with an anchor tenant will be constructed. It is outside the flood zone.

Demographics & Vulnerable Population

Hillside Township has an estimated population of 22,262, of which 6.0% of residents are estimated to be under age 5, and 14.0% are estimated as over age 65. The population of Hillside has remained consistent over the ACS survey periods between 2013-2017 and 2018-2022, with an estimated .87% growth. A larger share of population over 65 may indicate local vulnerabilities to hazard events both before and after a disaster occurs – these populations may have mobility needs, uneven access to resources, and limited social networks that makes pre-disaster engagement challenging (FEMA, 2023).

Within the township, there are eighteen (18) block groups which meet criteria as overburdened communities (OBC), through Minority (15 block groups) and Low Income and Minority (3 block groups) categorization. These block groups cover the entirety of Hillside's area. Hillside also has a single census tract meeting CEJST criteria, identifying vulnerability in Workforce Development population characteristics. There are no parts of the township which meet CDRZ criteria.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	22,262
Population Change since 2017	0.87%
Percent of Population Age < 5	5.99%
Percent of Population > 65	13.93%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Flood	High Wind – Straight-line Winds	Dam Failure
	Severe Storm – Winter Weather (Includes Ice Storms)	Drought
		Earthquake/Geological
		Erosion – Hurricane/ Nor'easter/Coastal Storm
		Extreme Temperature – Cold
		Extreme Temperature – Heat
		Hail
		High Wind – Tornado
		Landslide (Non-Seismic)
		Severe Storm – Lightning
Human-made Hazards		
	Cyber Attack	Animal Disease
	Economic Collapse	Civil Unrest
	Hazmat Release – Fixed Site	Nuclear Hazard
	Hazmat Release – Transportation	Terrorism

High	Medium	Low
	Pandemic	
	Power Failure	

Storm surge – hurricane/ nor'easter/tropical storm and wildfire were ranked N/A.

Hazard Ranking Explanation

While the hazard ranking for earthquakes remains low, a recent earthquake did cause a large (six foot by six foot) sinkhole at North Central and North Broad. This did not create structural damage. Cyber attacks have increased from a low to a medium level of concern; there was a ransom incident recently. Economic collapse also increased from a low to a medium level of concern; the township is mostly residential, but the economy is unsure. Hazmat release – fixed site is at a medium level of concern. There is a gas pipeline near the railroad line. Hazmat release – transportation also is at a medium level of concern due to the Route 22 and 78 corridors, the Garden State Parkway, and the railroad line. Power failure is of a medium level of concern due to aging infrastructure.

Significant Hazard Events Since Last Plan Update

Hurricane Ida affected 546 homes in the township in September 2021. The Township had damage from flooding in the library and police department/town hall. (The parking lot here will be elevated and pitched so that water can run off.)

There was also flash flooding in August 2024. A rainstorm caused flooding along I-78 and left cars stranded in floodwaters. There were no injuries or deaths.

Repetitive loss areas are concentrated at Cornell Place / Yale Avenue / Harvard Avenue and Central Avenue / Baker Avenue / 1st-3rd Avenue.

The Barnet and Ramsey Avenue sinkhole occurred in April 2023; it was caused by poor construction and erosion. The New Jersey Department of Transportation and the township will split the cost and stabilize the ground underneath.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Hillside Township	
Number of Policies In-Force:	32
Total Losses:	241
Total Payments:	$3,144,720.06
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	0
Number of SRL Properties:	36
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	109
SRL – Total Paid:	$962,015.01

Vulnerability of the Built Environment

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. 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.

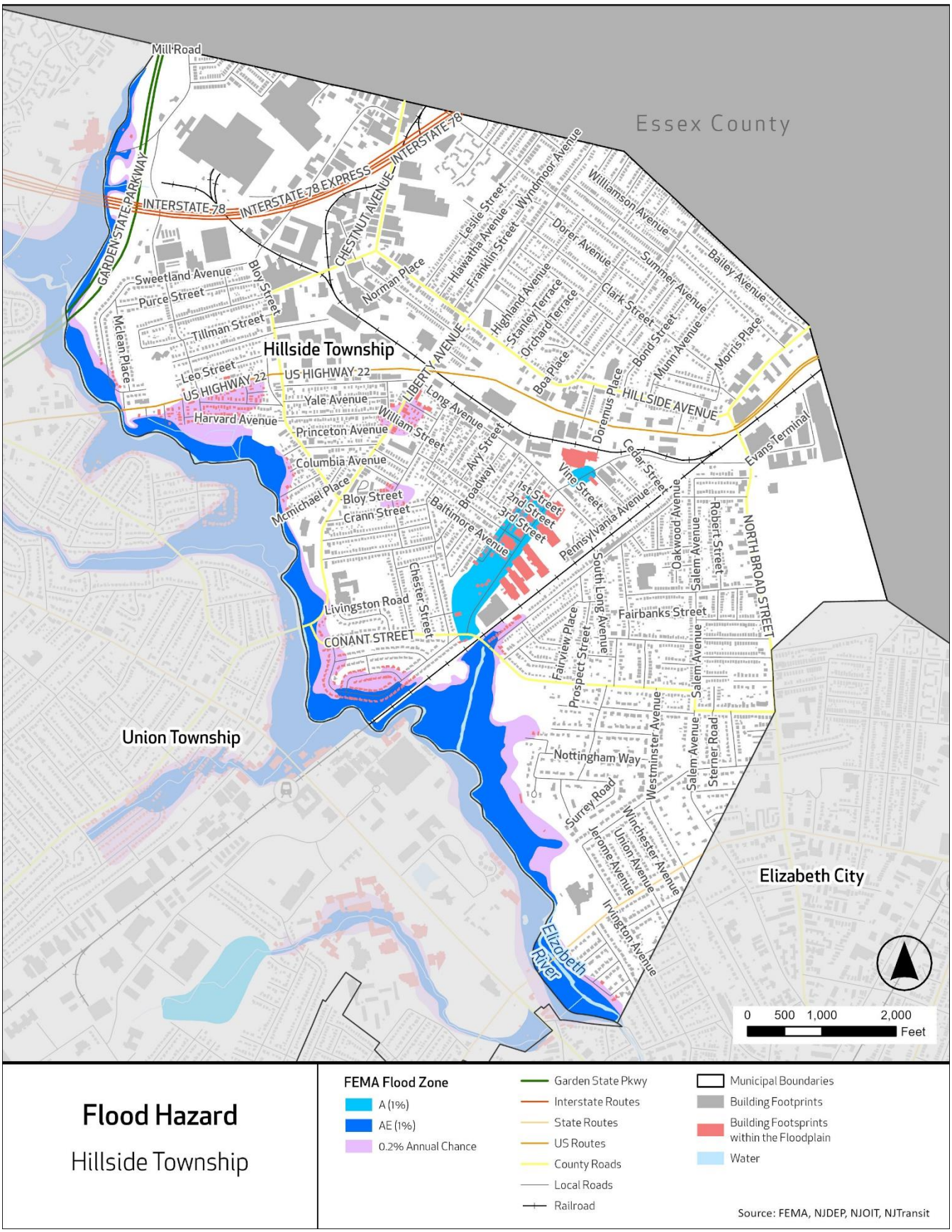
Approximately 7.2% of the total area of Hillside Township percent lies within the 1% annual chance floodplain as defined by FEMA. An additional 3.8 percent of the area of the municipality is in the 0.2% annual chance floodplain.

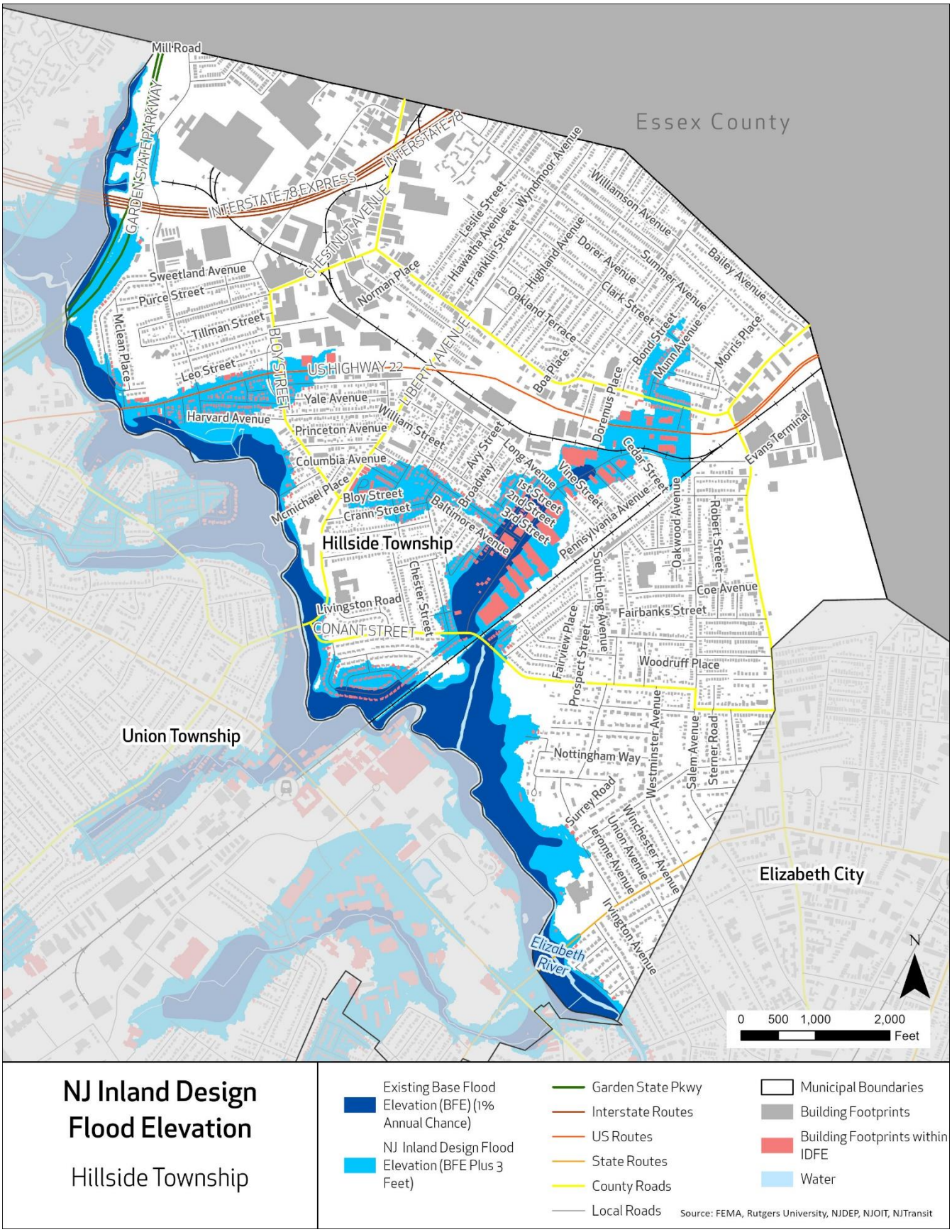
About 97.1 percent of Hillside is considered developed. Of the developed parcels of the town, 2.4 percent fall at least partially within the 1% annual chance floodplain and 5 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

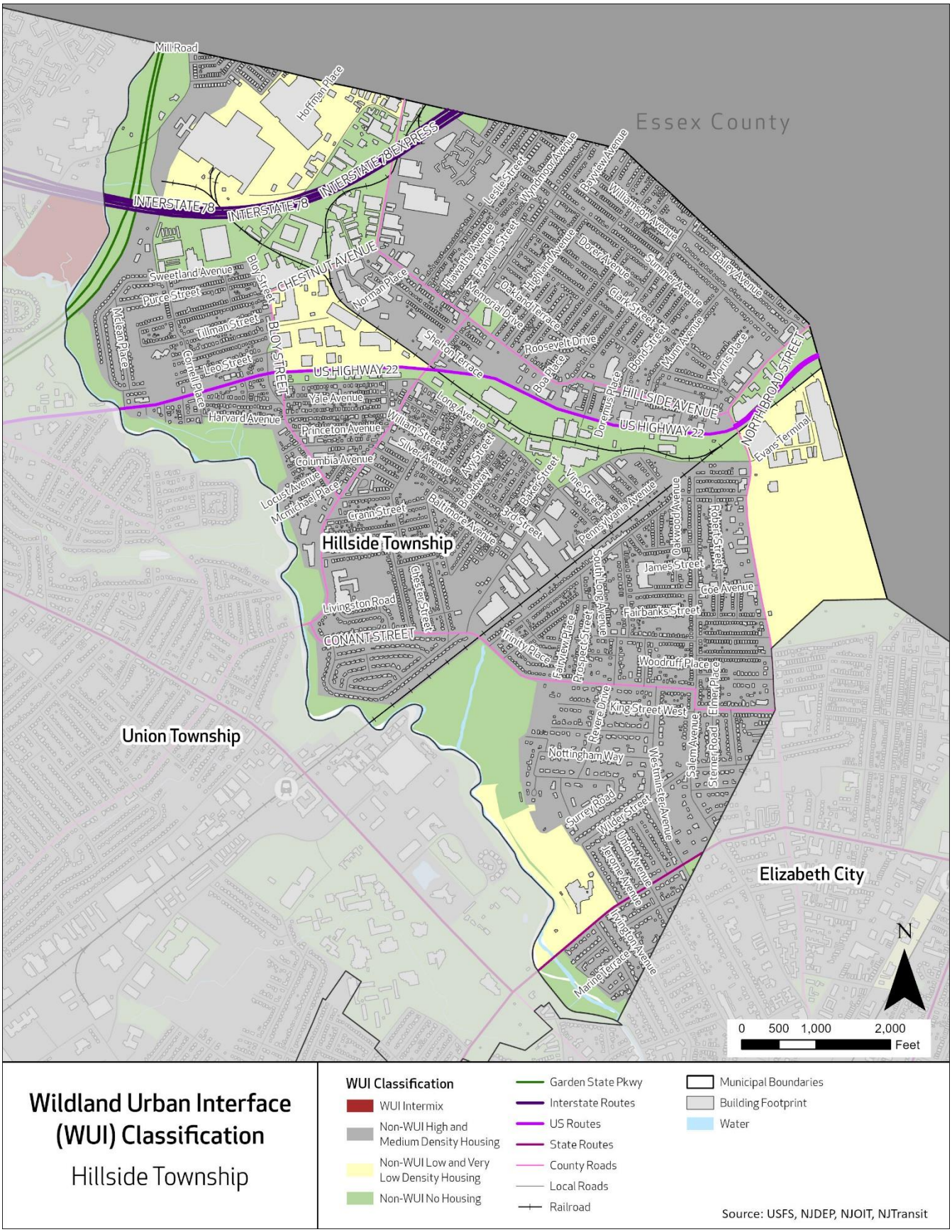
	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	2.4%	5.0%
Exposed Land Area	7.2%	3.8%

During the planning process, Hillside Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The township identified 24 total facilities. Of these facilities, none are within the floodplain.

	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-


Essex County
Hillside Township
Union Township
Elizabeth City
Mill Road
GARDEN STATE PARKWAY
INTERSTATE 78
INTERSTATE 78 EXPRESS
CHESTNUT AVENUE
Sweetland Avenue
Purce Street
Tillman Street
Bloy Street
Mclean Place
Leo Street
US HIGHWAY 22
Harvard Avenue
Yale Avenue
Princeton Avenue
Columbia Avenue
Mcmichael Place
Crann Street
William Street
LIBERTY AVENUE
Long Avenue
Avy Street
Broadway
Baltimore Avenue
1st Street
2nd Street
3rd Street
Vine Street
Cedar Street
Pennsylvania Avenue
Dorenus Place
HILLSIDE AVENUE
Evans Terminal
NORTH BROAD STREET
Robert Street
Oakwood Avenue
Salem Avenue
South Long Avenue
Fairbanks Street
Livingston Road
CONANT STREET
Chester Street
Fairview Place
Prospect Street
Nottingham Way
Westminster Avenue
Sterner Road
Surrey Road
Jerome Avenue
Union Avenue
Winchester Avenue
Irvington Avenue
Elizabeth River
Norman Place
Leslie Street
Hiawatha Avenue
Franklin Street
Wyndmoor Avenue
Williamson Avenue
Dorer Avenue
Highland Avenue
Stanley Terrace
Orchard Terrace
Clark Street
Summer Avenue
Bailey Avenue
Boa Place
Bond Street
Munn Avenue
Morris Place
0 500 1,000 2,000
Feet
Flood Hazard
Hillside Township
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
Garden State Pkwy
Interstate Routes
State Routes
US Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Essex County
Mill Road
GARDEN STATE PARKWAY
INTERSTATE 78 EXPRESS
INTERSTATE 78
CHESTNUT AVENUE
LIBERTY AVENUE
BLOY STREET
US HIGHWAY 22
CONANT STREET
Sweetland Avenue
Purce Street
Tillman Street
Leo Street
Yale Avenue
Harvard Avenue
Princeton Avenue
Columbia Avenue
Bloy Street
Crann Street
Livingston Road
Chester Street
Norman Place
Leslie Street
Hiawatha Avenue
Wyndmoor Avenue
Franklin Street
Highland Avenue
Oakland Terrace
Doret Avenue
Clark Street
Williamson Avenue
Summer Avenue
Bailey Avenue
Bond Street
Munn Avenue
Morris Place
Boa Place
Doremus Place
Cedar Street
Evans Terminal
Avy Street
Broadway
Long Avenue
Vine Street
1st Street
2nd Street
3rd Street
Baltimore Avenue
Pennsylvania Avenue
Oakwood Avenue
Robert Street
Coe Avenue
Fairbanks Street
South Long Avenue
Fairview Place
Prospect Street
Woodruff Place
Westminster Avenue
Nottingham Way
Salem Avenue
Sterner Road
Surrey Road
Jerome Avenue
Union Avenue
Winchester Avenue
Irvington Avenue
Elizabeth River
Mclean Place
Mcmichael Place
Hillside Township
Union Township
Elizabeth City
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Hillside Township
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Garden State Pkwy
Interstate Routes
US Routes
State Routes
County Roads
Local Roads
Municipal Boundaries
Building Footprints
Building Footprints within IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit


Essex County
Hillside Township
Union Township
Elizabeth City
Mill Road
Hoffman Place
INTERSTATE 78
INTERSTATE 78 EXPRESS
CHESTNUT AVENUE
Sweetland Avenue
Purce Street
Tillman Street
Leo Street
Yale Avenue
Harvard Avenue
Princeton Avenue
Columbia Avenue
Locust Avenue
McMichael Place
Grann Street
Livingston Road
CONANT STREET
Chester Street
Baltimore Avenue
Broadway
Silver Avenue
William Street
Long Avenue
Shelton Terrace
US HIGHWAY 22
HILLSIDE AVENUE
NORTH BROAD STREET
Evans Terminal
Roosevelt Drive
Memorial Drive
Oakland Terrace
Norman Place
Dover Avenue
Clark Street
Bond Street
Munn Avenue
Morris Place
Bailey Avenue
Williamson Avenue
Bayview Avenue
Wyndmoor Avenue
Leslie Street
Franklin Street
Hiawatha Avenue
Highland Avenue
Sumner Avenue
Boal Place
Dorenus Place
Vine Street
Parker Street
Pennsylvania Avenue
Oakwood Avenue
Roberts Street
James Street
Coe Avenue
Fairbanks Street
Woodruff Place
Ember Place
Trinity Place
Fairview Place
Prospect Street
Grove Street
Court Street
Avenue
Revere Drive
King Street West
Nottingham Way
Westminster Avenue
Salem Avenue
Sterner Road
Surrey Road
Wilder Street
Union Avenue
Jerome Avenue
Livingston Avenue
Marina Terrace
N
0 500 1,000 2,000
Feet
Wildland Urban Interface (WUI) Classification
Hillside Township
WUI Classification
WUI Intermix
Non-WUI High and Medium Density Housing
Non-WUI Low and Very Low Density Housing
Non-WUI No Housing
Garden State Pkwy
Interstate Routes
US Routes
State Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprint
Water
Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The Township of Hillside has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2016	
Capital Improvement Plan	X		2021	
Local Emergency Operations Plan/Continuity of Operations Plan	X		2022	
Floodplain Development Ordinance	X		2019	
Floodplain Management Plan		X		
Stormwater Management Ordinance		X		
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

The Township of Hillside has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Township Engineer, Consultant
Grant Writer	X		
Staff trained to support mitigation	X		DPW Director/Engineer
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

The Township of Hillside has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Swift 911 & Website
StormReady		X	
Firewise USA		X	

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week		X	
Community Rating System (CRS)	X		

Financial Capabilities

Within the last five years, the Township of Hillside has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP	X		
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank	X		
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

The township is working with the engineering and administration to develop a mitigation strategy. This will include working with the Planning and Zoning Boards as well as the Township Planner. American Water Company is in the process of replacing old water lines and Elizabethtown Gas Company is replacing all old gas lines and meters. Request for assistance from FEMA for the flume that runs from the Rahway River down Central Avenue and turns left on Mertz Avenue was denied during Hurricane Ida; however, a maintenance plan is in place to assure that there is no spillage and unrestricted flow. An application for the BRIC grant to mitigate several roadways and a new OEM office were put on hold due to lack of funding.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
-	-	-	-	-	-	-	-	-	-	-

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
07-01	Perform Infrastructure Improvements to Protect Town Hall which Houses the Police Department and the Library.	Construct additional basins, expand drainage, pitch the parking lot, elevate the parking lot, perform environmental renovations, and construct berms to protect the Town Hall which houses the Police Department and the community library.	Flood	High	Hillside Municipality	FEMA HMA	$300,000.00	3 - 4 years	Ongoing	The funding will primarily come from HMGP.
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.	Flood	High	Hillside Municipal OEM	FEMA HMA	$700,000.00	1 - 2 years	Ongoing	
07-03	Upgrade Stormwater Management System for Central Avenue.	Install larger pipes and repave Central Avenue.	Flood	High	Hillside Municipal OEM	FEMA HMA	$1,200,000.00	1 - 2 years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
07-04	Retrofit the North Avenue Pump Station that Houses Three Pumps.	Retrofit the North Avenue station that houses three pumps.	Flood		I-Bank		$1,800,000.00		Ongoing	This project is currently underway.
07-05	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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	TBD	Ongoing	Ongoing	Public outreach was performed during Hurricane Ida. The Township explained what was happening during the storm, and afterwards, it directed people to the Elizabeth FEMA office for assistance. Utilized were Swift 911, social media, and the police and fire departments.
07-06	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.	Flood, Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	Medium	Department of Public Works	FEMA HMA, CDBG	$109,800.00	1 year	Ongoing	A generator was purchased for the Community Center; the cost came to $98,000, $75,000 of which came from FEMA and $23,000 of which was municipal funds. The Senior Center generator is next. A grant from Union County CDBG was awarded to Hillside Senior Center in the amount of $38,750.00; additional funds are needed and will be a part of the Capital Improvement grant.
07-07	Conduct Ongoing Tree Maintenance and Survey Along Township Right-of-ways.	Conduct ongoing tree maintenance and survey along Township rights-of-way.	Power Failure, Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	Medium	Department of Public Works	DEP grant	$850,000.00	Ongoing	Ongoing	The township received a grant from DEP in the amount of $850,000.00 over the course of three years to conduct ongoing tree maintenance and replacement.
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	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	Flood	High	Affected homeowners	FEMA HMA	TBD	Ongoing	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	to mitigate their properties.								
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.	Flood, Erosion–Hurricane/ Nor'easter/ Coastal Storm	High	Township Engineering	FEMA HMA	TBD	1 - 4 years	Ongoing	DPW will continue to monitor this issue; cost is not determined at this time and the conversation will continue with County engineering office.
07-10	Coordinate with US DOT to Retrofit Route 22 to Mitigate Flooding.	Coordinate with US DOT to retrofit Route 22 to mitigate flooding.	Flood	High	US DOT	FEMA HMA, US DOT	TBD	4 years	Ongoing	NJDOT is responsible for coordinating.
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	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	Flood, Erosion–Hurricane/ Nor'easter/ Coastal Storm	Low	Township Council	Municipal Budget	TBD	1 - 2 years	Ongoing	

8 – BOROUGH OF KENILWORTH

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Michael Scuderi	**OEM Coordinator**	**Primary Contact, Municipal Meeting**
Tony Gallerano	Borough Engineer and Floodplain Manager	Coordination, Input and Review
Laura Reinersten	Borough Clerk	Coordination, Input and Review
Gregg Budesheim	DPW Superintendent	Coordination, Input and Review
Linda Karlovitch	Mayor	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

The Borough of Kenilworth has a total area of 2.16 square miles and is located between Routes 22 and 28 in central Union County, New Jersey. The Rahway River runs along the border on the west of town, while the Elizabeth River briefly passes through the northeast portion of the borough. Major transportation routes in the Borough include the Garden State Parkway which cuts northeast–southwest through the town, and County Routes 509 and 617. Kenilworth is served by NJ Transit bus service to Manhattan as well as local service on bus route 58. It is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Parcels classified as civic/public (tax exempt) accounted for the largest share of land use in Kenilworth (38%), including park land, schools, and other publicly owned property, followed by parcels classified as residential at 35% of total parcels. Most categories in Kenilworth remained relatively constant from 2016 to 2022; however, industrial land use decreased markedly, falling from 291.8 acres to 161.9 acres (a 45% decrease).

According to NJDEP's Land Use/Land Cover datasets for 2015 and 2020, the land use composition remained roughly the same. According to these datasets, urban land use accounted for the largest share of the total land use at 89%. Forest land followed, accounting for approximately 8% of the total area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	N/A
Barren Land	0	0	N/A
Forest	109	106.8	-2%
Urban	1226	1228.1	<1%
Water	8.4	8.5	1%
Wetlands	33.1	33.1	0%

Recent Major Development and Infrastructure from 2021 to Present

None identified.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The former Merck & Co. campus in Kenilworth will be converted to a data center and research facility. This redevelopment will be known as the NEST campus. The plan for this development has been approved but the final agreement is not complete. PSE&G will be readying the area's electrical infrastructure to support the extensive energy needs of the facility.

Additional anticipated development includes a 165-unit apartment building which has approved near Michigan and Galloping Hill. The development includes about 15 affordable units and is not located in the floodplain

Demographics & Vulnerable Population

Kenilworth Borough has an estimated population of 8,435, of which an estimated 3.9% is under age 5, and 14.5% over age 65. The borough experienced an estimated 1.3% population growth over the ACS survey periods between 2013-2017 and 2018-2022. Within Kenilworth, there are four block groups identified as overburdened (OBC), meeting categorical criteria for Minority and Low Income and Minority populations. There are no parts of the borough which meet designation criteria for CDRZ or CEJST identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	8,435
Population Change since 2017	1.3%
Percent of Population Age < 5	3.9%
Percent of Population > 65	14.5%

HAZARD IDENTIFICATION

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 high, medium, low, or no concern. The following include the borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
Natural Hazards		
Flood		Drought
		Earthquake/Geological
		Erosion- Hurricane/ Nor'easter/Coastal Storm, and Storm Surge
		Extreme Temperature – Cold
		Extreme Temperature – Heat
		Hail
		High Wind – Straight-line Winds
		High Wind - Tornado
		Severe Storm – Lightning
		Severe Storm – Winter Weather (Includes Ice Storms)
		Wildfire
Human-made Hazards		
	Cyber Attack	Civil Unrest
	Hazmat Release – Fixed Site	Economic Collapse
	Power Failure	Hazmat Release – Transportation
	Terrorism	Nuclear Hazard
		Pandemic

Animal disease, dam failure, and landslide (non-seismic) were ranked as N/A.

Hazard Ranking Explanation

Animal disease has been ranked N/A as the town does not contain any commercial or hobby farming activity. Dam failure has also been ranked N/A as there are no dams within the town or upstream which could cause impacts in the case of a failure. Landslide was ranked N/A due to lack of previous occurrence and a perception of low risk.

Earthquake was elevated from N/A in the last plan update to low in this update due to the recent quake which occurred in 2023. No damage was reported but the event did raise concern. Cyberattack and terrorism have been elevated from low to medium. The data center taking over the Merck property could be a potential target for both hazard types.

Hazmat release – fixed site was ranked medium as there is some potential for hazardous materials at former Merck building. Hazmat release - transportation is ranked low as there are only vehicles and no trucks on the Garden State Parkway. Power failure is ranked medium. Historically, during major storms is the only time the borough has had power outages for extended time periods.

Significant Hazard Events Since Last Plan Update

The main hazard event experienced by Kenilworth since the last plan update was Hurricane Ida. The Garden State Parkway experienced major flooding as well as flooding at Galloping Hill near the Parkway. Some houses flooded at Rahway River. Ground level entry split levels were especially impacted. In addition to these more concentrated effects there were sporadic issues around town such as basement flooding.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Kenilworth Borough	
Number of Policies In-Force:	62
Total Losses:	184
Total Payments:	$2,331,415.76
Number of RL Properties:	11
Number of Mitigated RL Properties:	0
RL – Total Losses:	30
RL – Total Paid:	298,829.38
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	0

Vulnerability of the Built Environment

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.

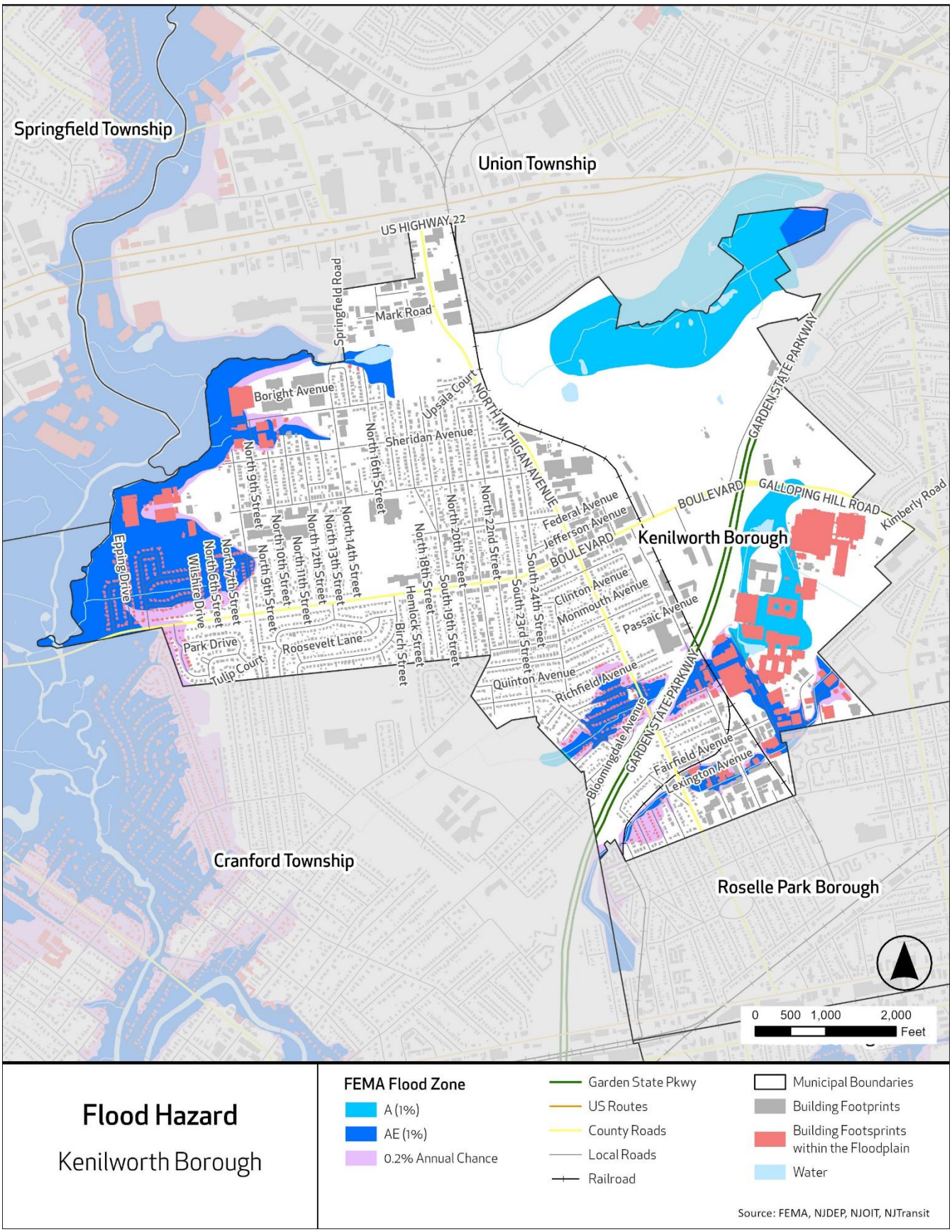
Approximately 18.8 percent of the total area of Kenilworth Borough lies within the 1% annual chance flood zone as defined by FEMA. An additional 3.6 percent of the area of the municipality is in the 0.2% annual chance floodplain.

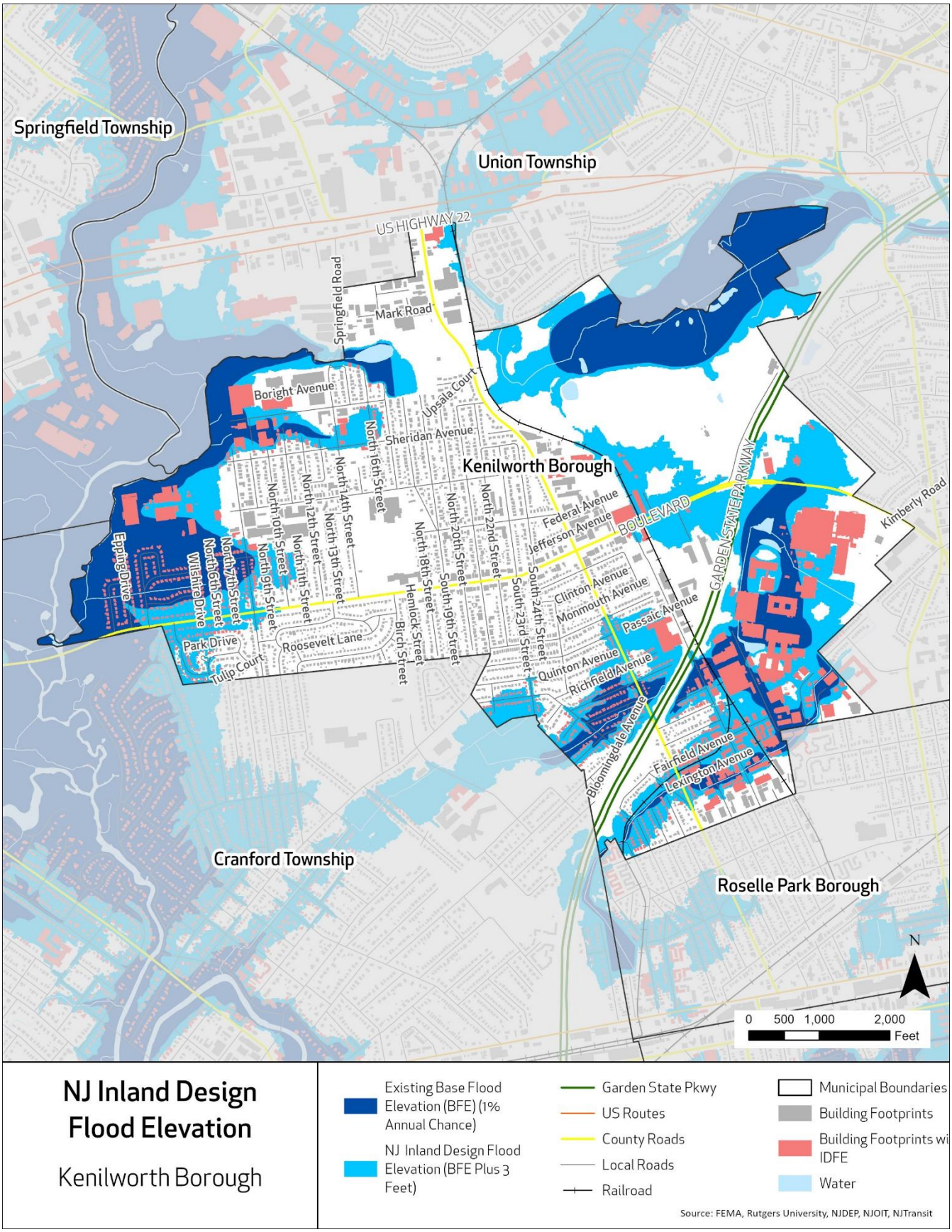
About 93.2 percent of Kenilworth is considered developed. Of the developed parcels of the town, 13.1 percent fall at least partially within the 1% annual chance floodplain and 11.1 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	13.1%	11.1%
Exposed Land Area	18.8%	3.6%

During the planning process, Kenilworth Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The borough identified 14 total facilities. Of these facilities, none are within the floodplain or areas projected to be at risk from sea level rise.

	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-


Springfield Township
Union Township
Cranford Township
Roselle Park Borough
Kenilworth Borough
US HIGHWAY 22
Springfield Road
Mark Road
Boright Avenue
Upsala Court
NORTH MICHIGAN AVENUE
Sheridan Avenue
North 16th Street
North 9th Street
North 10th Street
North 11th Street
North 12th Street
North 13th Street
North 14th Street
North 18th Street
North 20th Street
North 22nd Street
South 19th Street
South 23rd Street
South 24th Street
Epping Drive
Wilshire Drive
North 6th Street
North 7th Street
Park Drive
Tulip Court
Roosevelt Lane
Birch Street
Hemlock Street
Federal Avenue
Jefferson Avenue
BOULEVARD
Clinton Avenue
Monmouth Avenue
Passaic Avenue
Quinton Avenue
Richfield Avenue
GARDEN STATE PARKWAY
Bloomingdale Avenue
Fairfield Avenue
Lexington Avenue
BOULEVARD
GALLOPING HILL ROAD
Kimberly Road
0 500 1,000 2,000
Feet
Flood Hazard
Kenilworth Borough
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
Garden State Pkwy
US Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Springfield Township
Union Township
US HIGHWAY 22
Springfield Road
Mark Road
Boright Avenue
Upsala Court
Sheridan Avenue
Kenilworth Borough
North 16th Street
North 14th Street
North 13th Street
North 12th Street
North 11th Street
North 10th Street
North 9th Street
North 7th Street
North 6th Street
Wilshire Drive
Epping Drive
North 18th Street
South 19th Street
North 20th Street
North 22nd Street
South 23rd Street
South 24th Street
Federal Avenue
Jefferson Avenue
BOULEVARD
Clinton Avenue
Monmouth Avenue
Passaic Avenue
Quinton Avenue
Richfield Avenue
Bloomingdale Avenue
Fairfield Avenue
Lexington Avenue
GARDEN STATE PARKWAY
Kimberly Road
Hemlock Street
Birch Street
Roosevelt Lane
Park Drive
Tulip Court
Cranford Township
Roselle Park Borough
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Kenilworth Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Garden State Pkwy
US Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Kenilworth Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2024	
Capital Improvement Plan	X		2024	Does not include projects that could prevent or reduce impacts of natural hazards
Local Emergency Operations Plan/Continuity of Operations Plan	X		2023	
Floodplain Development Ordinance	X		2023	Does not enforce higher standards
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		2024	
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response	X			This is done through the Building Department
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			This is done through the Building Department
Post-Disaster Recovery Plan	X			
Current/recent redevelopment plans or studies	X			Redevelopment plan for Old Merck property. Contains both housing and commercial development. Does not have any exposure to natural hazards.
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Kenilworth Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		The borough utilizes a consultant as the FPA.
Grant Writer		X	
Staff trained to support mitigation	X		
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Kenilworth Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		The borough utilizes the Everbridge mass notification system and social media.

Education and Outreach Capability	Yes	No	Explanation
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Kenilworth Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs			
Evaluation process on the prioritization of risk reduction projects against other local activities	X		The Council Finance Committee determines prioritization of projects.
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the last update, the borough has continued to get funding to improve its OEM building. It also has been working to identify and fix areas that experience flooding on a regular basis. The borough is working on an update for its master plan, which is due to include a vulnerability assessment.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
08-01	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	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	Flood, Erosion–Hurricane /Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	Staff Time	1 - 2 years	Completed	Adopted in September 2024
08-02	Improve Maintenance of Brook near GSP	There is a 10-foot-wide area that requires minor cleaning. It is located near a repetitive loss area where water comes off the parkway. The area was last cleaned out about 15-20 years ago	Flood		NJTA				Completed	The area was cleaned by NJ Turnpike Authority. As it was handled by the Turnpike Authority, the borough does not have information on funding and cost.

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
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.	All Hazards	High	Borough Engineer	Capital Budget	$800,000.00	1 year	Ongoing	The borough has applied for numerous grants and has not yet had success.

Action	Name	Description	Hazards Addressed	Priority	Respons-ible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
08-04	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.	Flood	High	Code Enforce-ment	FEMA HMA	TBD	3 - 5 years	Ongoing	No update. Lots of split level homes which can complicate elevations.

9 – CITY OF LINDEN

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Christopher Guenther	Administrative Division Captain, Police Department	Primary Contact
Joseph C. Chrobak	Supervising Engineer	Steering Committee Kick-off Meeting, Municipal Workshop 1, Municipal Meeting
Nicholas Pantina	City Engineer	Municipal Workshop 1, Municipal Meeting
David Hart	Police Chief, OEM Coordinator	Municipal Meeting
Bill Hasko	Fire Chief	Coordination, Input and Review
Aimee Puluso	Public Health Officer	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

The City of Linden has an area of 11.4 square miles and is located in southeastern Union County, New Jersey. Linden ranges in elevation from sea level to an elevation of up to 90 feet. It is primarily an industrial city, with developed land accounting for nearly 79% of its area. It lies on the Arthur Kill, a navigable waterway used by shipping traffic to the Port Authority of New York and New Jersey. Linden is home to numerous businesses and several industries, along with major transportation routes such as the New Jersey Turnpike, Interstate 278, U.S. Routes 1 and 9, and State Route 27. Less than a mile from the Goethals Bridge, Linden carries traffic going to and coming from Staten Island, New York. Additionally, two major freight and commuter rail systems pass through the City. The Newark International Airport and Linden Airport also serve Linden.

Owing to its proximity to Rahway River and Arthur Kill, Linden experiences significant flooding. Furthermore, because the city is substantially developed, it faces recurring flooding during heavy rainfall events, in turn exacerbating hazmat risk. Linden is a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Linden is primarily an industrial community, with industrial use accounting for 45% of the land use, covering 2,679 acres of land in 2022. In the same year, residential (including apartment) use made up 20% of the land use, covering approximately 1,198 acres of land. Civic/public (tax exempt) land, vacant land, commercial land, and railroad property accounted for 15%, 12%, 6%, and 3%, respectively of Linden's total area. Between 2016 and 2022, the area under commercial use declined by 29%, while vacant land increased by 28%.

The increase in vacant land is also reflected in NJDEP's Land Use/Land Cover data for 2015 and 2020, which shows a 30% increase in barren land from 2015 to 2020. The same data shows a 1% decrease in urban/developed land, diminishing from 5,651 acres in 2015 to 5,577.8 acres in 2020. There was negligible change in other land uses during this period.

Land Use Type	Total Acres (2016)	Total Acres (2022)	Percent Change
Agriculture	0.0	0.0	-
Barren Land	352.8	459.6	30%
Forest	243	237.8	-2%
Urban	5651	5577.8	-1%
Water	281.1	278.3	-1%
Wetlands	555.5	530	-5%

Recent Major Development and Infrastructure from 2021 to Present

New residential properties were built at North Wood Avenue, South Wood Avenue, and West Elizabeth Avenue. However, none of these are in a floodplain.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The Walmart at Legacy Square will be redeveloped into the largest Walmart in the country. It is not located in a regulatory floodplain.

There will be residential development along West Elizabeth Ave and redevelopment of Airport Property on West Edgar Road. In addition, continued redevelopment along the private section of Tremley Point Road and also Marshes Dock Road.

Demographics & Vulnerable Population

Linden has an estimated population of 43,478. Of these residents, an estimated 5.6% are under age 5, and an estimated 13.7% are over age 65. The city experienced a modest population growth over the periods between ACS surveys (2013-2017 and 2018-2022), with an estimated 2.96% increase in total population. Within Linden, there are thirty-six (36) block groups which meet criteria of overburdened communities (OBC), with twenty-eight block groups identifying overburdened *Minority* populations and eight block groups identifying overburdened *Low Income and Minority* communities. These block groups cover nearly the entirety of the city's area. Linden's eastern portion is also designated largely as vulnerable under CEJST criteria, with five census tracts matching criteria for vulnerabilities of *Workforce Development, Housing, Legacy Pollution, Transportation, and Water and Wastewater.* There are no portions of the city which meet criteria for CDRZ identification. Linden is an Environmental Justice Community.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	43,478
Population Change since 2017	2.96%
Percent of Population Age < 5	5.64%
Percent of Population > 65	13.74%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Flood	Dam Failure	Drought
Storm Surge - Hurricane/Tropical Storm/Nor'easter	Erosion – Hurricane/Nor'easter/Coastal Storm	Earthquake/Geological
	Extreme Temperature - Cold	Hail
	Extreme Temperature - Heat	Landslide (Non-Seismic)
	High Wind – Straight-line Winds	Wildfire
	High Wind - Tornado	
	Severe Storm - Lightning	
	Severe Storm – Winter Weather (Includes Ice Storms)	
Human-made Hazards		

Hazmat Release – Fixed Site	Civil Unrest	Animal Disease
Hazmat Release - Transportation	Power Failure	Economic Collapse
Terrorism	Cyber Attack	Nuclear Hazard
	Pandemic	

Hazard Ranking Explanations

Given its proximity to Rahway River and Arthur Kill, flooding is a significant issue in Linden, particularly during heavy rainfall events. As a result, the city ranked flood and storm surge – hurricane/tropical storm/nor'easter as high. Key locations affected by flooding include Clinton Street, Emma Place, and 14th Street, where four buyouts recently took place. Furthermore, 22 Blue Acres buyouts took place at Madison Street, Arthur Street, Irene Street, Main Street, and Parkway Avenue where properties were affected by tidal flooding. Flooding also occurs along the Peach Orchard Brook, particularly at Sherman Street and Bergen Avenue, where four properties applied for buyouts while four other properties were demolished. Given the recurring flooding along the Peach Orchard Brook, the city wishes to enlarge the Amtrak Culvert located in the area. Another location experiencing recurring flooding is West Brook, which was identified as vulnerable to flooding in the 100-year projections. Additionally, West Saint Georges Avenue and Stiles Street, along with areas around Dewitt and Elmwood, experience significant flooding during heavy rainfall, with Dewitt and Elmwood experiencing flooding owing to an undersized pipeline. According to the city, installing catch basins along West Saint Georges and Stiles would help mitigate flooding.

Linden ranked terrorism as high because of the presence of several soft targets such as shopping centers and malls, along with Merck (which has approximately 7,000 employees), the Phillips 66 refinery (the largest refinery on the East Coast), the PSE&G Electric Generating Station, and the Co-Gen facility within the refinery. Flooding caused by dam failure has the potential to cause hazmat issues; consequently, the city ranked dam failure as a hazard of medium concern. Furthermore, it ranked power failure as medium owing to intermittent power outages.

Significant Hazard Events Since Last Plan Update

Hurricane Ida in 2021 caused severe flooding in Linden. Areas affected by flooding included Clinton Street, Emma Place, 14th Street, East 12th Street, East 13th Street, Sherman Street and Bergen Avenue, West Brook, West Saint Georges Avenue and Stiles Street, and Dewitt and Elmwood, as well as Academy Terrace and also Rosewood Terrace and Fernwood Terrace and Summit Terrace. Since 2021, in response to recurring flooding, nine bridges in the city, including one state bridge, one private bridge, and seven county bridges, were identified for replacement by Disko Associates.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to increase the frequency and intensity of hazards faced by Linden. As global temperatures rise, the risk of flooding due to hurricanes and nor'easters is also growing. This risk is further exacerbated by an inadequate drainage system, including undersized or deteriorating pipelines, as seen in Dewitt and Elmwood. Furthermore, since Linden is an industrial town, the risk of hazmat incidents is likely to rise significantly. Flooding and storm surges, which are expected to become more frequent, could increase the likelihood of such incidents.

Additionally, higher temperatures and prolonged heatwaves could increase risks of extreme temperature events, which may become more frequent and harder to manage, particularly for the city's nearly 14% population over 65. Aging infrastructure, already leading to standing water points during heavy rains, could be further strained by more severe storms, leading to compounding impacts of roadways flooding and potential power outages.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

City of Linden	
Number of Policies In-Force:	107
Total Losses:	341

City of Linden	
Total Payments:	$7,735,242.78
Number of RL Properties:	22
Number of Mitigated RL Properties:	0
RL – Total Losses:	58
RL – Total Paid:	$1,493,397.83
Number of SRL Properties:	5
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	31
SRL – Total Paid:	$2,056,209.71

Vulnerability of the Built Environment

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. Most of the land to the east of Route 1 to the Arthur Kill is in the Special Flood Hazard Area (SFHA).

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 current sizing of storm sewers cannot handle current torrential rainfalls. The city experiences nuisance flooding along Dewitt Terrace, Summit Terrace, Sunnyside Park, and Myles McManus Middle School. Given its 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).

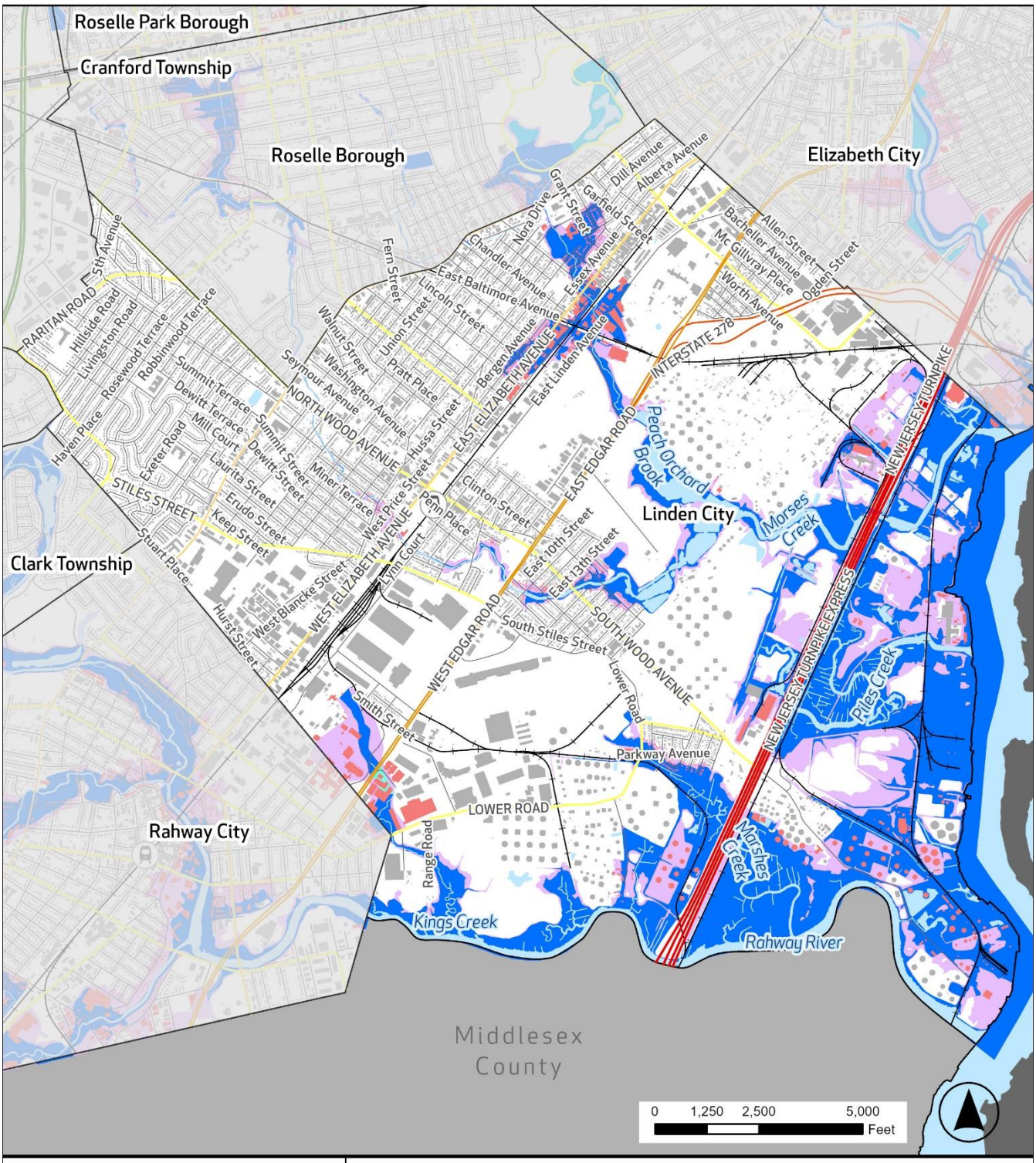
Approximately 19.8 percent of the total area of the City of Linden lies within the 1% annual chance floodplain as defined by FEMA. An additional 8.1 percent of the area of the municipality is in the 0.2% annual chance floodplain.

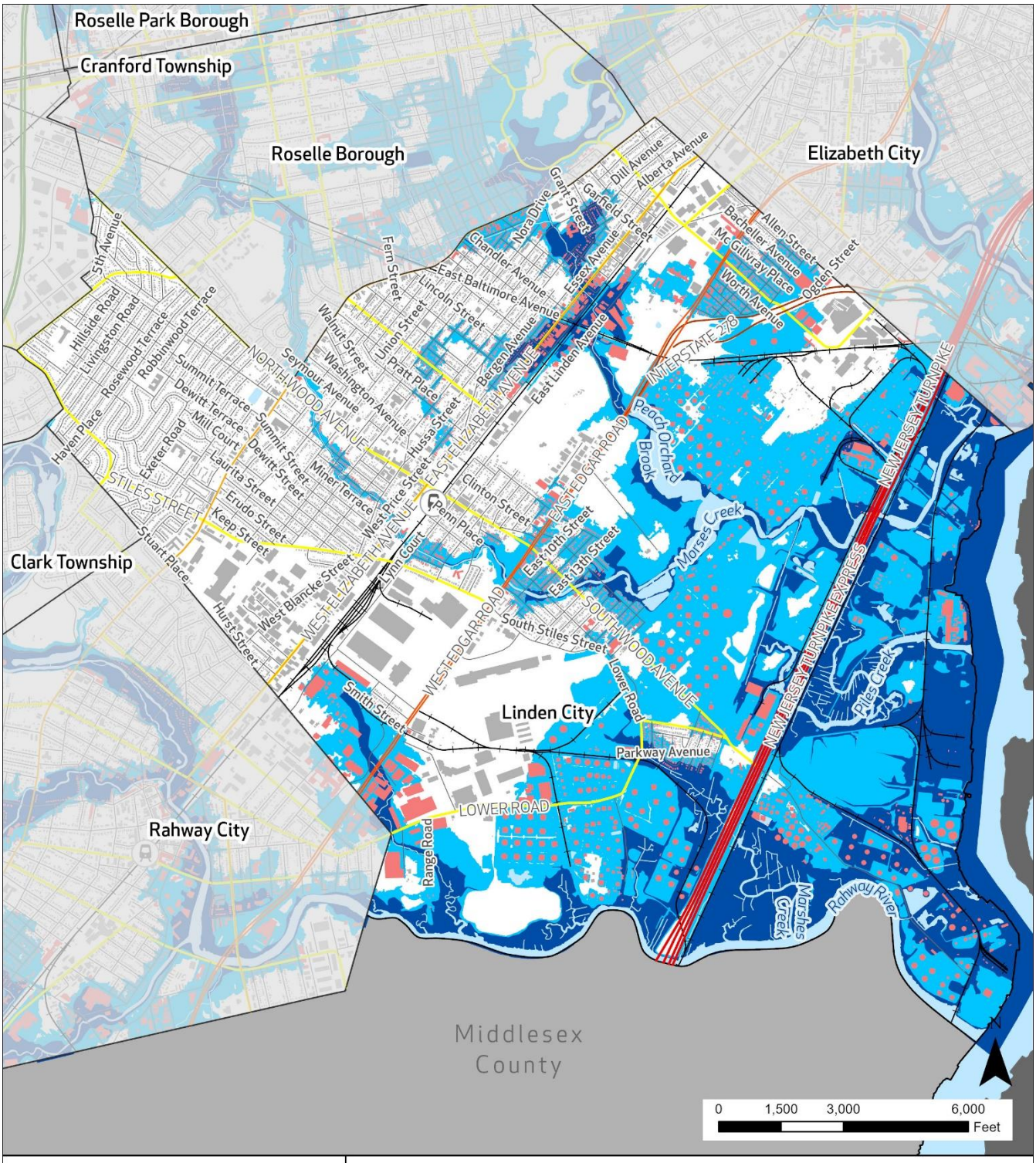
About 97.8 percent of Linden is considered developed. Of the developed parcels of the town, 7.5 percent fall at least partially within the 1% annual chance floodplain and 6.8 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that development in the municipality has generally occurred in areas that are less prone to flooding.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	7.5%	6.8%
Exposed Land Area	8.1%	19.8%

During the planning process, the City of Linden identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The city identified 90 total facilities. Of these facilities, five are within the floodplain and one is within the area of inundation under 5 feet of sea level rise.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain	Number Within 5 feet of Sea Level Rise
Hazardous Materials	-	1	1
Exposed Land Area	8.1%	19.8%	


Roselle Park Borough
Cranford Township
Roselle Borough
Elizabeth City
Clark Township
Linden City
Rahway City
Middlesex County
RARITAN ROAD
5th Avenue
Hillside Road
Livingston Road
Rosewood Terrace
Robbinwood Terrace
Haven Place
Exeter Road
Summit Terrace
Dewitt Terrace
Mill Court
Summit Street
Dewitt Street
Lauritta Street
Miner Terrace
Erudo Street
Keep Street
STILES STREET
Stuart Place
Hurst Street
NORTH WOOD AVENUE
Seymour Avenue
Washington Avenue
Walnut Street
Fern Street
Union Street
Lincoln Street
Pratt Place
Husa Street
West Price Street
Penn Place
Clinton Street
Lynn Court
WEST ELIZABETH AVENUE
West Blancke Street
Chandler Avenue
East Baltimore Avenue
Nora Drive
Grant Street
Garfield Street
Dill Avenue
Alberta Avenue
Essex Avenue
Bergen Avenue
EAST ELIZABETH AVENUE
East Linden Avenue
EAST EDGAR ROAD
WEST EDGAR ROAD
East 10th Street
East 13th Street
South Stiles Street
SOUTH WOOD AVENUE
Lower Road
Parkway Avenue
LOWER ROAD
Smith Street
Range Road
Allen Street
Bachelier Avenue
Mc Gillvray Place
Worth Avenue
Ogden Street
INTERSTATE 278
NEW JERSEY TURNPIKE
NEW JERSEY TURNPIKE EXPRESS
Peach Orchard Brook
Morses Creek
Piles Creek
Marshes Creek
Kings Creek
Rahway River
0 1,250 2,500 5,000
Feet
Flood Hazard
Linden City
FEMA Flood Zone
AE (1%)
AO (1%)
0.2% Annual Chance
Interstate Routes
New Jersey Tpke
State Routes
US Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit

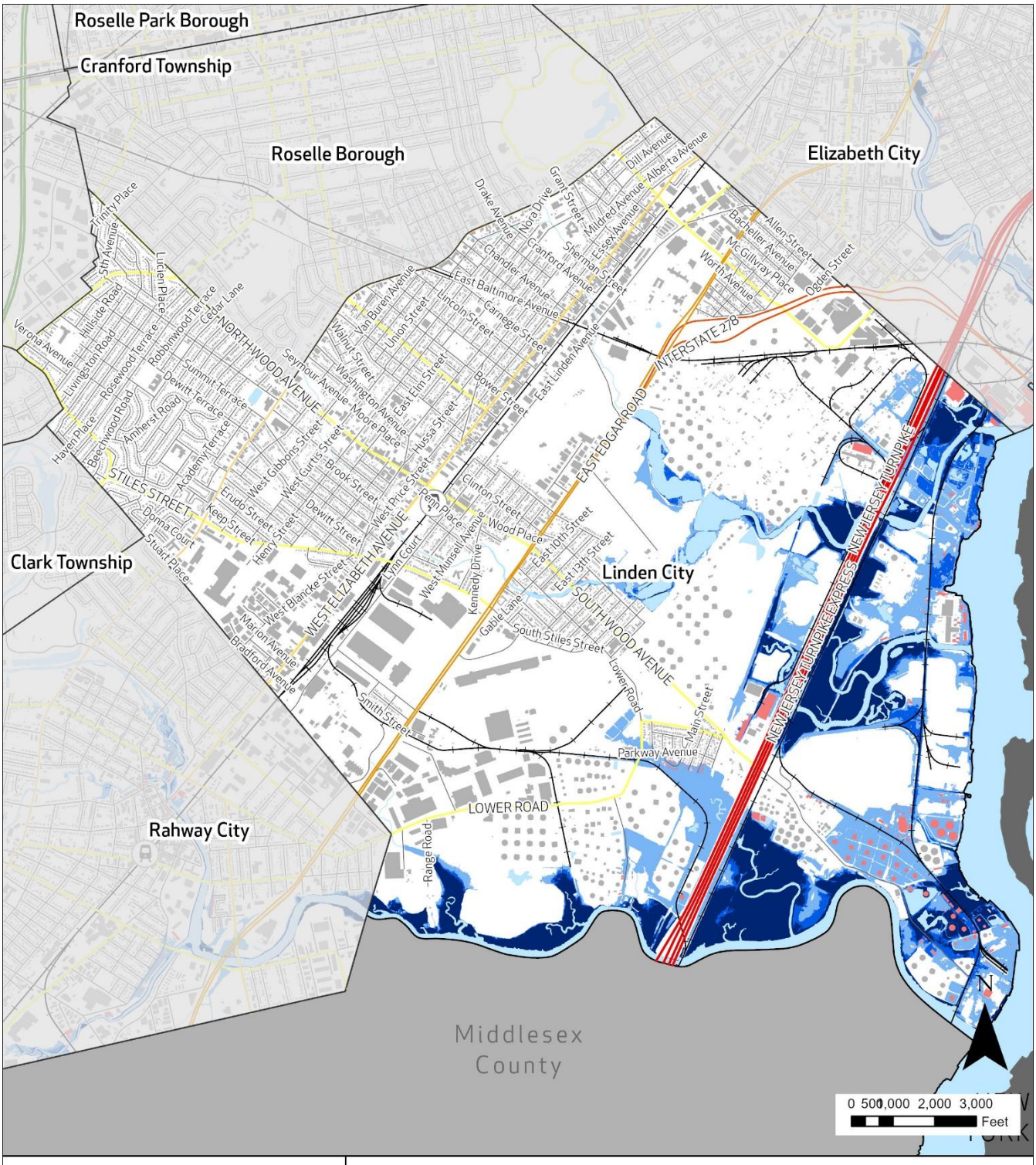


NJ Inland Design Flood Elevation

Linden City

- Existing Base Flood Elevation (BFE) (1% Annual Chance)
- NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
- Interstate Routes
- New Jersey Tpke
- US Routes
- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station
- Municipal Boundaries
- Building Footprints
- Building Footprints within IDFE
- Water

Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit


Roselle Park Borough
Cranford Township
Roselle Borough
Elizabeth City
Clark Township
Linden City
Rahway City
Middlesex County
NORTHWOOD AVENUE
STILES STREET
WEST ELIZABETH AVENUE
EAST EDGAR ROAD
SOUTH WOOD AVENUE
LOWER ROAD
INTERSTATE 278
NEW JERSEY TURNPIKE EXPRESS
NEW JERSEY TURNPIKE
Parkway Avenue
Main Street
Lower Road
Range Road
Smith Street
South Stiles Street
Gable Lane
Kennedy Drive
West Munsell Avenue
Lynn Court
Wood Place
East 10th Street
East 13th Street
Clinton Street
West Price Street
Penn Place
Brook Street
West Curtis Street
West Gibbons Street
Dewitt Street
Keep Street
Erudo Street
Henry Street
Donna Court
Stuart Place
West Blancke Street
Marion Avenue
Bradford Avenue
Hillside Road
Livingston Road
Rosewood Terrace
Robbinwood Terrace
Cedar Lane
Lucien Place
5th Avenue
Trinity Place
Verona Avenue
Haven Place
Beechwood Road
Amherst Road
Academy Terrace
Dewitt Terrace
Summit Terrace
Seymour Avenue
Moore Place
Washington Avenue
Walnut Street
Van Buren Avenue
Union Street
Lincoln Street
East Elm Street
Husca Street
Bower Street
Garnegie Street
East Baltimore Avenue
Chandler Avenue
Cranford Avenue
Sherman Street
Grant Street
Nora Drive
Drake Avenue
Mildred Avenue
Essex Avenue
Dill Avenue
Alberta Avenue
East Linden Avenue
Allen Street
Bachelier Avenue
McGilvray Place
Worth Avenue
Ogden Street
0 500 1,000 2,000 3,000
Feet
N
Permanent Inundation Under Sea Level Rise (SLR) Scenarios
Linden City
Inundation Under 5 Feet SLR
Inundation Under 3 Feet SLR
Inundation Under 2 Feet SLR
Interstate Routes
New Jersey Tpke
State Routes
US Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Water
Buidling Footprint
Building Footprint within SLR area
Source: FEMA, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The City of Linden has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		11/18/2022	
Capital Improvement Plan	X		05/01/2025	
Local Emergency Operations Plan/Continuity of Operations Plan	X		04/18/2024	
Floodplain Development Ordinance	X		2024	
Floodplain Management Plan	X		04/18/2024	
Stormwater Management Ordinance	X		08/20/2024	
Stormwater Management Plan	X		08/20/2024	
Watershed Management Plan		X		City participates in county-level plan, does not maintain own
Sheltering Plan	X		04/18/2024	
Evacuation Plan	X		04/18/2024	
Substantial Damage/Improved Structures Response				
Repetitive Loss Plan		X		No formalized plan in place, but repetitive loss properties have been identified
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			Recorded and maintained in city engineering department
Post-Disaster Recovery Plan				
Current/recent redevelopment plans or studies	X			
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

The City of Linden has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		
Grant Writer	X		
Staff trained to support mitigation	X		
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		
Organizations that work with socially vulnerable or underserved populations	X		

Education and Outreach Capabilities

The City of Linden has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)	X		

Financial Capabilities

Within the last five years, the City of Linden has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities	X		

Additional Capability Assessment Information

The City of Linden is a Forerunner community. Forerunner has dynamic tools to better manage flood risk and increase resilience by enforcing floodplain compliance and increasing disaster response by documenting damages in the field and providing timely information to residents. Forerunner's public features give residents access to relevant property-level flood risk details that help inform key decisions and minimize the number of assistance requests. Forerunner is also designed to make CRS participation easier for the city.

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since 2021, the City of Linden has initiated a comprehensive mitigation action strategy aimed at strengthening its resilience against natural disasters and human-made hazards. This strategy focuses on enhancing infrastructure, promoting sustainable development practices, and fostering community engagement to effectively reduce vulnerabilities and ensure the well-being of its residents. The collaborative efforts of its various City Departments, as well as other governmental partners and stakeholders within the private sector, have demonstrated the City's commitment to a safer and more sustainable future.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
09-01	Install Channel Improvements Along West Brook at Clinton Street.	Installation of channel improvements along West Brook at Clinton Street.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Linden Engineer		$600,000		Withdrawn	
09-02	Flood-proof Department of Public Works.	Flood-proof Department of Public Works.	Flood		Linden DPW	Municipal Capital Improvement Plan	$160,000		Completed	Elevated the boiler and electrical.
09-03	Geolocate Two Dams on Conoco Phillips Refinery.	Geolocate Two Dams on Conoco Phillips Refinery.	Flood		Linden OEM		-		Withdrawn	
09-04	Collect Additional Specific Data for Plan Update (Natural Events).	Collection of additional specific data for Plan update (natural events).	Severe Storm–Winter Weather (Ice Storm)		Linden OEM		-		Withdrawn	
09-05	Collect Additional Specific Data for Plan Update (Hazardous Materials).	Collection of additional specific data for Plan update (HazMat).	Hazardous Materials Release		Linden OEM		-		Withdrawn	
09-06	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.	Flood		Engineering	Fish & Wildlife	$2,500,000		Completed	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
09-07	Purchase a Backup Generator for City Hall.	Back-up generator for City Hall.	All Hazards		OEM	Municipal Capital Improvement Plan	$575,000		Completed	
09-08	Replace Range Road Bridge.	Replace Range Road Bridge to eliminate flood risk.	Flood		Linden Engineer	Municipal budget	$300,000	1 year	Completed	
09-09	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.	Flood		State of NJ	NJDEP Blue Acres Program	$8,000,000		Completed	Acquisition completed through the Blue Acres program.
09-10	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	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	Staff time	1 - 2 years	Completed	

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
09-11	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.	Flood	High	Linden DPW	Municipal budget	$265,000	Ongoing	Ongoing	An infiltration study costing $75,000 was conducted. The study was funded through the municipal budget.
09-12	Control Flooding from West Brook by Constructing Flood Walls from 11th Street to Clinton Street, Installing Channel	Control flooding from West Brook by constructing flood walls from 11th Street to Clinton Street, installing channel improvements at Clinton Street, and cleaning	Flood	High	Linden Engineering	FEMA HMA, Municipal Budget	$3,000,000	5 years	Ongoing	Princeton Hydro LLC conducted a study to address Peach Orchard Brook and West Brook flooding. The City

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Improvements at Clinton Street, and Cleaning West Brook at Linden Ave, Stimpson Ave, and 11th Street.	West Brook at Linden Ave, Stimpson Ave, and 11th Street.								wants to implement the findings of the study.
09-13	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.	Flood	High	Linden DPW	FEMA HMA, Municipal Budget	$1,000,000	1-5 years	Ongoing	City of Rahway to work on downstream improvements of Allen Street Creek.
09-14	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 Sen	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.	Flood	High	Linden Engineering	FEMA HMA, Municipal Budget	$1,000,000	2 years	Ongoing	Water gets held up at Allen St. Creek where there is a railroad property having an old freight line.
09-15	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)	Severe Storm–Winter Weather (Ice Storm), Severe Storm – Lightning	High	Linden		$575,000		Ongoing	Red Cross wishes to certify the Center as a center without a generator.
09-16	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.	Power Failure, Severe Storm–Winter Weather (Ice Storm), Severe	Medium	Linden Engineer	FEMA HMA, Municipal budget	$300,000	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
			Storm – Lightning							
09-17	Acquire or Elevate 1 Repetitive Loss Property on Clinton Street, 1 Repetitive Loss Property on Hussa Street, 1 Repetitive Loss property on N. Stiles Street and 1 Repetitive Loss property on Sherman Street.	Acquire or elevate structures on Clinton Street, Hussa Street, Stiles Street and Sherman Street, listed as RL/SRL property. Linden City will work with homeowner to mitigate their property.	Flood	High	State	FEMA HMA	$2,500,000	2 - 4 years	Ongoing	
09-18	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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$5,000	1 year	Ongoing	City needs to conduct outreach as part of CRS.
09-19	Improve the Stormwater and Sewer System in the Rosewood Terrace Area, 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.	Flood	High	Linden Roselle Sewerage Authority	FEMA HMA, Municipal Budget	$500,000	2 years	Ongoing	Wickersham Ave was taken out from this action because a soccer field costing $2.5 million is planned at the site, and the drainage might get updated through these funds. A 500 feet pipeline is planned at Elmwood Terrance, Dewitt Terrace and Summit Terrace.
09-20	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.	Flood, Storm Surge - Hurricane/Tropical Storm/Nor' easter	High	Linden Engineering	FEMA HMA	$3,000,000	Ongoing	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
09-21	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.	Flood, Storm Surge - Hurricane/Tropical Storm/Nor' easter	High	Linden Engineering	FEMA HMA	$15M	Ongoing	Ongoing	
09-22	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.	All Hazards	Low	Administration /OEM	Municipal Budget	Staff time	Ongoing	Ongoing	No progress.
09-23	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.	Flood	High	Linden Engineering	FEMA HMA, Municipal Budget	$100,000	1 year	New	City wishes to install a 200 feet pipeline and 1-2 catch basins at the site.
09-24	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.	Flood, Terrorism, Hazmat Release – Fixed Site, Hazmat Release – Transportation	High	NJDOT	DHS	$92M	1 - 5 years	New	No update although meetings with Department of Transportation have taken place.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
09-25	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.	Flood, Terrorism, Hazmat Release – Fixed Site, Hazmat Release – Transportation	Low	LIMAC, Linden OEM	Municipal Budget	TBD	1 - 5 years	New	

10 – BOROUGH OF MOUNTAINSIDE

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Matthew DeAnna	**Director of Public Works/OEM**	**Primary Contact, Municipal Workshop 1, Municipal Meeting**
Michael Disko	Municipal Engineer	Alternative Point of Contact, Municipal Workshop 1, Municipal Meeting
Keith C. Turner	OEM Director	Coordination, input, and review

COMMUNITY OVERVIEW

Overview

The Borough of Mountainside has a total area of 4.05 square miles and is located in western Union County, New Jersey. The Borough was named for its location alongside the Watchung Mountains, a group of three long low ridges between 400 and 500 feet high which rise in the western side of town. The Watchung Reservation, the largest nature reserve in Union County, lies partially within Mountainside. Major thoroughfares include Route 22 and Interstate 78. Mountainside is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. In Mountainside, civic/public (tax exempt) including park land, schools, and other publicly owned property, comprised the largest category with the MOD-IV dataset showing it accounting for 53% of the total land area in 2022. residential land use (including apartment land use) accounts for the second-largest share of the land area at 38%. Notably, from 2016 to 2022, commercial land use increased by 21%, rising from 87 acres to 105.6 acres.

According to NJDEP's Land Use/Land Cover datasets for 2015 and 2020, the land use composition remained roughly the same. According to these datasets, urban land use accounted for the largest share of the total land use at 79%. Forest land followed, accounting for approximately 18% of the total area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	27.5	29.1	6%
Barren Land	8.7	1.3	-85%
Forest	493.9	509.9	3%
Urban	2248.8	2238.2	>0%
Water	39.4	39.9	1%
Wetlands	26.6	26.6	0%

Recent Major Development and Infrastructure from 2021 to Present

In 2024, the borough constructed a new Department of Public Works facility along Route 22. The project cost $2 million and was funded through the sale of land on Mountain Avenue which is to be the site of the Park West condominium complex.

Park West at Mountainside is a 36- unit townhome condominium development located near Mountainside Avenue and New Providence Road in the south of town. The development is currently in the final stage of construction and expected to be completed in 2025. This complex is not located in the floodplain.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

Anticipated development includes a 20-lot subdivision of single-family homes off Route 22 which is in the planning process. It is not located within the floodplain.

Demographics & Vulnerable Population

Mountainside Borough has an estimated population of 6,991, of which an estimated 8.9% is under age 5 and 25.4% is estimated to be over age 65. Mountainside has experienced modest population growth over ACS survey periods between 2013-2017 and 2018-2022, with an estimated 1.2% shift. There are no communities within the borough which are identified as potentially socially vulnerable according to CDRZ, CEJST, or OBC criteria.

With an aging population making up nearly a quarter of the total community, Mountainside may focus hazard mitigation efforts on those with robust messaging and engagement for older residents, evacuation plans inclusive of populations with mobility issues, and resilient networks for resource accessibility post-disaster.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	6,991
Population Change since 2017	1.2%
Percent of Population Age < 5	8.9%
Percent of Population > 65	25.4%

HAZARD IDENTIFICATION

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 high, medium, low, or no concern. The following include the borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
	Natural Hazards	
	Drought	Dam Failure
	Extreme Temperature – Cold	Earthquake/Geological
	Extreme Temperature – Heat	Erosion- Hurricane/ Nor'easter/Coastal Storm
	Flood	Hail
	High Wind – Straight-line Winds	Landslide (Non-Seismic)
	High Wind - Tornado	
	Severe Storm – Lightning	
	Severe Storm – Winter Weather (Includes Ice Storms)	
	Wildfire	
	Human-made Hazards	
	Cyber Attack	Animal Disease
	Hazmat Release – Fixed Site	Civil Unrest
	Hazmat Release – Transportation	Economic Collapse
	Pandemic	Nuclear Hazard
	Power Failure	Terrorism

Storm surge – hurricane/nor'easter/tropical storm was ranked as N/A.

Hazard Ranking Explanation

Storm surge – hurricane/ nor'easter/tropical storm is ranked as N/A due to the absence of tidally influence waters within the borough.

Animal Disease is ranked as low. Working farms are not allowed. Erosion is low as it only is a concern in one area of the town behind Dunn Parkway. Wildfire is ranked as medium due to the risk of brushfire at the Watchung Reservation. Terrorism will remain low concern. The Diamond Head building which was formerly IRS is now inhabited by NJDOL.

Cyber attack was changed from low in the previous plan update to medium in this update due to increased occurrences around the country. Drought has also been ranked as medium, up from low in the last update, due to recent events and potential for wildfire in the Reservation.

Flood is ranked medium by Mountainside. Problem areas identified by the planning team include a grate at Possum Pass near the Springfield/Mountainside border that floods even though the borough attempted to mitigate the issue. Water can go over the grate and bulkhead during significant events like Ida. Additionally, near Deerfield School there is a creek that sometimes floods the surrounding area, although impacts are usually not extensive. The borough planning team reports that they believe the water table has changed throughout the years, reporting that during the last 10-15 years residential basement flooding has become more frequent, resulting in many residents utilizing sump pumps.

Significant Hazard Events Since Last Plan Update

Impacts in Mountainside from the remnants of Hurricane Ida were minimal compared to other areas in the county. The borough experienced no road or property damage. There were some basements which flooded from lost power causing sumps not to work.

A young man was killed when his car hit a tree and caused an explosion in the Watchung Reservation during the height of the drought. This event prompted concerns regarding wildfire in the area especially during drought events.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to impact the risks and hazards faced by the Borough of Mountainside. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and heavy rainfall are likely to increase. This will exacerbate existing vulnerabilities, particularly in areas prone to flooding. Although the general trend is toward a warmer climate, climate change has the potential to intensify winter storms, due to increased moisture, potentially leading to heavier snowfall when temperatures are cold enough to result in snow. Additionally, higher temperatures and prolonged heatwaves could increase the risk of wildfires and brushfire, which may become more frequent and harder to manage.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Mountainside Borough	
Number of Policies In-Force:	21
Total Losses:	29
Total Payments:	$330,458.77
Number of RL Properties:	2
Number of Mitigated RL Properties:	0
RL – Total Losses:	5
RL – Total Paid:	$41,476.77
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0

Mountainside Borough	
SRL – Total Losses:	0
SRL – Total Paid:	0

Vulnerability of the Built Environment

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.

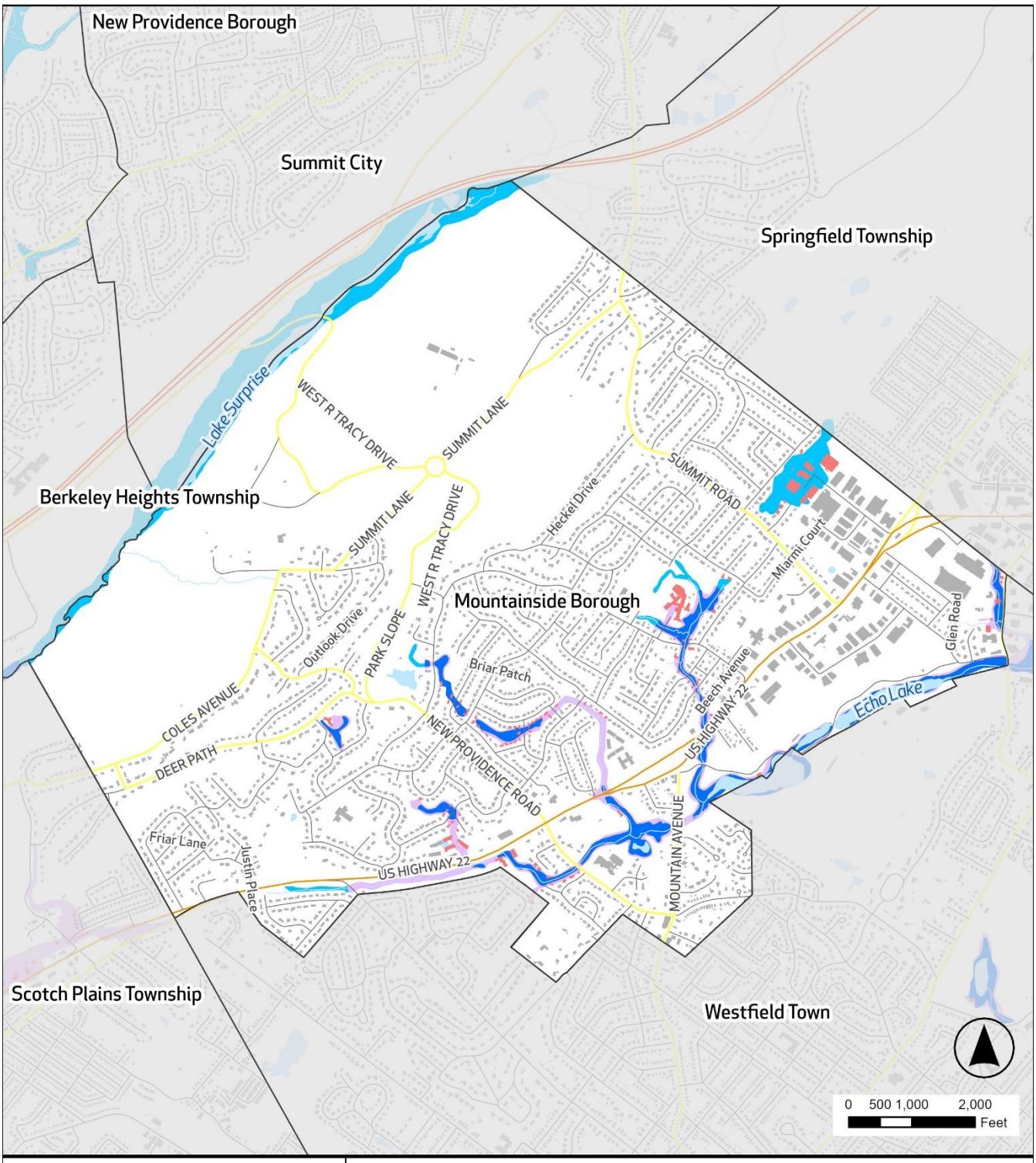
Approximately 4.2 percent of the total area of Mountainside, lies within the 1% annual chance floodplain as defined by FEMA. An additional 1.4 percent of the area of the municipality is in the 0.2% annual chance floodplain.

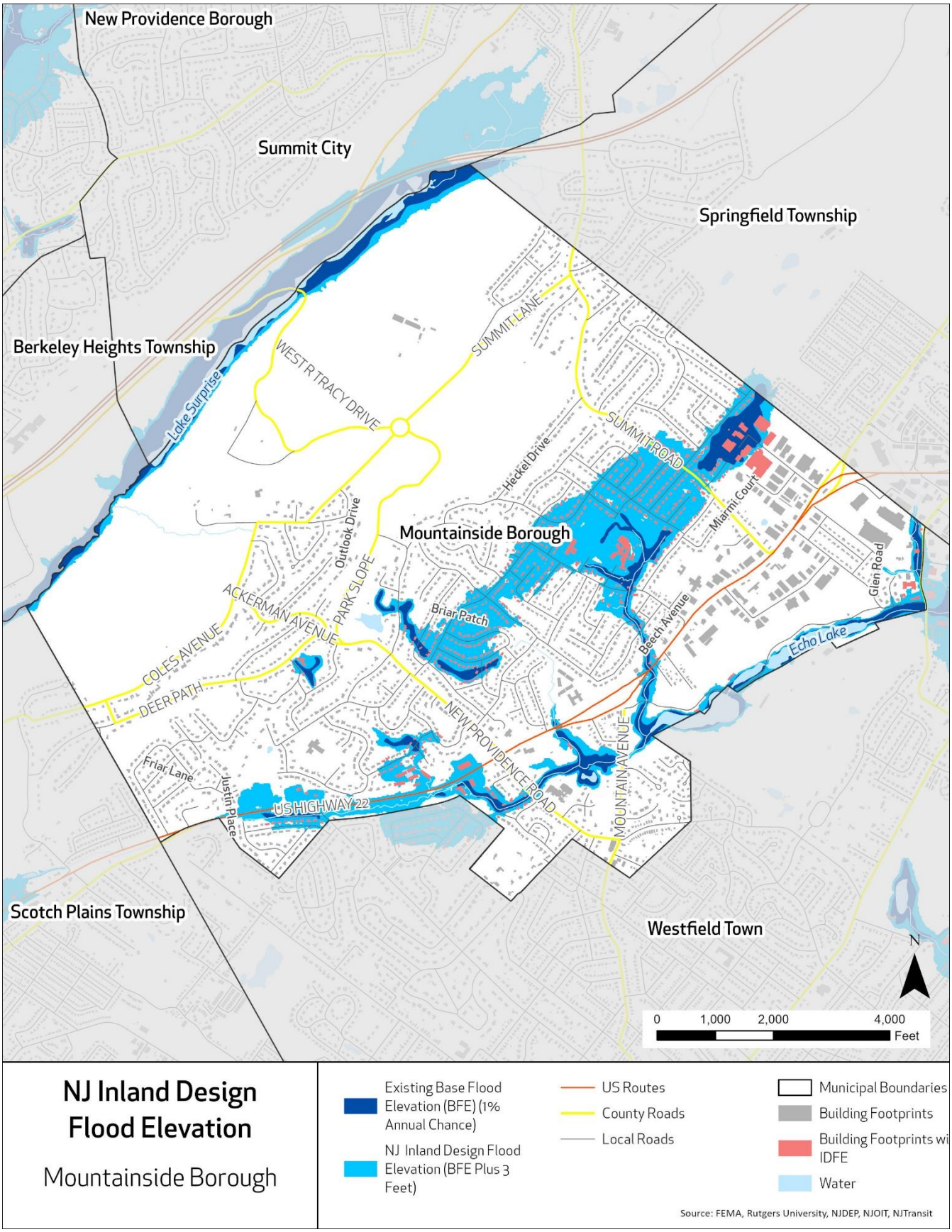
About 49.4 percent of Mountainside is considered developed. Of the developed parcels of the town, 5.9 percent fall at least partially within the 1% annual chance floodplain and 6.9 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk with perhaps slightly more development within the 0.2% annual chance floodplain than expected based on total area.

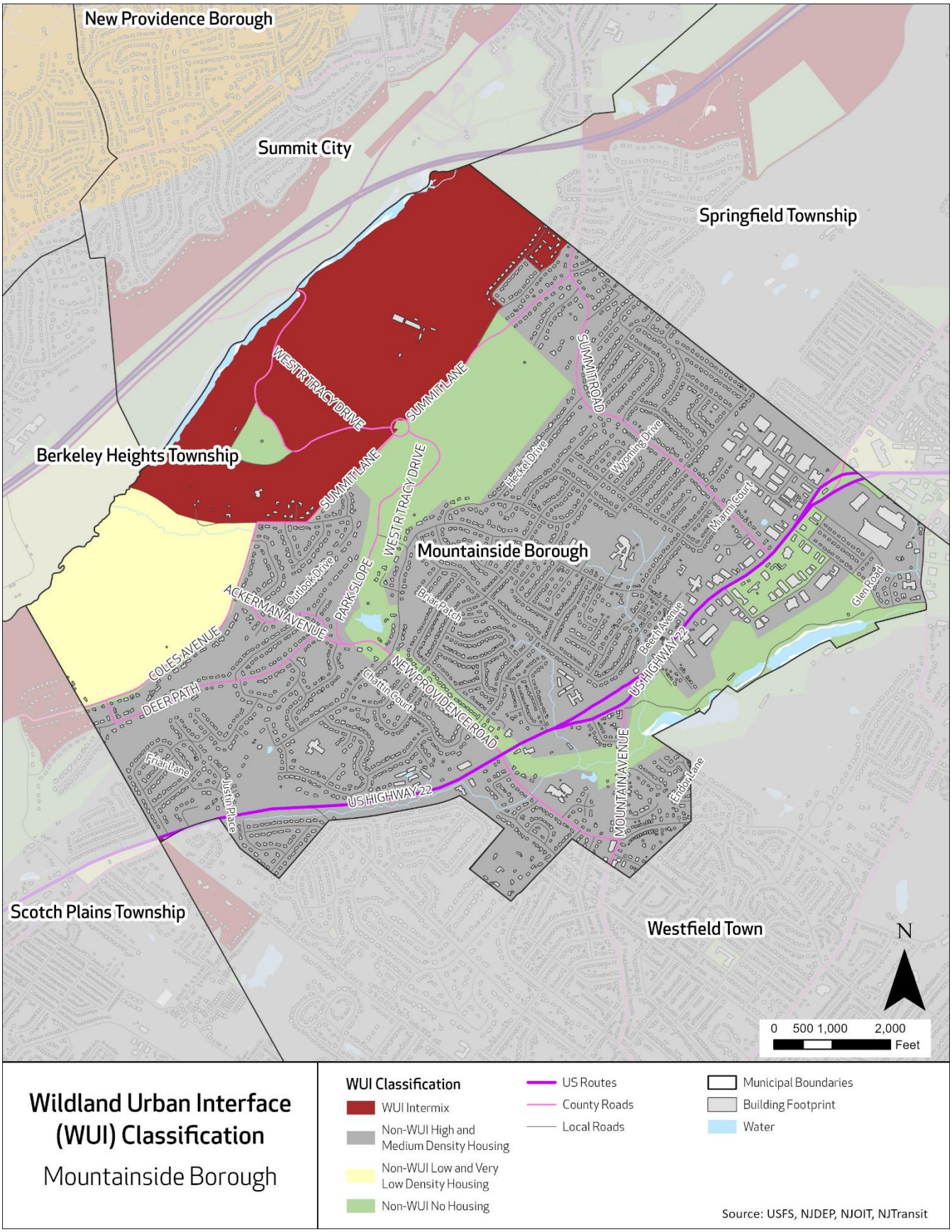
	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	5.9%	6.9%
Exposed Land Area	4.2%	1.4%

During the planning process, Mountainside Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 20 total facilities. Of these facilities, two are within the floodplain.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Health and Medical	-	1
Safety and Security	-	1


New Providence Borough
Summit City
Springfield Township
Lake Surprise
Berkeley Heights Township
WEST R TRACY DRIVE
SUMMIT LANE
SUMMIT ROAD
Heckel Drive
Miami Court
Glen Road
Mountainside Borough
Outlook Drive
PARK SLOPE
Briar Patch
Beech Avenue
US HIGHWAY 22
Echo Lake
COLES AVENUE
DEER PATH
NEW PROVIDENCE ROAD
Friar Lane
Justin Place
MOUNTAIN AVENUE
Scotch Plains Township
Westfield Town
0 500 1,000 2,000
Feet
Flood Hazard
Mountainside Borough
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
US Routes
County Roads
Local Roads
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


New Providence Borough
Summit City
Springfield Township
Berkeley Heights Township
Lake Surprise
WEST R TRACY DRIVE
SUMMIT LANE
SUMMIT ROAD
Heckel Drive
Miami Court
Glen Road
Mountainside Borough
Outlook Drive
PARK SLOPE
ACKERMAN AVENUE
COLES AVENUE
DEER PATH
Briar Patch
Beech Avenue
Echo Lake
NEW PROVIDENCE ROAD
MOUNTAIN AVENUE
Friar Lane
Justin Place
US HIGHWAY 22
Scotch Plains Township
Westfield Town
N
0 1,000 2,000 4,000
Feet
NJ Inland Design Flood Elevation
Mountainside Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
US Routes
County Roads
Local Roads
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Mountainside Borough

WUI Classification

- WUI Intermix
- Non-WUI High and Medium Density Housing
- Non-WUI Low and Very Low Density Housing
- Non-WUI No Housing

- US Routes
- County Roads
- Local Roads

- Municipal Boundaries
- Building Footprint
- Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Mountainside Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2017	
Capital Improvement Plan	X		2024	
Local Emergency Operations Plan/Continuity of Operations Plan	X		2024	
Floodplain Development Ordinance	X		2023	The FDPO enforces some higher standards
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		2023	
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		Borough site (Municipal Pool Parking) has been accepted again until Sept 30, 2029.
Tracking elevation certificates and/or Letter of Map Change	X			Kept in file (minimum due to location of borough on side of mountain).
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies	X			There are three housing redevelopment areas not located in hazard areas.
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation	X			The Borough has a steep slope ordinance.
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Mountainside Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		The borough FPA is the Borough Engineer.
Grant Writer	X		Borough has a part time staff member who assists in grant writing.
Staff trained to support mitigation		X	
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Mountainside Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		The Borough uses social media, the town website, and a first alert system
StormReady		X	

Education and Outreach Capability	Yes	No	Explanation
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Mountainside Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since 2021, the Borough has been actively strengthening its commitment to hazard mitigation, with a strong emphasis on reducing flood risks. A central initiative has been the implementation of updated stormwater management ordinances designed to minimize environmental impact and mitigate flooding. These measures are being incorporated into both private and public development projects, promoting long-term resilience and sustainability across the community. The Borough will continue to prioritize flood mitigation in future development in both private development and government development.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Funding Source	Cost Estimate	Timeline	Action Status	Notes
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.	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm – Lightning, High Wind–Straight-Line Winds	Medium	Chief of Rescue Squad/ Borough Administrator	Municipal Budget and Rescue Squad	$20,220	1 year	Completed	25 % Borough Paid 75% EMS Paid
10-02	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.	Flood	High	Engineering/ Public Works	Capital Improvement Budget	$25,000.00	Ongoing	Completed	
10-03	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management Practices	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$25,000.00	1 - 2 years	Completed	Completed in 2023.

Action	Name	Description	Hazards Addressed	Priority	Respons-ible Party	Funding Source	Cost Estimate	Time-line	Action Status	Notes
	Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8	conditions as well as other environmental								
10-04	Purchase and Install a Generator for Borough Hall.	Purchase and Install a Generator for Borough Hall.	All Hazards	High	Borough OEM	Municipal Budget, State Grants	$500,000.00	1 - 3 years	Completed	Completed in 2025.

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Respons-ible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
10-05	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.).	Flood		Engineering/ Public Works	Municipal Budget, State Grants	$400,000.00	2 years	Ongoing	Creek was dredged; however, Borough would like to pipe the entirety of this creek (partially piped as of now) or explore other mitigation options to clear and maintain.
10-06	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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Borough funds	$5,000.00	1 year	Ongoing	No updates to report.
10-07	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	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.	Flood	High	Affected home-owners	FEMA HMA	$750,000.00	Ongoing	Ongoing	No progress.

Action	Name	Description	Hazards Addressed	Priority	Respons-ible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Repetitive Loss (SRL) Properties.									

11 – BOROUGH OF NEW PROVIDENCE

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
John Signorello	**Fire Chief/OEM Coordinator**	**Primary Contact, Coordination, Input and Review**
Daniel Henn	**Police Chief**	**Steering Committee Kick-Off Meeting, Municipal Workshop 1, Municipal Meeting**
Marie Raffey	Borough Engineer	Municipal Meeting
Lindsey Massih	Borough Planner	Municipal Meeting
Ralph Parlapiano	DPW Director	Coordination, Input and Review
Bernadette Cuccaro	Borough Administrator	Coordination, Input and Review
Al Morgan	Mayor	Coordination, Input and Review
Keith Lynch	Director of Planning and Development	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

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. The borough lies on the western slope of Second Watchung Mountain and on the Passaic River, which forms the county boundary with Morris County and bordering Chatham Township. There are several creeks in the town, most of which are forks and branches of the Salt Brook, which join near the center of town and flow into the Passaic River. County Route 512 is the main thoroughfare through New Providence, and the borough is served by NJ Transit's Gladstone Branch at the Murray Hill Station and the New Providence Train Station as well as the 986 bus route. New Providence is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. New Providence is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 60% of the total land use, and covering around 1,153 acres of land. Civic/public (tax exempt) and commercial uses also accounted for significant portions, comprising 23% and 8% respectively of the total land use in the same year. From 2016 to 2022, civic/public (tax exempt) land increased by almost 35 acres, from 414 to 448.9.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up nearly 84% of the area in 2020. The forest and wetlands categories followed, accounting for 10% and 5% of the total land area, respectively. Urban land increased by almost 21 acres, while barren land decreased by about 15 acres and forest by 5 acres.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	-	-	-
Barren Land	16.4	1.3	-92%
Forest	238.1	233.6	-2%
Urban	1979.3	2000.2	1%
Water	21.7	20.9	-4%
Wetlands	118.7	118.2	0%

Recent Major Development and Infrastructure from 2021 to Present

Development under construction includes the "Bard site" (111 Spring St) along the Salt Brook. This is a townhouse and multifamily development consisting of 192 units, including a 20% set-aside for affordable units. There is flooding and wetlands around the creek area of the site, but this flooding does not impact the development area. The site was required to meet new DEP standards. Another development, called Riverbend, consisting of 22 townhome units (4 of which are affordable), was recently completed. This development is located in the floodplain. Additional development includes the Lantern Hill Senior Living Community on Mountain Avenue, an assisted living facility which has been expanded over the years. The most recent expansion has received approval but has not yet begun construction. This development is not located in the floodplain.

A Daycare Center (165 South St) was completed in 2025; however, it is not in floodplain.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

An additional Nursing Home in the floodplain was recently approved for expansion at 144 Gales Drive. During Hurricane, Ida several people required rescue from this location. The Borough has since attached a 12k platform to its high-water rescue vehicle to ensure accessibility to the elderly.

A site plan application has been approved for 121 Chanlon Road in the town's affordable housing overlay zone. The development will consist of 83 units with 21 units set aside for affordable housing. This development is not in an existing floodplain.

As previously stated, an expansion to the Lantern Hill Senior Living Community was approved in 2023. This will be the final phase of development for the complex. This expansion has yet to begin construction but once complete, it will contain an additional 444 independent living units. This site, however, is not located in a floodplain.

A site plan was approved by the Planning Board for a 21.5 acre site located at 70 Ryder Way. This development will include 297 residential units which includes 59 affordable units. The development will consist of townhomes and two multi-story apartment buildings. These will all be age-restricted rental units. The site is not located in a flood plain.

In 2024, New Jersey American Water completed replacement of approximately 3,200 feet of aging water main in New Providence. The company upgraded the aging water lines that were installed as far back as the 1900s with new 16-inch ductile iron main along South Street / County Road 647 from Springfield Avenue to Central Avenue. The project also includes replacing fire hydrants and utility-owned service lines along the pipeline route. Still in process, New Jersey American Water will replace any customer-owned service line that has been identified as lead or galvanized as part of a statewide initiative to remove all lead and galvanized service lines by 2031.

Demographics & Vulnerable Population

New Providence Borough has an estimated population of 13,595, of which an estimated 8.9% is under age 5 and 21.2% is estimated to be over age 65. New Providence experienced population growth of an estimated 6.9% over the ACS survey periods between 2013-2017 and 2018-2022. There are no communities within the borough which are identified as potentially socially vulnerable according to CDRZ, CEJST, or OBC criteria.

With an aging population making up nearly 21 percent of their total community, New Providence may focus hazard mitigation efforts on those with robust messaging and engagement for older residents, evacuation plans inclusive of populations with mobility issues, and resilient networks for resource accessibility post-disaster.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	13,595
Population Change since 2017	6.9%
Percent of Population Age < 5	8.9%
Percent of Population > 65	21.2%

HAZARD IDENTIFICATION

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 high, medium, low, or no concern. The following include the borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
Natural Hazards		
Dam Failure	Extreme Temperature – Cold	Drought
Flood	Extreme Temperature – Heat	Earthquake/Geological
	Severe Storm – Winter Weather (Includes Ice Storms)	Hail
	Erosion- Hurricane/ Nor'easter/Coastal Storm	High Wind – Straight-line Winds
		High Wind - Tornado
		Landslide (Non-Seismic)
		Severe Storm – Lightning
		Wildfire
Human-made Hazards		
	Cyber Attack	Animal Disease
	Hazmat Release – Fixed Site	Civil Unrest
	Hazmat Release – Transportation	Economic Collapse
	Pandemic	Nuclear Hazard
		Power Failure
		Terrorism

Storm surge - hurricane/nor'easter/tropical storm was ranked as N/A.

Hazard Ranking Explanation

Storm surge - hurricane/ nor'easter/tropical storm was ranked as N/A due to the lack of tidally influenced waters in the borough.

Dam failure is ranked as high due to the proximity of Clearwater Dam, a high hazard potential dam, upstream. Erosion is ranked medium. There are erosion issues along Salt Brook which have impacted homeowners in the area. Additionally, erosion occurs in the concrete-lined areas of the brook. Although wildfire is ranked as low, there are some concerns near the NJ Transit rail line (Gladstone Branch) which is heavily wooded and contains some unintended fire risk. Extreme temperatures are ranked as medium. The cooling center was used for the first time recently. Severe weather - wind is ranked low; these events are rare. The borough reported two microbursts in the past five years. Typically, only a small area is impacted. Winter storm is ranked medium; due to its location between mountains, New Providence gets unique weather patterns.

Flood's ranking increased from medium to high. The borough reports that flooding issues have been increasing over the last 25 years, which seems to be related to the volume of rainfall overwhelming current systems. The borough discussed several problem areas, including a culvert under railroad tracks which backs up into streets and residential areas. Maple Street continues to have issues even after mitigation. The borough would like to install signs to warn about flood proneness.

Cyber-attack has also been changed from low to medium. The borough has experienced cyber security issues in last five years. Power failure is ranked as low instead of not applicable; although occurrences are sporadic, they do exist. Back-to-back storms in 2012 caused 80% of the borough to be without power for a week. JCP&L did significant remediation immediately after but has not returned since. The pandemic ranking has been changed from low to medium due to long-lasting COVID-19 impacts as well as concerns about potential future pandemics resulting from viruses such as bird flu.

Significant Hazard Events Since Last Plan Update

The borough continues to experience periodic flooding, including from the remnants of Hurricane Ida in 2021. During the event, the borough lost several pedestrian bridges and had to use high water rescue vehicles. Also related to Ida, erosion has occurred around Salt Brook, including erosion in the backyard of a residence. As of now this residence itself has not been impacted, but it could be if conditions worsen.

In August 2024, a severe storm dumped between four and six inches of rain within a four-hour period, requiring emergency services to respond to numerous calls involving flooded roadways and residences and rescuing seven people from cars.

On July 14, 2025, a severe storm dumped approximately five and a half inches of rain within a two-to-three-hour period, requiring emergency services to respond to numerous calls involving flooded roadways and residences. Multiple people were rescued from vehicles, including one incident that required life saving action by emergency services under swift water conditions. Significant damage/blockage to a primary drainage flume caused significant flooding infrastructure and private property damage.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

New Providence Borough	
Number of Policies In-Force:	87
Total Losses:	96
Total Payments:	$733,659.75
Number of RL Properties:	7
Number of Mitigated RL Properties:	0
RL – Total Losses:	17
RL – Total Paid:	$442,394.83
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	0

Vulnerability of the Built Environment

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 NJ Transit tracks and flowing through the central part of the borough, and 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.

Approximately 9.5 percent of the total area of New Providence lies within the 1% annual chance floodplain as defined by FEMA. The borough contains no land in the 0.2% annual chance floodplain.

About 88.2 percent of New Providence is considered developed. Of the developed parcels of the town, 9.5 percent fall at least partially within the 1% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

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 ever 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.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	9.5%	N/A
Exposed Land Area	9.5%	N/A

During the planning process, New Providence Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 28 total facilities. Of these facilities, five are within the floodplain.

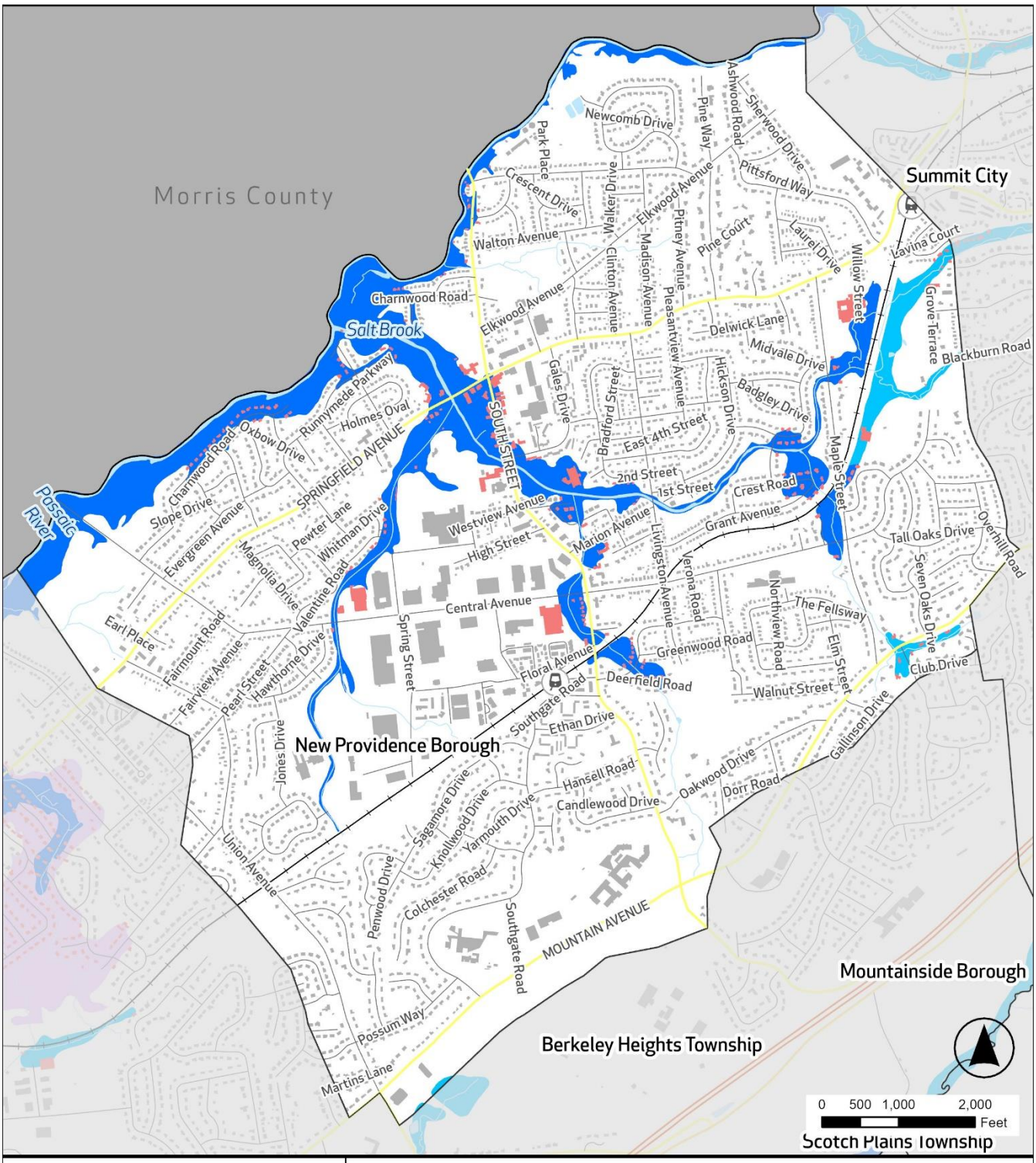
Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Health and Medical	1	-
Safety and Security	4	-

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to exacerbate existing risks and introduce new hazards for the Borough of New Providence. Increased frequency of severe weather events, such as hurricanes, nor'easters, and cloudbursts will likely lead to more frequent and severe flooding as existing stormwater management infrastructure may not be able to handle the increased capacity. Additionally, increased likelihood of extreme weather events as a result of climate change could strain the borough's resources and emergency response capabilities.

On July 17, 2023, the New Jersey Department of Environmental Protection (NJDEP) adopted its Inland Flood Protection Rule which, among other actions, establishes a new Design Flood Elevation (DFE) standard for specific types of new construction and redevelopment which takes into account current and future conditions, including future increases in precipitation due to climate change. To help visualize the new rule, Rutgers University created the NJ Inland Design Flood Elevation (IDFE) Layer, to be used as a non-regulatory planning tool which helps visualize potential future conditions in the state. The NJ IDFE may be the best data to visualize what flood hazard areas in places like New Providence may look like in the future.

The IDFE layer more than doubles the flood hazard area in New Providence. During discussion with the Planning Team, the borough identified some of the areas where it has already been experiencing flooding during the most extreme events, which were in the IDFE layer but not reflected in current flood risk maps. This area coincides with the borough's affordable housing overlay area which establishes a mandatory affordable set-aside with a density of 9.5-17 units per acre. This indicates that a large amount of housing development could occur in areas which will be vulnerable to flooding in the near future and that that residential development would likely house socially vulnerable populations.



Flood Hazard

New Providence Borough

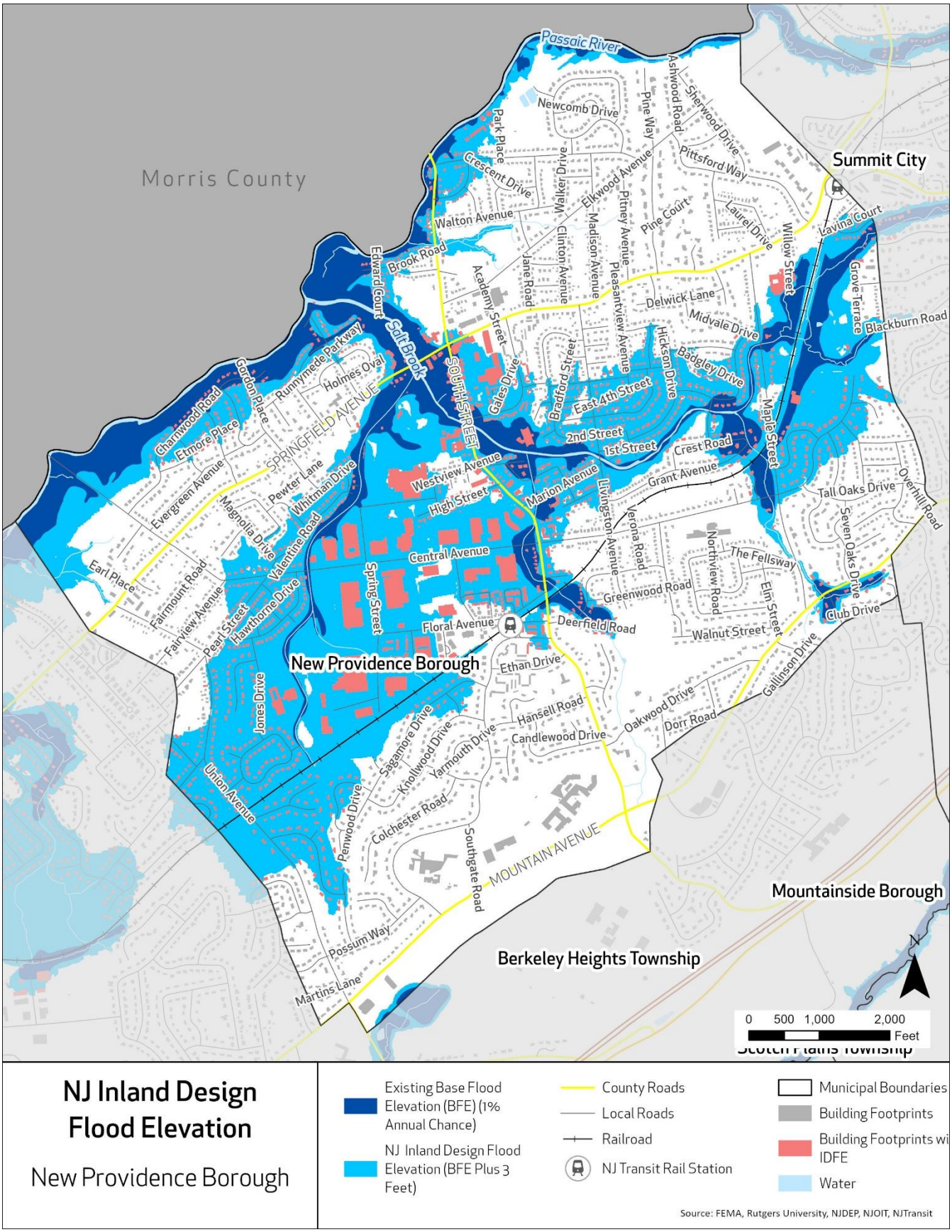
FEMA Flood Zone

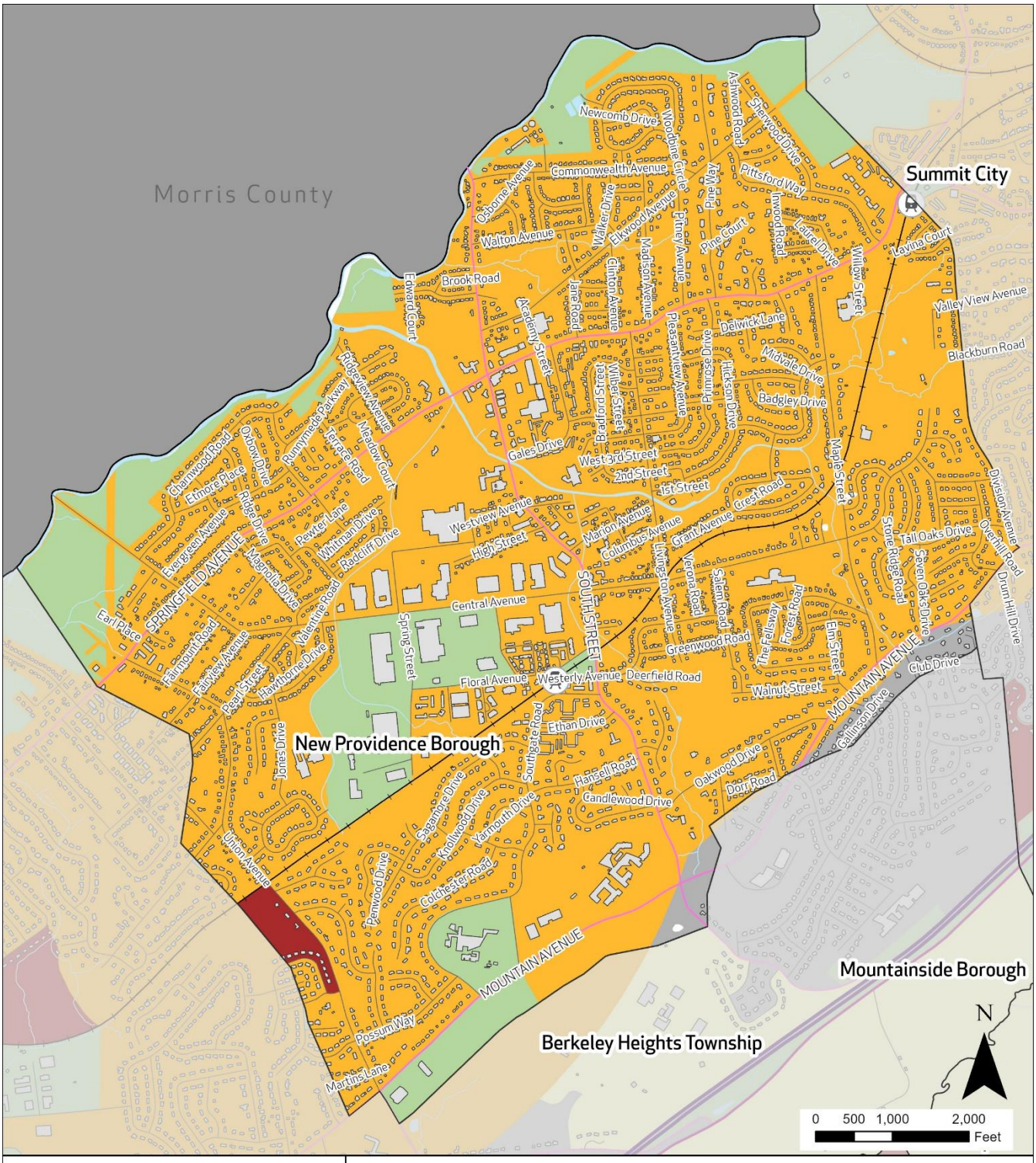
- A (1%)
- AE (1%)

- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit


Passaic River
Morris County
Summit City
New Providence Borough
Berkeley Heights Township
Mountainside Borough
Newcomb Drive
Park Place
Crescent Drive
Walton Avenue
Brook Road
Edward Court
Academy Street
Jane Road
Walker Drive
Clinton Avenue
Elkwood Avenue
Madison Avenue
Pitney Avenue
Pleasantview Avenue
Pine Way
Ashwood Road
Sherwood Drive
Pittsford Way
Pine Court
Laurel Drive
Willow Street
Lavina Court
Grove Terrace
Blackburn Road
Delwick Lane
Midvale Drive
Hicksom Drive
Badgley Drive
Maple Street
Bradford Street
Gales Drive
East 4th Street
2nd Street
1st Street
Crest Road
Grant Avenue
Tall Oaks Drive
Overhill Road
Seven Oaks Drive
Club Drive
Elm Street
Walnut Street
Gallinson Drive
Oakwood Drive
Dorr Road
Hansell Road
Candlewood Drive
Ethan Drive
Deerfield Road
Floral Avenue
Greenwood Road
The Fellsway
Northview Road
Verona Road
Livingston Avenue
Marion Avenue
Westview Avenue
High Street
Central Avenue
Spring Street
Soft Brook
SOUTH STREET
SPRINGFIELD AVENUE
MOUNTAIN AVENUE
Rumsey Parkway
Holmes Oval
Gordon Place
Charnwood Road
Etmore Place
Evergreen Avenue
Pewter Lane
Whitman Drive
Magnolia Drive
Valentine Road
Earl Place
Fairmount Road
Fairview Avenue
Pearl Street
Hawthorne Drive
Jones Drive
Union Avenue
Penwood Drive
Colchester Road
Southgate Road
Sagamore Drive
Knollwood Drive
Yarmouth Drive
Possum Way
Martins Lane
0 500 1,000 2,000
Feet
N
NJ Inland Design Flood Elevation
New Providence Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

New Providence Borough

WUI Classification

- WUI Intermix
- WUI Interface
- Non-WUI High and Medium Density Housing
- Non-WUI Low and Very Low Density Housing
- Non-WUI No Housing

- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprint
- Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

New Providence Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2017	Master Plan anticipated to be updated in 2026
Capital Improvement Plan	X		2026	
Local Emergency Operations Plan/Continuity of Operations Plan	X		2026	
Floodplain Development Ordinance	X		2023	
Floodplain Management Plan	X		2023	
Stormwater Management Ordinance	X		2024	
Stormwater Management Plan	X		2024	
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan	X			
Substantial Damage/Improved Structures Response	X			When a property owner in SFHA applies for a building permit, the borough requests the cost of the work and the value of the building to determine if the owners are required to bring substantially damaged/improved structures into compliance.
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change	X			Construction Department will monitor properties through site plan review when redevelopment takes place.
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies				Ongoing
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X			The borough has a lot grading ordinance that address steep slope runoff to mitigate flood risk.

Administrative and Technical Capabilities

New Providence Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		The municipal engineer (consultant) is the FPA. They are a certified floodplain administrator.
Grant Writer	X		The Borough of New Providence would enlist a consultant grant writer through Colliers Engineering.
Staff trained to support mitigation	X		OEM, DPW, Engineering, board of adjustment, and planning board
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		Union County
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations	X		Community service association and Red Cross. They are not part of the creation or maintenance of the hazard mitigation plan

Education and Outreach Capabilities

New Providence Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Reverse 911, online presence, social media, mailers, newsletters, community message board
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	Improved weather awareness campaigns are under review & planning
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, New Providence Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		The Borough of New Providence sought FEMA reimbursement for government-owned property loss in a FEMA designated event.
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities	X		The borough continually evaluates the costs associated with each risk reduction project versus the potential benefits to the community as they pertain to resources, alignment with strategic goals and timeliness and flexibility in completing the project.
Other ongoing efforts to build additional financial capabilities	X		The borough has engaged Congressman Kean's office and secured financing for a general feasibility study by the Army Corps of Engineers for the Upper Passaic River.

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since 2021, the borough continued to review its commitment to hazard mitigation. The borough has made investments in repairing and rehabilitating the Clearwater detention dam, upgraded pedestrian bridges that cross various waterways, and improved rescue equipment operated by emergency services. The borough has also adopted new ordinances for stormwater management that intend to address flooding conditions and minimize environmental impact. The borough will continue to prioritize flood mitigation in future development in both private development and government development.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
11-01	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, gabion baskets, remove and replace trash racks, and repaired the scour of the dam inlet and outlets	Dam Failure	High	Borough	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	$7,250.00	1 - 5 years	Complete	Rehabilitation completed. Inspection completed.
11-02	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 improved emergency response	All Hazards	High	New Providence Engineering	FEMA HMA	$3,000,000	4 years	Complete	
11-03	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 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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$10,000.00	1 year	Complete	Updated to current standards

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	the Stormwater Management Rules at N.J.A.C. 7:8									

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
11-04	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.	Flood	High	New Providence OEM, DPW and Planning & Development	FEMA HMA	$10 million	5 + years	Ongoing	The borough has and continues to seek state & federal funding for Passaic River de-snagging and desilting to improve stormwater management, however we have not been awarded to-date.
11-05	Acquire, Elevate or Floodproof Properties Along the Passaic River, 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. New Providence Borough will support these projects as interested homeowners come forward and will work with homeowners to mitigate their properties.	Flood	High	Affected homeowners	FEMA HMA	$150,000 to $800,000	Ongoing	Ongoing	
11-06	Implement Channel Improvements for Salt Brook.	Implement channel improvements for Salt Brook to protect against flooding.	Flood	High	New Providence Engineer	FEMA HMA	$800,000	1 year	Ongoing	
11-07	Flood-proof Wastewater Treatment Plant.	Flood-proof wastewater treatment plant to prevent flood damage and disruption of operations at critical infrastructure. Notably, to address continuity of operations after a flood event.	Flood	High	New Providence DPW	FEMA HMA, New Jersey Environmental Infrastructure Trust (NJEIT)	$250,000	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
11-08	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. The Borough will distribute preparedness and safety information for the public to follow during OEM events.	All Hazards	Low	OEM Coordinator, in coordination with SCOEM	Municipal Budget	$5,000.00	1 year	Ongoing	
11-09	Elevate, or Relocate Borough Owned 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.	Elevate, or relocate structures that are listed as RL/SRL properties.	Flood	High	Borough Council, New Providence Engineers and New Providence Affected homeowners, OEM	FEMA HMA, municipal budget	$14,000,000.00	Ongoing	Ongoing	DeCorso Center, DPW and Police Department
11-10	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.	Flood	High	New Providence Engineer	FEMA HMA, Blue Acres/Green Acres	$3 million	5 + years	Ongoing	
11-11	Maintenance and Repair of the Clearwater Detention Dam	Continue with inspection, maintenance and repair to ensure continuity of dam operation and integrity of the infrastructure.	Dam Failure	High	New Providence Engineer Marie Raffay, PE, CME	Municipal budget, NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	$80,000.00	1-5 Years	New	This dam is owned by the Borough, and they added an action to mitigate this high hazard potential dam.
11-12	Borough open space and recreation – Resilience Efforts	Seek opportunities to incorporate green infrastructure and enhanced flood storage in the borough's dedicated open space areas as well as the borough's recreation facilities.	Flood	Medium	New Providence Engineer, Mayor & Council	FEMA HMA, New Jersey Environ-mental Infra-structure Trust, Blue Acres/ Green Acres, Municipal Budget	$30,000.00	Ongoing	New	

12 – CITY OF PLAINFIELD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Khisha L. Bethea	**OEM Coordinator**	**Primary contact, Municipal Meeting**
Kenneth Childress	OEM Director, Fire Department	Coordination, input and review
Oren Dabney	Department of Public Works Director	Municipal Workshop

COMMUNITY OVERVIEW

Overview

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. Plainfield is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Plainfield is a predominantly residential community with residential (including apartment) use accounting for 66% percent of the total land, covering nearly 2,000 acres in 2022. In the same year, civic/public (tax exempt) use and commercial use were the other significant uses, making up 21% and 7% respectively of the total area. Other than a slight increase in vacant land from 65 acres to 75 acres between 2016 and 2022, there was negligible change in the land use composition of the city during this period.

The large share of residential and civic/public (tax exempt) land is also reflected in NJDEP's Land Use/Land Cover data; in 2020, urban/developed land made up 94% of Plainfield. In the same year, wetlands and barren land constituted 4% and 1%, respectively of the city's total area. Between 2015 and 2020, the share of barren land increased by 205%, rising from 9 acres to 28 acres.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	4.9	4.9	<1%
Barren Land	9.2	28.1	205%
Forest	53.6	54.1	1%
Urban	3592.1	3573.3	-1%
Water	18	18.2	1%
Wetlands	142.1	141.3	-1%

Recent Major Development and Infrastructure from 2021 to Present

11 residential complexes were developed on South Avenue. These are not located in a regulatory floodplain.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The DEP has restricted any residential development beyond 1000 North Avenue, because of increased flood-risk. Other planned developments include: 11 residential buildings on South Avenue, four complexes along East 3rd Street, and developments on Roosevelt Avenue and Watching Avenue. None of these developments will be located in a regulatory floodplain.

Demographics & Vulnerable Population

Plainfield City has an estimated total population of 54,358 – of these residents, an estimated 7.6% are under age 5, and an estimated 10.8% are over age 65. The city experienced population growth over the periods between ACS surveys (2013-

2017, 2018-2022), with an estimated 6.4% increase in population during this time. Plainfield's area nearly all qualifies as an overburdened community (OBC), with a total of thirty-four block groups meeting OBC criteria for over burden of *Minority* (eleven block groups), *Low Income and Minority* (nineteen block groups), and *Low Income, Minority, and Limited English* (four block groups) populations. Plainfield's western portion also all meets CEJST criteria for vulnerability, with eight census tracts designated vulnerable due to characteristics of *Climate Change, Housing, Legacy Pollution, Water and Wastewater,* and *Workforce Development.* There are no parts of the city which have been identified as CDRZ communities.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	54,358
Population Change since 2017	6.38%
Percent of Population Age < 5	7.65%
Percent of Population > 65	10.76%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
	Extreme Temperature - Heat	Dam Failure
	Flood	Drought
	Severe Storm - Lightning	Earthquake/Geological
	Severe Storm – Winter Weather (Includes Ice Storms)	Erosion – Hurricane/Nor'easter/Coastal Storm
		Extreme Temperature - Cold
		Hail
		High Wind – Straight-line Winds
		High Wind - Tornado
		Landslide (Non-Seismic)
		Storm Surge - Hurricane/Tropical Storm/Nor'easter
		Wildfire
Human-made Hazards		
	Pandemic	Animal Disease
	Power Failure	Civil Unrest
		Cyber Attack
		Economic Collapse
		Hazmat Release – Fixed Site
		Hazmat Release - Transportation
		Nuclear Hazard
		Terrorism

Hazard Ranking Explanation

The city is vulnerable to flooding due to extreme weather events. As a result, it ranked flood, severe storm – lightning, and severe storm – winter weather as medium. It also experiences power outages during extreme weather events; during Hurricane Ida, the city experienced power loss for up to two days when tower lines were brought down by fallen trees.

Significant Hazard Events Since Last Plan Update

The most significant hazard experienced by the city was Hurricane Ida, which caused flooding in areas projected to flood in the FEMA Base Flood Elevation (BFE) plus 3 feet maps. Specifically, East 2nd and 3rd Streets and Johnson Street were heavily affected, with basements and in some cases, first floors of homes being flooded. FEMA aided with elevations and buyouts.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to increase both the intensity and frequency of flooding in Plainfield. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and heavy rainfall are likely to increase. This will exacerbate existing vulnerabilities, particularly those induced by flooding from the three major water bodies of Green Brook, Cedar Brook, and Branch 22 of Robinsons Branch flowing through the city. As a result, even residents living outside Plainfield's regulatory floodplain that runs from its northwestern to its southeastern part may experience flooding. The current drainage system, which already may be undersized to handle severe storms, may become even more overwhelmed, leading to more frequent and severe flooding events and expansion of existing coverage when standing water does occur.

Additionally, higher temperatures and prolonged heatwaves could increase risks of extreme temperature events, which may become more frequent and harder to manage, particularly for the city's over 10% population over 65. Aging infrastructure, already leading to standing water points during heavy rains, could be further strained by more severe storms, leading to compounding impacts of roadways flooding and potential power outages.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

City of Plainfield	
Number of Policies In-Force:	715
Total Losses:	1026
Total Payments:	$8,656,404.99
Number of RL Properties:	77
Number of Mitigated RL Properties:	0
RL – Total Losses:	197
RL – Total Paid:	$1,687,082.22
Number of SRL Properties:	8
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	39
SRL – Total Paid:	$824,847.86

Vulnerability of the Built Environment

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 are 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, because of drainage problems along smaller, unnamed streams and drainage channels.

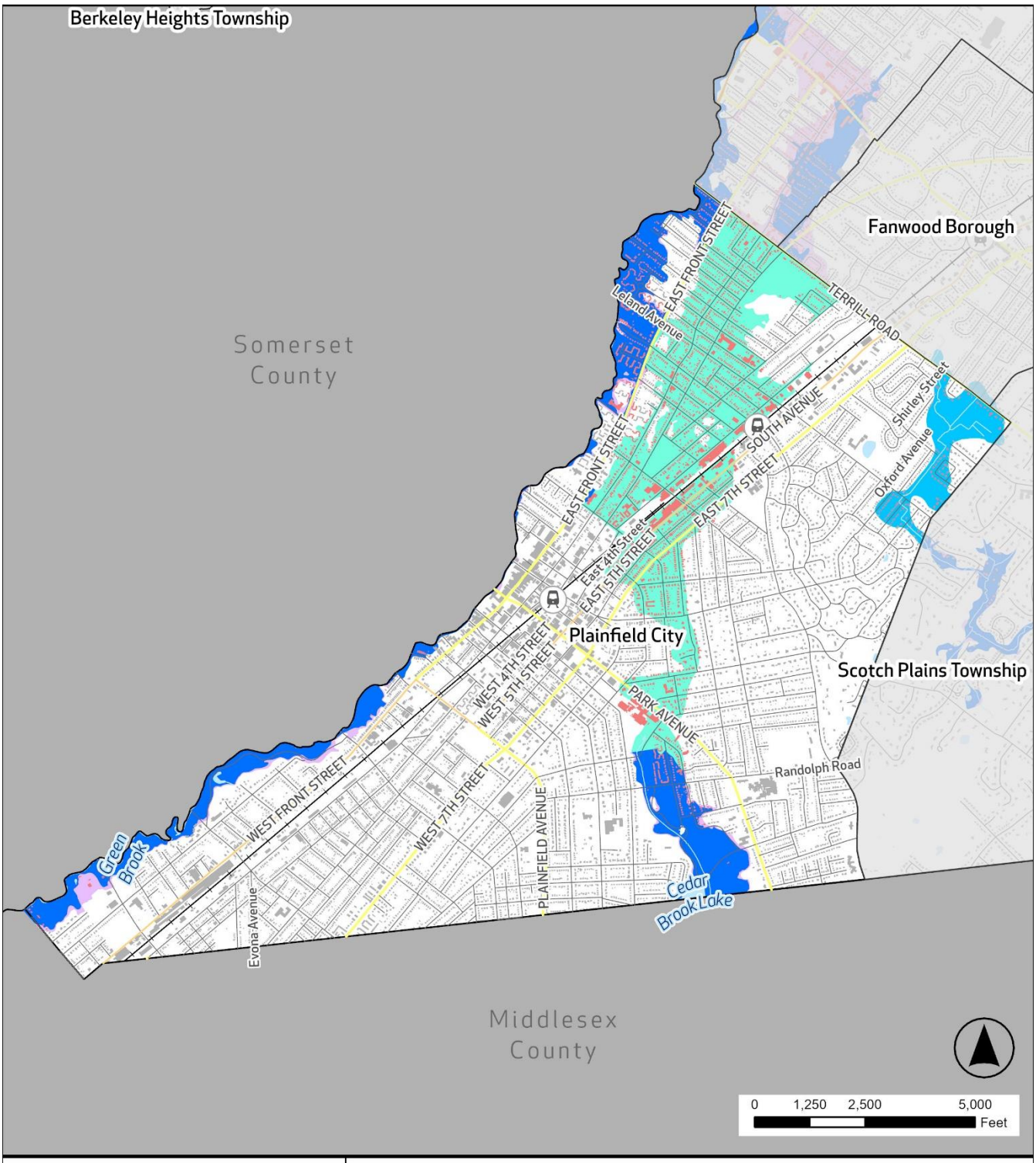
Approximately 22.2 percent of the total area of the City of Plainfield lies within the 1% annual chance floodplain as defined by FEMA. An additional 0.9 percent of the area of the municipality is in the 0.2% annual chance floodplain.

About 91.6 percent of Plainfield is considered developed. Of the developed parcels of the town, 25.9 percent fall at least partially within the 1% annual chance floodplain and 2 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	25.9%	2.0%
Exposed Land Area	22.2%	0.9%

During the planning process, Plainfield City identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 75 total facilities. Of these facilities, six are within the floodplain.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Health and Medical	1	-
Safety and Security	5	-



Flood Hazard

Plainfield City

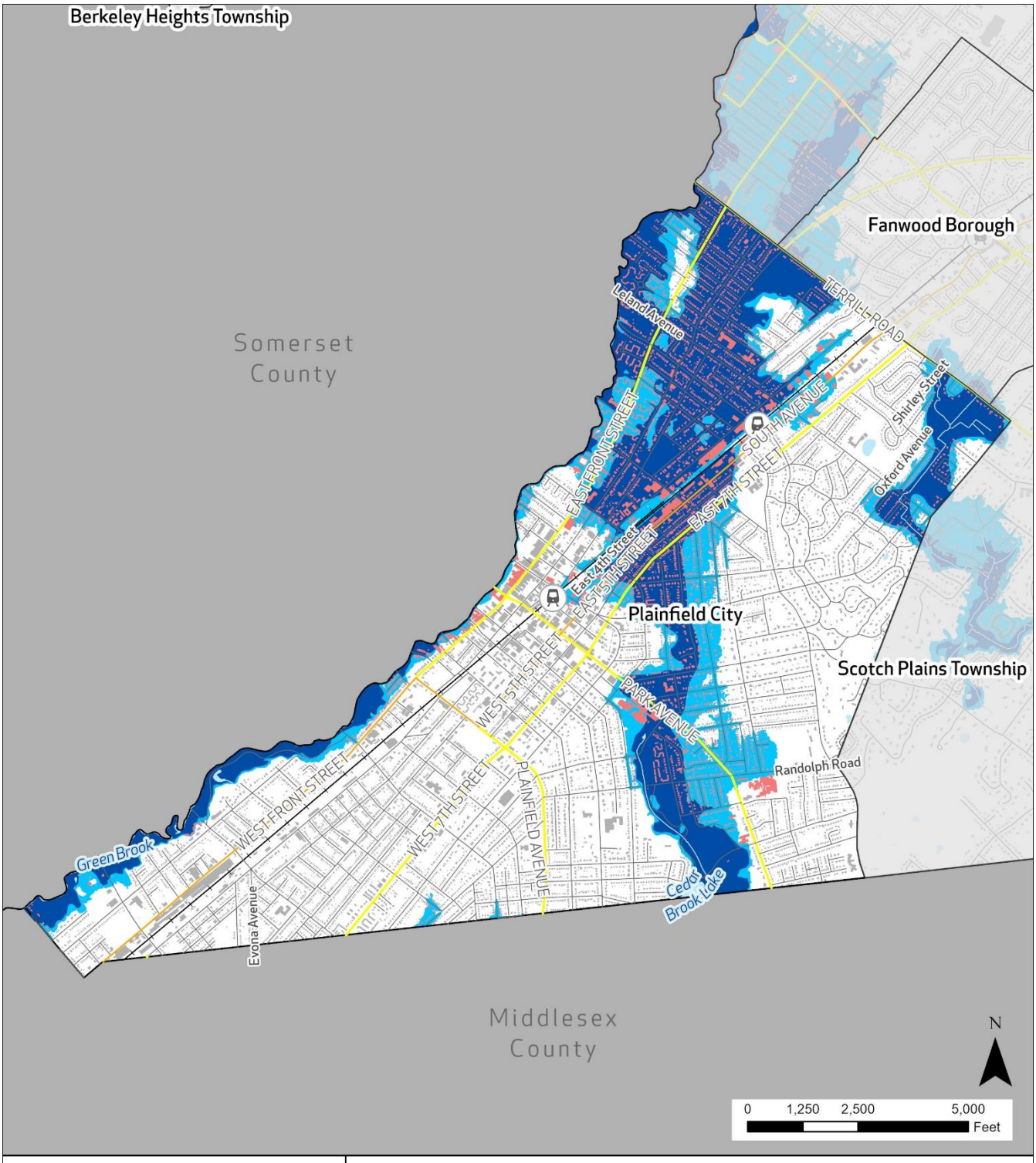
FEMA Flood Zone

- A (1%)
- AE (1%)
- AO (1%)
- 0.2% Annual Chance

- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit



NJ Inland Design Flood Elevation

Plainfield City

- Existing Base Flood Elevation (BFE) (1% Annual Chance)
- NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station
- Municipal Boundaries
- Building Footprints
- Building Footprints wi IDFE
- Water

Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The City of Plainfield has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2023	Incorporates flood mitigation and climate adaptation priorities
Capital Improvement Plan	X		2022	Includes flood infrastructure and emergency backup power
Local Emergency Operations Plan/Continuity of Operations Plan	X		2023	expanded to include pandemic and severe weather events
Floodplain Development Ordinance		X		
Floodplain Management Plan		X		
Stormwater Management Ordinance		X		
Stormwater Management Plan	X		2021	Follows NJDEP BMP Manual for runoff
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response				
Repetitive Loss Plan		X	N/A	To be developed as target initiative.
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		Holding
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

The City of Plainfield has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Housed within the inspections department
Grant Writer	X		Contracted consultant
Staff trained to support mitigation	X		OEM and DPW personnel trained through NJOEM
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		Formalized with neighboring municipalities
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		Partnership with the Red Cross and local community groups
Organizations that work with socially vulnerable or underserved populations	X		Plainfield actions services and housing nonprofits

Education and Outreach Capabilities

The City of Plainfield has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Uses Nixle, social media, and school programs
StormReady		X	Not currently certified
Firewise USA		X	Not applicable

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week	X		Annual outreach campaign
Community Rating System (CRS)		X	In progress goal to rejoin 2026

Financial Capabilities

Within the last five years, the City of Plainfield has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC	X		Applications submitted in 2023
FEMA FMA	X		Targeting RL/SRL properties
FEMA Public Assistance	X		Received post-IDA
FEMA HMGP	X		Multiple projects funded
Non-FEMA Federal Funding Programs	X		Seeking DOE and EPA climate resilience funding
Other FEMA resources		X	
NJ Infrastructure Bank	X		Stormwater improvement financing
Other state municipal assistance or grant programs	X		Received resilience planning grants
Evaluation process on the prioritization of risk reduction projects against other local activities	X		Incorporated in CIP process
Other ongoing efforts to build additional financial capabilities	X		Staff training and grant planning initiatives

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, the City of Plainfield has prioritized addressing flood-prone infrastructure, upgrading emergency power at critical facilities, and enhancing community outreach. Key efforts have included securing backup power for fire stations and planning major stormwater upgrades in high-risk neighborhoods. Over the next five years, the city aims to improve streambank stabilization, develop a microgrid for critical infrastructure, and elevate Repetitive Loss properties to increase resilience to worsening climate impacts.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
12-01	Obtain Backup Power or Bury Lines for Fire Station on Central Avenue.	Obtain backup power or bury lines for Fire Station on Central Avenue.	All Hazards		Plainfield DPW	FEMA HMA, Municipal Budget	$315,000.00		Completed	
12-02	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.	All Hazards		Plainfield DPW	FEMA HMA, Municipal Budget	$500,000.00		Completed	
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.	Flood	High	Plainfield OEM	FEMA HMA	$320,000.00	2 - 3 years	Withdrawn	No funding.
12-04	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.	All Hazards		Plainfield DPW	FEMA HMA, Municipal Budget	$500,000.00		Completed	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
12-05	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.	Flood	High	Individual Residents	FEMA HMA	$100,000.00	1 year	Withdrawn	
12-06	Install emergency generator at Warming Center (Welcome Center) at Senior Citizens Building - 400 East Front St.	Install emergency generator at Warming Center (Welcome Center) at Senior Citizens Building - 400 East Front St.	All Hazards		OEM Coordinator	No funding			Completed	
12-07	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.	Flood	High	Plainfield OEM & Engineer	FEMA HMA	$500,000.00	1 - 2 years	Completed	
12-08	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	Staff time	1 year	New	Completed

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	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.	water quality and flooding conditions as well as other environmental and community needs. The sample ordinances located in Appendix D of the New Jersey Stormwater Best Management Practices Manual.								

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
12-09	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	Flood	High	Plainfield DPW	FEMA HMA	$6,000,000.00	1 - 2 years	Ongoing	No progress as the city has not yet received funding. However, action is part of the Master Plan.
12-10	Dredge and Clean Green Brook and Cedar Brook.	Dredge and clean Green Brook and Cedar Brook.	Flood	High	Union County	County Budget	$3,500,000.00	1 - 2 years	Ongoing	County is responsible for maintenance.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
12-11	Acquire or Elevate Buildings and Infrastructure with a Focus on 2 Repetitive Loss (RL) Properties on Inwood Place, 3 Repetitive Loss Properties on Johnston Ave.	Acquire or elevate structures that are listed as RL/SRL properties on Inwood Place and 3 Repetitive Loss properties on Johnston Ave.	Flood	High	Economic Development	FEMA HMA	$1,400,000.00 (Inwood Place properties) + $600,000.00 (Johnston Ave properties)	1 year	Ongoing	FEMA is working on the properties on Johnston Ave.
12-12	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.	All Hazards	Low	OEM Coordinator, in coordination with County OEM	Municipal Budget	$100,000	1 year	Ongoing	Outreach at schools, Nixle, Get Rave notifications.
12-13	Remove Trees and Trim Tree Limbs Near Power Lines.	Remove trees and trim tree limbs near power lines.	High Wind–Tornado, High Wind–Straight-Line Winds	Low	Public Works	Municipal Budget	$500,000.00	1 - 2 years	Ongoing	DPW is also involved in this action.
12-14	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Flood	Low	OEM Coordinator/ Inspections Department (NFIP Administrator)	Municipal Budget	Staff time	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.	All Hazards	High	Plainfield DPW	FEMA HMA, Municipal Budget	$750,000.00	1 year	Ongoing	Funded through Plainfield public school system.
12-16	Obtain Backup Power or Bury Lines at 724 Park Ave.	Full backup power/bury lines for critical facility at 724 Park Ave.	All Hazards	High	Plainfield DPW	FEMA Grant	$150,000	1 year	New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
12-17	Obtain Backup Power or Bury Lines at Emerson School.	Full backup power/bury lines for critical facility at Emerson School.	All Hazards	High	Plainfield DPW	FEMA Grant	$750,000.00	1 year	New	No progress
	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.	All Hazards	High	Utility companies/DPW	FEMA Grant	$5,000,000.00	5 + years	New	Follow-up
12-18	Install emergency generator at Warming Center (Welcome Center) at YMCA – 518 Watchung.	Install emergency generator at Warming Center (Welcome Center) at YMCA – 518 Watchung.	All Hazards		OEM Coordinator	Developer (NJEDA) for COE FEMA HMA	$1,200,000.00 for this action and completed Action 12-06		New	Building under construction

13 – CITY OF RAHWAY

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Thomas Brougham	**Deputy OEM Coordinator City of Rahway**	**Primary Contact, Municipal Workshop 1, Municipal Meeting**
Daniel Lee	City Engineer	Municipal Workshop 1, Municipal Meeting
Michael Presley	Department of Public Works, OEM	Municipal Workshop 1
Joe DiLorenzo	Senior Scientist, Consultant from Najarian Associates	Municipal Meeting
Leigh Fleming	City Planner	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

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.

The City of Rahway originated as outlying settlements of Elizabethtown and Woodbridge and it is believed to be named after a Lenape Chief from the region. The construction of the railroad in the early 19th century contributed to the growth and development, establishing it as a key stagecoach hub and fostering an industrial economy rooted in the manufacture of stagecoach components. This industrial character continued through the first half of the 20th century, supported by major companies such as Merck, Purolator, and others.

Although Rahway is situated inland, tidal influence from the Arthur Kill extends up the Rahway River to approximately Bridge Street, and along the South Branch to East Inman Avenue. As a result, the City of Rahway is technically classified as a coastal community and would be impacted by sea level rise if it were to occur.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Rahway is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 51% of the total land use and covering nearly 955 acres of land. Civic/public (tax exempt) and industrial uses also accounted for significant portions, comprising 25% and 12% respectively of the total land use in the same year. From 2016 to 2022, the most notable changes in land use in the City were that of railroad property, which decreased by 15% from 50 to 42.3 acres, and vacant land, which increased by 32% from 53 to 70 acres. The increase in vacant land is primarily attributed to the turnover of privately held flood prone properties to the State as part of several flood property buyout programs.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 90% of the area in 2020. The forest, water, and wetlands categories followed, each accounting for 3% of the total land area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	N/A
Barren Land	15.3	20.4	33%
Forest	73.2	69.4	-5%
Urban	2327.4	2326.2	-<1%

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Water	90	90	0%
Wetlands	81.5	81.4	-<1%

Recent Major Development and Infrastructure from 2021 to Present
In 2023, Merck relocated their headquarters back to their campus in Rahway, NJ. Over the company's nearly 120-year history in Rahway, the 200-acre site, which extends into Linden, expanded from one manufacturing plant to approximately 100 buildings. The recent developments include a multipurpose auditorium, additional parking and a $450 million learning and manufacturing facility.

Other major developments include the construction of several multi-family residential developments including Brownstones Phase 1 and The Mint 2. The Brownstones Phase 1, the first of two proposed phases, is situated at 1901 Elizabeth Avenue and consists of 298 residential units. The Mint 2, the second of two phases, is situated at 84 Monroe Street and consists of 109 residential units.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years
Vermella Rahway, which is situated along Essex Street, broke ground in 2024 and is expected to open for leasing in 2026. Vermella Rahway consists of 164 residential units. Glendennings Homes is a public housing community located along Capobianco Plaza and is managed by the Rahway Housing Authority. This development consists of 112 units and is scheduled to be completely replaced in several phases over the next few years. While the unit count will remain the same, the project aims to modernize the existing housing units and improve living conditions for residents.

Demographics & Vulnerable Population

The City of Rahway has an estimated population of 29,664, with approximately 7.5% of residents under the age of 5 and 16.1% over the age of 65. The city's population has remained relatively stable, showing a modest increase of 0.75% between the ACS survey periods of 2013–2017 and 2018–2022.

A higher proportion of residents over age 65—such as Rahway's 16.1%—can signal increased local vulnerability to hazard events, both before and after a disaster. Older populations may face mobility challenges, have uneven access to resources, and possess limited social networks, all of which can complicate pre-disaster engagement and response efforts (FEMA, 2023).

There are twenty block groups within Rahway which meet criteria as overburdened communities (OBC) under categories of vulnerable *Minority* communities (seventeen block groups) and *Low Income and Minority* communities (three block groups). These overburdened communities make up the majority of the City of Rahway's total area. Additionally, Rahway has a CEJST-identified census tract along its southeast, which meets vulnerability criteria under *Climate Change*, *Housing*, *Legacy Pollution*, *Transportation*, and *Water and Wastewater* categories. There are no portions of Rahway which are identified as CDRZ communities.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	29,664
Population Change since 2017	0.75%
Percent of Population Age < 5	7.49%
Percent of Population > 65	16.14%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Flood	Dam Failure	Earthquake/Geological
Storm Surge – Hurricane/ Nor'easter/ Tropical Storm	Drought	Erosion – Hurricane/ Nor'easter/Coastal Storm
	Severe Storm – Winter Weather (Includes Ice Storms)	Extreme Temperature – Cold
		Extreme Temperature – Heat
		Hail
		High Wind – Straight-line Winds
		High Wind – Tornado
		Landslide (Non-Seismic)
		Severe Storm – Lightning
		Wildfire
Human-made Hazards		
	Cyber Attack	Animal Disease
	Hazmat Release – Fixed Site	Civil Unrest
	Hazmat Release – Transportation	Economic Collapse
	Pandemic	Nuclear Hazard
	Terrorism	Power Failure

Hazard Ranking Explanation

Dam failure remains at a medium level of concern; there is a high-hazard dam upstream on Milton Lake. When water levels are low, the city has to purchase water. Hazmat release increased from a low to a medium level of concern; at 1045 East Hazelwood Avenue is a chemical cleaning facility called Quala. Quala cleans up tankers and has historic spills that it is actively cleaning up. There is also a resource recovery center on Route 1. Terrorism increased from a low to a medium level of concern due to the presence of Merck and the Rahway Train Station.

Significant Hazard Events Since Last Plan Update

Hurricane Ida affected the city in September 2021. There were hundreds of millions in estimated damage. There was not time to install the floodgate, and the city saw eight to 10 inches of rain in a short timeframe.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Rahway City	
Number of Policies In-Force:	333
Total Losses:	1,014
Total Payments:	$27,261,907.85
Number of RL Properties:	27
Number of Mitigated RL Properties:	27
RL – Total Losses:	89
RL – Total Paid:	$1,555,107.42
Number of SRL Properties:	163
Number of Mitigated SRL Properties:	27
SRL – Total Losses:	506

Rahway City	
SRL – Total Paid:	$17,393,405.31

Vulnerability of the Built Environment

Compared to most other jurisdictions in Union County, Rahway has a relatively large area of floodplain. The South Branch Rahway River as well as Robinsons Branch both flow into the Rahway River within the borders of the jurisdiction. All three water bodies are surrounded by floodplains including 1% and 0.2% annual chance floodplains. The city has numerous NFIP Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties, distributed across most areas of floodplain.

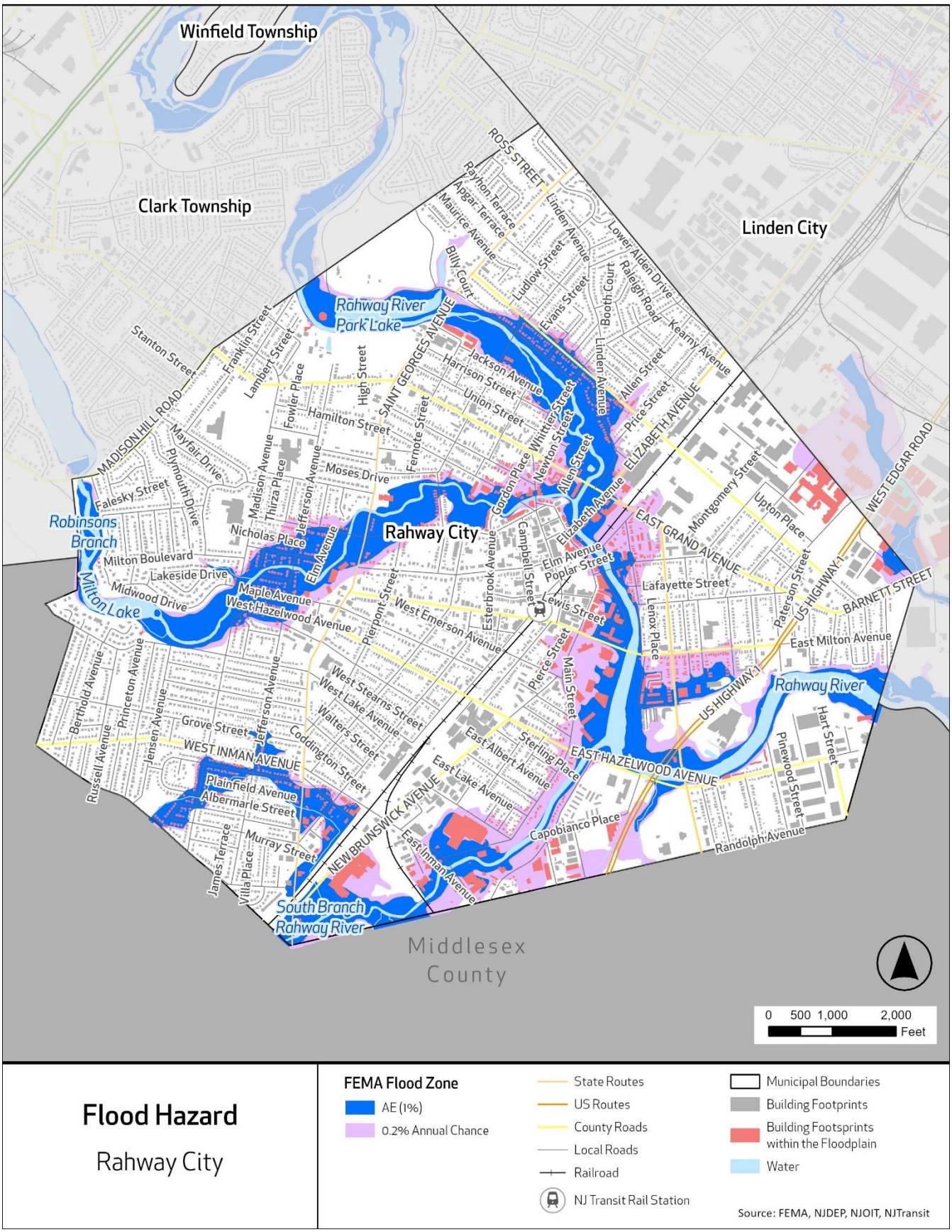
Approximately 16.6 percent of the total area of Rahway City lies within the 1% annual chance floodplain as defined by FEMA. An additional 9.2 percent of the area of the municipality is in the 0.2% annual chance floodplain.

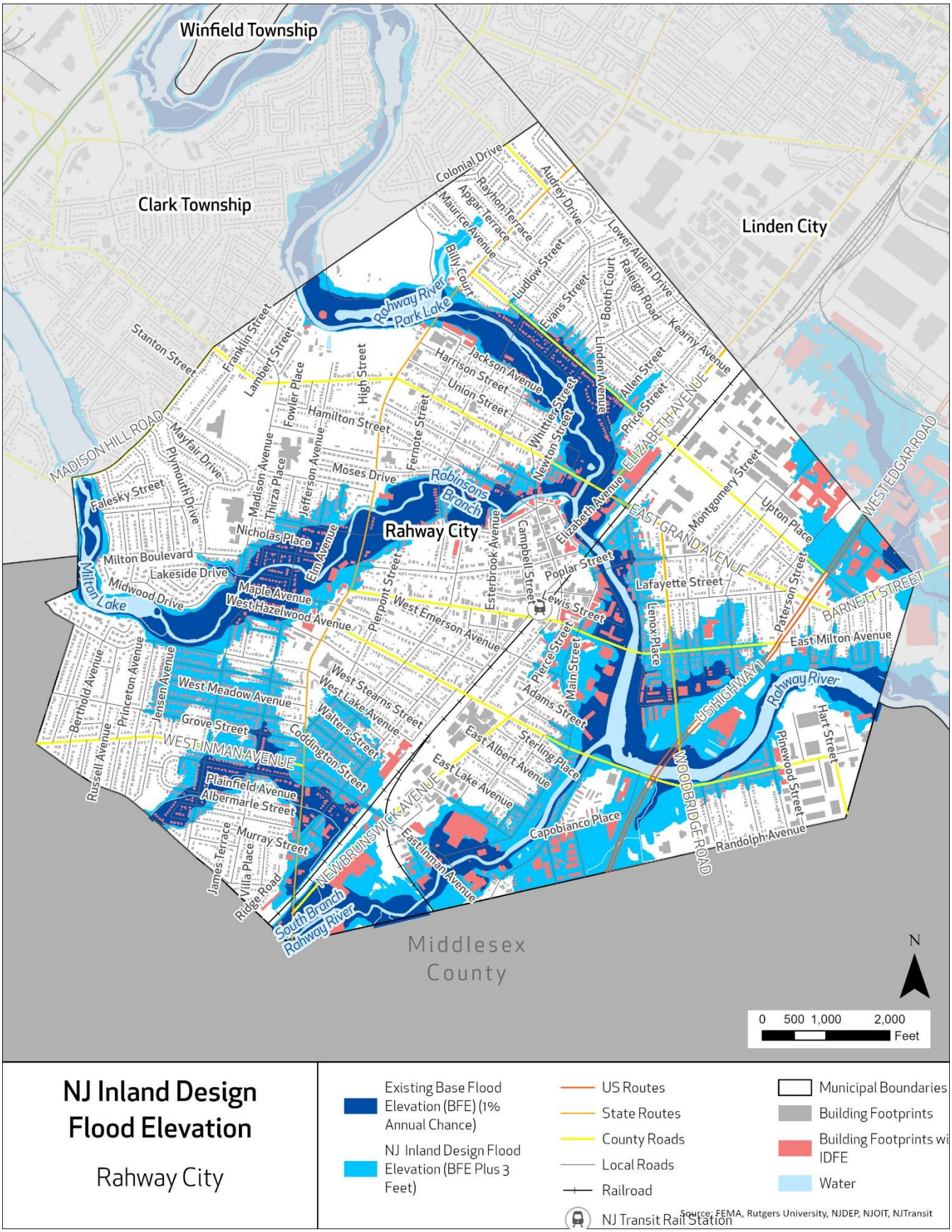
About 86.5 percent of Rahway is considered developed. Of the developed parcels of the town, 13.1 percent fall at least partially within the 1% annual chance floodplain and 13.1 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

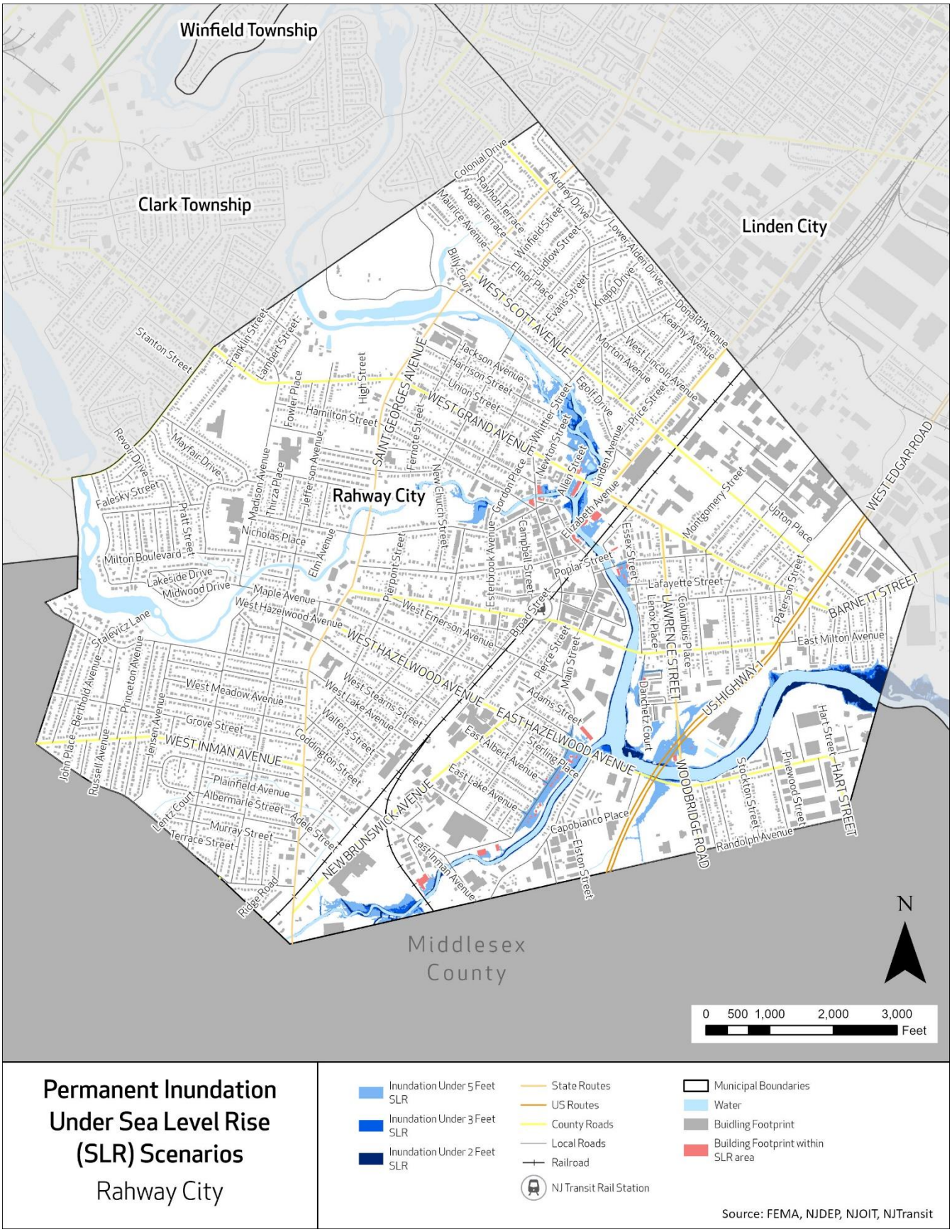
	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	13.1%	13.1%
Exposed Land Area	16.6%	9.2%

During the planning process, the City of Rahway identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 36 total facilities. Of these facilities, eight are within the floodplain and none are within areas projected to be at risk from sea level rise.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain	Number Within 5 feet of Sea Level Rise
Energy	1	-	-
Health and Medical	1	-	-
Safety and Security	2	3	-
Water Systems	-	1	-


Winfield Township
Clark Township
Linden City
Middlesex County
Rahway City
Rahway River Park Lake
Robinsons Branch
Milton Lake
South Branch Rahway River
Rahway River
ROSS STREET
Rayhon Terrace
Apgar Terrace
Maurice Avenue
Billy Court
Linden Avenue
Ludlow Street
Evans Street
Booth Court
Lower Alden Drive
Raleigh Road
Kearny Avenue
Stanton Street
Franklin Street
Lambert Street
Fowler Place
High Street
SAINT GEORGES AVENUE
Jackson Avenue
Harrison Street
Union Street
Hamilton Street
Fernote Street
Whittier Street
Newton Street
Allen Street
Price Street
ELIZABETH AVENUE
Montgomery Street
Upton Place
WEST EDGAR ROAD
MADISON HILL ROAD
Mayfair Drive
Plymouth Drive
Falesky Street
Madison Avenue
Thirza Place
Jefferson Avenue
Moses Drive
Gordon Place
Allen Street
Elizabeth Avenue
EAST GRAND AVENUE
Nicholas Place
Elm Avenue
Milton Boulevard
Lakeside Drive
Midwood Drive
Maple Avenue
West Hazelwood Avenue
Pierpont Street
West Emerson Avenue
Esterbrook Avenue
Campbell Street
Elm Avenue
Poplar Street
Lewis Street
Lafayette Street
Lenox Place
Paterson Street
US HIGHWAY 1
BARNETT STREET
East Milton Avenue
Pierce Street
Main Street
US HIGHWAY 1
Rahway River
Berthold Avenue
Princeton Avenue
Jefferson Avenue
West Stearns Street
West Lake Avenue
Walter's Street
Coddington Street
Grove Street
WEST INMAN AVENUE
Russell Avenue
Jensen Avenue
Plainfield Avenue
Albermarle Street
East Albert Avenue
Sterling Place
EAST HAZELWOOD AVENUE
Hart Street
Pinewood Street
East Lake Avenue
Capobianco Place
Randolph Avenue
NEW BRUNSWICK AVENUE
East Inman Avenue
James Terrace
Villa Place
Murray Street
0 500 1,000 2,000
Feet
Flood Hazard
Rahway City
FEMA Flood Zone
AE (1%)
0.2% Annual Chance
State Routes
US Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Winfield Township
Clark Township
Linden City
Rahway City
Middlesex County
Rahway River
Park Lake
Robinsons Branch
Milton Lake
South Branch Rahway River
Colonial Drive
Audrey Drive
Rayhon Terrace
Apgar Terrace
Maurice Avenue
Lower Alden Drive
Raleigh Road
Kearny Avenue
Booth Court
Ludlow Street
Evans Street
Billy Court
Stanton Street
Franklin Street
Lambert Street
Fowler Place
High Street
Harrison Street
Jackson Avenue
Union Street
Linden Avenue
Allen Street
Price Street
Whittier Street
Newton Street
Hamilton Street
Fernote Street
MADISON HILL ROAD
Mayfair Drive
Plymouth Drive
Madison Avenue
Thirza Place
Jefferson Avenue
Moses Drive
Falesky Street
Nicholas Place
Elm Avenue
Milton Boulevard
Lakeside Drive
Midwood Drive
Maple Avenue
West Hazelwood Avenue
Esterbrook Avenue
Campbell Street
Elizabeth Avenue
ELIZABETH AVENUE
Montgomery Street
Upton Place
WEST EDGAR ROAD
EAST GRAND AVENUE
Poplar Street
Lafayette Street
Lewis Street
Lenox Place
Paterson Street
BARNETT STREET
East Milton Avenue
Pierpont Street
West Emerson Avenue
Pierce Street
Main Street
Adams Street
US HIGHWAY 1
Rahway River
Hart Street
Pinewood Street
Berthold Avenue
Princeton Avenue
Jensen Avenue
West Meadow Avenue
West Stearns Street
West Lake Avenue
Walters Street
Grove Street
WEST INMAN AVENUE
Coddington Street
Russell Avenue
Plainfield Avenue
Albermarle Street
Murray Street
James Terrace
Villa Place
Ridge Road
NEWBRUNSWICK AVENUE
East Albert Avenue
Sterling Place
East Lake Avenue
East Inman Avenue
Capobianco Place
WOODBRIDGE ROAD
Randolph Avenue
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Rahway City
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
US Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit


Winfield Township
Clark Township
Linden City
Rahway City
Middlesex County
WEST SCOTT AVENUE
WEST GRAND AVENUE
WEST HAZELWOOD AVENUE
EAST HAZELWOOD AVENUE
WEST INMAN AVENUE
NEW BRUNSWICK AVENUE
SAINT GEORGES AVENUE
LAWRENCE STREET
BARNETT STREET
HART STREET
WOODBRIDGE ROAD
US HIGHWAY 1
WEST EDGAR ROAD
Stanton Street
Franklin Street
Lambert Street
Colonial Drive
Raybon Terrace
Appar Terrace
Maurice Avenue
Audrey Drive
Winfield Street
Ludlow Street
Lower Alden Drive
Knapp Drive
Donald Avenue
Kearny Avenue
Billy Court
Elinor Place
Evans Street
Morton Avenue
West Lincoln Avenue
Price Street
Golf Drive
Whittier Street
Newton Street
Allen Street
Linden Avenue
Jackson Avenue
Harrison Street
Union Street
High Street
Fowler Place
Hamilton Street
Fernrote Street
New Church Street
Gordon Place
Elizabeth Avenue
Essex Street
Montgomery Street
Upton Place
Paterson Street
Lafayette Street
Lenox Place
Columbus Place
East Milton Avenue
Danchetz Court
Hart Street
Pinewood Street
Stockton Street
Randolph Avenue
Capobianco Place
Elston Street
East Inman Avenue
Ridge Road
Lentz Court
Terrace Street
Murray Street
Albermarle Street
Adele Street
Plainfield Avenue
Grove Street
West Meadow Avenue
Coddington Street
Walter's Street
West Lake Avenue
East Lake Avenue
West Stearns Street
East Albert Avenue
Sterling Place
Adams Street
Main Street
Pierce Street
Broad Street
Campbell Street
Esterbrook Avenue
Pierpont Street
West Emerson Avenue
West Hazelwood Avenue
Maple Avenue
Elm Avenue
Nicholas Place
Milton Boulevard
Lakeside Drive
Midwood Drive
Platt Street
Madison Avenue
Thirza Place
Jefferson Avenue
Mayfair Drive
Revon Drive
Falesky Street
Stalevicz Lane
Princeton Avenue
Jansen Avenue
Russell Avenue
John Place
Berthold Avenue
Poplar Street
N
0 500 1,000 2,000 3,000
Feet
Permanent Inundation Under Sea Level Rise (SLR) Scenarios
Rahway City
Inundation Under 5 Feet SLR
Inundation Under 3 Feet SLR
Inundation Under 2 Feet SLR
State Routes
US Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Water
Buidling Footprint
Building Footprint within SLR area
Source: FEMA, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The City of Rahway has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2008 - Master Plan adopted 2019 – Master Plan Re-examination 2025 – Master Plan Re-examination scheduled	
Capital Improvement Plan	X		Unknown	
Local Emergency Operations Plan/Continuity of Operations Plan	X		6/15/23	
Floodplain Development Ordinance	X		2024	
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		October 2024, Revised February 2025	They are in conformance with the NJDEP model ordinance.
Stormwater Management Plan	X			
Watershed Management Plan	X			
Sheltering Plan	X			
Evacuation Plan	X			
Substantial Damage/Improved Structures Response	X			Per FEMA requirements. Essentially cost of improvements compared to assessed building value or appraisal if one is provided by applicant.
Repetitive Loss Plan	X			Prepared by Najarian Associates in March 2023.
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			They are filed with the Engineering Department.
Post-Disaster Recovery Plan	X			
Current/recent redevelopment plans or studies	X			Community is experiencing development downtown. It is both housing and commercial development, and some of it is exposed to flooding.
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X			Water Conservation Ordinance adopted 2022

Administrative and Technical Capabilities

The City of Rahway has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Joseph DiLorenzo, PhD, Najarian Associates, Consulting Flood Plain Administrator/CRS Coordinator
Grant Writer	X		The Aubrey Group
Staff trained to support mitigation		X	Tom Brougham (OEM Deputy Director)/ Dan Lee (City Engineer) are responsible for implementing hazard mitigation actions but are not trained in it.

Position	Yes	No	Explanation
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations	X		

Education and Outreach Capabilities

The City of Rahway has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Nixle, Social Media (X, Facebook, YouTube), City website (www.cityofrahway.com/280/Flood-Hazard-Information), Quarterly publications
StormReady	X		
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)	X		

Financial Capabilities

Within the last five years, the City of Rahway has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities	X		Unless a specific risk reduction situation exists requiring higher priority, risk reduction projects are given equal priority in comparison to other local activities that require staff time/local funding.
Other ongoing efforts to build additional financial capabilities	X		

Additional Capability Assessment Information

Regarding capital improvements, the Engineering Department has the following projects to prevent or reduce the impacts of natural hazards, specifically flooding. The projects are in various stages of progress.

- Hamilton Stage Flood Mitigation Project
- Tide/Sluice Gates Repair/Replacement Project
- Orchard Creek Desnagging/Desiltation Study
- Rahway River Desnagging/ Desiltation Study
- Annual Sanitary Sewer Inflow/Infiltration Repair Projects

Regarding organizations that work with socially vulnerable or underserved populations, below is a list of organizations with which the City frequently works; however, it does not have a record of working with these organizations for HMP or storm recovery. The City's Social Services Coordinator is Nidiyojana Rubiano.

- Bridgeway

- Mental Health Association
- Bridges
- Catholic Charities
- Proceed
- DCA
- CSPNJ
- Union County Social Services

Regarding ongoing efforts to build additional financial capabilities, the City has a strong bond rating and annually sets aside budgets of varying magnitude (up to $1 million) for the purpose of hazard mitigation with particular focus on projects that protect against flooding. There is currently no plan to change this process.

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the City of Rahway's last mitigation plan update in 2021, our overall strategy has focused on implementing practical, high-impact projects that address both acute and systemic flooding vulnerabilities. In response to the severe damage caused by Tropical Storm Ida—particularly the over $2 million in losses at Hamilton Stage and the destruction of more than 200 vehicles—our priorities have emphasized infrastructure hardening and real-time hazard communication. Key initiatives for 2025 include flood-proofing the Hamilton Stage building, installing flood depth gauges at historically low-lying intersections, and advancing the Tide and Sluice Gate Project to manage tidal inflows and enhance stormwater drainage capacity.

Additionally, the City has launched a comprehensive waterway analysis, concentrating initially on Orchard Creek to identify debris and vegetation removal opportunities that can be executed rapidly for near-term benefits. This approach allows for immediate risk reduction while setting the stage for longer-term waterway improvements citywide. Our commitment to regional collaboration continues through active participation in the Mayors Council for the Rahway River Watershed, working closely with NJDEP and USACE on sustainable, basin-wide flood mitigation strategies.

Looking ahead, the City's priorities over the next five years will include the systematic execution of smaller-scale waterway clearance projects identified in our ongoing analysis. These efforts are critical to reducing chronic flooding risks, improving hydraulic capacity, and building resilience incrementally throughout the City.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
13-01	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.	Flood	Low	Jacqueline Foushee, City Engineer	City Engineering Department Budget	$5,000.00	1 year	Completed	The DEP model was adopted in 2023.
13-02	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management	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	Flood, Erosion–Hurricane/ Nor'easter/ Coastal Storm	Low	City Council	Municipal Budget	N/A	1 year	Completed	The ordinance complying with DEP standards was adopted in October 2024.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8	well as other environmental								

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
13-03	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.	Flood	Low	Rahway DPW	NJDOT	$400,000	2 - 3 years	Ongoing	This is an RL/SRL area and does not contain SVI. The library was replaced with tennis courts.
13-04	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.	Flood	High	Union County	Grants, FEMA	$450,000	1 - 2 years	Ongoing	A bridge replacement is in progress; it is a County project. It is being funded by grants and $300,000 from FEMA. The City funded relocating the water mains and temporary parking at a cost of over $200,000 funded through local bonding. This project requires closing off businesses, parking, and access to a side street. Bridge replacement by the County is expected to start the summer of 2025.
13-05	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.	All Hazards	Low	OEM Coordinator, in coordination with SCOEM	City funds	$5,000	1 year	Ongoing	The City is currently working on plans to implement the public education and outreach program.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
13-06	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.	All Hazards	Low	DPW	City funds	$20,000 each	Annual project until complete	Ongoing	The city has generators, but they are being replaced with capacitors. The capacitors can run for eight hours; at City Hall, six (6) surplus capacitors are charged and switched out when another runs out of power. Seven have been installed and 18 remain. The City anticipates installing between 2-4 capacitors annually until backup power supply for all signals are provided by capacitors.
13-07	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.	Flood	Low	Administration/ Code Enforcement	City funds	N/A	1 - 2 years	Ongoing	Although the Stormwater Control Ordinance has been revised for compliance with current NJDEP regulations (adopted October 2024), the desired local restrictions are still being reviewed and will be adopted in the future.
13-08	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 option is to	Flood	Low	Administration	City funds	$10,000 annually	Ongoing	Ongoing	The $10,000 annual fee covers the fees for the engineering and lobbying professionals that assist the Mayor's Council with review of proposals from the NJDEP and USACE and for coordination with regional bureaucrats for support of regional projects. The Mayor of Rahway continues to be an active participant toward this effort.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
		consider additional detention within the South Mountain Reservoir.								
13-09	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 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.	Flood	High	Administration/NJDEP	FEMA HMA	$100,000	Ongoing	Ongoing	One house is being elevated and rebuilt, but it is not yet complete. Two houses are being elevated. There have been no home acquisitions, but some homes have been demolished through Blue Acres.
13-10	Investigate Resistance Tide Gates, the Water Coming in from or out through the Levee.	Investigate resistance tide gates, the water coming in from or out through the levee. Determine what projects like desilting and de-snagging may be implemented.	Flood, Storm Surge – Hurricane/ Nor'easter/ Tropical Storm	High	City of Rahway	Municipal Budget	Tide Gate - $850,000	2 Years	Ongoing	The Tide/Sluice Gate rehabilitation/replacement design process was initiated in September 2024 and is anticipated to be complete in June 2025. Construction is anticipated to begin in the fall of 2025 or spring of 2026.
13-11	Relocate the auxiliary firehouse on Maple Avenue.	Relocate the auxiliary firehouse on Maple Avenue. This firehouse is in the SFHA. The generator was raised, but the cost of elevating the whole building was too high. Look into relocating the auxiliary firehouse outside of the SFHA.	Flood	Low	City of Rahway	Municipal Budget	TBD	TBD	New	The damage to the Auxiliary Building caused by flooding was repaired in 2022 so the building is functioning again as originally used. This project is still under consideration to move forward by City Administration.

14 – BOROUGH OF ROSELLE

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Michael Sojka	OEM Coordinator	Primary Contact, Municipal Meeting
Christopher Laba	Acting Borough Administrator	Coordination, Input and Review
Denise Wilkerson	Assistant Borough Administrator	Coordination, Project Officer
Raj Kumar	Deputy OEM Coordinator	Municipal Meeting, Input
VACANT	OEM Secretary	Personnel and Training Management
VACANT	OEM Communication Manager	Messaging, Social Media Manager
Helder Freire	Police Department Chief	Municipal Meeting; Input
Christopher Laba	Fire Chief	Municipal Meeting; Input
Eric Robinson	Senior Program Manager	Municipal Meeting; Coordination, Input and Review
Darshell Yacinthe	Project Engineer	Municipal Meeting; Coordination, Input and Review
Shane Bonczak	Senior Professional Engineer	Municipal Meeting; Coordination, Input and Review
Ronald Reinertsen	Borough Planner	Municipal Meeting; Input
Louis Ulrich	Public Works Superintendent	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

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. Roselle is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Roselle is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 73% of the total land use, and covering about 425 acres of land. Civic/public (tax exempt), commercial, and railroad uses also accounted for notable portions, comprising 11%, 7%, and 6% respectively of the total land use in the same year.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 98% of the area in 2020. The forest category followed, accounting for 1% of the total land area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	0	0	N/A
Barren Land	0	1.5	N/A
Forest	6.6	10.6	61%
Urban	777.1	771.7	-1%
Water	0	0	N/A
Wetlands	0	0	N/A

Recent Major Development and Infrastructure from 2021 to Present

There have been a few recent developments in the past five years. There were 953 apartments built on Pine Street, where certain sections of the area fall within the FEMA flood zone. On 4th and Chestnut, 31 one-bedroom apartments were built outside of the flood zone. On 1100 Spruce Street, 195 units were built outside of the flood zone as part of a five-story apartment building.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

In the next five years, there are three anticipated developments. Borough Hall will be reconstructed at 210 Chestnut Street. 135 units are expected to be built at the Top Line Property on the 100 block of East 1st Avenue as part of a five-story apartment building. A four-story, 55-unit multi-family dwelling will be constructed in a new development on 792 East 3rd Street. There will also be an apartment building constructed along E Saint Georges Avenue; 195 units.

Demographics & Vulnerable Population

The Borough of Roselle has a total estimated population of 22,500, of which an estimated 4.4% are under age 5 and an estimated 15.7% are over age 65. The borough experienced moderate population growth over the ACS survey periods between 2013-2017 and 2018-2022, with an estimated 1.6% increase in population during this time. Nearly the entirety of Roselle Borough is identified as potentially overburdened (OBC), with seventeen block groups meet criteria for overburden due to *Minority* (10 block groups) and *Low Income and Minority* (7 block groups) indicators. Roselle also has two census tracts which have been identified for vulnerabilities related to CEJST categories of *Housing, Legacy Pollution, Transportation, Water and Wastewater,* and *Workforce Development.* There are no portions of the borough which meet criteria for CDRZ identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	22,500
Population Change since 2017	3.47%
Percent of Population Age < 5	4.37%
Percent of Population > 65	15.72%

HAZARD IDENTIFICATION

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 high, medium, low, or no concern. The following include the borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
	Natural Hazards	
	Extreme Temperature -Cold	Drought
Flood	Extreme Temperature – Heat	Earthquake/Geological
	High Wind – Straight Line Winds	Hail
	Severe Storm – Winter Weather (Includes Ice Storms)	Severe Storm - Lightning
		Erosion – Hurricane/Nor'easter/Coastal Storm
		Wildfire
	Human-made Hazards	
Power Failure	Cyber Attack	Animal Disease
	Hazmat Release - Transportation	Civil Unrest
	Pandemic	Economic Collapse
	Terrorism	Hazmat Release – Fixed Site
		Nuclear Hazard

Dam failure, high wind – tornado, landslide, and storm surge – hurricane/nor'easter/tropical storm were ranked as N/A.

Hazard Ranking Explanation

Flooding and erosion remain the largest risks in the borough. Several roads and intersections in the borough, including Jackson Avenue, Pine Street, 2nd Avenue, 3rd and Vine, and 3rd and John Street flood consistently, and the houses on these

corridors tend to experience significant basement flooding. As a result of significant rain events, erosion along streams is another high hazard of concern. Power failure remains a concern as there have been a few power outages within the borough in the past five years. Pandemics and cyber-attacks are a medium risk; while there have not been many instances in the past five years, if another event were to occur it would cause a significant disturbance. Dam failure, high wind – tornado, landslide, and storm surge – hurricane/nor'easter/tropical storm are all not applicable due to the borough's location. During the July 14, 2025 severe storm and flash flooding event, Roselle experienced intense rainfall that overwhelmed stormwater infrastructure, resulting in roadway inundation, property impacts, and localized drainage system failures. The most significant effects occurred in areas of the borough that continue to experience residual vulnerability following Hurricane Ida in 2021.

Significant Hazard Events Since Last Plan Update

In the past five years, a number of significant flood events have occurred resulting in significant damage to residences. There have also been a few high wind events resulting in a lot of downed trees.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Roselle Borough	
Number of Policies In-Force:	102
Total Losses:	461
Total Payments:	$6,887,982.40
Number of RL Properties:	3
Number of Mitigated RL Properties:	3
RL – Total Losses:	7
RL – Total Paid:	$30,906.43
Number of SRL Properties:	50
Number of Mitigated SRL Properties:	3
SRL – Total Losses:	186
SRL – Total Paid:	$6,871,434.81

Vulnerability of the Built Environment

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.

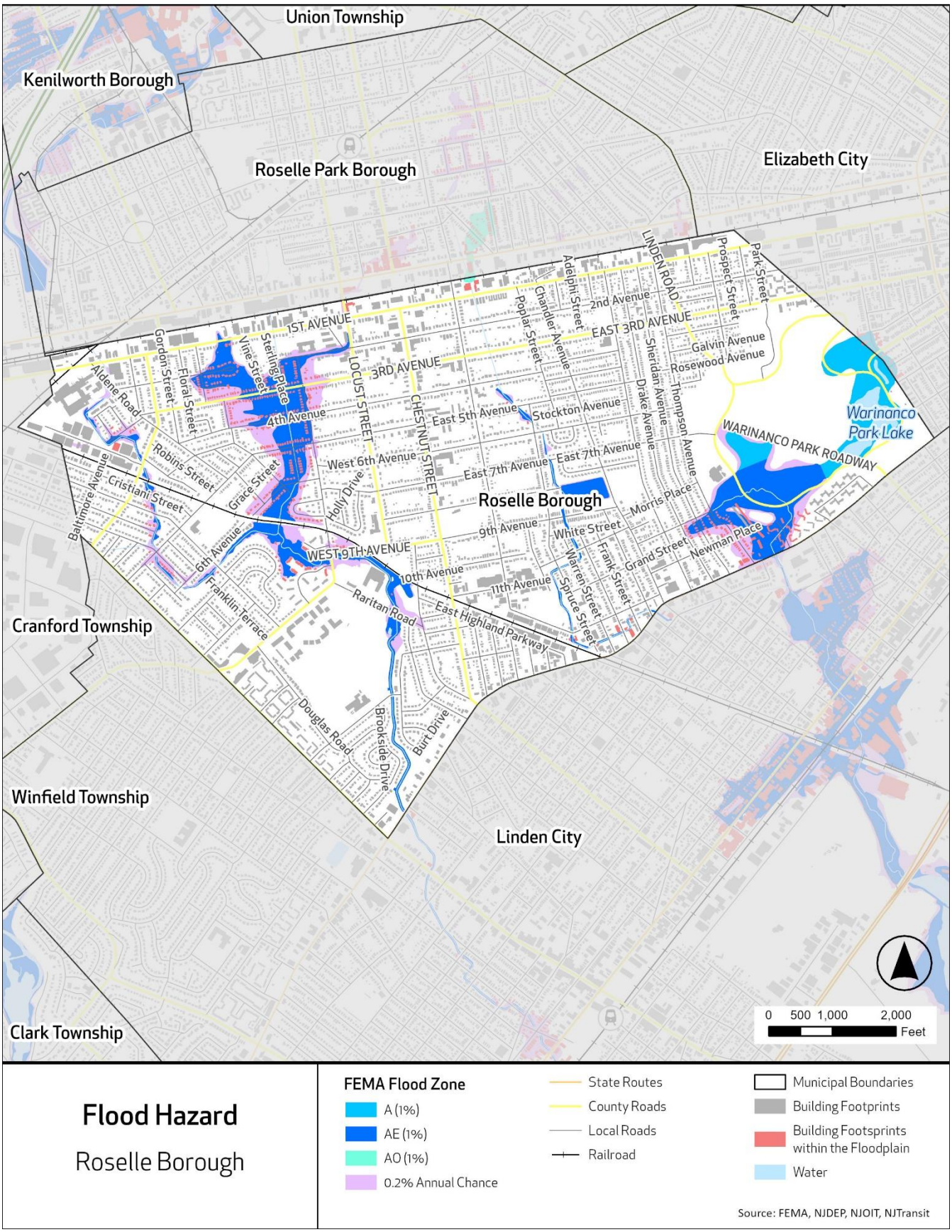
Approximately 8.7 percent of the total area of Roselle Borough lies within the 1% annual chance floodplain as defined by FEMA. An additional 3.9 percent of the area of the municipality is in the 0.2% annual chance floodplain.

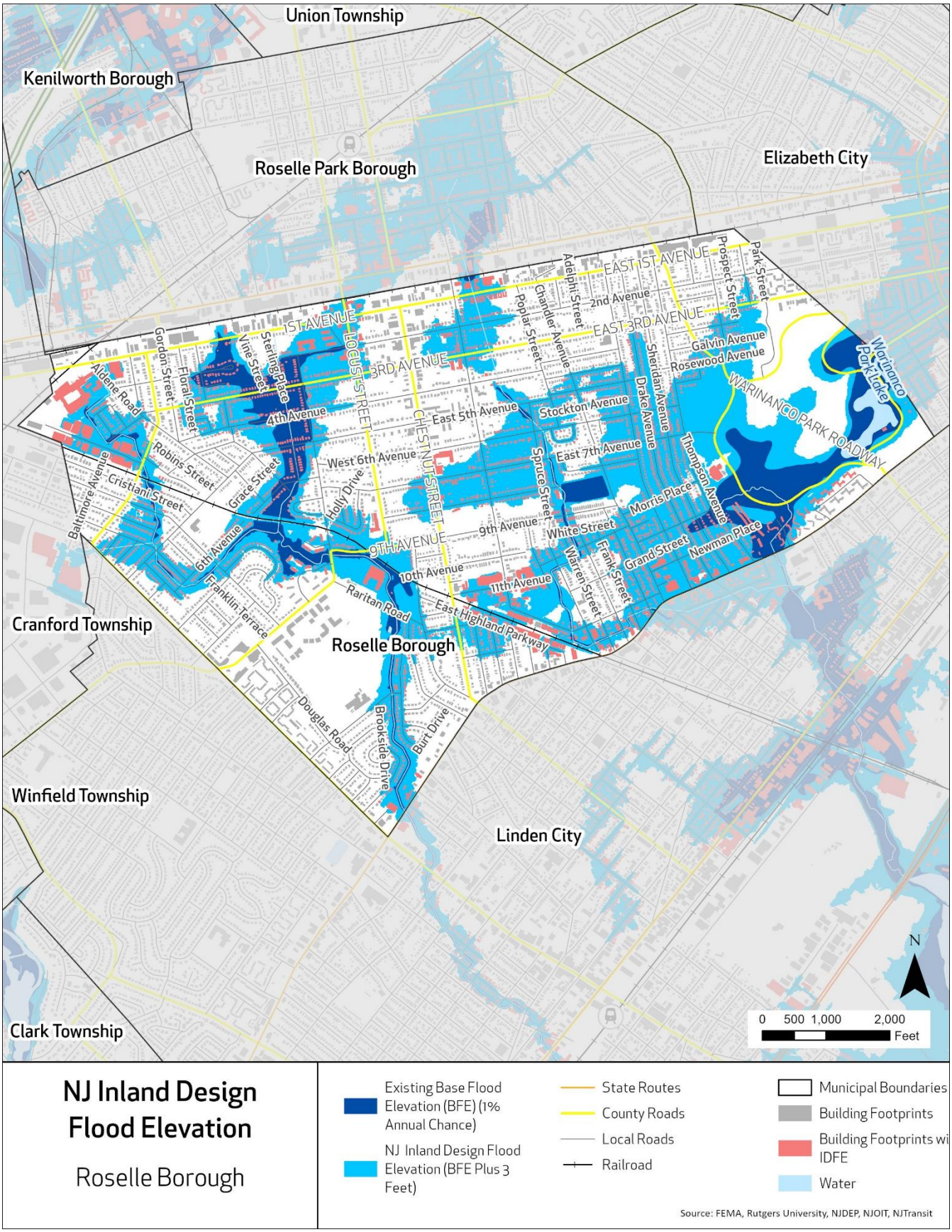
About 96.8 percent of Roselle is considered developed. Of the developed parcels of the town, 11.8 percent fall at least partially within the 1% annual chance floodplain and 10.1 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	11.8%	10.1%
Exposed Land Area	8.7%	3.9%

During the planning process, Roselle Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 23 total facilities. Of these facilities, none are within the floodplain or areas projected to be at risk from sea level rise.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-


Union Township
Kenilworth Borough
Roselle Park Borough
Elizabeth City
Cranford Township
Winfield Township
Linden City
Clark Township
Roselle Borough
1ST AVENUE
2nd Avenue
EAST 3RD AVENUE
3RD AVENUE
4th Avenue
East 5th Avenue
West 6th Avenue
East 7th Avenue
9th Avenue
WEST 9TH AVENUE
10th Avenue
11th Avenue
LINDEN ROAD
Park Street
Prospect Street
Adelphi Street
Chandler Avenue
Poplar Street
Sheridan Avenue
Drake Avenue
Thompson Avenue
Galvin Avenue
Rosewood Avenue
Warinanco Park Lake
WARINANCO PARK ROADWAY
Stockton Avenue
Morris Place
White Street
Grand Street
Newman Place
Frank Street
Warren Street
Spruce Street
East Highland Parkway
Raritan Road
Gordon Street
Floral Street
Aldene Road
Vine Street
Sterling Place
LOCUST STREET
CHESTNUT STREET
Holly Drive
Grace Street
Robins Street
Cristiani Street
Baltimore Avenue
6th Avenue
Franklin Terrace
Douglas Road
Brookside Drive
Burt Drive
0 500 1,000 2,000
Feet
Flood Hazard
Roselle Borough
FEMA Flood Zone
A (1%)
AE (1%)
AO (1%)
0.2% Annual Chance
State Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Union Township
Kenilworth Borough
Roselle Park Borough
Elizabeth City
Cranford Township
Roselle Borough
Winfield Township
Linden City
Clark Township
EAST 1ST AVENUE
1ST AVENUE
EAST 3RD AVENUE
3RD AVENUE
9TH AVENUE
2nd Avenue
4th Avenue
East 5th Avenue
West 6th Avenue
East 7th Avenue
9th Avenue
10th Avenue
11th Avenue
Adelphi Street
Poplar Street
Chandler Avenue
Prospect Street
Park Street
Gordon Street
Vine Street
Sterling Place
Floral Street
Aldene Road
LOCUST STREET
CHESTNUT STREET
Holly Drive
Spruce Street
Stockton Avenue
Drake Avenue
Sheridan Avenue
Galvin Avenue
Rosewood Avenue
Warinanco Park Lake
WARINANCO PARK ROADWAY
Thompson Avenue
Morris Place
White Street
Grand Street
Newman Place
Warren Street
Frank Street
Robins Street
Grace Street
Cristiani Street
Baltimore Avenue
6th Avenue
Franklin Terrace
Raritan Road
East Highland Parkway
Douglas Road
Brookside Drive
Burt Drive
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Roselle Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
State Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Roselle Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2021	
Capital Improvement Plan		X		
Local Emergency Operations Plan/Continuity of Operations Plan	X		November 2023	
Floodplain Development Ordinance	X		April 2025	Flood damage prevention ordinance was updated.
Floodplain Management Plan		X		
Stormwater Management Ordinance	X		April 2025	
Stormwater Management Plan	X		Unknown	
Watershed Management Plan		X		
Sheltering Plan		X		IN PROGRESS AS OF JANUARY 2026
Evacuation Plan	X		2025	
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X		March 2024	
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan	X		March 2024	
Current/recent redevelopment plans or studies	X		2024	
Community Wildfire Protection Plan	X		March 2024	
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Roselle Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		CME Associates
Grant Writer	X		Mr. David Biunno and Aubrey Group
Staff trained to support mitigation	X		DPW, PD, OEM and Fire Department have trained staff
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		The Fire Department and Police Department have agreements with nearby municipalities when there are emergencies.
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations	X		The Boxwood Learning Center offers an afterschool program for socially vulnerable students and services for people who are a victim of domestic violence.

Education and Outreach Capabilities

Roselle Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Public information officer sends communications.
Storm Ready Program		X	
Firewise USA		X	

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week		X	
Community Rating System (CRS)	X		Brochures and other basic flood-related information are distributed to Borough property owners.

Financial Capabilities

Within the last five years, Roselle Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs	X		NJDOT projects that include drainage improvements to reduce flooding on certain roads.
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities	X		Grant writer seeks funding for projects.

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, the Borough of Roselle has focused on enhancing flood resilience, improving emergency response capabilities for natural and human-made attacks, and upgrading critical infrastructure to mitigate natural hazard risks. Over the next five years, Roselle aims to prioritize projects that address streambank stabilization and security for various attacks.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
-	-	-	-	-	-	-	-	-	-	-

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
14-01	Purchase and Install a Dual fuel Generator at the Community Center.	Purchase and install a generator at the Community Center.	Flood, High Wind–Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Ongoing	
14-02	Purchase and Install a Dual fuel Generator at the Department of Public Works (DPW).	Purchase and install a generator at the DPW.	Flood, High Wind–Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Ongoing	
14-03	Purchase and Install a Dual fuel Generator at the Sanitary Sewer Pump Station	Purchase and install a generator at the Sanitary Sewer Pump Station	Flood, High Wind–Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
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.	Flood	High	Engineering	FEMA HMA, Municipal Budget	$5,000,000.00	3 years	Ongoing	
14-05	Improve and Convert Roadway Stormwater Systems at Harrison Ave., Wheatsheaf Ave, and Brook Run.	Improve and convert roadway stormwater systems along Harrison Ave., Wheatsheaf Rd., and Brook Run to control stormwater.	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 stream maintenance to West Brook and Peach Orchard Brook. Engineering to assist in the analysis of brooks and creating action plans.	Flood	Medium	Engineering / DPW	Municipal Budget	$250,000.00	Ongoing	Ongoing	
14-07	Purchase and Install a Dual Fuel Generator at the OEM Building. 131 W. 8th Ave	Purchase and install a generator at the OEM Building.	Flood, High Wind– Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$25,000.00	1 year	Ongoing	
14-08	Purchase and Install a Dual Fuel Generator at the Borough Hall Annex.	Purchase and install a generator at the borough hall Annex.	Flood, High Wind– Straight-Line Winds	Medium	DPW	FEMA HMA, Municipal Budget	$50,000.00	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
14-09	Purchase and Install Solar Panels with Battery Back Up at 725 Chestnut St (Fire Department).	Purchase and install solar panels with battery back up.	Flood, High Wind–Straight-Line Winds	Medium	Fire	Municipal Budget	$100,000.00	1 year	Ongoing	
14-10	Purchase Trash Pumps and Sump Pumps for Flood Mitigation.	Purchase trash pumps and sump pumps.	Flood, High Wind–Straight-Line Winds	Medium	Fire	Municipal Budget	$25,000.00	1 year	Ongoing	
14-11	Executing the Duties of the Floodplain Administrator.	Evaluate all site development and redevelopment plans submitted to the borough for major or minor site plan approval in conformance with the Flood Damage Prevention Ordinance. Coordinate and attend recurring meetings with the community and the county.	Flood	Medium	Engineering	FEMA HMA	$80,000.00	Ongoing	Ongoing	
14-12	Furnish and Install Traffic Signage.	Find areas in the borough that could use regulatory and warning signs to alert motorists of flooded areas, evacuation routes and detours in case of an emergency.	Flood	Medium	Engineering	Municipal Budget or other grant funding	$50,000.00	2 years	New	
14-13	Improve/ Create and Implement Waste Flow Plan and Debris Management Plan.	Waste flow plan, debris management plan, including but not limited to, vegetative debris, construction debris, and health waste.	Flood	Medium	Engineering / DPW	Municipal Budget or other grant funding	$50,000.00	Ongoing	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
14-14	Purchase Level 1 Power Redundancy for City Hall.	Purchase Petroleum Generator.	Power	Medium	Municipal / Sysnet	FEMA HMA	$325,000	1 year	New	
14-15	Purchase Level 2 Power Redundancy for City Hall.	Purchase Gas Generator.	Power	Medium	Municipal / Sysnet	FEMA HMA	$160,000	1 year	New	
14-16	Purchase Level 3 Power Redundancy for City Hall.	Purchase Power walls.	Power	Medium	Municipal / Sysnet	FEMA HMA	$123,500	1 year	New	
14-17	Purchase Level 1 Internet Redundancy for City Hall.	Hardline Dual Internet (Cable & Fiber).	Network	Medium	Municipal / Sysnet	FEMA HMA	$65,000	1 year	New	
14-18	Purchase Level 2 Internet Redundancy for City Hall.	Subscribe to 5G LTE based internet modems.	Network	Medium	Municipal / Sysnet	FEMA HMA	$32,500	1 year	New	
14-19	Purchase Level 3 Internet Redundancy for City Hall.	Subscribe to Satellite based internet provider.	Network	Medium	Municipal / Sysnet	FEMA HMA	$97,500	1 year	New	
14-20	Purchase Level 1 Power Redundancy for Annex.	Purchase Petroleum Generator.	Power	Medium	Municipal / Sysnet	FEMA HMA	$260,000	1 year	New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
14-21	Purchase Level 2 Power Redundancy for Annex.	Purchase Gas Generator.	Power	Medium	Municipal / Sysnet	FEMA HMA	$130,000	1 year	New	
14-22	Purchase Level 3 Power Redundancy for Annex.	Purchase Power walls.	Power	Medium	Municipal / Sysnet	FEMA HMA	$97,500	1 year	New	
14-23	Purchase Level 1 Internet Redundancy for Annex.	Hardline Dual Internet (Cable & Fiber).	Network	Medium	Municipal / Sysnet	FEMA HMA	$45,500	1 year	New	
14-24	Purchase Level 2 Internet Redundancy for Annex.	Subscribe to 5G LTE based internet modems.	Network	Medium	Municipal / Sysnet	FEMA HMA	$26,650	1 year	New	
14-25	Purchase Level 3 Internet Redundancy for Annex.	Subscribe to Satellite based internet provider.	Network	Medium	Municipal / Sysnet	FEMA HMA	$65,000	1 year	New	
14-26	Purchase Level 1 Power Redundancy for Fire.	Purchase Petroleum Generator.	Power	Medium	Municipal / Sysnet	FEMA HMA	$325,000	1 year	New	
14-27	Purchase Level 2 Power Redundancy for Fire.	Purchase Gas Generator.	Power	Medium	Municipal / Sysnet	FEMA HMA	$160,000	1 year	New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
14-28	Purchase Level 3 Power Redundancy for Fire.	Purchase Power walls.	Power	Medium	Municipal / Sysnet	FEMA HMA	$123,500	1 year	New	
14-29	Purchase Level 1 Internet Redundancy for Fire.	Hardline Dual Internet (Cable & Fiber).	Network	Medium	Municipal / Sysnet	FEMA HMA	$65,000	1 year	New	
14-30	Purchase Level 2 Internet Redundancy for Fire.	Subscribe to 5G LTE based internet modems.	Network	Medium	Municipal / Sysnet	FEMA HMA	$32,500	1 year	New	
14-31	Purchase Level 3 Internet Redundancy for Fire.	Subscribe to Satellite based internet provider.	Network	Medium	Municipal / Sysnet	FEMA HMA	$97,500	1 year	New	
14-32	Purchase Level 3 Power Redundancy for OEM.	Purchase Power walls.	Power	Medium	Municipal / Sysnet	FEMA HMA	$97,500	1 year	New	
14-33	Purchase Level 1 Internet Redundancy for OEM.	Hardline Dual Internet (Cable & Fiber).	Network	Medium	Municipal / Sysnet	FEMA HMA	$45,500	1 year	New	
14-34	Purchase Level 2 Internet Redundancy for OEM.	Subscribe to 5G LTE based internet modems.	Network	Medium	Municipal / Sysnet	FEMA HMA	$26,650	1 year	New	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
14-35	Purchase Level 3 Internet Redundancy for OEM.	Subscribe to Satellite based internet provider.	Network	Medium	Municipal / Sysnet	FEMA HMA	$65,000	1 year	New	

15 – BOROUGH OF ROSELLE PARK

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Richard Cocca	**Deputy Coordinator, Roselle Park OEM**	**Primary contact, Municipal Workshop 1, Municipal Meeting**

COMMUNITY OVERVIEW

Overview

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. Approximately 98% of the borough is developed, with vacant and forested land making up a small proportion of its total area. The Valley Road Industrial Company LLC and shipbuilding activities are an important part of the borough's economy. Roselle Park is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Roselle Park is a predominantly residential community with residential (including apartment) use accounting for 73% of its area, covering nearly 396 acres in 2022. In the same year, civic/public (tax exempt) land, commercial land, and railroad property made up 11%, 7%, and 6% respectively of its area. Between 2016 and 2022, area under industrial use fell from 12 acres to 6 acres, while vacant land increased from 3 acres to 10 acres. Although there was an increase in vacant land during this period, it accounted for merely 2% of the borough's total area, covering 10 acres of land.

The significant share of residential use, followed by civic/public (tax exempt) and commercial use is reflected in NJDEP's Land Use/Land Cover data as well; in 2020, urban/developed land constituted nearly 98% of the borough's total land, covering 772 acres. Forest land and barren land followed, each covering 1% or less of Roselle Park's area.

Land Use Type	Total Acres (2016)	Total Acres (2022)	Percent Change
Agriculture	0	0	N/A
Barren Land	0	1.5	N/A
Forest	6.6	10.6	61%
Urban	777.1	771.7	-1%
Water	0	0	N/A
Wetlands	0	0	N/A

Recent Major Development and Infrastructure from 2021 to Present

None identified.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

A 400-unit mixed-use development and two buildings comprising 300 units were built on Westfield Avenue. These developments are located close to a regulatory floodplain. Additionally, there are other projects on the table for development throughout the borough.

Demographics & Vulnerable Population

Roselle Park Borough has an estimated total population of 13,964, with an estimated 5.7% of these residents aged under 5 and an estimated 13.4% aged over 65. The borough experienced moderate population growth over the periods between ACS surveys 2013-2017 and 2018-2022, with an estimated 1.9% growth in residents during this time. There are 8 block

groups within the borough which meet criteria as overburdened communities, all defined as vulnerable due to *Minority* categorization. These block groups make up the majority of the borough's area. No portions of Roselle Park meet designation criteria for identification under CDRZ or CEJST definitions of vulnerability.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	13,964
Population Change since 2017	1.86%
Percent of Population Age < 5	5.68%
Percent of Population > 65	13.38%

HAZARD IDENTIFICATION

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 high, medium, low, or no concern. The following include the borough's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
Natural Hazards		
Flood	High Wind – Straight-line Winds	Drought
	Severe Storm – Winter Weather (Includes Ice Storms)	Earthquake/Geological
		Erosion – Hurricane/Nor'easter/Coastal Storm
		Extreme Temperature - Cold
		Extreme Temperature - Heat
		Hail
		High Wind - Tornado
		Landslide (Non-Seismic)
		Severe Storm - Lightning
		Storm Surge - Hurricane/Tropical Storm/Nor'easter
Human-made Hazards		
	Cyber Attack	Animal Disease
	Hazmat Release – Fixed Site	Civil Unrest
	Hazmat Release - Transportation	Economic Collapse
	Power Failure	Nuclear Hazard
		Pandemic
		Terrorism

Dam failure and wildfire were ranked as N/A.

Hazard Ranking Explanation

Flooding is the most significant issue faced by the borough. As a result, it ranked flood as a hazard of high concern. Locations experiencing recurring flooding include the Meridia block, which comprises a 4-story complex of 400 units and a parking deck, and Chestnut Street. A development that is planned at Westfield Avenue and Chestnut Street faces flood risk owing to its proximity to Morses Creek.

The borough ranked hazmat release hazards as medium, owing to chemical releases from shipbuilding activities and the Valley Road Industrial Company LLC. Other hazmat concerns stem from transportation activities including tankers and heavy vehicles that commute to Linden Township through the borough, along with trains transporting trash from New York City to Pennsylvania twice a week.

Power failure is also a hazard of medium concern for the borough as its Police Headquarters frequently experience power outages due to high demand.

Significant Hazard Events Since Last Plan Update

Catastrophic flooding occurred during Hurricane Ida in 2021, with basements along Galloping Hill Road experiencing severe flooding. Other locations that were affected by flooding during the storm were Westfield Avenue and Chestnut Street. Flooding during Hurricane Ida caused sewage to back up. As a result, the borough is separating its sewage system from the City of Elizabeth, an action which is estimated to cost $3,000,000.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to increase both the intensity and frequency of flooding in Roselle Park. As global temperatures rise, heavy rainfall events are expected to become more frequent. Due to its proximity to Rahway River and Morses Creek, the latter of which flows through Roselle Park, the borough may face a heightened risk of flooding. Additionally, upcoming developments along Westfield Avenue raise concerns as they are situated in flood-prone areas. Moreover, the borough may be at an increased risk of hazmat releases from industrial and transportation activities, which could become dangerous in the event of intensified flooding. Since much of the borough is residential, many residents are at increased risk from these hazards.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Roselle Park Borough	
Number of Policies In-Force:	33
Total Losses:	84
Total Payments:	$758,637.80
Number of RL Properties:	2
Number of Mitigated RL Properties:	0
RL – Total Losses:	5
RL – Total Paid:	$47,870.26
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	$0.00

Vulnerability of the Built Environment

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. As previously stated, 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.

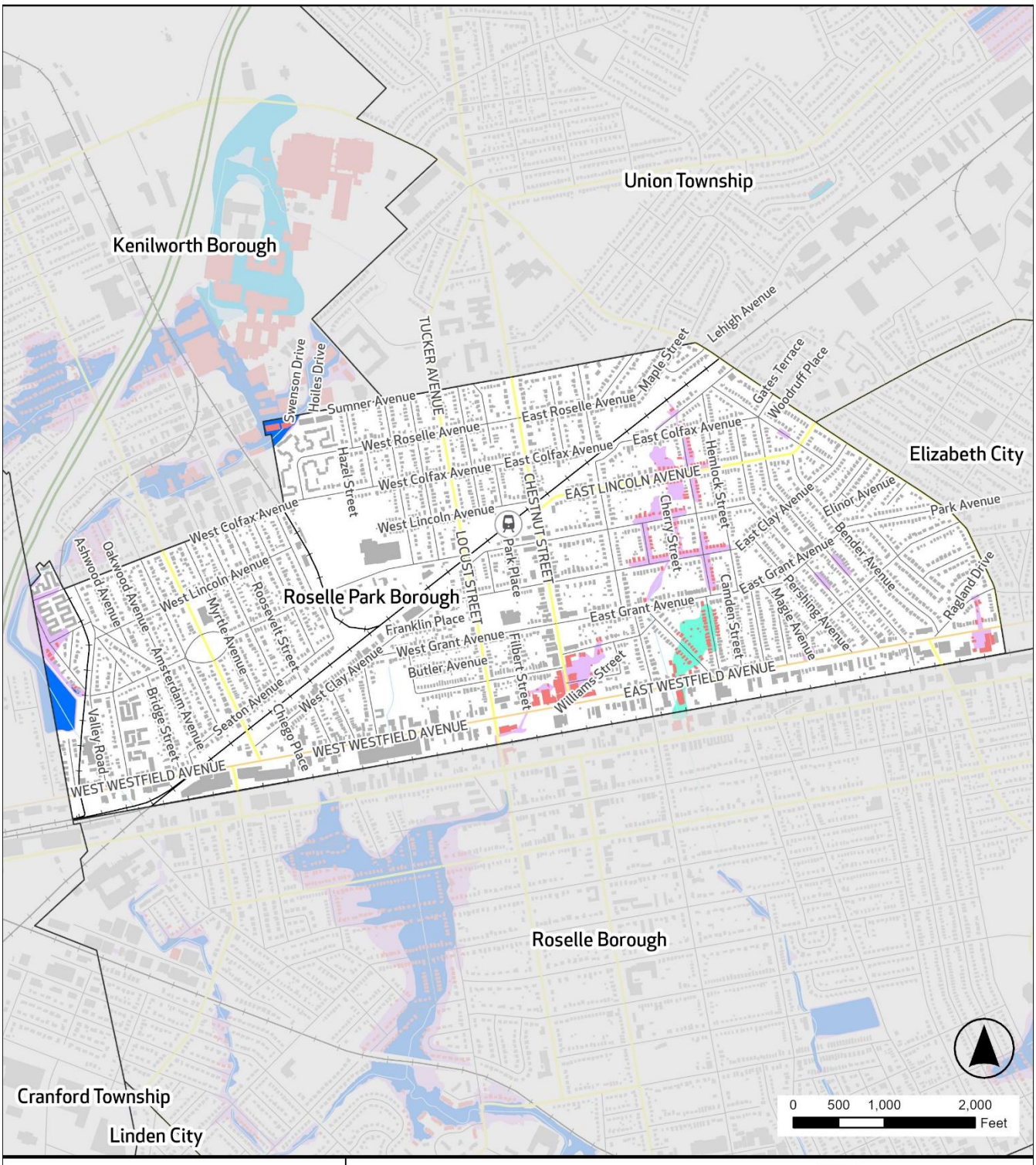
Approximately 1.4 percent of the total area of Roselle Park Borough lies within the 1% annual chance floodplain as defined by FEMA. An additional 3.1 percent of the area of the municipality is in the 0.2% annual chance floodplain.

About 97 percent of Roselle Park is considered developed. Of the developed parcels of the town, 3.2 percent fall at least partially within the 1% annual chance floodplain and 6.4 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that development of the municipality is generally in areas that are more prone to flooding.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	3.2%	6.4%
Exposed Land Area	1.4%	3.1%

During the planning process, Roselle Park Borough identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 20 total facilities. Of these facilities, none are within the floodplain.

	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-



Flood Hazard

Roselle Park Borough

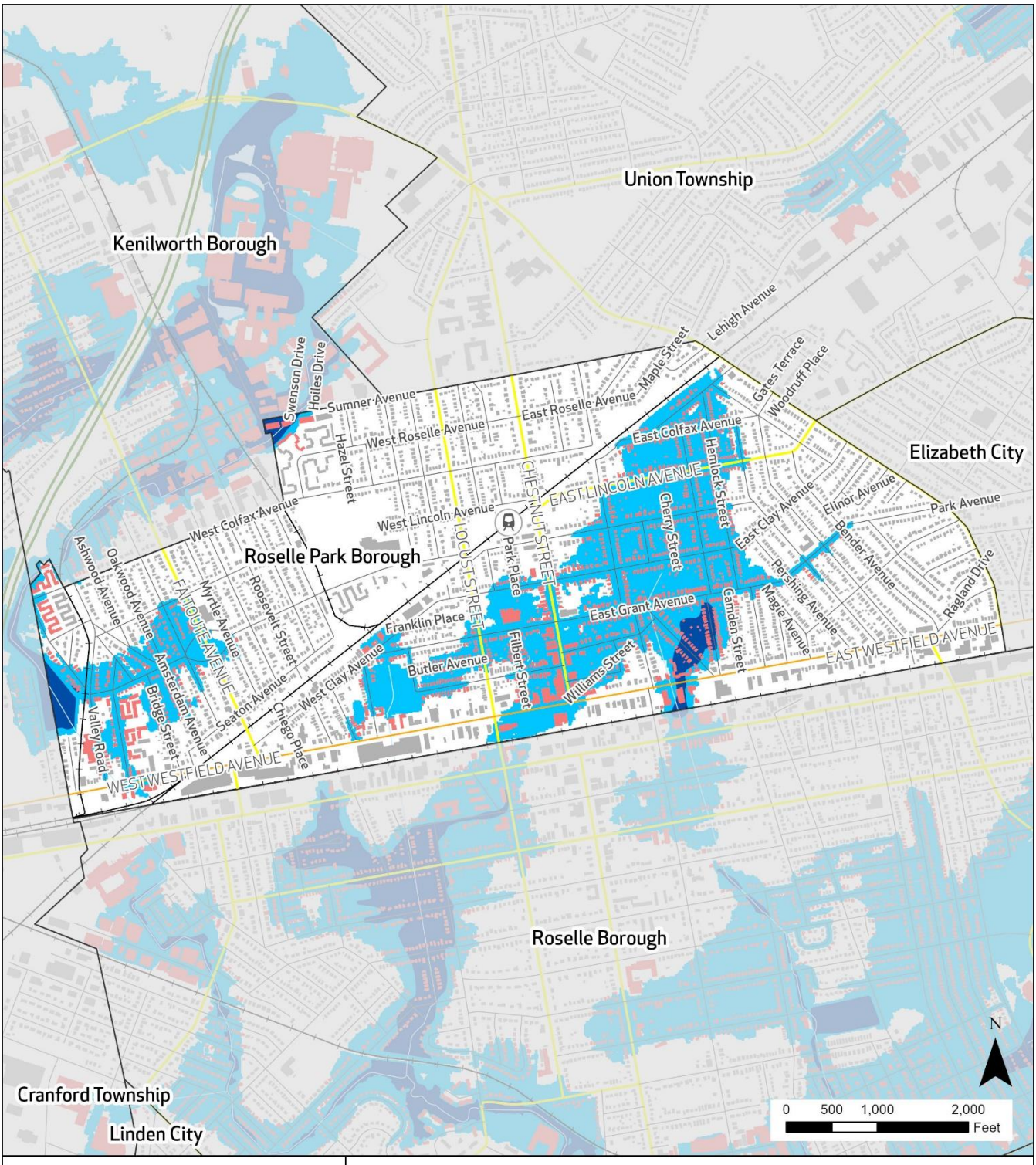
FEMA Flood Zone

- AE (1%)
- AO (1%)
- 0.2% Annual Chance

- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit


Union Township
Kenilworth Borough
Elizabeth City
Roselle Park Borough
Roselle Borough
Cranford Township
Linden City
Swenson Drive
Hoiles Drive
Sumner Avenue
West Roselle Avenue
East Roselle Avenue
Maple Street
Lehigh Avenue
Gates Terrace
Woodruff Place
East Colfax Avenue
Hemlock Street
EAST LINCOLN AVENUE
Cherry Street
East Clay Avenue
Elinor Avenue
Park Avenue
Bender Avenue
Ragland Drive
Pershing Avenue
Magie Avenue
Camden Street
EAST WESTFIELD AVENUE
West Colfax Avenue
West Lincoln Avenue
Hazel Street
CHESTNUT STREET
LOCUST STREET
Park Place
Franklin Place
East Grant Avenue
Butler Avenue
Filbert Street
Williams Street
West Clay Avenue
Ashwood Avenue
Oakwood Avenue
Myrtle Avenue
Roosevelt Street
FAIRMOUNT AVENUE
Amsterdam Avenue
Bridge Street
Seaton Avenue
Chiego Place
Valley Road
WEST WESTFIELD AVENUE
N
0 500 1,000 2,000
Feet
NJ Inland Design Flood Elevation
Roselle Park Borough
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Roselle Park Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2020	
Capital Improvement Plan	X		January 2023	
Local Emergency Operations Plan/Continuity of Operations Plan		X		
Floodplain Development Ordinance	X		June 2024	
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		June 2024	
Stormwater Management Plan		X		
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan	X			
Substantial Damage/Improved Structures Response	X			Borough enforces Building Code through the building official.
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			SDA
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies	X			Commercial development planned in area prone to flooding.
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X			

Administrative and Technical Capabilities

Roselle Park Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Floodplain Administrator, Andrew Casias, is a full-time employee and a Borough Administrator as well.
Grant Writer		X	
Staff trained to support mitigation	X		
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		x	

Education and Outreach Capabilities

Roselle Park Borough has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Outreach conducted through social media platforms and AM Radio Station. Borough's local website has information on reducing vulnerability to natural hazards.

Education and Outreach Capability	Yes	No	Explanation
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Roselle Park Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities	X		Projects must be approved by Mayor/Council.
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, the Borough of Roselle Park has focused on enhancing flood resilience, improving emergency response capabilities, and upgrading critical infrastructure to mitigate natural hazard risks. Key completed actions include improving drainage systems and enhancing backup power at essential facilities. Over the next five years, The Borough of Roselle Park aims to prioritize projects that address emerging climate challenges, such as sea-level rise, by expanding mitigation strategies like updated flood mapping, increased drainage and retention basin capacity. These efforts underscore the Borough of Roselle Park's commitment to safeguarding residents and promoting sustainable growth in the face of evolving hazards. The borough is working on a 2026 update for its master plan, which is due to include a vulnerability assessment.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
15-01	Flood-proof the Chestnut Street Fire Station.	Flood-proof the Chestnut Street fire station.	Flood		Roselle Park Fire Chief		$125,000.00		Completed	
15-02	Flood-proof the Lorane Fire House.	Flood-proof the Lorane Fire House	Flood		Roselle Park Fire Chief		$125,000.00		Completed	
15-03	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.	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park		$250,000.00		Completed	
15-04	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.	Flood, High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park Fire Chief		$45,000.00		Withdrawn	Boro no longer owns this property
15-05	Mitigate Flooding of the Sherman School.	Mitigate flooding of the Sherman School.	Flood		Roselle Park OEM		$25,000.00		Completed	
15-06	Obtain Backup Power to the Roselle Park Middle School.	Backup power to the Roselle Park Middle School.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$100,000.00		Completed	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
15-07	Obtain Backup Power for and Retrofit the Aldine School.	Backup power/retrofitting of the Aldine School.	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$125,000.00		Completed	
15-08	Obtain Backup Power for and Retrofit Roselle Park High School.	Backup power/retrofitting of Roselle Park High School.	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$125,000.00		Completed	
15-09	Flood-proof the Department of Public Works.	Floodproofing of the Department of Public Works.	Flood, High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park DPW		$150,000.00		Withdrawn	
15-10	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.	High Wind–Tornado, High Wind–Straight-Line Winds		Roselle Park OEM		$750,000.00		Completed	
15-11	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).	Flood		DPW	Capital Improvement	$200,000.00		Completed	
15-12	Join CRS Program.	Join CRS Program.	Flood		Floodplain Administrator	Municipal Budget	$0.00		Completed	
15-13	Update Municipal Stormwater Control Ordinance Based on Appendix D: Model Stormwater Control Ordinance for Municipalities of the New Jersey Stormwater Best Management	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	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Borough Council	Municipal Budget	$0.00	1 year	Completed	Updated Ordinance in June 2024.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Practices Manual to Reflect Amendments to the Stormwater Management Rules at N.J.A.C. 7:8	water quality and flooding conditions as well as other environmental								

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
15-14	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).	Flood		Roselle Park OEM	TBD	$130,000.00		Ongoing	Still needs additional work
15-15	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.	Flood		Roselle Park DPW	TBD	$350,000.00		Ongoing	Still needs additional work
15-16	Upgrade the Covered Culvert Along West Westfield Ave.	Covered culvert upgrade along West Westfield Ave.	Flood		Roselle Park OEM	TBD	$1,200,000.00		Ongoing	Still needs additional work
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.	Flood	Low	Engineering				Ongoing	Future Project
15-18	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.	High Wind–Straight-Line Winds	Low	Roselle Park Administrator	FEMA HMA, Insurance	$250,000.00	1 - 5 years	Ongoing	
15-19	Flood-proof and Purchase and Install a Backup Generator for the Faitoute Fire House.	Floodproofing and backup generator for the Faitoute Fire House.	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm – Lightning	High	Roselle Park	FEMA HMA, Municipal Budget	$300,000.00	1 - 5 years	Ongoing	Installed a generator. Ongoing, with $20,000 spent from the municipal budget.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
15-20	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.	All Hazards	Low	OEM Coordinator, in coordination with NJOEM	OEM Budget	TBD	1 year	Ongoing	
15-21	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.	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	Payment of $40,000 to a private company for the action. DPW no longer involved.
15-22	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.	All Hazards	High	Rochelle Park OEM	Capital Improvement funding	$20,000.00	1 - 5 years	Ongoing	Current generator is old.
15-23	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.	Flood	High	Affected homeowners	FEMA HMA	TBD	Ongoing	Ongoing	
15-24	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.	Flood, Terrorism	High	Roselle Park OEM	FEMA HMA	$200,000.00	1 - 5 years	Ongoing	Security fencing repaired but needs to be redone. Need higher fence.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
15-25	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.	Flood	High	Borough of Roselle and Borough of Roselle Park	FEMA HMA, NJ Green Acres	$20,000.00	1 - 5 years	Ongoing	No progress. Borough wants to increase capacity of the Morses Creek as it is the main source of flooding.
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.	All Hazards	Medium	Roselle Park OEM	FEMA HMA	$100,000.00	1 - 5 years	Ongoing	No progress.
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.	Severe Storm – Lightning	High	Roselle Park OEM	Municipal budget	$20,000.00	1 - 5 years	New	High priority because of power surges
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.	Terrorism	High	Roselle Park OEM	Homeland Security grants	TBD	1 - 5 years	Ongoing	Borough wants new cameras.
15-29	Replace Computer/Network Infrastructure to Further Prevent Cyber Attacks.	Replace computer/network infrastructure to further prevent cyber attacks.	Cyber Attack	High	Roselle Park OEM	Homeland Security grants	TBD	1 - 5 years	Ongoing	Shared service with County.
15-30	Purchase a High-Capacity Mobile Pump for the Two Basins in Town to Prevent Overflow.	Purchase a high-capacity mobile pump for the two basins in town to prevent overflow.	Flood, Severe Storm – Lightning	Medium	Roselle Park OEM	FEMA, Municipal budget	$50,000.00	1 - 5 years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
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.	Flood	High	Roselle Park OEM	Municipal budget	TBD	1 - 5 years	Ongoing	Currently Borough shares a CSO with Elizabeth. Plans to separate the Borough's sewer system are underway.
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 vac truck to assist in cleaning catch basins and a new large dump truck for DPW to assist in clean ups during storm impacts.	Flood	Low	Roselle Park DPW	Municipal budget	$5,000,000.00 - $10,000,000.00	1 - 5 years	New	

16 – TOWNSHIP OF SCOTCH PLAINS

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Brendon Canavan	**Coordinator, Scotch Plains OEM**	**Primary contact; attended Municipal Workshop 1 and Municipal Meeting**
David Atkinson	Township Engineer	Attended Municipal Meeting
Frank Dinizo	DPW Director	Attended Municipal Meeting
Margaret Heisey	Township Manager	Attended Municipal Meeting
Thomas Strowe	Redevelopment Director	Attended Municipal Meeting

COMMUNITY OVERVIEW

Overview

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. Scotch Plains is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Scotch Plains is a predominantly residential community with residential (including apartment) use accounting for 56% of its area, covering nearly 2,842 acres in 2022. In the same year, civic/public (tax exempt) land, commercial land, and vacant made up 33%, 5%, and 5% respectively of its area. Between 2016 and 2022, its farm land fell from 24 to 6 acres, and commercial land decreased from 288 to 240 acres, while vacant land increased from 144 to 256 acres. The significant share of residential use, followed by civic/public (tax exempt) and commercial use is reflected in NJDEP's Land Use/Land Cover data as well; in 2020, urban/developed land constituted 72% of the township's total land, covering 4,184 acres. Wetlands and forest land followed, each covering 13% of the township's total area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	18.9	18.9	<1%
Barren Land	5.5	21.5	291%
Forest	765.7	761.1	-1%
Urban	4189.1	4183.9	<1%
Water	34.0	33.7	-1%
Wetlands	783.6	777.6	-1%

Recent Major Development and Infrastructure from 2021 to Present

The township's Third Round Affordable Housing settlement required the township to rezone several properties and areas to permit housing at a higher density to fulfill affordable housing requirements. As required by the settlement agreement, 228 residential were constructed on Terrill Road at the former Parker Gardens site (now Orchid Park) and 200 residential units were constructed on Route 22 at the former Bowcraft site (now Glenside). Mostly recently, 40 units were constructed on East Second Street (Scotch Plains Crossings).

Furthermore, the township is currently planning towards addressing its fourth-round state-mandated affordable housing obligations received in October 2024. The township is seeking to satisfy as much of their affordable housing obligations as possible in the downtown area to protect their well-established residential neighborhoods. There have been several projects (mixed-use, residential, and commercial) that have been constructed or are currently under construction downtown. The township's Housing Element and Fair Share Plan was due on June 30, 2025.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The NJDEP's new Flood Hazard Area (FHA) and Stormwater Management Rules, adopted in July 2023, put a significant portion of the township's downtown and other parts of town in the regulated floodplain.

A mixed-use downtown redevelopment project spread across approximately nine acres area in Downtown Park Avenue toward U.S. Highway Route 22 is planned. The redevelopment plan includes the relocation of the township's Emergency Services (Police, Fire, OEM, Fire/EMS), currently located in a floodplain, to township-owned property on Plainfield Avenue where a new state of the art combined facility will be constructed. The facility is not planned in a location prone to flooding. Additionally, the township is working with a developer to sell several large parking lots to reduce impervious surfaces and mitigate flooding in the area.

Any projects that have been constructed recently, are in the process of construction, or that will be constructed need Individual Permit approval from the NJDEP.

The township recently purchased the old Rhino Liner building on Plainfield Avenue. This was done to help move the new public safety building up more to the top of the hill when it is constructed. The township also purchased and acquired the old Highland Swim Club on Martine Avenue. Usage of this land by the township is dedicated for recreational use.

Demographics & Vulnerable Population

Scotch Plains Township has a total estimated population of 24,740, of which 4.8% is estimated to be under 5 years of age, and an estimated 17.1% are over age 65. The township experienced moderate population growth over ACS survey periods between 2013-2017 and 2018-2022, with an estimated 1.7% increase in population during this time. A larger share of population over 65, as with Scotch Plains over 17%, may indicate local vulnerabilities to hazard events both before and after a disaster occurs – these populations may have mobility needs, uneven access to resources, and limited social networks that makes pre-disaster engagement challenging (FEMA, 2023).

There are four block groups within Scotch Plains which meet criteria for overburden (OBC) due to vulnerabilities of *Minority* populations. There are no portions of the township which meet designation criteria for CEJST or CDRZ identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	24,740
Population Change since 2017	1.65%
Percent of Population Age < 5	4.82%
Percent of Population > 65	17.12%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Dam Failure	Extreme Temperature - Heat	Drought
Flood	Hazmat Release - Transportation	Earthquake/Geological
High Wind – Straight-line Winds	Severe Storm – Winter Weather (Includes Ice Storms)	Erosion – Hurricane/Nor'easter/Coastal Storm

High	Medium	Low
	Wildfire	Hail
		High Wind - Tornado
		Landslide (Non-Seismic)
		Severe Storm - Lightning
Human-made Hazards		
	Cyber Attack	Animal Disease
	Pandemic	Civil Unrest
		Economic Collapse
		Hazmat Release – Fixed Site
		Nuclear Hazard
		Power Failure
		Terrorism

Storm surge - hurricane/nor'easter/tropical storm were ranked as N/A.

Hazard Ranking Explanation

The township ranked flood, high wind – straight-line winds, and dam failure as hazards of high concern. In particular, flooding is a recurring issue. Areas and properties prone to flooding include the Southwyck Village Condos, the Country Club, and Tussel Lane. The areas experience flooding from the Pumpkin Patch Brook, Green Brook, and Stony Brook. Department of Agriculture funds were used for debris removal in the Southwyck area, and the Army Corps of Engineers is currently preparing a study on flooding from Green Brook. Other locations vulnerable to flooding include the Glenside property, and the Downtown Park Avenue. Current flood maps do not depict Downtown Park Avenue as vulnerable to flooding; flooding here is in typically short-lived and infrequent.

In addition to flood, the township ranked dam failure as high due to its proximity to high-hazard potential dams, including Lambertville and Seeley's Pond.

Extreme temperatures were ranked medium, as the township has opened its cooling stations a few times since 2021. Wildfires were also ranked medium given the township's proximity to Watchung Reservation.

Significant Hazard Events Since Last Plan Update

Hurricane Ida was the last significant hazard experienced by the township, causing catastrophic flooding in its area in 2021. The July 14, 2025 storm was initially a flash flood event in the township until riverine flooding began from the volume of rain that fell in the Berkeley Heights region. The area in the township that suffered the most for individual loss due to flooding was within the area between Route 22 East between Park Avenue and Terrill Road to the west and East Second Street for about 500 feet southerly on the side streets that connect to East Second. Notably, some of this area is not in the FEMA flood zone, shown in a map below. The Seeley's Creek River Gauge rose from 5.5 feet (minor Flood Stage) to 9.2 feet in two hours, well after the flash flooding had started.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to increase both the intensity and frequency of flooding in Scotch Plains. As global temperatures rise, heavy rainfall events are expected to become more frequent. As a result, the township, which currently experiences flooding from Pumpkin Patch Brook, Green Brook and Stony Brook during heavy rainfall, may face heightened flood risk. Additionally, higher temperatures and prolonged heatwaves could increase the risk of wildfire in nearby Watchung Reservation, which may become more frequent and harder to manage, increasing the township's vulnerability to wildfires. Since 56% of the township is residential, a substantial population is vulnerable to these climate change-induced hazards.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Scotch Plains Township	
Number of Policies In-Force:	167
Total Losses:	286
Total Payments:	$5,783,816.76
Number of RL Properties:	19
Number of Mitigated RL Properties:	0
RL – Total Losses:	54
RL – Total Paid:	$1,030,059.27
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	5
SRL – Total Paid:	$117,326.80

Vulnerability of the Built Environment

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.

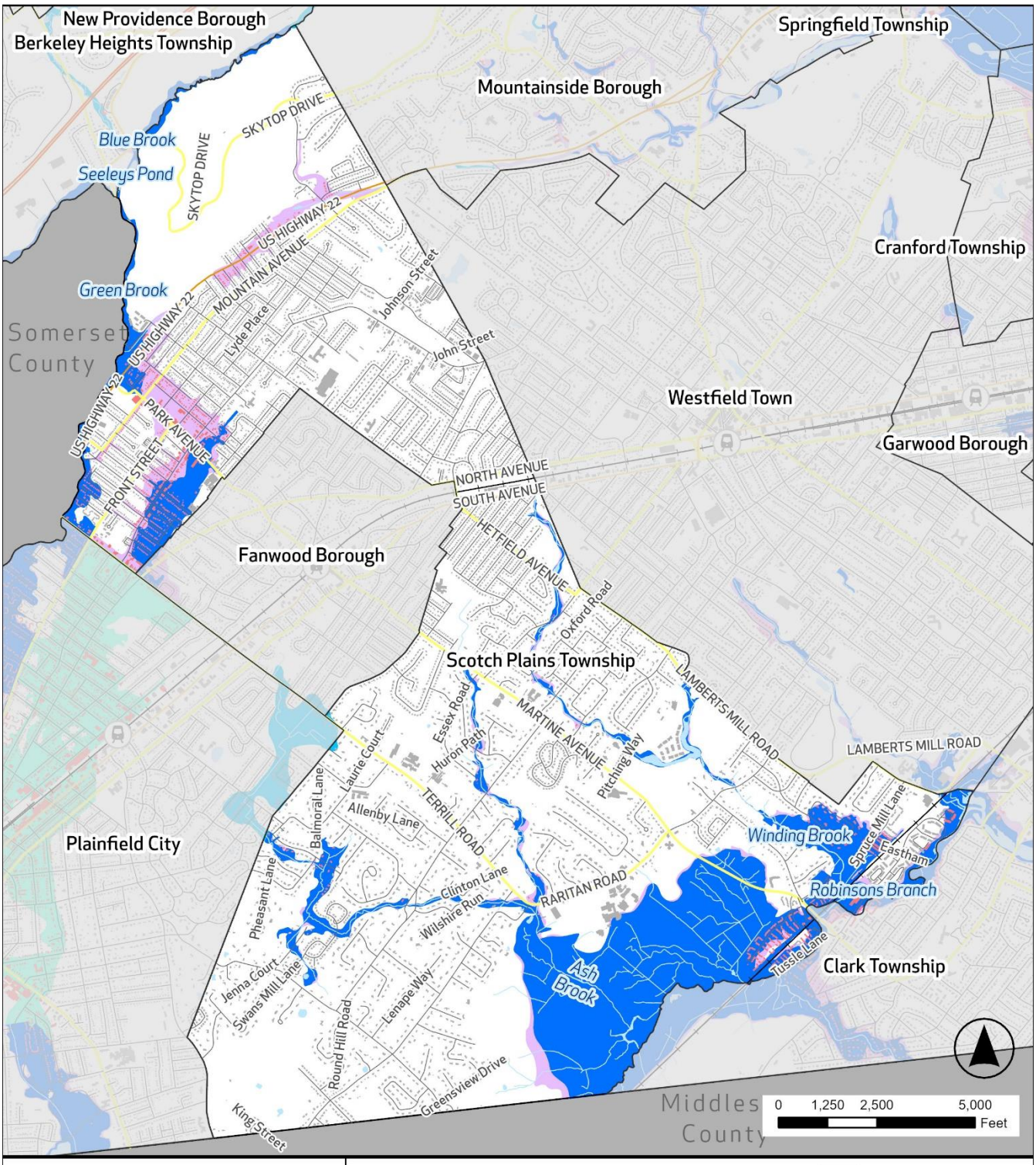
Approximately 15 percent of the total area of Scotch Plains Township lies within the 1% annual chance floodplain as defined by FEMA. An additional 3.5 percent of the area of the municipality is in the 0.2% annual chance floodplain.

About 88.4 percent of Scotch Plains is considered developed. Of the developed parcels of the town, 10.4 percent fall at least partially within the 1% annual chance floodplain and 11 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	10.4%	11.0%
Exposed Land Area	15.0%	3.5%

During the planning process, Scotch Plains Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 67 total facilities. Of these facilities, eight are within the floodplain.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Safety and Security	2	5
Water Systems	-	1



Flood Hazard

Scotch Plains Township

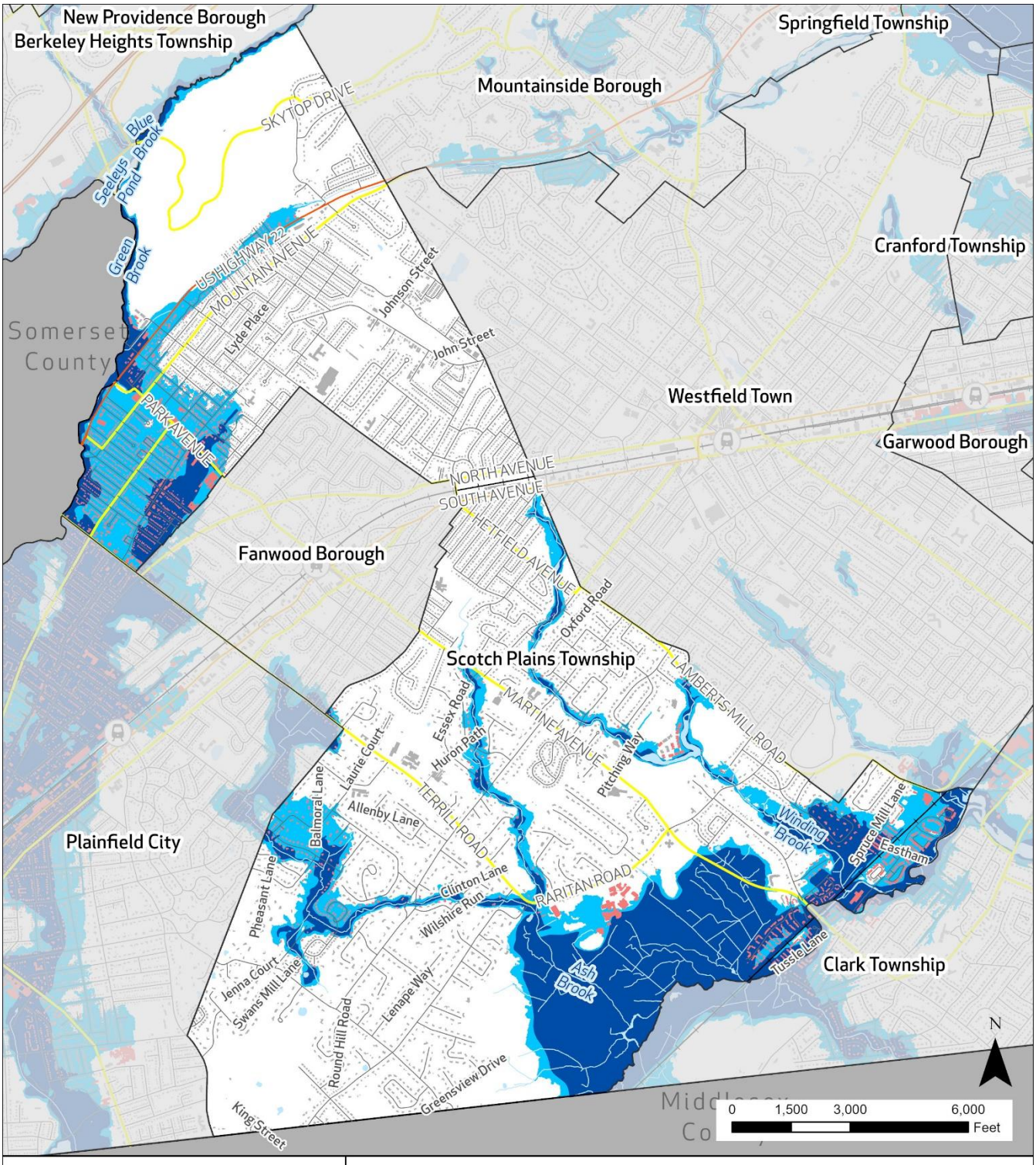
FEMA Flood Zone

- A (1%)
- AE (1%)
- AO (1%)
- 0.2% Annual Chance

- State Routes
- US Routes
- County Roads
- Local Roads
- Railroad

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit

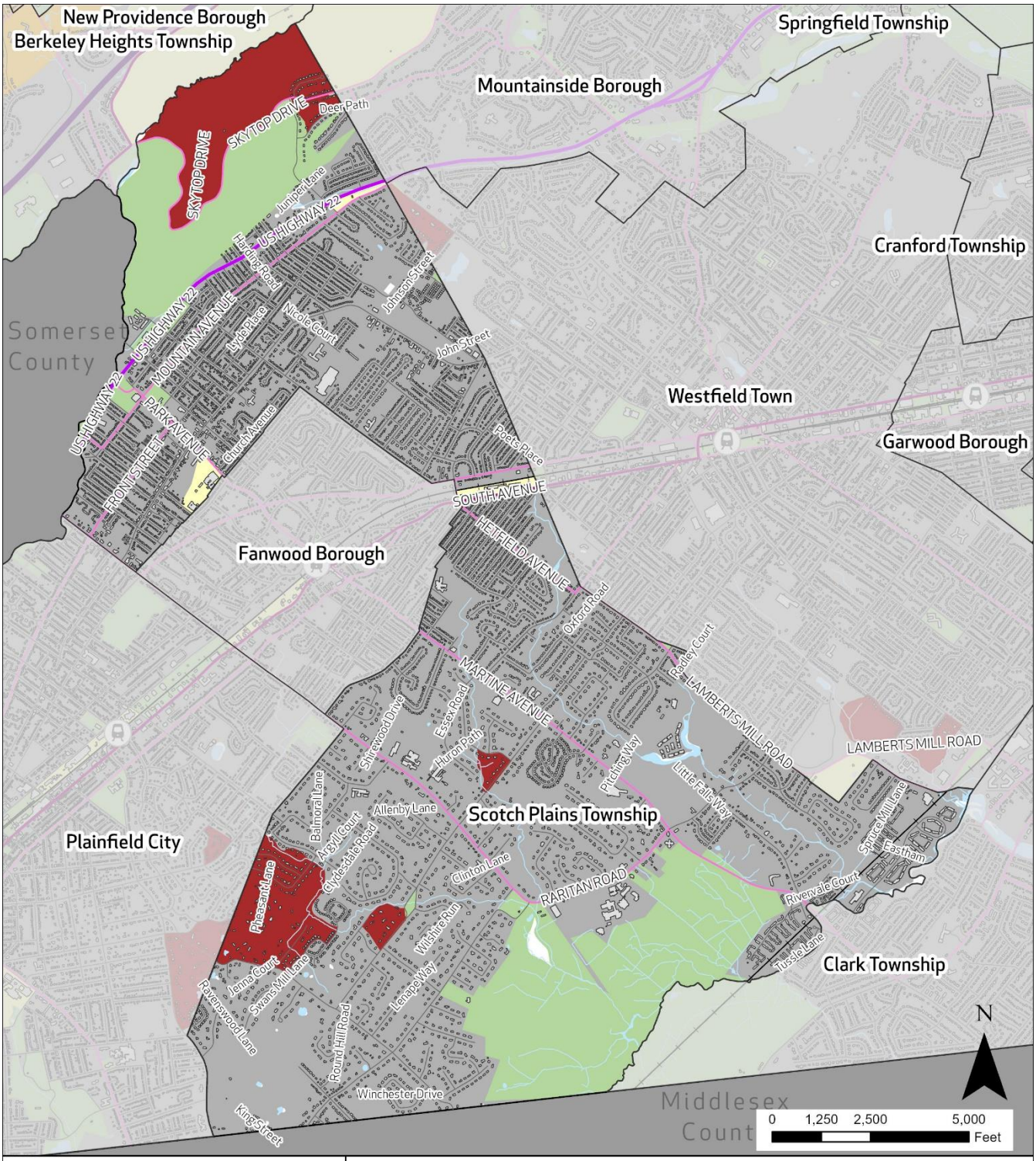


NJ Inland Design Flood Elevation

Scotch Plains Township

- Existing Base Flood Elevation (BFE) (1% Annual Chance)
- NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
- US Routes
- State Routes
- County Roads
- Local Roads
- Railroad
- Municipal Boundaries
- Building Footprints
- Building Footprints wi IDFE
- Water

Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Scotch Plains Township

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Scotch Plains Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X			The last comprehensive Master Plan prepared and adopted by Scotch Plains was in 2001. The Township prepared Master Plan Reexamination Reports in 2007 and 2016 and an addendum to the 2016 Master Plan Reexamination Report in 2018 to address the rezoning of certain parcels as part of the Township's Housing Element & Fair Share Plan as required by the Township's third round affordable housing requirements. A Master Plan or a Reexamination is required at least every 10 years as per the Municipal Land Use Law and the Township is in the process of preparing a comprehensive Master Plan which will be adopted by December 11, 2026.
Capital Improvement Plan	X			Annual updates
Local Emergency Operations Plan/Continuity of Operations Plan	X		7/2025	The Scotch Plains Emergency Operations Plan was approved by NJSP OEM in 07/2025. Its next review will occur in 2027.
Floodplain Development Ordinance		X		
Floodplain Management Plan	X			
Stormwater Management Ordinance		X		
Stormwater Management Plan		X		
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan				
Substantial Damage/Improved Structures Response	X			Rely on assessed value and building code
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change	X			Engineer and Building department
Post-Disaster Recovery Plan	X			
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan	X			
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X			Overlay and Stormwater management plans

Administrative and Technical Capabilities

Scotch Plains Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Construction Code Officials and Consultants as needed.
Grant Writer		X	
Staff trained to support mitigation	X		
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations			

Education and Outreach Capabilities

Scotch Plains Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Through social media, Union County First Alert (everbridge) Email, Text, Cable TV, Website
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Scotch Plains Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP	X		
Non-FEMA Federal Funding Programs	X		
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

The overall mitigation strategy for the township will always focus and be prioritized first and foremost on life-safety initiatives, followed by encouraging the State Department of Transportation to take action on the long-standing mitigation effort of addressing the flooding on Route 22. The township's Downtown Development as well as development in general will always seek to make the township more resilient to the weather events that have increased in intensity and show no sign of stopping.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
16-01	Install Generator at Library.	Install generator at library.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Scotch Plains OEM		$250,000.00		Withdrawn	
16-02	Install Generator at Municipal Building.	Install generator at municipal building.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Scotch Plains OEM	HMGP Grant	$125,000.00		Completed	
16-03	Restore Eroded Streambanks Upstream of Raritan Rd. Pump Station.	Restore eroded streambanks upstream of pump station.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Scotch Plains Engineering	Township funds	$100,000.00		Completed	
16-04	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).	Flood	High	Scotch Plains Engineering, Union County	FEMA HMA, other grant funding	$100,000.00	5 + years	Completed	Used Department of Agriculture funds to remove debris. 25% of the funding came from the municipal budget.
16-05	Install Generator at Library.	Install generator at library.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Scotch Plains OEM		$250,000.00		Withdrawn	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
16-06	Upgrade EOC.	Upgrade EOC.	All Hazards		Scotch Plains OEM	Capital Improvement / Grant Funding	$800,000.00		Completed	

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
16-07	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.	Severe Storm–Winter Weather (Ice Storm), Severe Storm – Lightning, High Wind–Straight-Line Winds	Medium	Scotch Plains OEM	Capital Improvement funding	$25,000.00	1 - 2 years	Ongoing	Generator needs to be moved to DPW as existing building is coming down.
16-08	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.	Flood	High	Engineering/ Union County	FEMA HMA and other grant funding	$750,000.00	5 + years	Ongoing	USACE project. County desilted Brook.
16-09	Partner with the YMCA and/or JCC to Expand Community Shelter Options.	Partner with the YMCA and/or JCC to Expand Community Shelter Options.	All Hazards	Low	Scotch Plains OEM	Staff Resources	-	2 - 3 years	Ongoing	No progress. Staffing capacity issues.
16-10	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	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	Flood	High	Affected homeowners	FEMA HMA	TBD	Ongoing	Ongoing	Not many RL/SRL properties in Township.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Township (Not Addressed Through Drainage Improvements)	work with homeowners to mitigate their properties.								
16-11	Support the Green Brook Flood Control Project from USACE.	Support the Green Brook Flood Control Project from USACE.	Flood	Low	Scotch Plains Administration	Federal (USACE), State	TBD	Long-term	Ongoing	
16-12	Repair, Remove, or Rehabilitate Shackamaxon Dam.	Repair, remove, or rehabilitate Shackamaxon Dam, a High-Hazard Potential Dam, located along Lambert's Run.	Dam Failure	High	Scotch Plains, Heritage Golf Group Engineer Jeff Derosier	NJDEP Bureau of Dam Safety and Flood Control, FEMA HMA	TBD	2 years	Ongoing	The dam is undergoing its formal inspection in the 2026 year, which will review the spillway design flood and dam breach scenarios. Planned rehabilitation work for the Winter of 2026/2027 includes the replacement of the low flow outlet pipe and the resurfacing of the spillway.
16-13	Coordinate with NJDOT and NJOEM 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.	Flood, High Wind–Straight-Line Winds	High	NJ Department of Transportation, Union County Engineering Department, Twp. of Scotch Plains Engineering Department	Grant Funding, Township of Scotch Plains Capital improvement, State of NJ, County of Union	$500,000.00	1 year	Ongoing	Township closes west bound Route 22 when flooded.
16-14	Purchase and Install a Generator at the Shady Rest 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	All Hazards	Low	Scotch Plains OEM	FEMA HMA, Municipal Budget	$150,000.00	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
		heating/cooling center and so needs backup power in case of power outages.								
16-15	Rejoin NFIP CRS Program to Reduce Flood Insurance Premiums for Homeowners.	Rejoin NFIP CRS Program to reduce flood insurance premiums for homeowners.	Flood	Low	Scotch Plains OEM	Staff Resources	Unknown	1 - 5 years	Ongoing	No progress. Waiting for updated FIRM maps.
16-16	Relocate Public Safety Building Outside Flood-Hazard Area.	Relocate public safety building outside flood-hazard area, one mile away from current location.	Flood	High	Scotch Plains OEM, NJDEP	TBD	$50,000,000.00	2 years	Ongoing	Township is working with DEP to obtain the necessary permits.

17 – TOWNSHIP OF SPRINGFIELD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Scott Seidel	**Springfield OEM Coordinator**	**Primary Contact, Steering Committee Kick-Off Meeting, Municipal Workshop 1, Municipal Meeting**
Michael Disko	Springfield Department of Engineering	Municipal Workshop 1
Apu Mullick	Deputy OEM Coordinator	Municipal Workshop 1
Jennifer Law	Planning Board Secretary / OEM Administrator	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

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. Springfield is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Springfield is a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 39% of the total land use, and covering nearly 1,090 acres of land. Civic/public (tax exempt) and commercial uses also accounted for significant portions, comprising 27% and 26% respectively of the total land use in the same year. From 2016 to 2022, the area under residential use decreased by 47 acres, while civic/public (tax exempt) land increased by about 30 acres and vacant land by about 20.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up nearly 75% of the area in 2020. The forest and wetlands categories followed, accounting for 16% and 5% of the total land area, respectively.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	5.8	5.8	0%
Barren Land	65.4	67.2	3%
Forest	550.4	546.1	-1%
Urban	2492.1	2494.6	0%
Water	30.9	31.4	2%
Wetlands	166.3	165.8	0%

Recent Major Development and Infrastructure from 2021 to Present

A recent apartment complex was completed with retail underneath on Morris Avenue to Church Mall. A development project called The Metropolitan was built on Millburn Avenue with 240 units. The next development of 32 units is on the Church Mall. Both developments are outside the flood zone. Another project (The Gomes Project) on Morris Avenue, consisting of 140 units and retail stores on the first floor, has been under construction for many years and may reach completion in the next year or two.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

Scotty's Pub on Morris Avenue has been sold and it is going to be a 55+ community with about 30 units. This area is outside the flood zone.

Demographics & Vulnerable Population

Springfield Township has an estimated population of 17,011, of which 4.7% are estimated to be under age 5, and 16.4% are estimated as over age 65. The township experienced some population loss over the ACS survey periods of 2013-2017 and 2018-2022, with an estimated -2.95% decline in residents during this time. There are three block groups within Springfield which have been identified as overburdened (OBC), all meeting criteria of vulnerability for *Minority* populations. There are no portions of the township which meet designation criteria for CDRZ or CEJST identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	17,011
Population Change since 2017	-2.95%
Percent of Population Age < 5	4.66%
Percent of Population > 65	16.44%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Flood	Extreme Temperature – Cold	Dam Failure
	Extreme Temperature – Heat	Drought
	Severe Storm – Winter Weather (Includes Ice Storms)	Earthquake/Geological
	High Wind – Straight-Line Winds	Hail
		High Wind - Tornado
		Landslide (Non-Seismic)
		Severe Storm - Lightning
		Wildfire
Human-made Hazards		
	Cyber Attack	Animal Disease
	Pandemic	Civil Unrest
	Power Failure	Economic Collapse
		Hazmat Release – Transportation
		Hazmat Release – Fixed Site
		Terrorism
		Nuclear Hazard

Erosion – hurricane/nor'easter/coastal storm and storm surge were ranked as N/A.

Hazard Ranking Explanation

The highest-ranked hazard in the township is flood. This remains a high hazard concern due to the rivers which flood consistently and the number of repetitive loss properties. Other hazards have increased in severity since the last plan update. Cyber-attacks are now a medium as cyber-attacks against municipal departments are raising concerns statewide. Additionally, extreme heat is now medium as there have been more high heat days resulting in cooling centers needing to

be opened. High winds are a medium risk hazard as downed wires and trees are a consistent problem for the township resulting in power failure. Storm surge and erosion do not apply to the township as the township is not coastal.

Significant Hazard Events Since Last Plan Update

Flooding happens consistently along the rivers. The repetitive loss properties within the township flood a few times a year with severe rain events. Flooding builds slowly until the tipping point then it floods quickly when all the rain comes at once. The Rahway River floods often under the Rt 82 bridge. In addition to flood events, there was also a wildfire in the summer of 2024 due to the recent drought, but it was extinguished fairly quickly.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Springfield Township	
Number of Policies In-Force:	118
Total Losses:	409
Total Payments:	$8,907,251.13
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	0
Number of SRL Properties:	52
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	139
SRL – Total Paid:	$4,826,032.76

Vulnerability of the Built Environment

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 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.

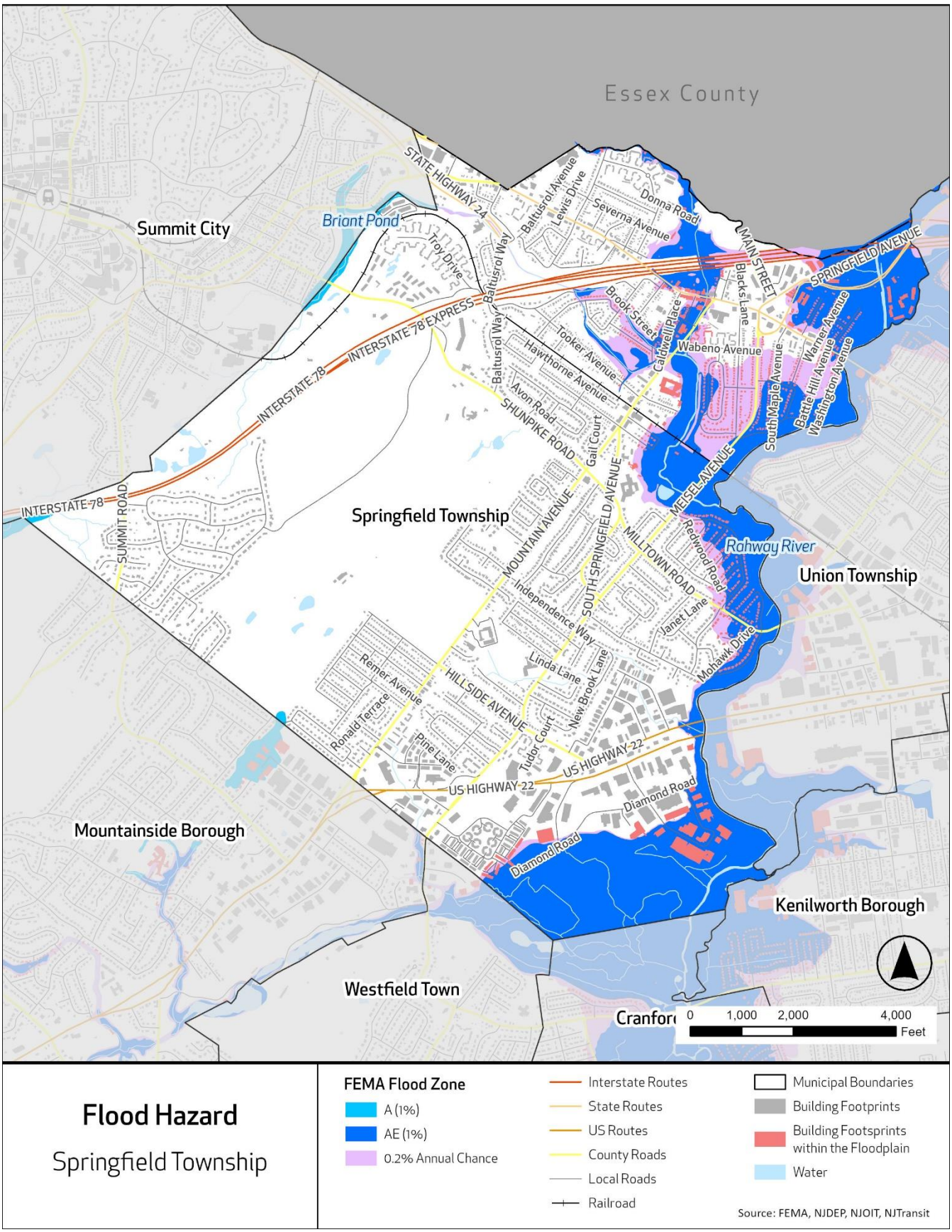
Approximately 16.5 percent of the total area of Springfield Township lies within the 1% annual chance floodplain as defined by FEMA. An additional 4.7 percent of the area of the municipality is in the 0.2% annual chance floodplain.

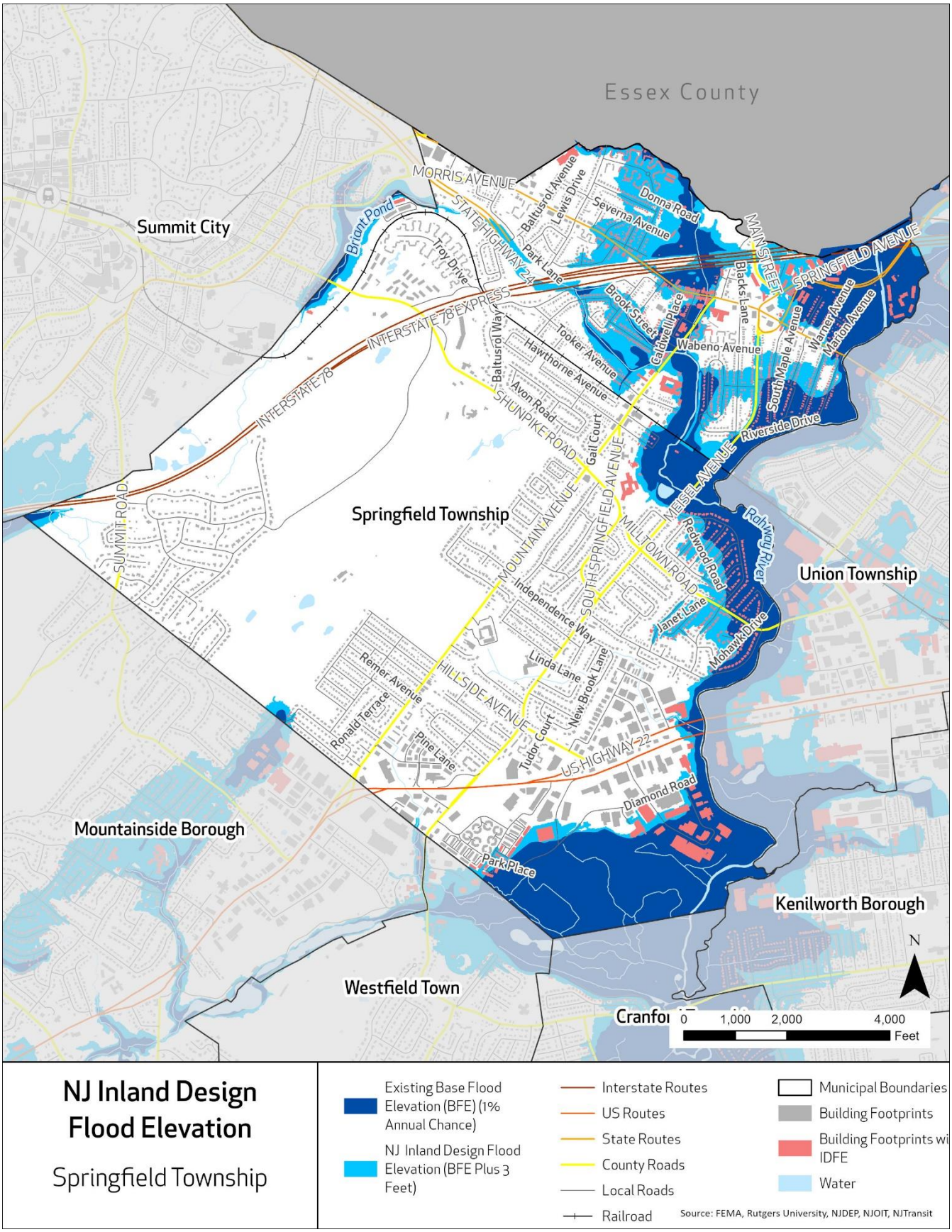
About 98.6 percent of Springfield is considered developed. Of the developed parcels of the town, 11.8 percent fall at least partially within the 1% annual chance floodplain and 13.7 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

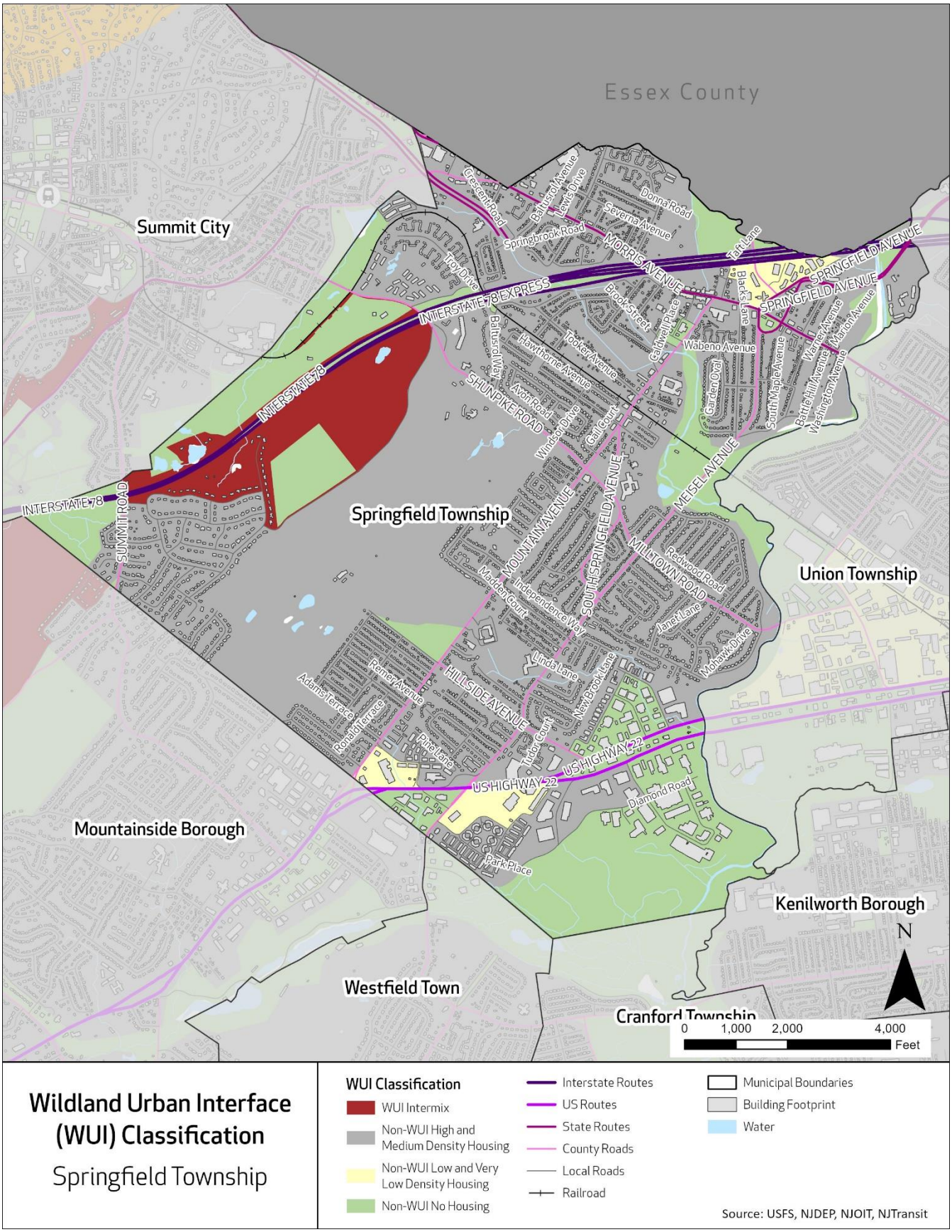
	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	11.8%	13.7%
Exposed Land Area	16.5%	4.7%

During the planning process, Springfield Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 25 total facilities. Of these facilities, seven are within the floodplain.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Community Lifelines and Critical Facilities	5	2


Essex County
Summit City
Briant Pond
STATE HIGHWAY 24
Troy Drive
Baltusrol Way
Baltusrol Avenue
Lewis Drive
Severna Avenue
Donna Road
MAIN STREET
SPRINGFIELD AVENUE
Blacks Lane
Brook Street
Caldwell Place
Wabeno Avenue
Tooker Avenue
Hawthorne Avenue
Avon Road
SHUNPIKE ROAD
Gail Court
South Maple Avenue
Battle Hill Avenue
Warner Avenue
Washington Avenue
INTERSTATE 78 EXPRESS
INTERSTATE-78
INTERSTATE-78
SUMMIT ROAD
Springfield Township
MOUNTAIN AVENUE
SOUTH SPRINGFIELD AVENUE
MEISEL AVENUE
MILLTOWN ROAD
Redwood Road
Rahway River
Union Township
Independence Way
Janet Lane
Mohawk Drive
Linda Lane
New Brook Lane
Remer Avenue
Ronald Terrace
HILLSIDE AVENUE
Pine Lane
Tudor Court
US HIGHWAY 22
US HIGHWAY 22
Diamond Road
Diamond Road
Mountainside Borough
Kenilworth Borough
Westfield Town
Cranford
0 1,000 2,000 4,000
Feet
Flood Hazard
Springfield Township
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
Interstate Routes
State Routes
US Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Essex County
Summit City
Springfield Township
Union Township
Mountainside Borough
Kenilworth Borough
Westfield Town
Cranfor
MORRIS AVENUE
STATE HIGHWAY 24
INTERSTATE 78 EXPRESS
INTERSTATE 78
SHUNPIKE ROAD
SUMMIT ROAD
MOUNTAIN AVENUE
SOUTH SPRINGFIELD AVENUE
MILLTOWN ROAD
MEISEL AVENUE
SPRINGFIELD AVENUE
MAIN STREET
HILLSIDE AVENUE
US HIGHWAY 22
Briant Pond
Troy Drive
Baltusrol Avenue
Lewis Drive
Park Lane
Donna Road
Severna Avenue
Brook Street
Caldwell Place
Blacks Lane
Wabeno Avenue
Warner Avenue
Mahon Avenue
South Maple Avenue
Riverside Drive
Baltusrol Way
Hawthorne Avenue
Tooker Avenue
Avon Road
Gail Court
Redwood Road
Janet Lane
Mohawk Drive
Rahway River
Independence Way
Linda Lane
New Brook Lane
Tudor Court
Remer Avenue
Ronald Terrace
Pine Lane
Diamond Road
Park Place
N
0
1,000
2,000
4,000
Feet
NJ Inland Design Flood Elevation
Springfield Township
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Interstate Routes
US Routes
State Routes
County Roads
Local Roads
Railroad
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Springfield Township

WUI Classification

- WUI Intermix
- Non-WUI High and Medium Density Housing
- Non-WUI Low and Very Low Density Housing
- Non-WUI No Housing

- Interstate Routes
- US Routes
- State Routes
- County Roads
- Local Roads
- Railroad

- Municipal Boundaries
- Building Footprint
- Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Springfield Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2017	
Capital Improvement Plan		X		
Local Emergency Operations Plan/Continuity of Operations Plan	X		2025	Kept on the forefront
Floodplain Development Ordinance	X		4/25/23	Sensible development
Floodplain Management Plan		X		
Stormwater Management Ordinance	X		4/25/23	NJDEP mandate
Stormwater Management Plan	X		Ongoing	Per ordinance
Watershed Management Plan		X		
Sheltering Plan			2025	In EOP
Evacuation Plan	X		2025	Clear steps
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X		Ongoing	Department of Public Works with Union County DPW
Tracking elevation certificates and/or Letter of Map Change	X		Ongoing	N/A
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies	X			Sensible development
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Springfield Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		CFM on staff
Grant Writer		X	
Staff trained to support mitigation	X		CFM on staff
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Springfield Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		
StormReady		X	
Firewise USA		X	

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week	X		
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Springfield Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 update, the Township of Springfield has increased resiliency by purchase and installation of emergency backup generators. The community often loses power and backup generators ensure that flood control / stormwater pumps are kept operational. New pumps and new generators are planned in construction.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
17-01	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.	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	Completed	The common areas now have power and the heat will run. This was privately paid for.
17-02	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.	All Hazards	High	OEM	Board funding	$400,000.00	1 - 2 years	Completed	Completed. It was paid for by the board.
17-03	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.	All Hazards	Medium	DPW	Municipal budget	$15,000.00	1 year	Completed	The light tower has been bought with the municipal budget. The cost estimate was accurate.
17-04	Update Municipal Stormwater Control Ordinance Based on Appendix D:	The sample ordinance represents the minimum standards and expectations, except where noted otherwise. A	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	$0	1 year	Completed	The stormwater ordinance has been adopted.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	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.	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.								

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
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.	Flood	High	Springfield DPW	FEMA HMA, Capital Improvement	$250,000.00	1 year	Ongoing	
17-06	Flood-proof the Hersey Building, Department of Public Works.	Floodproofing of the Hersey Building, Department of Public Works.	Flood	High	Springfield DPW	FEMA HMA and other grant funding	$150,000.00	1 year	Ongoing	The Vanwinkles Brook runs under the building making it necessary.
17-07	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.	All Hazards	Low	OEM Coordinator and Engineering	Staff Resources	$500.00	1 year	Ongoing	Ongoing effort as new residents move in. There's the local newspaper, social media, mailing list, and website.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
17-08	Install Generator at Gas Station.	Install generator at gas station.	All Hazards	Low	OEM		$400,000.00		Ongoing	
17-09	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.	Flood	High	OEM/ Code Enforcement, Affected homeowners	FEMA HMA	TBD	Ongoing	Ongoing	No elevations in the past five years.
17-10	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.	All Hazards	Medium	DPW	Grant funding	$250,000.00	1 year	Ongoing	Ongoing. No progress so far. It was approved once but then withdrawn by FEMA because they approved too much. The generator went to the Chisholm Community Center which is the shelter.
17-11	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.	Flood	High	DPW	FEMA HMA	$778,000.00	1 - 5 years	Ongoing	Currently in construction
17-12	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.	Flood, Severe Storm–Winter Weather (Ice Storm), Erosion–Hurricane/Nor'easter/Coastal Storm	High	DPW	FEMA HMA	$225,000.00	1 - 5 years	Ongoing	When streets are resurfaced all contiguous insets are graded per NJDEP standards

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
17-13	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 red	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm, Severe Storm–Winter Weather (Ice Storm)	High	DPW	FEMA HMA	$120,000.00	1 - 5 years	Ongoing	There has been a little work done at Veteran's Park. They put in some pavers and cleaned up the area, but not complete.
17-14	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.	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	Ongoing	Mostly done by the utility company JCP&L but not complete.
17-15	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.	Flood	High	DPW	Grant funding	$20,000.00	1 - 5 years	Ongoing	Not complete due to the nature of the project.
17-16	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.	Power Failure	Medium	DPW/ Engineering Department	Grant funding -- over exceeds municipality funding	$150,000.00	1 - 5 years	Ongoing	There is no traction from the community. The annex is across from the municipal building. The only buildings that have received generators are the community center and private residences.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
17-17	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.	Flood	High	DPW	FEMA HMA, other grant funding	$75,000.00	1 - 5 years	Ongoing	Nothing completed so far.
17-18	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.	Flood	Medium	Springfield Township in conjunction with Union County	FEMA HMA, other grant opportunities	$1,000,000.00	1 - 5 years	Ongoing	This is the county's responsibility.

18 – CITY OF SUMMIT

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Aaron Schrager	**Director of Community Services**	**Primary Contact, Steering Committee Kick-Off Meeting, Municipal Workshop 1, Municipal Meeting**
Kirolos Salama	Assistant Engineer	Municipal Meeting
Elizabeth Fagan	Mayor	Coordination, Input and Review
Lyndsay Knight – Neglia Group	City Planner	Municipal Meeting
Tammie Baldwin	City Administrator	Coordination, Input and Review
Augusto Dal'Maso	Land Use Manager	Coordination, Input and Review
Michael Caputo	DPW Superintendent	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

The City of Summit has a total area of 6.046 square miles and is located in the Watchung Mountains in the northwest corner of Union County, New Jersey. Summit is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Summit is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 62% of the total land use, and covering 1,908.5 acres of land. Civic/public (tax exempt) and commercial uses also accounted for significant portions, comprising 24% and 9% respectively of the total land use in the same year. From 2016 to 2022, civic/public (tax exempt) land use increased from 697 to 726.4 acres, and vacant land decreased from 58.9 to 22.2 acres.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up nearly 83% of the area in 2020. The forest category followed, accounting for 15% of the total land area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	1.1	1.1	<1%
Barren Land	16	30.6	91%
Forest	568.3	562.6	-1%
Urban	3201.8	3192.8	<1%
Water	38.8	38.8	<1%
Wetlands	35.2	35.2	<1%

Recent Major Development and Infrastructure from 2021 to Present

Primarily redevelopment of business and corporate districts, but there are no large-scale development that added a large number of units.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The township is pretty built out, so no large-scale developments are coming. A few redevelopments are happening. The old firehouse is one of them as the firehouse has to move simply due to age. Tyrconnell Housing will add 28 new units. This is Morris and River Road. This area does not flood.

Demographics & Vulnerable Population

The City of Summit has an estimated population of 22,555, of which 5.9% is estimated as under age 5, and 12.8% is estimated to be over age 65. The city's population remained consistent over ACS survey periods between 2013-2017 and 2018-2022, with an estimated 1.8% change during this time. There are five block groups within Summit which have been identified as overburdened (OBC), all meeting criteria of vulnerability for *Minority* populations. There are no portions of the city which meet criteria for designation as CDRZ or CEJST communities.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	22,555
Population Change since 2017	1.81%
Percent of Population Age < 5	5.86%
Percent of Population > 65	12.82%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Erosion – Hurricane/Nor'easter/Coastal Storm	High Wind – Straight-line Winds	Dam Failure
Flood	High Wind – Tornado	Drought
Severe Storm – Winter Weather (Includes Ice Storms)	Severe Storm – Lightning	Earthquake/Geological
	Wildfire	Extreme Temperature - Heat
		Hail
		Landslide (Non-Seismic)
Human-made Hazards		
	Cyber Attack	Animal Disease
	Economic Collapse	Hazmat Release - Transportation
	Hazmat Release – Fixed Site	Nuclear Hazard
	Pandemic	Power Failure
	Terrorism	Civil Unrest

Storm surge – hurricane/nor'easter/tropical storm was ranked as N/A.

Hazard Ranking Explanation

Flooding remains the highest hazard of concern within the city. The majority of this flooding is just flooded basements brought on by haphazard home renovations. The stormwater infrastructure cannot sustain that amount of water. Hazmat release – the fixed site is medium due to a genetics research lab that has a lot of liquid nitrogen on-site. Power failure is low due to animal disruption but for operations, there are generators mostly everywhere. While there are dams within the city, they have just been replaced. Storm surge is not applicable because the water is not tidal.

Significant Hazard Events Since Last Plan Update

On the Fourth of July in 2023, summer storms caused severe flooding in Salt Brook. Manhole covers were coming up on Myrtle Avenue and Tulip Street and roads were closed and underwater. Flooding got to this level mostly because the pipes within the city are not big enough for the amount of water they receive. In August 2024 there was another storm with

about five inches of rain in two hours. There have been underground electrical fires downtown as water gets into the pipes and the circuits short.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Summit City	
Number of Policies In-Force:	118
Total Losses:	409
Total Payments:	$8,907,251.13
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	0
Number of SRL Properties:	52
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	139
SRL – Total Paid:	$4,826,032.76

Vulnerability of the Built Environment

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, the City of Summit has four significant areas of Special Flood Hazard Area (SFHA). 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. Flooding in City of Summit 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

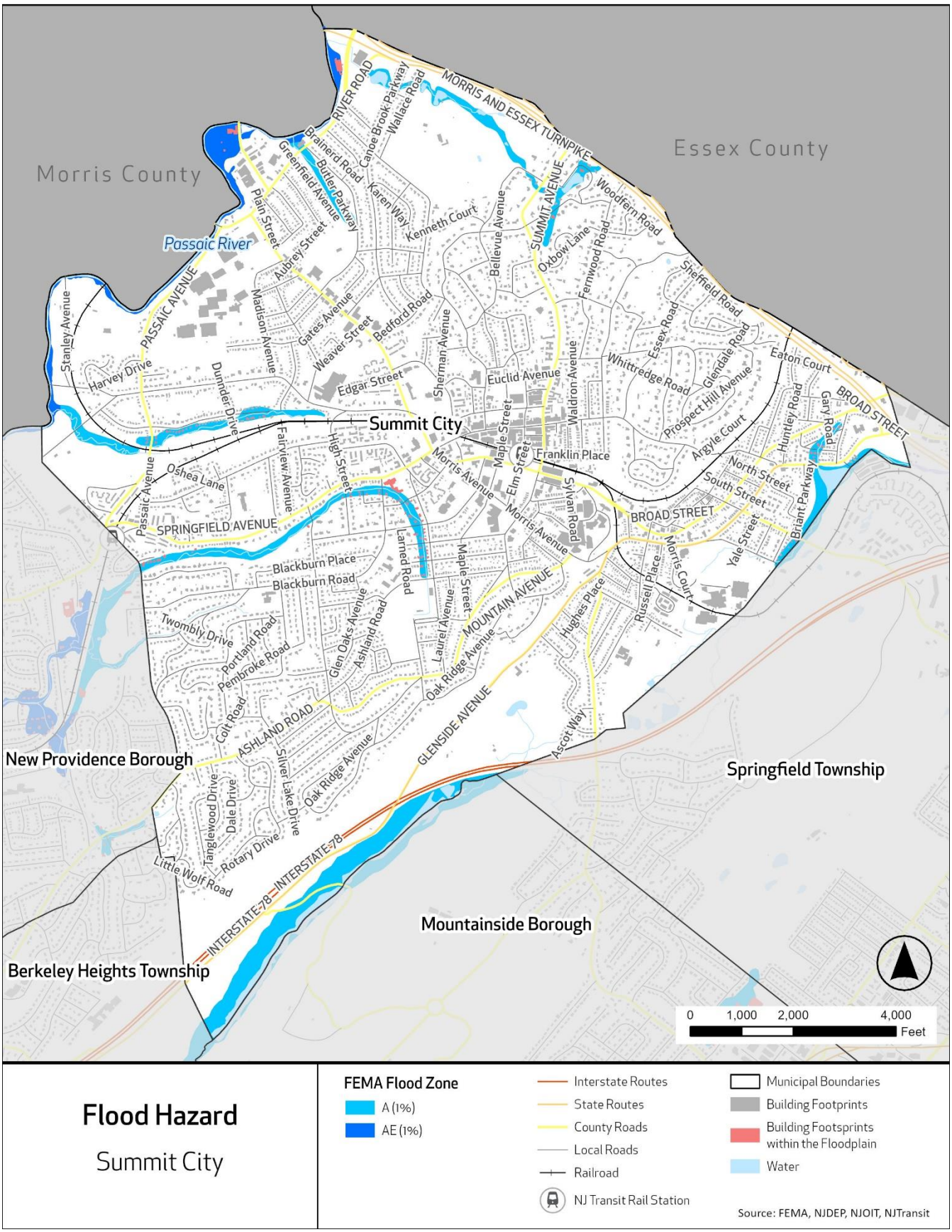
Approximately 5.1 percent of the total area of the City of Summit lies within the 1% annual chance floodplain as defined by FEMA. An additional 0 percent of the area of the municipality is in the 0.2% annual chance floodplain.

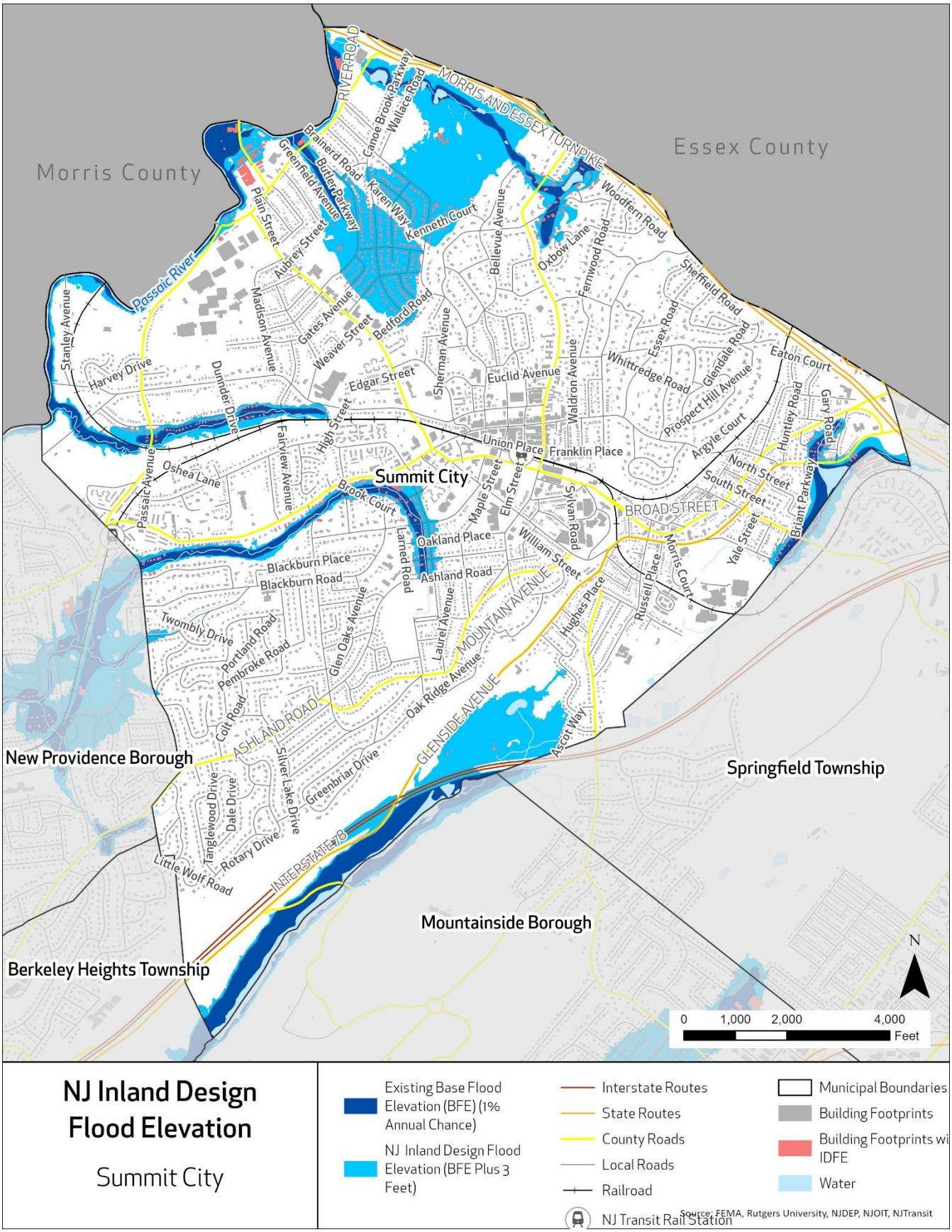
About 94.7 percent of Summit is considered developed. Of the developed parcels of the town, 4.4 percent fall at least partially within the 1% annual chance floodplain and 0 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

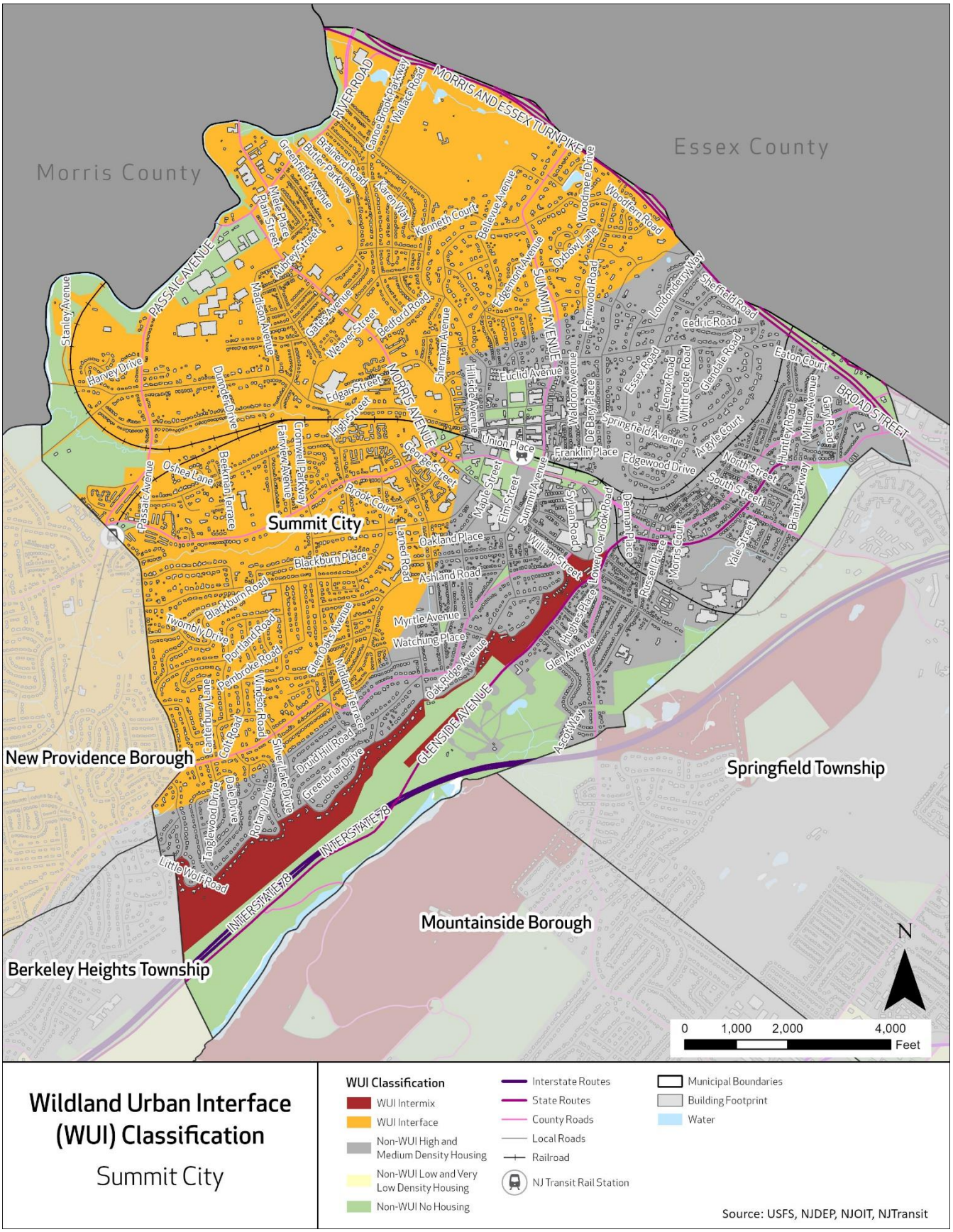
	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	4.4%	-
Exposed Land Area	5.1%	-

During the planning process, the City of Summit identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 65 total facilities. Of these facilities, none are within the floodplain.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-


Morris County
Essex County
Passaic River
Summit City
New Providence Borough
Springfield Township
Mountainside Borough
Berkeley Heights Township
RIVER ROAD
MORRIS AND ESSEX TURNPIKE
Canoe Brook Parkway
Wallace Road
Brainerd Road
Greenfield Avenue
Butler Parkway
Karen Way
Kenneth Court
Plain Street
Aubrey Street
PASSAIC AVENUE
Stanley Avenue
Harvey Drive
Madison Avenue
Dunnider Drive
Gates Avenue
Weaver Street
Bedford Road
Edgar Street
Sherman Avenue
Euclid Avenue
Bellevue Avenue
SUMMIT AVENUE
Oxbow Lane
Fernwood Road
Woodfern Road
Waldron Avenue
Maple Street
Elm Street
Franklin Place
Morris Avenue
Sylvan Road
Fairview Avenue
High Street
Oshea Lane
Passaic Avenue
SPRINGFIELD AVENUE
Blackburn Place
Blackburn Road
Larned Road
Twombly Drive
Portland Road
Pembroke Road
Glen Oaks Avenue
Ashland Road
Laurel Avenue
MOUNTAIN AVENUE
Hughes Place
Russell Place
Morris Court
Oak Ridge Avenue
GLENSIDE AVENUE
Ascot Way
ASHLAND ROAD
Colt Road
Silver Lake Drive
Tanglewood Drive
Dale Drive
Rotary Drive
Little Wolf Road
INTERSTATE-78
Sheffield Road
Essex Road
Whittredge Road
Glendale Road
Prospect Hill Avenue
Eaton Court
Argyle Court
Huntley Road
Gary Road
BROAD STREET
North Street
South Street
Yale Street
Briant Parkway
0 1,000 2,000 4,000
Feet
Flood Hazard
Summit City
FEMA Flood Zone
A (1%)
AE (1%)
Interstate Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit


Morris County
Essex County
Summit City
New Providence Borough
Springfield Township
Mountainside Borough
Berkeley Heights Township
Passaic River
RIVER ROAD
MORRIS AND ESSEX TURNPIKE
MOUNTAIN AVENUE
ASHLAND ROAD
GLENSIDE AVENUE
INTERSTATE 78
BROAD STREET
Canoe Brook Parkway
Wallace Road
Brainerd Road
Greenfield Avenue
Butler Parkway
Karen Way
Kenneth Court
Plain Street
Aubrey Street
Madison Avenue
Gates Avenue
Weaver Street
Bedford Road
Bellevue Avenue
Oxbow Lane
Fernwood Road
Woodfern Road
Sheffield Road
Essex Road
Whittredge Road
Glendale Road
Eaton Court
Prospect Hill Avenue
Huntley Road
Gary Road
Argyle Court
Briant Parkway
North Street
South Street
Yale Street
Morris Court
Russell Place
Hughes Place
William Street
Sherman Avenue
Euclid Avenue
Waldron Avenue
Union Place
Franklin Place
Maple Street
Elm Street
Summit Avenue
High Street
Fairview Avenue
Oshea Lane
Passaic Avenue
Brook Court
Oakland Place
Ashland Road
Larned Road
Blackburn Place
Blackburn Road
Twombly Drive
Portland Road
Pembroke Road
Glen Oaks Avenue
Laurel Avenue
Oak Ridge Avenue
Ascot Way
Colt Road
Silver Lake Drive
Greenbriar Drive
Tanglewood Drive
Dale Drive
Rotary Drive
Little Wolf Road
Dunnider Drive
Harvey Drive
Stanley Avenue
N
0
1,000
2,000
4,000
Feet
NJ Inland Design Flood Elevation
Summit City
Existing Base Flood Elevation (BFE) (1% Annual Chance)
NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
Interstate Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footprints wi IDFE
Water
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit


Morris County
Essex County
Summit City
New Providence Borough
Springfield Township
Mountainside Borough
Berkeley Heights Township
RIVER ROAD
MORRIS AND ESSEX TURNPIKE
PASSAIC AVENUE
SUMMIT AVENUE
MORRIS AVENUE
BROAD STREET
GLENSIDE AVENUE
INTERSTATE 78
Wallace Road
Canoe Brook Parkway
Brainerd Road
Butler Parkway
Greenfield Avenue
Miele Place
Plain Street
Kibbey Street
Madison Avenue
Gates Avenue
Weaver Street
Bedford Road
Karen Way
Kenneth Court
Bellevue Avenue
Edgemont Avenue
Oxbow Lane
Woodmere Drive
Woodfern Road
Fernwood Road
Londonderry Way
Sheffield Road
Cedric Road
Glendale Road
Eaton Court
Milton Avenue
Essex Road
Lenox Road
Whittredge Road
Huntley Road
Euclid Avenue
Waldron Avenue
Dr Barry Place
Springfield Avenue
Argyle Court
Edgewood Drive
North Street
South Street
Briant Parkway
Yale Street
Morris Court
Russell Place
Lower Overlook Road
Overlook Road
Franklin Place
Union Place
William Street
Summit Avenue
Maple Street
Elm Street
Sherman Avenue
Hillside Avenue
Edgar Street
High Street
George Street
Brook Court
Cromwell Parkway
Fairview Avenue
Beekman Terrace
Oshea Lane
Passaic Avenue
Stanley Avenue
Harvey Drive
Dunraden Drive
Oakland Place
Blackburn Place
Ashland Road
Lamed Road
Myrtle Avenue
Watchung Place
Oak Ridge Avenue
Glen Avenue
Hughes Place
Glen Oaks Avenue
Twombly Drive
Portland Road
Blackburn Road
Pembroke Road
Windsor Road
Canterbury Lane
Colt Road
Tanglewood Drive
Rotary Drive
Silver Lake Drive
Druid Hill Road
Greenbriar Drive
Little Wolf Road
Acorn Way
N
0
1,000
2,000
4,000
Feet
Wildland Urban Interface (WUI) Classification
Summit City
WUI Classification
WUI Intermix
WUI Interface
Non-WUI High and Medium Density Housing
Non-WUI Low and Very Low Density Housing
Non-WUI No Housing
Interstate Routes
State Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprint
Water
Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The City of Summit has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2016	
Capital Improvement Plan	X		2024	
Local Emergency Operations Plan/Continuity of Operations Plan		X		
Floodplain Development Ordinance	X			
Floodplain Management Plan		X		
Stormwater Management Ordinance	X			
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan	X			
Tracking elevation certificates and/or Letter of Map Change	X			
Post-Disaster Recovery Plan	X			
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

The City of Summit has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Currently the City Engineer
Grant Writer	X		Contracted out
Staff trained to support mitigation	X		
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations	X		

Education and Outreach Capabilities

The City of Summit has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		
StormReady		X	
Firewise USA		X	

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, the City of Summit has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance	X		
FEMA HMGP	X		EMAA grants
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank	X		
Other state municipal assistance or grant programs	X		
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the last update, the City has completed construction of its new firehouse which also houses the City's OEM and its Emergency Operations Center (EOC). This modern facility will greatly assist the City's ability to serve the public in times of major incident activation. Looking to the future, the City intends to put a priority on upgrading its infrastructure to accommodate the intense microburst storms that seem to be increasing in frequency and greatly impact the existing infrastructure. This will be done through physical improvements as well consideration of policy and planning changes to assist in more resilient development.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
18-01	Purchase and Install a Backup Generator for the Department of Public Works.	Backup generator for the Department of Public Works.	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm – Lightning		Engineering	FEMA, Municipal Budget	$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 the Department of Public Works	Flood		Summit DPW		$250,000.00		Withdrawn	
18-03	Upgrade and Improve Channelization of the Salt Brook/West End Brook.	Upgrade and improve channelization of the Salt Brook/West End Brook.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Engineering		$4,000,000.00		Withdrawn	
18-04	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.	Flood		Engineering	Municipal Budget	$1,000,000.00		Completed	
18-05	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.	Flood		Engineering		$1,000,000.00		Withdrawn	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
18-06	Join the CRS program.	Join the CRS program.	Flood		Engineering		$0.00		Withdrawn	
18-07	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.	High Wind–Tornado, High Wind–Straight-Line Winds	High	Summit Fire Chief	FEMA HMA, Municipal Budget, Capital Funding	$15,100,000.00	1 year	Completed	New firehouse constructed
18-08	Construct Spillway Improvements at River Road.	Construct spillway improvements at River Road to reduce flooding.	Flood	High	Summit Engineering	FEMA HMA, Municipal Budget	$500,000.00	1 year	Completed	
18-09	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.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	City Council	Municipal Budget	$0.00	1 year	Completed	Followed DEP model ordinance under county review.
18-10	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	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds	Medium	Engineering/DPW	Municipal Budget	$500,000.00	Ongoing	Completed	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
		will be done upon completion of the City's GIS system scheduled to take place in 2021.								

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
18-11	Upgrade and Improve Channelization of the Salt Brook/West End Brook.	Upgrade and improve channelization of the Salt Brook/West End Brook.	Flood, Erosion–Hurricane/ Nor'easter/ Coastal Storm, Severe Storm – Winter Weather		Engineering	TBD	$4,000,000.00		Ongoing	
18-12	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.	All Hazards	Low	OEM Coordinator, in coordination with NJOEM	Municipal Budget	TBD	Ongoing	Ongoing	
18-13	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.	Flood	High	Summit Engineering	FEMA HMA, Municipal Budget	$2,000,000.00	Ongoing	Ongoing	
18-14	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 Hobart Ave. and Edgewood Drive.	Flood	Medium	Engineering	Municipal Budget	$500,000.00	1 year	Ongoing	
18-15	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.	High Wind–Tornado	Low	Summit OEM	Municipal Budget	TBD	Ongoing	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
18-16	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.	Flood	High	Affected homeowners	FEMA HMA	TBD	Ongoing	Ongoing	
18-17	Ascot Way (Area Drainage Basin)	A stream that serves as the discharge location for a large watershed before traversing County land, and then State property is silted over.	Flood	High	City/County/State	FEMA	TBD	Ongoing	Ongoing	Permitting in progress.
18-18	Public Works Facility	The main facility is located in a flood plain. Floodproofing needed for future development	Flood	High	City	FEMA	TBD	Ongoing	Ongoing	Plans in progress.
18-19	Woodmere Drive Drainage Area	Several tributary streams discharge to a privately owned pond. Erosion is causing flooding and restricting flow.	Flood, Severe Storm – Winter Weather	High	City/Private HOA	FEMA	TBD	TBD	Ongoing	

19 – TOWNSHIP OF UNION

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Frederic Fretz	**OEM Coordinator**	**Primary Contacts, Municipal Workshop 1, Municipal Meeting**
Gregory Ricciardi	OEM Deputy Coordinator	Coordination, Input and Review

COMMUNITY OVERVIEW

Overview

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. Union is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Union Township is a predominantly residential community with residential (including apartment) use accounting for 47% of its area, covering nearly 2,095 acres in 2022. In the same year, Civic/public (tax exempt) land, commercial land, industrial land, and vacant land made up 25%, 16%, 9%, and 2% respectively of its total area. Between 2016 and 2022, area under industrial use fell by 16%, from 461 acres to 389 acres, while vacant land increased by 31%, from 82 acres to 107 acres. Although there was an increase in vacant land during this period, it accounted for merely 2% of the township's total area in 2022.

The significant share of Residential use, followed by civic/public (tax exempt), commercial and industrial use is reflected in NJDEP's Land Use/Land Cover data as well; in 2020, urban/developed land constituted nearly 86% of the township's total land, covering over 5,117 acres. Forest land, wetlands, and barren land followed, making up 7%, 4%, and 1% respectively of the township's total area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	3.8	1.0	-74%
Barren Land	34.4	39.6	15%
Forest	399.4	390.7	-2%
Urban	5111	5117.3	<1%
Water	36.5	36.7	1%
Wetlands	230.1	230	<1%

Recent Major Development and Infrastructure from 2021 to Present

None identified at this time by the township.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

None identified at this time by the township.

Demographics & Vulnerable Population

Union Township has an estimated population of 59,956, of which 4.3% are estimated to be under age 5 and 16.7% are estimated to be over age 65. The township experienced modest population growth over the periods of 2013-2017 and 2018-2022 ACS surveys, with an estimated 2.5% change during this period. Union has forty-three block groups which are

identified as overburdened (OBC), making up nearly the entire area of the township. These block groups are identified under OBC criteria for community vulnerability according to *Minority* (forty-one block groups) and *Low Income and Minority* (two block groups) areas. There are no portions of Union which have been identified as potentially vulnerable according to CDRZ or CEJST criteria.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	59,956
Population Change since 2017	2.49%
Percent of Population Age < 5	4.27%
Percent of Population > 65	16.72%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
	Natural Hazards	
Flood	Earthquake/Geological	Drought
High Wind – Straight-line Winds	Erosion – Hurricane/Nor'easter/Coastal Storm	Hail
	Extreme Temperature - Cold	High Wind - Tornado
	Extreme Temperature - Heat	
	Severe Storm - Lightning	
	Severe Storm – Winter Weather (Includes Ice Storms)	
	Dam Failure	
	Human-made Hazards	
	Hazmat Release – Fixed Site	Civil Unrest
	Pandemic	Economic Collapse
	Cyber Attack	Nuclear Hazard
	Hazmat Release - Transportation	Terrorism

Animal disease, landslide (non-seismic), power failure, storm surge-hurricane/nor'easter/tropical storm and wildfire were as N/A.

Hazard Ranking Explanation

Flooding is a significant issue in Union Township. Springfield Avenue, Liberty Avenue, Carol Road, and Biscuit Road are particularly prone to flooding. During prolonged heavy rainfall, manholes tend to overflow, exacerbating the flooding. During storm events, the township also experiences tree damage owing to high-speed winds. As a result, it ranked flood, and high wind – straight-line winds as hazards of high concern.

The township ranked hazmat release – transportation as medium because flooding on route I-78 has previously caused issues for trucking, including a gasoline tanker fire. The township ranked cyber attack as medium owing to its previous experiences with cyber attacks as recently as in 2022. In response to these attacks, the township adopted stricter email protocols for municipal staff. The township also ranked dam failure as medium; occasionally, soil erosion owing to runoff from hillside dam, causes trees to fall and block streams. The county handles the cleaning of these blockages. It is challenging to get the DEP to address the issue.

Significant Hazard Events Since Last Plan Update

The most recent significant hazard event experienced by the township was Hurricane Ida in 2021, when flooding occurred in a substantial portion of the township. The Home Depot, the largest in the country, and Maplecrest Ford Lincoln of Union were the major establishments that were impacted by the flooding. During the storm, people stranded on top of cars had to be rescued using the westbound train near Springfield Avenue.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to increase both the intensity and frequency of flooding in Union Township. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and heavy rainfall are likely to increase. This will exacerbate existing vulnerabilities, particularly those induced by flooding from East Branch of the Rahway River. The current drainage system, which already may be undersized to handle severe storms, may become even more overwhelmed, leading to more frequent and severe flooding events and expansion of existing coverage when standing water does occur.

Additionally, higher temperatures and prolonged heatwaves could increase risks of extreme temperature events, which may become more frequent and harder to manage, particularly for the township's nearly 17% population over 65. Aging infrastructure, already leading to standing water points during heavy rains, could be further strained by more severe storms, leading to compounding impacts of roadways flooding and potential power outages.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Union Township	
Number of Policies In-Force:	184
Total Losses:	517
Total Payments:	$12,258,707.16
Number of RL Properties:	29
Number of Mitigated RL Properties:	0
RL – Total Losses:	74
RL – Total Paid:	$905,376.11
Number of SRL Properties:	9
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	48
SRL – Total Paid:	$3,066,361.22

Vulnerability of the Built Environment

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 20 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.

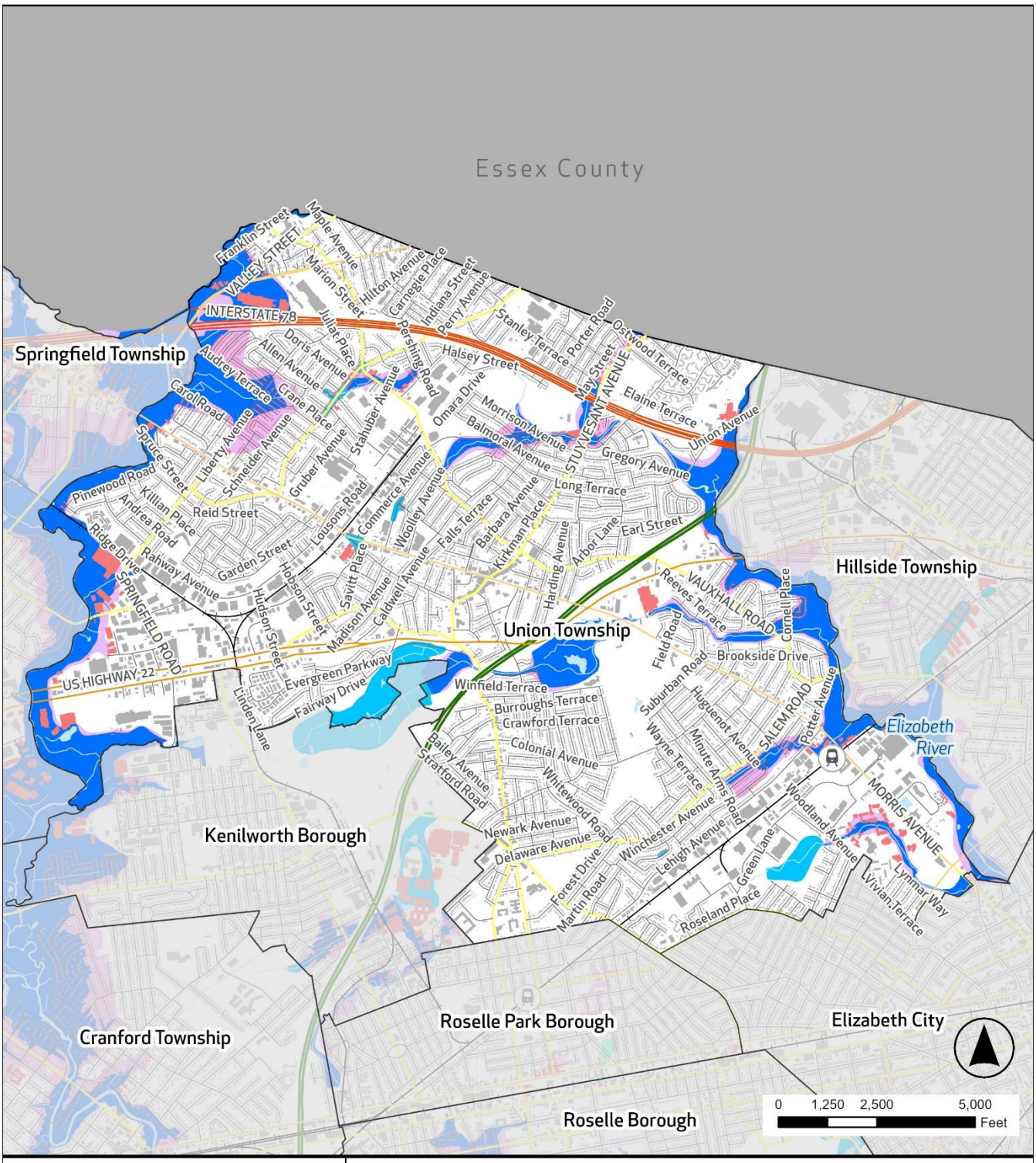
The two smaller areas of floodplain directly east of the area described above are related to the Vauxhall Branch, a tributary of the Rahway. Historical flood claims in this area are found in the area of Vauxhall Road and Winslow Avenue. The flooding in all these areas is typically relatively minor, often requiring the Fire Department to pump out basements.
Approximately 11.9 percent of the total area of Union Township lies within the 1% annual chance floodplain as defined by FEMA. An additional 3.8 percent of the area of the municipality is in the 0.2% annual chance floodplain.

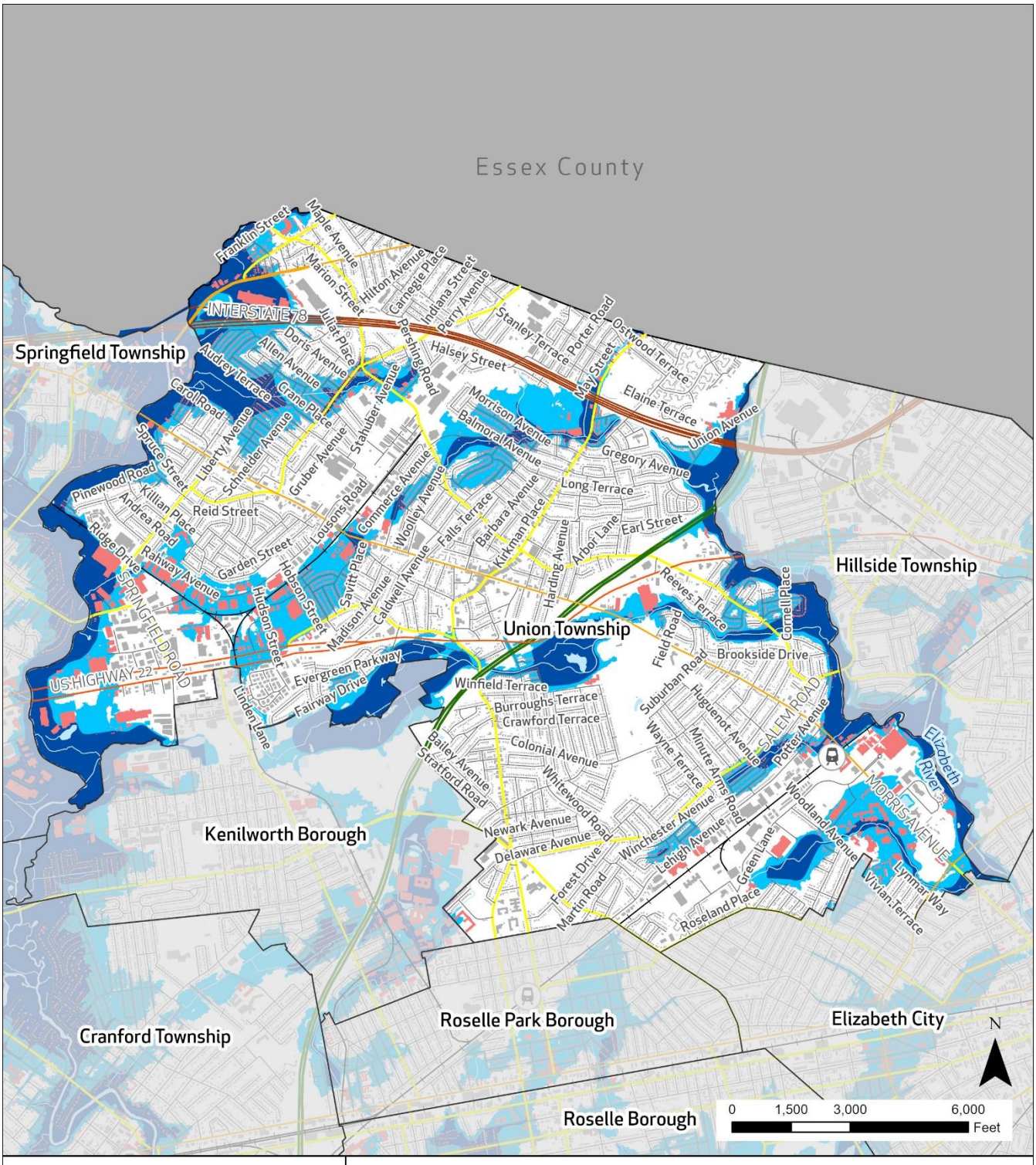
About 92.9 percent of Union is considered developed. Of the developed parcels of the town, 6 percent fall at least partially within the 1% annual chance floodplain and 6.9 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	6.0%	6.9%
Exposed Land Area	11.9%	3.8%

During the planning process, Union Township identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 67 total facilities. Of these facilities, 11 are within the floodplain.

Lifeline Category	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Health and Medical	1	-
Safety and Security	2	4
Water Systems	2	2


Essex County
Springfield Township
Union Township
Hillside Township
Kenilworth Borough
Cranford Township
Roselle Park Borough
Roselle Borough
Elizabeth City
Elizabeth River
INTERSTATE 78
US HIGHWAY 22
SPRINGFIELD ROAD
STUYVESANT AVENUE
VAUXHALL ROAD
SALEM ROAD
MORRIS AVENUE
Franklin Street
VALLEY STREET
Maple Avenue
Marion Street
Hilton Avenue
Carnegie Place
Indiana Street
Perry Avenue
Stanley Terrace
Porter Road
Ostwood Terrace
Juliet Place
Pershing Road
Halsey Street
May Street
Elaine Terrace
Union Avenue
Doris Avenue
Allen Avenue
Audrey Terrace
Crane Place
Carroll Road
Omara Drive
Morrison Avenue
Balmoral Avenue
Gregory Avenue
Long Terrace
Stahuber Avenue
Liberty Avenue
Schneider Avenue
Gruber Avenue
Spruce Street
Pinewood Road
Killian Place
Andrea Road
Reid Street
Lousons Road
Commerce Avenue
Woolley Avenue
Falls Terrace
Barbara Avenue
Kirkman Place
Harding Avenue
Arbor Lane
Earl Street
Ridge Drive
Rahway Avenue
Garden Street
Hobson Street
Hudson Street
Savitt Place
Madison Avenue
Caldwell Avenue
Reeves Terrace
Cornell Place
Field Road
Suburban Road
Brookside Drive
Linden Lane
Evergreen Parkway
Fairway Drive
Winfield Terrace
Burroughs Terrace
Crawford Terrace
Colonial Avenue
Whitewood Road
Bailey Avenue
Stratford Road
Newark Avenue
Delaware Avenue
Forest Drive
Martin Road
Hugenot Avenue
Wayne Terrace
Minute Arms Road
Potter Avenue
Winchester Avenue
Lehigh Avenue
Woodland Avenue
Green Lane
Roseland Place
Lynmar Way
Vivian Terrace
0 1,250 2,500 5,000
Feet
Flood Hazard
Union Township
FEMA Flood Zone
A (1%)
AE (1%)
0.2% Annual Chance
Garden State Pkwy
Interstate Routes
State Routes
US Routes
County Roads
Local Roads
Railroad
NJ Transit Rail Station
Municipal Boundaries
Building Footprints
Building Footsprints within the Floodplain
Water
Source: FEMA, NJDEP, NJOIT, NJTransit



NJ Inland Design Flood Elevation

Union Township

Existing Base Flood Elevation (BFE) (1% Annual Chance)

NJ Inland Design Flood Elevation (BFE Plus 3 Feet)

Garden State Pkwy

Interstate Routes

US Routes

State Routes

County Roads

Local Roads

Railroad

NJ Transit Rail Station

Municipal Boundaries

Building Footprints

Building Footprints within IDFE

Water

Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Union Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		Approved by Planning Board on 7/25/24 and adopted by Governing Body on 8/27/24.	
Capital Improvement Plan	X		4/23/2024	Plan addresses projects that reduce impacts from natural hazards.
Local Emergency Operations Plan/Continuity of Operations Plan				
Floodplain Development Ordinance		X	Scheduled for adoption on 11/26/24.	Township adopted the FEMA/NJDEP model.
Floodplain Management Plan	X			
Stormwater Management Ordinance	X		10/8/2024	The model has not been modified to adopt higher standards.
Stormwater Management Plan	X			
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan	X			
Substantial Damage/Improved Structures Response	X			Damages are identified where the cost of repairs exceeds 50% of the market value prior to damage.
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change	X			Documents are stored in the FEMA file.
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies	X			Mixed use development in the downtown core district.
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards	X			Township adopted a steep slope ordinance.

Administrative and Technical Capabilities

Union Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Joseph Venezia
Grant Writer	X		Millennium Strategies
Staff trained to support mitigation	X		Chief Fretz & Ricciardi, Engineers Hoover & Venezia
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		Union County

Position	Yes	No	Explanation
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		Colliers Engineering and Design
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Union Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Union Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA	X		
FEMA Public Assistance	X		
FEMA HMGP	X		
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs	X		DOT, Union County & Community Development Block Grant
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the 2021 plan update, Union Township, NJ (07083) has prioritized upgrades to aging storm water infrastructure, strengthening its pump stations, and improving emergency communication systems in response to increased flooding from severe weather events. Over the next five years, the township focus will center on modernizing and expanding the capacity of critical pump stations, particularly in low-lying and flood-prone neighborhoods, where existing systems have been overwhelmed during heavy rainfall. By enhancing pump performance and reliability, the township aims to significantly reduce the frequency and severity of localized flooding, protect homes and businesses, and improve its ability to manage storm events more effectively.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
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.	Flood		Township of Union OEM		$900,000.00		Completed	
19-02	Harden and Retrofit Police Department.	Hardening/retrofitting of Police Department.	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.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Straight-Line Winds		Township of Union Administrator		$350,000.00		Completed	
19-04	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.	All Hazards		OEM Coordinator, in coordination with NJOEM				Completed	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
19-05	Purchase New Emergency Standby Generator for Firehouse Headquarters.	New Emergency Standby Generator – Firehouse Headquarters	High Wind–Tornado, High Wind–Straight-Line Winds		Township of Union Fire Department	TBD	$150,000.00		Completed	Reach out to Home Depot when big storms are coming. Ever Bridge is their alert system. Township does not use Nixle or Facebook.
19-06	Purchase New Emergency Standby Generator for Senior Center.	New Emergency Standby Generator – Senior Center	High Wind–Tornado, High Wind–Straight-Line Winds		Township of Union Administrator	TBD	$100,000.00		Completed	
19-07	Repair Retaining Walls on Various Streams Throughout the Township.	Repair retaining walls on various streams throughout the Township to ensure they remain functional during future flood events.	Flood	Medium	Township	Municipal Budget	TBD		Completed	
19-08	Purchase New Emergency Standby Generator for Police Department.	New Emergency Standby Generator – Police Department	High Wind–Straight-Line Winds		Township of Union Police Department	TBD	$265,000.00		Completed	
19-09	Repair Irvington Branch Retaining Wall.	Irvington Branch Retaining Wall Repairs	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm		Township of Union Engineering Dept	TBD	$2,000,000.00		Completed	

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
19-10	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.	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	Fuel dispensary is now above ground.
19-11	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.	Flood	High	Township of Union DPW	FEMA HMA	$500,000.00	1 year	Ongoing	In progress of moving electric higher.
19-12	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.	Flood	High	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers	TBD	Ongoing	Ongoing	No progress.
19-13	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.	Flood	High	Township of Union OEM, Affected homeowners	FEMA HMA	TBD	Ongoing	Ongoing	No recent elevations or buyouts.
19-14	Join CRS program.	Join CRS program.	Flood	Low	NFIP Administrator	Municipal Budget	TBD	1 year	Ongoing	
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.	All Hazards	Medium	OEM	Municipal Budget	TBD	TBD	New	New public library costing $40M was designated it as a shelter. The funds

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
										came from the municipal budget. Library is out of a flood zone and has backup generator.
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.	Flood	High	OEM	FEMA HMA, County	TBD	TBD	Ongoing	
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.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Township Council	Municipal Budget	TBD	1 year	Ongoing	

20 – TOWN OF WESTFIELD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Christopher Battiloro	**OEM Coordinator**	**Primary Contact, Municipal Meeting**
Mike Bignell	Westfield Town Engineer	Municipal Workshop 1, Municipal Meeting
Eugene Watkins	Westfield DPW/OEM	Municipal Workshop 1, Municipal Meeting
Michael Duelks	Fire Chief	Municipal Meeting
James Gildea	Town Administrator	Appendix Review

COMMUNITY OVERVIEW

Overview

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. Westfield was settled in 1720, as part of the Elizabethtown Tract. It was incorporated as part of New Jersey's first 104 towns. Westfield is a town of about 30,000 people and is located 16 miles southwest of Manhattan, New York. Its downtown has about forty dining establishments and 600 total businesses, most of which are just south of the town's train station. The town has five parks and a school stadium. Route 28 is its main road. Westfield is not a coastal community.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Westfield Township is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 69% of the total land use, and covering nearly 2,400 acres of land. Civic/public (tax exempt) and commercial uses also accounted for significant portions, comprising 19% and 9% respectively of the total land use in the same year. From 2016 to 2022, vacant land use decreased 58%, from 65 to 27.5 acres, while civic/public (tax exempt) land increased by 22.5 acres to almost 675 acres total and residential by 20.5 acres to 2,407 acres.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up 92% of the area in 2020. The forest category followed, accounting for 6% of the land area.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	10.8	8.3	-23%
Barren Land	15.1	19.4	28%
Forest	255.9	249.4	-3%
Urban	3969.3	3974	<1%
Water	25.4	25.4	0%
Wetlands	38.7	38.7	0%

Recent Major Development and Infrastructure from 2021 to Present

The projects shown in the table below have been completed from 2021 to present.

Application Number	Address	Application Type	Description	Planning Board Approval Date	Status	Bedroom Distribution			
PB 22-3	440 North Avenue East	Preliminary and Final Major Site Plan	Construction of 10-unit building.	Approved 5/2/2022	Complete	**Unit Size**	**Market Rate**	**Affordable**	**Total**
						Studio	NA	NA	NA
						1 Bedroom	NA	NA	NA
						2 Bedroom	8 units	1 units	9 units
						3 Bedroom	NA	1 units	1 unit
						Total	**8 units**	**2 units**	**10 units**
PB 21-12	516-540 North Avenue East	Preliminary and Final Major Site Plan	Construction of 40-unit building	Approved 4/4/2022	Complete	**Unit Size**	**Market Rate**	**Affordable**	**Total**
						1 Bedroom	5 units	0 units	5 units
						2 Bedroom	25 units	4 units	29 units
						3 Bedroom	4 units	2 units	6 units
						Total	**34 units**	**6 units**	**40 units**
PB 21-09	522 Springfield Avenue	Preliminary and Final Major Site Plan	Construction of 162 units total in three separate buildings	Approved 2/7/2022	Complete	**Unit Size**	**Market Rate**	**Affordable**	**Total**
						1 Bedroom	10 units	6 units	16 units
						2 Bedroom	84 units	19 units	103 units
						3 Bedroom	36 units	7 units	43 units
						Total	**130 units**	**32 units**	**162 units**
PB 21-11	552-556 North Avenue East	Preliminary and Final Major Site Plan	Renovation and expansion of former TD Bank building for 7,500 SF retail	Approved 1/26/2022	Complete	NA			
PB 21-10	421-449 South Avenue East	Preliminary and Final Major Site Plan	Mixed use project consisting of 156 residential units and 17,000 square feet of commercial space	Approved 10/4/2021	Complete	**Unit Size**	**Market Rate**	**Affordable**	**Total**
						Studio	NA	4 units	4 units
						1 Bedroom	48 units	NA	48 units
						2 Bedroom	82 units	16 units	98 units
						3 Bedroom	NA	6 units	6 units
						Total	**130 units**	**26 units**	**156 units**
PB 12-12	430-516 Central Avenue	Preliminary and Final Major Site Plan Approval	Proposed mixed-use building containing 15,359 SF commercial space and 22 residential units	Approved 11/4/2013	Complete	8 – One BR Market Rate 14 – Two BR Market Rate			

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The Town has adopted a redevelopment plan for a project called One Westfield Place will feature new housing, retail, and office properties. The redevelopment plan allows for a maximum of approximately 200 residential units and approximately 200,000 square feet of commercial space along with various public improvements which include public plazas and streetscape enhancements. Site plan approvals have not yet been obtained and construction has not yet started on this project.

Remaining major development projects anticipated to be completed in the next five (5) years include:

<table>
<tr><th>Application Number</th><th>Address</th><th>Application Type</th><th>Description</th><th>Planning Board Approval Date</th><th>Status</th><th colspan="4">Bedroom Distribution</th></tr>
<tr><td>PB 24-005</td><td>1003 North Avenue West</td><td>Preliminary/Final Major Site Plan w/variances</td><td>Construction of a mixed-use building w/22 residential units for homeless veterans</td><td>Approved 11/4/2024</td><td>Applicant seeking project financing</td><td colspan="4">22 - special needs units</td></tr>
<tr><td>PB 23-012</td><td>118 Elm St</td><td>Preliminary/Final Major Site Plan w/variances</td><td>Construction of a mixed-use 3-story building w/22 residential units over 3,863 SF retail and parking</td><td>Approved 10/16/2023</td><td>Under Construction</td><td colspan="4">16 – One BR Market Rate
6 – Two BR Market Rate</td></tr>
<tr><td rowspan="5">PB 23-010</td><td rowspan="5">500 North Avenue East</td><td rowspan="5">Preliminary/Final Major Site Plan</td><td rowspan="5">Construction of a three-story apartment building w/29 units</td><td rowspan="5">Approved 12/4/2023</td><td rowspan="5">Applicant revising plans to meet conditions of approval</td><td>Unit Size</td><td>Market Rate</td><td>Affordable</td><td>Total</td></tr>
<tr><td>1 Bedroom</td><td>19 units</td><td>1 unit</td><td>20 units</td></tr>
<tr><td>2 Bedroom</td><td>5 units</td><td>3 units</td><td>8 units</td></tr>
<tr><td>3 Bedroom</td><td>0 units</td><td>1 unit</td><td>1 unit</td></tr>
<tr><td>Total</td><td>24 units</td><td>5 units</td><td>29 units</td></tr>
<tr><td rowspan="5">PB 23-04</td><td rowspan="5">418 South Ave East; 448 South Ave East; 338 Windsor Ave</td><td rowspan="5">Preliminary/Final Major Site Plan</td><td rowspan="5">Construction of three story apartment building with 37 units</td><td rowspan="5">Approved 7/17/2023</td><td rowspan="5">Under Construction</td><td>Unit Size</td><td>Market Rate</td><td>Affordable</td><td>Total</td></tr>
<tr><td>Studio</td><td>NA</td><td>1 unit</td><td>1 unit</td></tr>
<tr><td>1 Bedroom</td><td>12 units</td><td>NA</td><td>12 units</td></tr>
<tr><td>2 Bedroom</td><td>19 units</td><td>3 units</td><td>22 units</td></tr>
<tr><td>3 Bedroom</td><td>NA</td><td>2 units</td><td>2 units</td></tr>
<tr><td>Total</td><td>31 units</td><td>6 units</td><td>37 units</td></tr>
<tr><td>PB 23-07</td><td>184 Elm Street</td><td>Preliminary and Final Major Site Plan</td><td>Two story addition onto existing building. Two ground floor commercial tenant spaces (5,962 SF total) and a total of 10 dwelling units on upper stories</td><td>Approved 6/5/2023</td><td>Applicant determining project start date</td><td colspan="4">6 – One BR Market Rate
4 – Two BR Market Rate</td></tr>
</table>

<table>
<tr><th>Application Number</th><th>Address</th><th>Application Type</th><th>Description</th><th>Planning Board Approval Date</th><th>Status</th><th>Bedroom Distribution</th></tr>
<tr><td>PB 22-9</td><td>415-427 South Avenue W</td><td>Preliminary and Final Major Site Plan</td><td>Applicant proposes to construct a new mixed-use building and parking. New building will have 5,233 SF of commercial / retail on 1st floor and 20 apartments in total on 2nd and 3rd floors.</td><td>Approved 10/3/2022</td><td>Under Construction</td><td>16 – One BR Market Rate
4 – Two BR Market Rate</td></tr>
<tr><td>PB 22-11</td><td>201 and 215 Prospect Street; 112 Ferris Place</td><td>Preliminary & Final Major Site Plan</td><td>Applicant proposes to construct a new mixed-use building and parking. New building will have 500 SF commercial / retail on 1st floor and 60 apartments in total.</td><td>Approved 8/1/2022</td><td>Under Construction</td><td>
<table>
<tr><th>Unit Size</th><th>Market Rate</th><th>Affordable</th><th>Total</th></tr>
<tr><td>Studio</td><td>NA</td><td>NA</td><td>NA</td></tr>
<tr><td>1 Bedroom</td><td>29 units</td><td>1</td><td>30 units</td></tr>
<tr><td>2 Bedroom</td><td>22 units</td><td>6 units</td><td>28 units</td></tr>
<tr><td>3 Bedroom</td><td>NA</td><td>2 units</td><td>2 units</td></tr>
<tr><td>Total</td><td>51 units</td><td>9 units</td><td>60 units</td></tr>
</table>
</td></tr>
</table>

Demographics & Vulnerable Population

The Town of Westfield has a total estimated population of 30,839, of which 7.5% is estimated to be under age 5, and 14.5% is estimated as over 65 years of age. The town saw consistent population over the periods between ACS surveys (2013-2017, 2018-2022), with an estimated .81% change during this time. A larger share of population over 65, as with the town's nearly 15%, may indicate local vulnerabilities to hazard events both before and after a disaster occurs – these populations may have mobility needs, uneven access to resources, and limited social networks that makes pre-disaster engagement challenging (FEMA, 2023).

Within Westfield, there are three block groups identified as potentially overburdened (OBC) according to characteristics of *Minority* population vulnerability. There are no portions of the Town which are designated under CDRZ or CEJST criteria.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	30,839
Population Change since 2017	0.81%
Percent of Population Age < 5	7.50%
Percent of Population > 65	14.46%

HAZARD IDENTIFICATION

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 town's hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

High	Medium	Low
Natural Hazards		

High Wind – Straight-line Winds	Extreme Temperature – Cold	Dam Failure
Severe Storm – Winter Weather (Includes Ice Storms)	Extreme Temperature – Heat	Drought
	Flood	Earthquake/Geological
	Severe Storm – Lightning	Hail
		High Wind – Tornado
Human-made Hazards		
Hazmat Release – Transportation		Animal Disease
Pandemic		Civil Unrest
Power Failure		Cyber Attack
		Economic Collapse
		Hazmat Release – Fixed Site
		Nuclear Hazard
		Terrorism
		Wildfire

Erosion – hurricane/ nor'easter/coastal storm, landslide (non-seismic), and storm surge – hurricane/ nor'easter/tropical storm were ranked N/A.

Hazard Ranking Explanation

Extreme temperatures, both cold and hot, sit at a medium level of concern. The town will open warming and cooling centers, but not many make use of them. Hazmat release – transportation was one of the most major hazards identified in Emergency Operations Plan. Power failure increased from not applicable to a high level of concern. It is critical for government operations; the town may look into a microgrid for such facilities. Straight-line winds remain at a high level of concern. The town is a tree community; high winds cause trees to fall, which also affects power. Terrorism increased from not applicable to a low level of concern; the town has had events like street fairs that have been soft targets. It also has a train station.

Significant Hazard Events Since Last Plan Update

Hurricane Ida in September 2021 saw areas flood that had not flooded before. Much of the town's storm sewers were temporarily over-charged, which resulted in widespread flooding. The flooding took cars away.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Westfield Town	
Number of Policies In-Force:	86
Total Losses:	49
Total Payments:	$1,701,351.99
Number of RL Properties:	0
Number of Mitigated RL Properties:	0
RL – Total Losses:	0
RL – Total Paid:	$0.00
Number of SRL Properties:	3
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	6
SRL – Total Paid:	$150,736.01

Vulnerability of the Built Environment

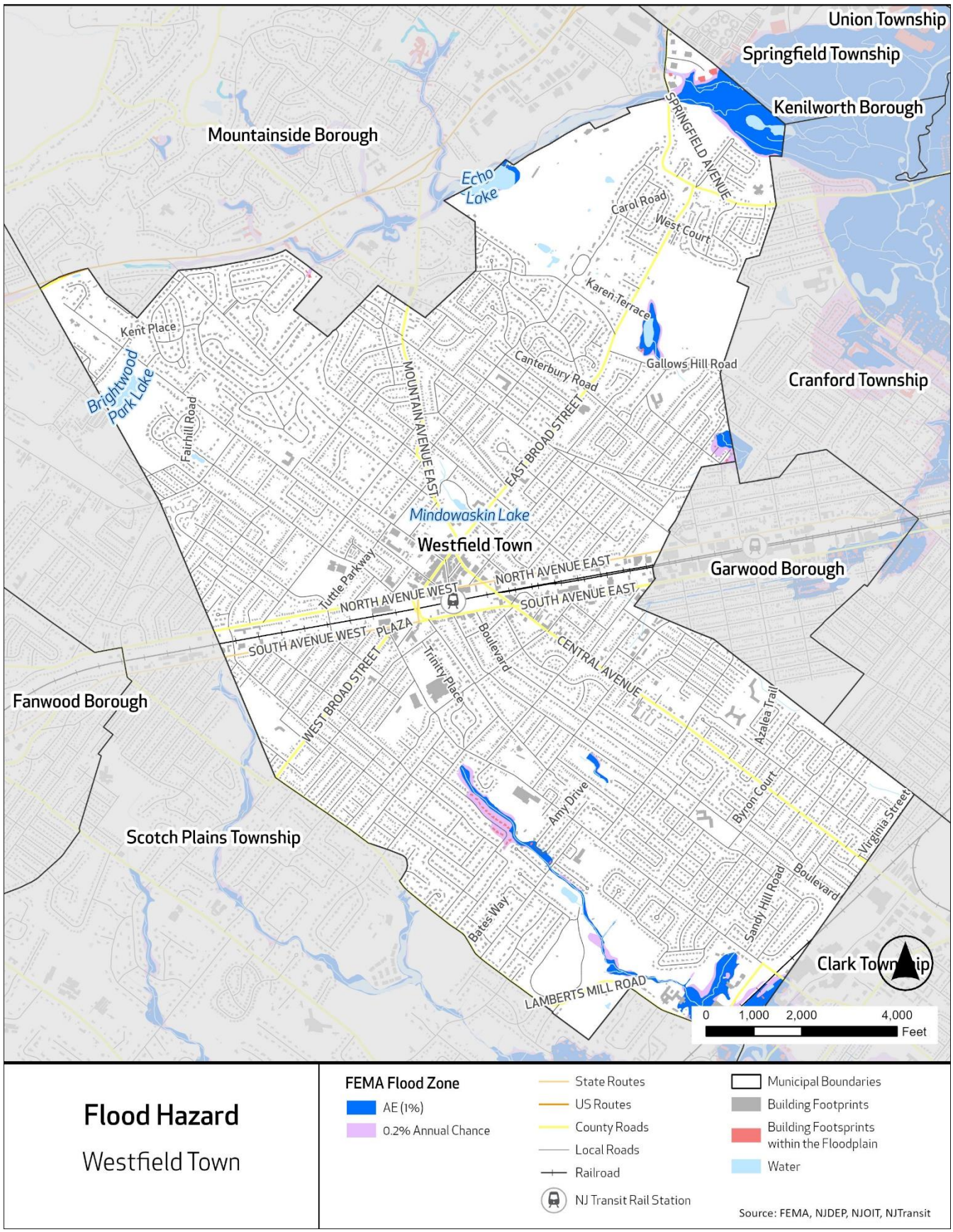
Compared to other jurisdictions, the Town of Westfield has a relatively small flood plain. There are four small areas of flood concern in the town. These include: Nomahegan Brook, Gallows Hill Road Branch, Brookside Place Brook & retention basin and Robinson's Branch of the Rahway River, the largest flood area in Westfield. Flooding in Westfield most often occurs during extreme rain events and such incidents are for short durations. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes nor'easters. 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. Approximately 2.4 percent of the total area of the Town of Westfield lies within the 1% annual chance floodplain as defined by FEMA. An additional 0.8 percent of the area of the municipality is in the 0.2% annual chance floodplain.

About 86.2 percent of Westfield is considered developed. Of the developed parcels of the town, 0.9 percent fall at least partially within the 1% annual chance floodplain and 1.2 percent are at least partially within the 0.2% annual chance floodplain. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	0.9%	1.2%
Exposed Land Area	2.4%	0.8%

During the planning process, the Town of Westfield identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified 52 total facilities. Of these facilities, none are within the floodplain.

	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-



Flood Hazard

Westfield Town

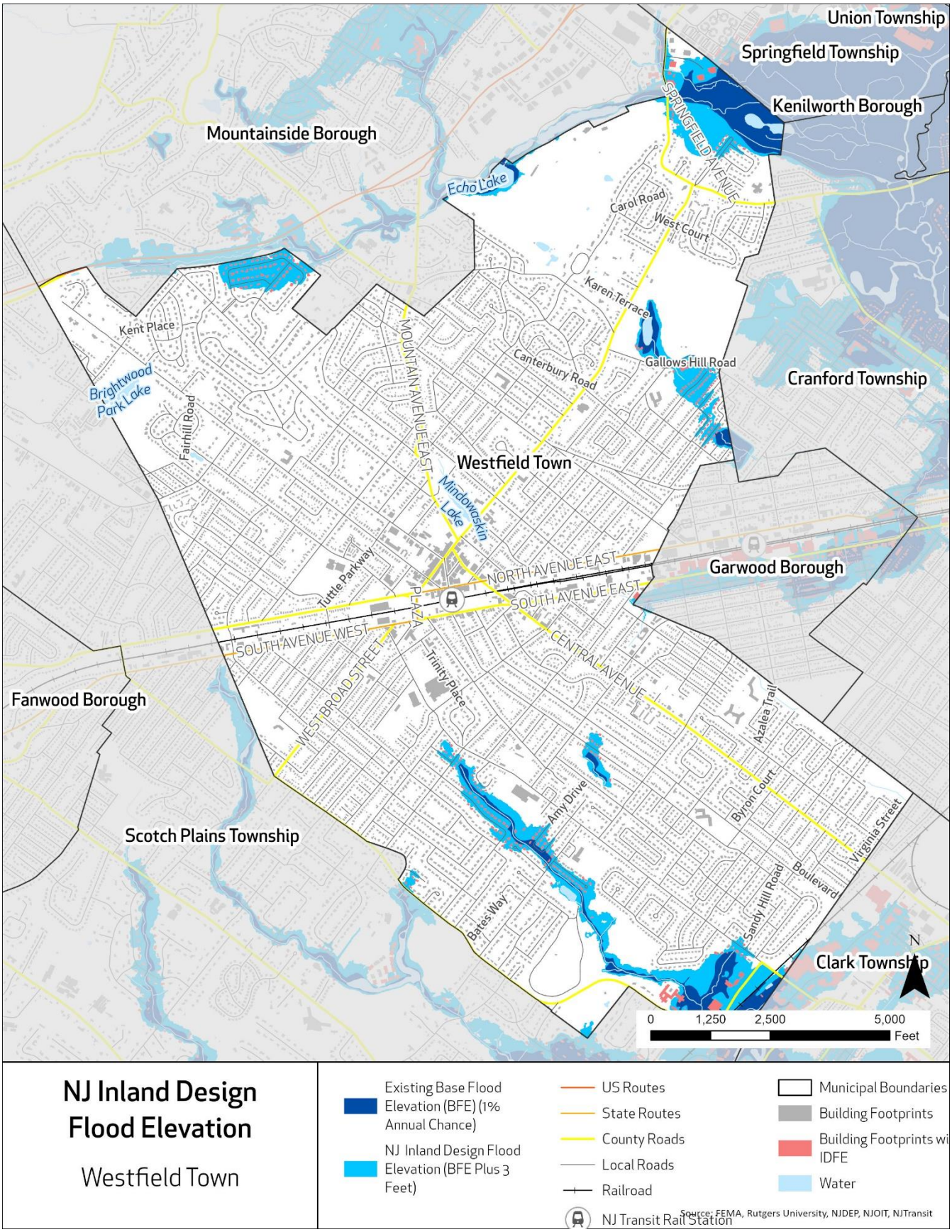
FEMA Flood Zone

- AE (1%)
- 0.2% Annual Chance

- State Routes
- US Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprints
- Building Footsprints within the Floodplain
- Water

Source: FEMA, NJDEP, NJOIT, NJTransit



NJ Inland Design Flood Elevation

Westfield Town

- Existing Base Flood Elevation (BFE) (1% Annual Chance)
- NJ Inland Design Flood Elevation (BFE Plus 3 Feet)
- US Routes
- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station
- Municipal Boundaries
- Building Footprints
- Building Footprints wi IDFE
- Water

Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Westfield Town

WUI Classification

- WUI Intermix
- Non-WUI High and Medium Density Housing
- Non-WUI Low and Very Low Density Housing
- Non-WUI No Housing

- US Routes
- State Routes
- County Roads
- Local Roads
- Railroad
- NJ Transit Rail Station

- Municipal Boundaries
- Building Footprint
- Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

The Town of Westfield has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan	X		2024	A section titled "Climate Change Vulnerability Assessment" was added into the Storm Resiliency, Smart Growth, and Environmental Sustainability element of the Master Plan.
Capital Improvement Plan	X		2026	Provides resources to continue to upgrade stormwater facilities throughout the Town.
Local Emergency Operations Plan/Continuity of Operations Plan	X			
Floodplain Development Ordinance	X		2023	Regulates construction and land use in flood-prone areas to reduce future flood damage.
Floodplain Management Plan	X			
Stormwater Management Ordinance	X			
Stormwater Management Plan	X			
Watershed Management Plan	X			
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

The Town of Westfield has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Town Engineer serves as Floodplain Administrator
Grant Writer	X		
Staff trained to support mitigation	X		Public Works provides training sessions for staff to support mitigation efforts.
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

The Town of Westfield has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Westfield utilizes Nixle alerts and has a dedicated Alert Center Page on the Town's website to communicate with the public.
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, The Town of Westfield has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs	X		NJDOT State Aid grants have been utilized to upgrade existing non-compliant stormwater management features.
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the last plan update in 2021, the Town mitigation strategy has focused on strengthening critical infrastructure to ensure continuity of essential services during power failures and other emergencies. Westfield prioritized installing backup power systems at key facilities such as emergency shelters, fire and police stations, and communication centers to address vulnerabilities revealed during recent outages. Over the next five years, the Town plans to expand these efforts and prioritize hardening evacuation routes and enhancing communication systems to ensure residents can safely evacuate and stay informed during extended emergencies.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
20-01	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.	Flood, Erosion–Hurricane/Nor'easter/Coastal Storm	Low	Town Council	Municipal Budget	$0.00	1 year	Completed	-
20-02	Implement the Mitigation Actions from the Resiliency Guidelines prepared by the Center for Climate and Energy Solutions	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.	All Hazards	Medium	Westfield OEM	Sustainable Jersey, FEMA HMA, municipal budget depending on the action	$12,000.00		Completed	The town included a "Climate Change Vulnerability Assessment" section into the Storm Resiliency, Smart Growth, and

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	(C2ES) to Adapt to Future Extreme Heat and Flooding Hazards.									Environmental Sustainability element of the land use plan.
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.	Severe Storm–Winter Weather (Ice Storm), High Wind–Straight-Line Winds	High	Westfield Fire Chief	FEMA HMA, Municipal Budget	$5-10,000,000.00	1 year	Withdrawn	

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
20-04	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.	All Hazards	Low	OEM Coordinator, in coordination County OEM	Staff Resources	$5,000.00	1 year Ongoing	Ongoing	This is an ongoing effort. The Town has increased this effort since Hurricane Ida including by social media, community messaging, and Nixle alerts. There is also an adopt-a-drain program through which residents can opt to be responsible for cleaning the catch basin in a drain near their home.
20-05	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.	Flood	High	Westfield Police Chief/OEM	FEMA HMA, Municipal Budget	$150,000.00	1 year Ongoing	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
20-06	Rebuild the Fire Department Building on Central Avenue to Reduce the Impacts of High Wind and Extreme Weather on the Structure.	Rebuild of Fire Department on Central Avenue to reduce the impacts of high wind and extreme weather on the structure.	Severe Storm–Winter Weather (Ice Storm), High Wind–Tornado, High Wind–Straight-Line Winds	High	Westfield Fire Chief	FEMA HMA, Municipal Budget	$30,000,000.00	8 + years	Ongoing	
20-07	Flood-proof the Complete Care at Westfield: Senior Housing Building to Reduce the Impact of Flooding on Vulnerable Populations.	Flood-proof the Complete Care at Westfield: Senior Housing to reduce the impact of flooding on vulnerable populations.	Flood	Medium	Complete Care	FEMA HMA	$180,000.00	1 year	Ongoing	A generator has been acquired for this facility, but that also needs to be floodproofed.
20-08	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.	Flood	High	Engineering, Affected homeowners	FEMA HMA	$2,000,000.00	Ongoing	Ongoing	
20-09	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.	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds, Hail, Extreme	Low	Town of Westfield	Future Municipal Government Capital Budget Expenditure	$100,000.00	1 - 5 years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
			Temperature, Power Failure							
20-10	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.	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds, Hail, Extreme Temperature	High	Town of Westfield	Future Municipal Capital Budget Expenditure	$400,000.00	1 - 5 years	Ongoing	
20-11	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.	Flood, Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, High Wind–Tornado, High Wind–Straight-Line Winds, Hail, Extreme Temperature	High	Town of Westfield	Future Municipal Capital Budget Expenditure	$500,000.00	1 - 5 years	Ongoing	This has been approved but is on hold pending engineering review and public bidding process.
20-12	Use the Town's Green Development Checklist to Identify Opportunities to Integrate Green Infrastructure into Redevelopment Plans, Especially in the Special Flood	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	Flood, Extreme Temperature, Drought	Low	Planning and Zoning Boards	Municipal Budget	$15,000.00	Ongoing	Ongoing	There has been some progress on this action. Developments are incorporating green aspects.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Hazard Area (SFHA).	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.								
20-13	Upgrade Stormwater Infrastructure.	Continue to identify areas of need throughout the Town and upgrade stormwater infrastructure where necessary.	Flood, Severe Storm–Winter Weather (Ice Storm)	High	Town of Westfield, Engineering	Municipal Budget	$300,000.00	Ongoing	New	
20-14	Establish and Maintain Hazardous Materials Response Plan.	Establish Hazmat Response Plan, train local first responders in hazmat protocols.	Hazmat Release - Transportation	High	Westfield OEM	Municipal Budget	$50,000.00	Ongoing	New	
20-15	Establish and Maintain a Comprehensive Public Health Emergency Plan	Establish plan to help limit spread of disease, maintain essential services, and ensure the community is informed and supported during a health crisis.	Pandemic	High	Westfield OEM, Department of Health	Municipal Budget	$50,000.00	Ongoing	New	
20-16	Robinsons Branch Rahway River Tributary	Repair and/or reconstruct the drainage channel/flume, which has deteriorated over time.	Flood	Medium	Town of Westfield	FEMA HMA, DEP, USACE	Unknown	Ongoing	New	The Town of Westfield has consulted with the US Army Corps of Engineers (USACE) and the Department of Environmental Protection (DEP) regarding the drainage channel/flume located behind Edison Intermediate School and parallel to Knollwood Terrace that leads to the Tamaques Park

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
										pond, which is an identified and DEP-listed flood zone in Westfield. Westfield was formally included in the Rahway River Basin Flood Risk Management Feasibility Study in 2023 and has also become a member of the Mayor's Rahway River Coalition, advocating for changes along the Rahway River and its tributaries to mitigate water flow and flooding. Any project in Westfield on this channel will need design and funding assistance from the USACE and the DEP and this item is ongoing.

21 – TOWNSHIP OF WINFIELD

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Frank Mazzarella	**Winfield OEM Coordinator**	**Primary Contact**

COMMUNITY OVERVIEW

Overview

The Township of Winfield has a total area of 0.17 square miles and is located in central Union County, New Jersey. The Township of Winfield has a unique history. Winfield was incorporated from a section of Clark Township by an Act of the Legislature on August 6, 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. Winfield is not a coastal community.

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. The population of Winfield is around 1,400.

Land Use, Development, & Growth

This paragraph describes the key land use types and any key land use changes based on MOD-IV, New Jersey's property tax data. Winfield is primarily a residential community, with the MOD-IV dataset showing that residential (including apartment) use constituted the largest category in 2022, accounting for 97% of the total land use, and covering around acres of land. Civic/public (tax exempt) use accounted for 3% of the total land use in the same year. All categories of parcels remained constant in Winfield from 2016 to 2022.

According to NJDEP's Land Use/Land Cover dataset categories for 2015 and 2020, the area classified as urban occupied the largest share, making up nearly 77% of the area in 2020, followed by forest land, which accounted for 23% of the total land area. The township contains no other land use classifications.

Land Use Type	Total Acres (2016)	Total Acres (2022)	Percent Change
Agriculture	-	-	-
Barren Land	-	-	-
Forest	3	2.9	-3%
Urban	112	112.1	<1%
Water	-	-	-
Wetlands	-	-	-

Recent Major Development and Infrastructure from 2021 to Present

The township is built out. Due to the unique nature of land ownership in the town almost no new development is allowed, although residents can make some improvements.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years
See above.

Demographics & Vulnerable Population

Winfield Township has an estimated population of 1,518, of which an estimated 2.2% is under age 5 and 21.3% is over age 65. Winfield's population has remained steady over recent ACS survey periods (2013-2017, 2018-2022), with an estimated -0.46% shift. There are no communities within the township which are identified as potentially socially vulnerable according to CDRZ, CEJST, or OBC criteria.

With an aging population making up nearly 21 percent of their total community, Winfield may focus hazard mitigation efforts on those with robust messaging and engagement for older residents, evacuation plans inclusive of populations with mobility issues, and resilient networks for resource accessibility post-disaster.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	1,518
Population Change since 2017	-0.46%
Percent of Population Age < 5	2.2%
Percent of Population > 65	21.3%

HAZARD IDENTIFICATION

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 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 4.0.

High	Medium	Low
Natural Hazards		
Severe Storm – Winter Weather (Includes Ice Storms)	Extreme Temperature – Cold	Dam Failure
	Extreme Temperature – Heat	Drought
	High Wind – Straight-line Winds	Earthquake/Geological
	Severe Storm – Lightning	Erosion- Hurricane/ Nor'easter/Coastal Storm, and Storm Surge
		Flood
		Hail
		High Wind - Tornado
		Landslide (Non-Seismic)
		Wildfire
Human-made Hazards		
	Cyber Attack	Civil Unrest
		Power Failure
		Economic Collapse
		Hazmat Release – Fixed Site
		Hazmat Release – Transportation
		Pandemic
		Nuclear Hazard
		Terrorism

Animal disease and storm surge – hurricane/ nor'easter/tropical storm were ranked as N/A.

Hazard Ranking Explanation

Animal disease and storm surge – hurricane/ nor'easter/tropical storm are ranked as not applicable. There are no farms, commercial or hobby, within the township, and there are no tidally influenced waters.

Severe storm – winter weather is the highest ranked hazard of concern. Snow impacts town and leads to the most issues for residents.

High wind straight line winds is of medium concern. The Planning Team reports that the Township Housing Corporation has better handle on removing downed/dying trees. Extreme temperatures are ranked medium concern as well. Heat and cold events have been increasing and there are many seniors in town who are vulnerable during events. Power failure is ranked medium. The township reports that power outages have been happening less frequently lately and typically coincide with major storms where a larger area is impacted.

Economic collapse is ranked low. There are very few businesses within Winfield. Hazmat release – transportation is ranked low as there is no traffic coming through town. Recent water main breaks could possibly be a result of the 2024 earthquake.

Significant Hazard Events Since Last Plan Update

During Ida, the Township experienced minor flooding in areas around the edges of the township, mostly on Union County Parkway Drive Way (a county owned road). Due to the topography, there are low points in the road primarily at the southwestern tip/bend of the Rahway River. The areas where this occurred lined up with the areas shown on the Inland Design Flood Elevation map below. Additional hazard events in the last five years include several ice storm/wind events where some trees went down.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to impact the risks and hazards faced by the Township of Winfield. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and heavy rainfall are likely to increase. This will exacerbate existing vulnerabilities, particularly in areas prone to flooding, and potentially create issues in areas which are not currently vulnerable to flood. Additionally, although the general trend is toward a warmer climate, climate change has the potential to intensify winter storms, due to increased moisture, potentially leading to heavier snowfall when temperatures are cold enough to result in snow.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) Statistics

Winfield Township	
Number of Policies In-Force:	0
Total Losses:	0
Total Payments:	0
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

Vulnerability of the Built Environment

Despite its proximity to the Rahway River in neighboring Clark Township, the Township of Winfield contains minimal floodplain. The township is on a slope away from the river. Zero percent of the total area of the township lies within the 1% annual chance floodplain as defined by FEMA and 0.1 percent of the area of the municipality is in the 0.2% annual chance floodplain. At the time of this update, Winfield did not have any Repetitive Loss (RL) or Severe Repetitive Loss (SRL) properties.

About 99.6 percent of Winfield is considered developed. Of the developed parcels of the town, zero fall within the 1% annual chance floodplain and 0.1 percent are at least partially within the 0.2% annual chance floodplain. This is a single parcel in the southwestern corner of town. This illustrates that the developed area of the municipality is generally in line with overall flood risk which is minimal.

	Percentage in 1% Floodplain	Percentage in 0.2% Floodplain
Developed Parcels	-	0.1%
Exposed Land Area	-	0.1%

During the planning process, the Township of Winfield identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified six total facilities. Of these facilities, none are within the floodplain.

	Number in the 1% Floodplain	Number in the 0.2% Floodplain
Community Lifelines and Critical Facilities	-	-



Flood Hazard

Winfield Township

FEMA Flood Zone

0.2% Annual Chance

County Roads

Local Roads

Municipal Boundaries

Building Footprints

Building Footsprints within the Floodplain

Water

Source: FEMA, NJDEP, NJOIT, NJTransit



NJ Inland Design Flood Elevation

Winfield Township

CAPABILITY ASSESSMENT

Planning and Regulatory Capabilities

Winfield Township has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of Last Update	How does this support hazard mitigation?
Master Plan		X		
Capital Improvement Plan		X		
Local Emergency Operations Plan/Continuity of Operations Plan	X		5/2023	
Floodplain Development Ordinance		X		
Floodplain Management Plan		X		
Stormwater Management Ordinance	X		5/2021	Adopted per state guidelines
Stormwater Management Plan	X		8/2005	Adopted per state guidelines
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan	X		5/2023	In EOP
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Winfield Township has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator		X	
Grant Writer		X	
Staff trained to support mitigation		X	
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations	X		

Education and Outreach Capabilities

Winfield Township has the following Education and Outreach capabilities:

Education and Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Utilizing social media as well as reverse messaging
StormReady		X	
Firewise USA		X	

Education and Outreach Capability	Yes	No	Explanation
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Winfield Township has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

MITIGATION STRATEGY

Overview and Progress Since Last Update

Since the last plan update, the Township of Winfield has focused on enhancing community outreach, improving emergency response capabilities, and upgrading critical infrastructure to mitigate natural hazard risks. Key completed actions include acquiring new technology to better notify its residents prior, during, and after emergencies. Over the next five years, Winfield aims to prioritize projects that address improving drainage systems and enhance backup power at essential facilities by expanding mitigation strategies like upgrading community shelters. These efforts underscore the Township of Winfield's commitment to safeguarding residents and promoting sustainable growth in the face of evolving hazards.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Respons-ible Party	Funding Source	Cost Estimate	Time-line	Action Status	Notes
21-01	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	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	Flood, Erosion–Hurricane/ Nor'easter/ Coastal Storm	Low	Township Council	Municipal Budget	$0.00	1 year	Complete	Town passed model stormwater ordinance in 2024.
21-02	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.	Severe Storm–Winter Weather (Ice Storm), Extreme Temperature	High	OEM	CDBG	$80,000.00	1 year	Complete	Improvements complete, generator still needed.
21-03	Improve Drainage in Low-Lying Areas along Pacific Dr. to Reduce Stormwater Flooding.	Improve drainage in low-lying areas along Pacific Dr. to reduce stormwater flooding.	Flood	High	OEM and Housing Corp	Existing State and Federal Grant Programs	N/A	2 years	Withdrawn	House installed deck and they drilled into and blocked drainage pipe. Has been resolved.

Action	Name	Description	Hazards Addressed	Priority	Respons-ible Party	Funding Source	Cost Estimate	Time-line	Action Status	Notes
21-04	Join the National Flood Insurance Program (NFIP) to Strengthen Floodplain Management Practices.	Join the NFIP to strengthen floodplain management practices.	Flood	Low	OEM	Existing municipal resources	N/A	1 - 3 years	Withdrawn	

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsibl e Party	Potential Funding	Cost Estimate	Time -line	Action Status	Notes
21-05	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. Information presented at towns (code red, register ready, other programs such as lockbox).	All Hazards	Low	OEM Coordinator, in coordination with SCOEM	Municipal budget, staff time	$0.00	1 year	Ongoing	
21-06	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.	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	Ongoing	
21-07	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.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Medium	OEM	Existing State and Federal Grant Programs	$650,000	3 - 5 years	Ongoing	No progress. DPW is being considered.
21-08	Alternative Snow Removal Strategies to Ensure Roadway Safety During	Investigate alternative snow removal strategies to ensure roadway safety during winter weather events. No driveways	Severe Storm–Winter Weather (Ice Storm)	Low	OEM	Existing municipal resources	$0.00	1 year	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	Winter Weather Events.	and all parking is on-street. Current snow emergency plan goes section by section.								
21-09	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.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Medium	OEM	Existing State and Federal Grant Programs	$200,000.00	3 - 5 years	Ongoing	
21-10	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. School is being considered as an alternate shelter to the community center.	Severe Storm–Winter Weather (Ice Storm), Severe Storm –Lightning, Extreme Temperature	Low	OEM	Existing State and Federal Grant Programs	$650,000	3 - 5 years	Ongoing	
21-11	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.	Terrorism	Medium	OEM	Homeland Security grants, Municipal budget	$45,000.00	1 year	Ongoing	
21-12	Acquire, Elevate, or Relocate Buildings and Infrastructure in Flood-prone Areas, with a Focus on Repetitive Loss	There are currently no RL or SRL properties in the township; however, the township realizes the floodplain changes and will retain this action in case of future need	Flood	Low	OEM, Home-owners	FEMA HMA, NJDEP Blue Acres	$0.00	10 Years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Time-line	Action Status	Notes
	(RL) and Severe Repetitive Loss (SRL) Properties.									
21-13	Create Formal Sheltering and Evacuation Plan	Create sheltering and evacuation plan so that town seniors know where they are supposed to go in the case of hazard events. Township has limited manpower to direct sheltering and evacuation in emergency.	All hazards	Medium	OEM	TBD	TBD	TBD	New	

22 – SPECIAL DISTRICTS

PLANNING PROCESS & PARTICIPATION

The Project Team met virtually with representatives from municipal utility authorities in Union County on March 12, 2025. These representatives discussed recent hazards, such as cyber-attack, power failure, heavy rainfall, flooding, earthquakes, droughts, COVID-19, and hurricanes. Representatives were given the opportunity to raise concerns and present mitigation actions at this meeting as well as by email after the meeting. Participation is recorded in the below table.

Name	Authority	Participation
Rafael Brizuela	New Jersey American Water	Utility Authority Meeting
Lisa da Silva	Union County Utilities Authority	Utility Authority Meeting, Submitted Mitigation Actions by Email
Jaclyn Gerhardt	Jersey Central Power & Light JCP&L)	Utility Authority Meeting
Jose Ortiz	Jersey Central Power & Light (JCP&L)	Utility Authority Meeting
Amanda Mons	New Jersey American Water	Utility Authority Meeting
Janet Thevenin	Rahway Valley Sewerage Authority (RVSA)	Utility Authority Meeting

SPECIAL DISTRICTS PROFILE

JERSEY CENTRAL POWER & LIGHT

Jersey Central Power & Light (JCP&L) is a company of FirstEnergy, which is comprised of 11 regulated distribution companies form one of the nation's largest investor-owned electric systems, based on serving 6 million customers in the Midwest and Mid-Atlantic regions. Stretching from the Ohio-Indiana border to the New Jersey shore, the companies operate a vast infrastructure of more than 269,000 miles of distribution lines and are dedicated to providing customers with safe, reliable and responsive service.

FirstEnergy's transmission operations include approximately 24,000 miles of lines and two regional transmission operation centers. The company's successful, 10-year Energizing the Future transmission investment initiative resulted in reliability improvements, operating flexibility, enhanced performance and system security while building a highly successful and valued transmission business that helped position FirstEnergy for success. As the needs of our customers evolve, critical investments to continue strengthening and modernizing the transmission system will continue through our Energize365 program, launched in 2024.

NEW JERSEY AMERICAN WATER

New Jersey American Water is the largest water service provider in the state, serving approximately 2.9 million people in more than 190 communities. It also provides water service to 31 additional communities through bulk purchase water agreements. More than 850 highly-skilled professionals including water quality specialists, distribution and field service personnel, plant operators, meter readers, and engineers, carry out the company's foremost priority of providing safe, reliable water and wastewater service to our customers.

The company's team of experts monitors, maintains, and upgrades its facilities to continue to operate efficiently and meet regulatory standards. This requires investing millions each year in our infrastructure, including treatment plants, tanks, pump stations, pipes, fire hydrants, and metering equipment. Statewide, the company invested more than $520 million in 2024 to improve the water treatment and pipeline systems.

RAHWAY VALLEY SEWERAGE AUTHORITY

The Rahway Valley Sewerage Authority (RVSA) shall be the best, most efficiently run sewerage authority, in full compliance with all regulations, in the State of New Jersey.

RVSA is an autonomous agency that owns and operates a trunk sewer system and a wastewater treatment facility in Rahway, New Jersey. The RVSA currently serves more than 250,000 residents and 3,500 industrial and commercial customers in 14 communities in central New Jersey.

The RVSA prides itself on being in the forefront of initiating programs designed to protect the environment. In 1991, the RVSA made history when it became the first of New Jersey's ocean-dumping Authorities to cease the disposal of sludge (the stabilized and concentrated organic material removed in the treatment of the wastewater) in the ocean and initiated a land-based beneficial reuse program for its sludge. Since that time, the RVSA's sludge has been used in agricultural applications, for the reclamation of strip mining sites, and as landfill cover material. The RVSA is also one of the few regional wastewater treatment plants that has a tertiary treatment process. This produces an extremely clean effluent which further protects the environment and enhances the quality of the river water that it discharges into.

UNION COUNTY UTILITIES AUTHORITY

The Union County Utilities Authority (the Authority) is a public body corporate and politic of the State, which was created by an ordinance of the Board of Chosen Freeholders of the County of Union (the “County”), adopted on June 5, 1986, as amended on December 11, 1986. The Authority has been designated by the Board of Chosen Freeholders of the County as the implementing agency for the Union County District Solid Waste Management Plan (the “Plan”) and is empowered to plan, acquire, construct, maintain and operate (or cause to be planned, acquired, constructed, maintained and operated) facilities for the processing, disposal and/or recycling of solid waste throughout the County in an environmentally sound manner.

The Plan includes a mass-burn solid waste disposal, resource recovery and electric generation facility (the “Facility”), located in at 1499 Routes 1 & 9 North, Rahway, New Jersey. The Facility, which is owned by the Authority, includes three mass-burn, waterwall boilers and a turbine-generator nominally rated at 45 megawatts. The Facility has a permitted processing capacity of 1,540 tons of solid waste per day, or approximately 562,000 tons per year. The Authority formerly managed the Facility as part of an integrated solid waste management system for the County. The Facility is currently leased to and operated by Covanta Union, Inc.

In accordance with the Plan, the Authority has the exclusive right to control and provide for the disposal of solid waste generated within the geographic boundaries of the County, including all non-recycled solid waste “Type 10” (municipal), “Type 13” (bulky waste), “Type 13C” (construction/demolition), “Type 23” (vegetative), “Type 25” (animal and food processing) and “Type 27” (dry industrial) (each as defined by the NJDEP). Due to the Authority’s considerable expertise as the implementing agency for the Plan, the Authority has been designated by the County, with the approval of the State, as the entity responsible for the inspection, investigation and enforcement of solid waste flow control directives for all of the above noted solid waste Types generated within the County.

Enforcement officers within the Authority’s Division of Solid Waste Enforcement conduct daily inspections and/or investigations of solid waste facilities, transporters and generators, and investigate complaints generated within the County regarding the collection and disposal of County-generated solid waste. The Authority routinely evaluates its enforcement efforts, assessing both existing and potential diversion of waste from the solid waste system. The Authority works with Covanta, adjacent counties’ enforcement agencies, and the NJDEP to further its efforts to focus on possible illegal solid waste diversion and to more effectively coordinate regional solid waste enforcement measures.

MITIGATION STRATEGY

New Mitigation Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status
22-01	HW Bypass Backflow Prevention	Installation of a tide gate on the headworks emergency bypass	Flood	Medium	RVSA	FEMA HMA	$175,000	1 Year	New
22-02	Portable Flood Protection	Purchase of temporary flood protection similar to PortaDam products	Flood	Medium	RVSA	FEMA HMA	$275,000	1 Year	New
22-03	Additional Temporary Pumping	Purchase of additional portable pumping for temporary bypass pumping	Flood	Medium	RVSA	FEMA HMA	$150,000	1 Year	New
22-04	Hardening of Exposed Sewer Piping	Protection of exposed sections of trunk sewer along rivers	Severe Storm	Medium	RVSA	DHS	$100,000	2 Year	New
22-05	Easement Maintenance	Clearing of hazards from trunk sewer easements and ensuring proper access	Severe Storm	Medium	RVSA	TBD	$75,000	1 Year	New
22-06	Electrical Hookups	Electrical tie in points for portable generators at critical facilities at the plant	Power Failure	Medium	RVSA	TBD	$250,000	3 Year	New
22-07	Perimeter Fence Upgrade	Repair and hardening of perimeter fencing around plant	Terrorism - Site Security	Medium	RVSA	DHS	$150,000	1 Year	New
22-08	Building Security and Access	Increased cameras and building access controls throughout the plant	Terrorism - Site Security	Medium	RVSA	DHS	$400,000	3 Year	New

23 – UNION COUNTY

The Project Team met with the County to review their 2021 mitigation strategy on March 26, 2025. This meeting included representatives from the Department of Public Safety, Economic Development Authority, Department of Public Works, Union County Office of Emergency Management, Union County Police Department, and Union County Office of Health Management.

Completed or Withdrawn Mitigation Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-01	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.	Flood	N/A	N/A	N/A	N/A	N/A	Withdrawn	This is conducted at the local, not County, level
23-02	Implement a Training for Using GIS Interface on Tablets in the Field.	Training for using GIS interface on tablets in the field.	All Hazards	N/A	N/A	N/A	N/A	N/A	Withdrawn	
23-03	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.	Flood, Power Failure, Storm Surge– Hurricane / Nor'easter /Tropical Storm, Hazardous Materials Release	N/A	N/A	N/A	N/A	N/A	Withdrawn	It was determined the Black Start Engine is not a feasible option.
23-04	Purchase and Install a Black Start Engine Near the Union	Purchase and install a black start engine near the UCUA incinerator for power grid	Flood, Power Failure, Storm Surge– Hurricane /	N/A	N/A	N/A	N/A	N/A	Withdrawn	It was determined the Black Start Engine is not a feasible option.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
	County Utilities Authority (UCUA) Incinerator for Power Grid Redundancy.	redundancy. One possible site for the engine is the nearby site of historic fill that would need to be removed for this project.	Nor'easter / Tropical Storm, Hazardous Materials Release							
23-05	Participate in Training and Workshops.	Participate in training and workshops.	All Hazards	High	Union County and municipal OEMs, NJOEM, New Jersey Forest Fire Service	County Budget- not FEMA Funded	$0.00	N/A	Withdrawn	Combined with Action 22-07, 22-08
23-06	Purchase Portable Generators for Use During Power Failure.	Purchase portable generators for use during power failure.	All Hazards	High	Union County Emergency Services	County Budget	TBD	2 years	Withdrawn	The County conducts quarterly and yearly generator testing, servicing and repair and/or replacement for various types of Emergency Generators, Controls, Transfer Switches and related equipment. This is done in every county building The County utilizes a vendor to conduct this work when it is beyond the capability or available time for in-house staff The contract is through the end of 2025 with the possibility of extension. The County reports it could use additional portable generators for traffic lights.
23-07	Install a Fiber Loop Throughout Each County Complex to Provide Enhanced Communication Between Government Facilities, Ensure Continuity of Operations During Power	Install a fiber loop throughout each county complex in Union County to provide enhanced communication between government facilities, ensure continuity of operations during power failure, and enhance security to	Power Failure, Cyber Attack	High	Union County Public Safety and Police	ARPA	$12M	1 - 5 years	Completed	The fiber ring was constructed to connect all Union County buildings and facilities. The project was funded with ARPA dollars ($12M).

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
	Failure, and Enhance Security to Prevent Against a Cyber Attack.	prevent against a cyber-attack.								

Ongoing and New Mitigation Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-08	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. 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).	All Hazards	High	Union County and municipal OEMs	County Budget	Staff Time	Ongoing	Ongoing	Health Department has ongoing outreach

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-09	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.	All Hazards	Medium	Union County Emergency Services	County Budget	Staff Time	Ongoing	Ongoing	Ongoing Coordination with the State
23-10	Conduct Yearly Workshops Related to FEMA Hazard Mitigation Grant Programs.	Conduct yearly workshops related to FEMA hazard mitigation grant programs. Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.	All Hazards	High	Union County Emergency Services	Existing State Assets, County Budget	Staff Time	Ongoing	Ongoing	The County has Quarterly OEM Coordinator Meetings, Health Family Disaster Preparedness
23-11	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 May 2025, New Jersey Municipal Land Use Law 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.	All Hazards	Medium	Union County Emergency Services, Rutgers University, New Jersey Geological Survey (NJGS), National Oceanic and Atmospheric Administration (NOAA) and United States Army Corp of Engineers (USACE)	County Budget	Staff Time	Ongoing	Ongoing	
23-12	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.	Flood	High	Union County Emergency Services	County Budget	TBD	Ongoing	Ongoing	The Cultural & Heritage building and Trinitas Hospital are historic areas that need flood studies; flooded during Ida.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-13	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.	Flood, Terrorism	Medium	Union County and municipal OEMs	County Budget	Staff Time	1 - 5 years	Ongoing	The County coordinates with the State on target hardening mitigation strategies
23-14	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.	Flood	High	Union County and municipal OEMs	County Budget	Staff Time	3 years	Ongoing	
23-15	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	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 cluster solutions and/or basin projects, as appropriate.	Flood	High	Union County and municipal OEMs	FEMA HMA, other Federal grants, Green Acres, other Open Space Funding	Staff Time	Ongoing	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
	Support their Efforts to Mitigate RL and SRL Properties and Offer Technical Support.									
23-16	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.	High Wind–Tornado, High Wind–Straight-Line Winds	Low	Union County Emergency Services, NJOEM, with cooperation of other agencies that own and/or operate the facilities; New Jersey	County Budget	Staff Time	1 year	Ongoing	
23-17	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.	Wildfire	High	Union County, New Jersey Forest Fire Service	County Budget, Potential FEMA grants to conduct studies as indicated	Staff Time	Ongoing	Ongoing	There is recent concern about critical infrastructure (County communications) at risk to wildfire; the County is coordinating with the NJ Forest Fire Service to clear debris near facilities.
23-18	Collect Data on Hazardous Material Sites; Integrate with Most Current	Maintain effective coordination and information sharing related to hazardous material sites with NJOEM and the Right to	Hazardous Materials Release	Medium	Union County, RTK Network, NJOEM.	County Budget	Staff Time	Ongoing	Ongoing	The State did an assessment with CERT.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
	Information About Risk Factors; and Perform a GIS Analysis and Mapping of Potential Areas of Impact.	Know (RTK) Network. Integrate data about hazardous materials with most current available information about other risk factors.								
23-19	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.	All Hazards	Medium	Union County Emergency Services	County Budget	Staff Time	3 years	Ongoing	Each nursing home has a response plan; the County follows up with the nursing homes annually on their plan.
23-20	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.	Dam Failure	High	Union County Engineering (Ricardo Matias, PE, CME, CFM), Union County Planning and Environmental Services (Daniel Bernier), NJDEP, NJOEM	FEMA HHPD Funding	$75,000.00	Ongoing	Ongoing	This action was moved to a high priority. This Dam is a Class I, high hazard potential dam. EAP is required by the State. Union County is the owner of this dam and updated this action for this plan update.
23-21	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,	Storm Surge–Hurricane / Nor'easter / Tropical Storm	Medium	UCOEM with cooperation from NJDEP and potentially USACE. Some potential for FEMA to contribute.	Projected Resources: Possibility of cooperation from state and federal agencies	Staff Time	2 years	Ongoing	Especially in Elizabeth and Linden

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
		and functions in identified surge zones.								
23-22	Identify and Map Erosion Hazard Zones Through Detailed Study.	Conduct detailed study to identify and map erosion hazard zones.	Erosion–Hurricane/Nor'easter/Coastal Storm	Medium	Union County and municipal OEMs	FEMA, NJDEP	Staff Time	4 years	Ongoing	This action was moved to a medium priority. This action needs to occur in County Parks and private properties along rivers.
23-23	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 lifelines.	All Hazards	High	Union County	County Budget	Staff Time	Ongoing	Ongoing	
23-24	Offer Technical Support to Help Municipalities Meet FEMA HMA Requirements and Provide Current Information on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties.	Continue working with the State, as well as local jurisdictions, to encourage local cooperation in making RL and SRL property mitigation a high priority.	Flood	High	Union County Emergency Services	County Budget	Staff Time	Ongoing	Ongoing	
23-25	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.	Flood	High	Union County Engineering	Existing Resources	Staff Time	2 years	Ongoing	The County speaks to municipal engineers on the benefits of CRS. The County would like to start a CRS Users Group.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-26	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.	Flood	High	Union County Economic Development and Planning Department	Existing resources and Federal grant funds	NA	Ongoing	Ongoing	The County reviews stormwater regulations from the municipalities to ensure conformity with requirements. Will revisit if the county updates comprehensive master plan update.
23-27	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.	All Hazards	Medium	Union County Emergency Services	County Budget	NA	Ongoing	Ongoing	The City of Elizabeth is now part of the Union County HMP. Additional regionalization of hazard mitigation planning opportunities still exists.
23-28	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.	All Hazards	Medium	Union County Emergency Services	County Budget	Staff Time	Ongoing	Ongoing	The County has a portal.
23-29	Integrate Hazard Mitigation Priorities into Transportation Planning and Other Capital Planning.	Integrate hazard mitigation priorities into transportation planning and other capital planning.	All Hazards	Medium	Union County Engineering, Economic Development, and Planning Departments	Existing County Resources	TBD	Ongoing	Ongoing	No update – will address in a new transportation plan update.
23-30	Inspect All Levees on County Property as Part of Dam Inspections.	Inspect all levees on county property as part of dam inspections.	Dam Failure	Medium	Union County Engineering	County Budget	TBD	5 + years	Ongoing	Engineering inspects all levees every two years.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-31	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.	All Hazards	Medium	Union County Emergency Services, Engineering	County Budget	TBD	1 year	Ongoing	No update.
23-32	Improve Options for Power Redundancy within Union County.	Improve options for power redundancy within Union County.	All Hazards	Medium	Union County Emergency Services, Engineering	County Budget	TBD	5 + years	Ongoing	The County conducted an EV study completed in 2023 which recommends areas for potential EV charging stations. Next steps would be implementation. There have been several applications with EV charging stations.
23-33	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.	All Hazards	Medium	Union County Emergency Services, Union County Department of Planning	Union County OEM	TBD	2 years	Ongoing	
23-34	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.	All Hazards	High	Union County Public Safety and Police	FEMA HMA	TBD	1 - 5 years	Ongoing	There is a 911 Center at the Union County Public Safety; one more is still needed.
23-35	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.	Power Failure, Wildfire, High Wind–Straight-Line Winds	High	Union County Public Safety and Police	Homeland Security grants	TBD	1 - 5 years	Ongoing	There is a risk of communications failure at the County Courthouse due to environmental issues (falcons).

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-36	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.	Flood, Storm Surge–Hurricane / Nor'easter / Tropical Storm	High	Union County Department of Planning	County Budget	Staff Time	1 - 5 years	Ongoing	The Study is complete but the recommendations have not been put into action yet. The County will reexamine in the transportation plan/ comprehensive plan within the near future
23-37	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 (pedestrian streets), flood risk to new transportation infrastructure, and improving paratransit.	All Hazards	Low	Union County Department of Planning and Engineering	County Budget, NJEIT, NJTIB	Staff Time	1 - 5 years	Ongoing	ADA upgrades are completed as part of intersection upgrades. This is part of the infrastructure updates. If the county updates the transportation plan or comprehensive plan, this would be assessed at that time.
23-38	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.	Terrorism, Civil Unrest	High	Union County Public Safety	Homeland Security grants	Staff Time	1 - 3 years	Ongoing	Part of the Urban Area Security Initiative. The County works with a Risk Mitigation Planner which performs ongoing services.
23-39	Digitize Municipal Zoning Maps to Assist the County with Understanding Potential New Development in	Digitize municipal zoning codes to create a build out analysis to forecast if new development is at risk of flooding.	All Hazards	Low	Union County GIS	County Budget	Staff Time	1 year	Ongoing	Zoning maps are digitized – the build out analysis still needs to occur.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
	Hazardous Areas.									
23-40	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).	All Hazards	Low	Union County Public Safety	County Budget	Staff Time	1 year	Ongoing	No update.
23-41	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.	Flood	High	City of Linden, Union County	FEMA HMA, NJDOT Transportation Trust Fund Grant	$12M (3.1M project total for culvert)	5 + years	Ongoing	The County received Congressional funds ($2.7M) for the culvert only.
23-42	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.	Flood	High	Township of Springfield, Union County	FEMA HMA	$100,000	5 + years	Ongoing	No update.
23-43	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).	Flood	High	Township of Cranford, Union County, USACE	FEMA HMA	$5M	5 + years	Ongoing	The County is coordinating with USACE on the Upper Basin Project where Riverside Dr. was regraded. Cranford Township is removing sediment.
23-44	Dredge Clark Reservoir.	Dredge Clark Reservoir.	Flood	Medium	Union County Engineering	County Budget	$36M	5 + years	Ongoing	Dredging improvements including the dewatering, removal, and disposal of dredge spoils from the Headwaters, West Lake, and Central Lake began in Fall 2025 and should be completed in 2027.
23-45	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.	Flood	High	Township of Union and Union County	FEMA HMA	$12M	5 + years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	2026 Update Notes
23-46	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.	Flood	High	Township of Clark and Union County	FEMA HMA	$4M	5 + years	Ongoing	DPW conducts stream cleaning
23-47	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.	All Hazards	Medium	Union County Public Safety	County Budget, Union County OEM, Federal grants, other state and local sources	$1M	2 - 4 years	Ongoing	Training for hazard mitigation designation. $1M from County's capital improvement funding
23-48	Conduct an Engineering Study on the Effects of Lowering Water Levels in Lakes Prior to Storms.		Flood	High	Union County Engineering				New 2026	

APPENDICES VOLUME II. OTHER PLAN MATERIALS

Appendix A. FEMA Plan Review Tool

Appendix B. Resolution Template

Appendix C. Community Rating System (CRS) Crosswalk

Appendix D. Annual Progress Report

Appendix E. Adopted Local Resolutions

Appendix F. Email Invites to Stakeholders

Appendix G. Capability Assessment Table

Local Mitigation Plan Review Tool

Cover Page

The Local Mitigation Plan Review Tool (PRT) 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 local governments, including special districts.

1. The Multi-Jurisdictional Summary Sheet is a worksheet that is used to document how each jurisdiction met the requirements of the plan elements (Planning Process; Risk Assessment; Mitigation Strategy; Plan Maintenance; Plan Update; and Plan Adoption).
2. The Plan Review Checklist summarizes FEMA's evaluation of whether the plan has addressed all requirements.

For greater clarification of the elements in the Plan Review Checklist, please see Section 4 of this guide. Definitions of the terms and phrases used in the PRT can be found in Appendix E of this guide.

Plan Information	
Jurisdiction(s)	Union County, NJ
Title of Plan	Multi-Jurisdictional Hazard Mitigation Plan 2026
New Plan or Update	New Plan
Single- or Multi-Jurisdiction	Multi-jurisdiction
Date of Plan	5/1/2026
Local Point of Contact	
Title	William Kane, Deputy OEM Coordinator
Agency	Union County Division of Emergency Services
Address	400 North Avenue East, Westfield, NJ 07090
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Additional Point of Contact	
Title	Elizabeth Stamler, Procurement Specialist
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Review Information	
State Review	
State Reviewer(s) and Title	Alyssa Meredith, Planner
State Review Date	5/11/2026
FEMA Review	
FEMA Reviewer(s) and Title	Nicholas Kahn, Emergency Management Specialist
Date Received in FEMA Region	5/20/2026
Plan Not Approved	Click or tap to enter a date.
Plan Approvable Pending Adoption	6/10/2026
Plan Approved	Click or tap to enter a date.

Multi-Jurisdictional Summary Sheet

In the boxes for each element, mark if the element is met (Y) or not met (N).

#	Jurisdiction Name	A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. HHPD Requirements
1	Berkeley Heights (Twp)	Y	Y	Y	Y	Y	N	N/A
2	Clark (Twp)	Y	Y	Y	Y	Y	N	N/A
3	Cranford (Twp)	Y	Y	Y	Y	Y	N	N/A
4	Elizabeth (C)	Y	Y	Y	Y	Y	N	N/A
5	Fanwood (B)	Y	Y	Y	Y	Y	N	N/A
6	Garwood (B)	Y	Y	Y	Y	Y	N	N/A
7	Hillside (Twp)	Y	Y	Y	Y	Y	N	N/A
8	Kenilworth (B)	Y	Y	Y	Y	Y	N	N/A
9	Linden (C)	Y	Y	Y	Y	Y	N	N/A
10	Mountainside (B)	Y	Y	Y	Y	Y	N	N/A
11	New Providence (B)	Y	Y	Y	Y	Y	N	Y
12	Plainfield (C)	Y	Y	Y	Y	Y	N	N/A
13	Rahway (C)	Y	Y	Y	Y	Y	N	N/A
14	Roselle (B)	Y	Y	Y	Y	Y	N	N/A
15	Roselle Park (B)	Y	Y	Y	Y	Y	N	N/A
16	Scotch Plains (Twp)	Y	Y	Y	Y	Y	N	Y
17	Springfield (Twp)	Y	Y	Y	Y	Y	N	N/A
18	Summit (C)	Y	Y	Y	Y	Y	N	N/A
19	Union (Twp)	Y	Y	Y	Y	Y	N	N/A
20	Westfield (T)	Y	Y	Y	Y	Y	N	N/A
21	Winfield (Twp)	Y	Y	Y	Y	Y	N	N/A
22	Union County	Y	Y	Y	Y	Y	N	Y
23	Rahway Valley Sewerage Authority	Y	Y	Y	Y	Y	N	N/A

Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. 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." FEMA completes the "required revisions" summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is "not met." Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process.

If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that.

Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))		
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved?	Section 4.0: Planning Process	Met
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process?	Section 4.3: Planning Process: Engagement Strategy Section 4.4: Planning Process: Summary of Participation Section 6.1: County Profile: Overview	Met

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))		
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Section 4.3: Planning Process: Engagement Strategy	Met
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))		
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	Section 4.5: Planning Process: Public Participation	Met
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	Section 5.3: Capability Assessment: Watershed Management Plans Section 5.6: Capability Assessment: Plan Integration	Met

ELEMENT A REQUIRED REVISIONS
Required Revision**:** Click or tap here to enter text.

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))		
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Section 7.0: Risk Assessment	Met
B1-b. Does the plan include information on the location of each identified hazard?	Sections 7.4 – 7.28: Location, Extent, and Magnitude subsections	Met
B1-c. Does the plan describe the extent for each identified hazard?	Sections 7.4 – 7.28: Location, Extent, and Magnitude subsections	Met
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Sections 7.4 – 7.28: Previous Occurrences and Losses subsections	Met
B1-e. Does the plan include the probability of future events for each identified hazard, including the type, location and range of anticipated intensities?	Sections 7.4 – 7.28: Probability of Future Occurrences subsections	Met
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	Jurisdictional Appendices: Hazard Identification sections	Met
B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))		
B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards?	Jurisdictional Appendices: Hazard Identification sections	Met

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Jurisdictional Appendices: Hazard Identification sections	Met
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Section 7.10.4: NFIP Insured Structures and Repetitive Loss Properties Jurisdictional Appendices: NFIP Statistics subsections	Met
ELEMENT B REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))		
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Section 5.4: Regional Capabilities Section 5.5: Union County Capabilities Section 5.6: Plan Integration Jurisdictional Appendices: Capability Assessment sections Appendix G: Capability Assessment Table	Met

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Section 5.6: Plan Integration Jurisdictional Appendices: Capability Assessment sections	Met
C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Section 7.10.4: NFIP Insured Structures and Repetitive Loss Properties Jurisdictional Appendices: NFIP Statistics subsections	Met
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Section 3.2: Hazard Mitigation Plan Goals and Objectives	Met
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 44 CFR § 201.6(c)(3)(ii))		
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Jurisdictional Appendices: New and Ongoing Actions tables	Met
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?	Jurisdictional Appendices: New and Ongoing Actions tables	Met

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Section 3.3: Evaluation and Prioritization of Mitigation Actions	Met
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Jurisdictional Appendices: New and Ongoing Actions tables	Met
ELEMENT C REQUIRED REVISIONS		
Required Revision**:** Click or tap here to enter text.		

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Section 9.4: Plan Maintenance: Public Participation	Met

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))		
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Section 9.1: Plan Maintenance: Process Summary Section 9.2: Plan Maintenance: Monitoring the Plan Appendix D: Annual Progress Report	Met
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Section 9.1: Plan Maintenance: Process Summary Section 9.2: Plan Maintenance: Monitoring the Plan Appendix D: Annual Progress Report	Met
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Section 9.3: Plan Maintenance: Updating the Plan	Met
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))		
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Section 5.6: Capability Assessment: Plan Integration	Met
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Jurisdictional Appendices: Capability Assessment sections Appendix G: Capability Assessment Table	Met

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	Section 5.6: Capability Assessment: Plan Integration	Met
ELEMENT D REQUIRED REVISIONS		
Required Revision**:** Click or tap here to enter text.		

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	Section 2.2: HMP Review, Evaluation, and Implementation: Changes in Development Jurisdictional Appendices: Community Overview sections	Met
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	Section 2.3: HMP Review, Evaluation, and Implementation: Changes in Priorities	Met

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Section 2.4: HMP Review, Evaluation, and Implementation: Progress in Local Mitigation Efforts Jurisdictional Appendices: Completed or Removed Actions tables	Met
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Section 5.6: Capability Assessment: Plan Integration	Met
ELEMENT E REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	N/A	Not Met
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	Section 8.0: Plan Adoption	Not Met

ELEMENT F REQUIRED REVISIONS
Required Revision: **F2:** Not Met. This element will be met when the plan is adopted by all participating jurisdictions. As there were no adoption resolutions submitted to FEMA before the plan review was finished, this plan will be deemed as "Approved Pending Adoption." The status will change to "Approved" once FEMA receives and approves the first adoption resolution, and subsequent communities will be eligible to apply for HMGP funding once their adoption resolutions get approved.

Element G: High Hazard Potential Dams (Optional)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Section 4.1: Planning Process: Description of the Planning Process (pg. 4.0-2) Section 7.4: Risk Assessment: Dam Failure (pg. 7.0.14)	Met
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Borough of New Providence Appendix Township of Scotch Plains Appendix Union County Appendix	Met
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Section 7.4: Risk Assessment: Dam Failure	Met
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Section 7.4: Risk Assessment: Dam Failure	Met

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Borough of New Providence Appendix Township of Scotch Plains Appendix Union County Appendix	Met
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Section 3.2: Mitigation Strategy: Hazard Mitigation Plan Goals and Objectives (pg. 3.0-3) Borough of New Providence Appendix Township of Scotch Plains Appendix Union County Appendix	Met
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Borough of New Providence Appendix Township of Scotch Plains Appendix Union County Appendix	Met
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Section 3.3: Mitigation Strategy: Evaluation and Prioritization of Mitigation Actions (pg. 3.0-3 – 4)	Met

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Borough of New Providence Appendix Township of Scotch Plains Appendix Union County Appendix	Met
HHPD Required Revisions		
Required Revision: Click or tap here to enter text.		

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process.

Strengths

- [insert comments]

Opportunities for Improvement

- It is disappointing to see that only 7 municipalities attended all 3 of the steering committee meetings and workshops, as well as seeing that Berkeley Heights, Cranford, and Kenilworth did not attend any of the meetings. The county should work with each municipality to ensure that they have at least one representative at each meeting, as participating throughout each step of the planning process will lead to more robust plan.
- While the transportation sector was represented in planning meetings by the Port Authority, it would have been helpful to invite other representatives from the rail transportation industry, including New Jersey Transit, to participate in the planning process. As Union County was heavily impacted by 2021's Hurricane Ida and the percentage of railroad property increased by 30% between 2016 and 2022, it could have been helpful to include these representatives to see if they had any concerns about the county's rail infrastructure that could have been addressed in mitigation actions.
- With the many developments that have been built or are planned to be built in the county, it could have been helpful to invite representatives from the private sector planning and/or real estate development sector to participate in the planning process.
- For the next HMP, it would be helpful to include the number of public meeting attendees and the number of public comments received for the plan. These figures would help show how effective the county's public outreach strategy was and could offer insights to how to improve or tweak it. In addition, either a summary of public comments that were received or an appendix of the comments could be helpful to show what issues are of concern to the community at large.

Element B. Risk Assessment

Strengths

- The hazard profiles in Section 7 are thorough but not overly complex and easily digestible while still meeting the CFR requirements. Well done.

Opportunities for Improvement

- It appears as if Union County only used a quantitative calculation to rank the risk factors for the hazards impacting the county, but in each of the Jurisdictional Appendices the hazards were presumably ranked qualitatively. While it would be interesting to see the same quantitative calculation used in each municipality, it may not be feasible. Conversely, the County may want to consider doing a qualitative review of the hazard rankings based on the quantitative calculations.

Regardless, the plan would be stronger if the method for ranking hazards was uniform throughout.

Element C. Mitigation Strategy

Strengths

- [insert comments]

Opportunities for Improvement

- While it is great to see that the 3 jurisdictions that currently are rescinded from CRS are looking to rejoin the program (Berkeley Heights, Plainfield, and Scotch Plains), it is concerning that only 2 jurisdictions included actions to join CRS: Summit and Union Township. Given the high number of RL/SRL properties in the county and increasing flood occurrences, the county should encourage more jurisdictions to join CRS to help both the community at large and its constituents.
- The county should encourage each jurisdiction to develop a disaster debris management plan. While most jurisdictions have debris management-related actions in their appendices, developing plans would help formalize processes and prepare relevant parties for when debris clearing operations need to take place.
- Several 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 Maintenance

Strengths

- [insert comments]

Opportunities for Improvement

- While Section 9 outlines the plan maintenance process well and Appendix D serves as a good tool for tracking the progress of mitigation actions and initiatives, aside from saying that the Union County Division of Emergency Services will host annual plan review meetings, there isn't any sort of timeline given for when plan monitoring, plan updating, and public participation steps will be taken. Adding timelines would be helpful for cementing the maintenance process for the 2031 HMP.
- The last sentence of the second paragraph on page 9.0-2 says, "Union County has opted to pursue a very similar strategy as the previous plan update for the next five years (2026–2031) although some changes have been made to account for new FEMA guidance released in 2023." It would be helpful to outline what FEMA guidance was being considered and how said guidance changed their plan maintenance process.

Element E. Plan Update

Strengths

- [insert comments]

Opportunities for Improvement

- Table 5.6-1 is an excellent addition to the plan, but it is concerning to see that not every municipality has identified an integration activity. The county OEM should work with each municipality to ensure that they have at least one integration activity listed in the next HMP to show that mitigation efforts are not being done in isolation from other initiatives.

Element G. HHPD Requirements (Optional)

Strengths

- Union County, the Borough of New Providence, and the Township of Scotch Plains have met the requirements for HHPD. The mitigation actions for their HHPDs are well developed, and the plan clearly explains how the county worked with the dam owners in the planning process.

Opportunities for Improvement

- For the HHPD located in Clark Township, Sections 4 and 7 of the Base Plan and the Township of Clark Appendix refer to the dam as Robinson's Branch Reservoir Dam (which is also the name used in USACE's National Inventory of Dams), but Action 23-20 in the Union County Appendix refers to the dam as the Clark Reservoir Dam. It would help to keep the nomenclature of the dam consistent throughout the plan to avoid confusion, or at least reference somewhere that the dam goes by two different names.
- The Township of Clark Appendix classifies dam failure as a low-ranked hazard despite it being home to an HHPD. They may wish to reconsider their ranking despite recent repairs because of damage that dam failure may cause to themselves and downstream communities, including one of the biggest municipalities in the county in Rahway, which lists dam failure as a medium-ranked hazard.

APPENDIX B. RESOLUTION TEMPLATE

[MUNICIPALITY NAME], NJ

RESOLUTION NO. _____

A RESOLUTION OF [MUNICIPALITY NAME] ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the [local governing body] recognizes the threat that natural hazards pose to people and property within [Municipality Name]; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the [local governing body] demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED BY THE [MUNICIPALITY NAME], NJ THAT:

Section 1. In accordance with (local rule for adopting resolutions), the [local governing body] adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to [Municipality Name] may require revisions to meet the plan approval requirements, changes occurring after adoption will not require [Municipality Name] to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of _____in favor and _____against, and _____abstaining, this _____day of _____, _____.

By: _____(print name) ATTEST: By: _____

_____(print name)

APPROVED AS TO FORM: By: _____(print name)

APPENDIX C. CRS CROSSWALK

Union County Municipality: _____

510 FLOODPLAIN MANAGEMENT PLANNING

512.a Floodplain Management Planning (FMP)

CRS Step	Note/ Section/ Page	Score	Total
1. Organize to prepare the plan. (15 Max)			
a. Involvement of Office Responsible for Community Planning (4)	Section 4.1, Page 4.0-1	4	15
b. Planning committee of department staff (9)	Section 4.3, Page 4.0-2	9	
c. Process formally created by the community's governing board (2)	Section 4.1, Page 4.0-1	2	
2. Involve the public. (120 Max)			
a. Planning process conducted through a planning committee (60)	Section 4.1, Page 4.0-1	60	120
b. Public meetings held at the beginning of the planning process (15)	Section 4.5, Page 4.0-14	15	
c. Public meeting held on draft plan (15)	Section 4.5, Page 4.0-14	15	
d. Other public information activities to encourage input (Up to 30)	Section 4.5, Page 4.0-11	30	
3. Coordinate with other agencies. (35 Max)			
a. Review of existing studies and plans (required) (5)	Section 5.3, Page 5.0-3 Section 5.6, Page 5.0-6	5	35
b. Coordinating with communities and other agencies (Up to 30)	Section 4.3, Page 4.0-2	30	
c. Plan includes assessment of areas likely to flood (5)	Section 7.10, Page 7.0-46	5	
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 7.10.2, Page 7.0-49	5	35
(2) A description of known flood hazard (5)	Section 7.10, Page 7.0-46	5	
(3) A discussion of past floods (5)	Section 7.10.3, Page 7.0-53	5	
b. Plan includes assessment of less frequent floods (10)	Section 7.10.2, Page 7.0-48	10	
c. Plan includes assessment of areas likely to flood (5)	Section 7.10, Page 7.0-48	5	
d. The plan describes other natural hazards (REQUIRED FOR DMA) (5)	Section 7.4 through Section 7.28	5	

Manual Version: **2021/ 2026 Update**

Municipality: _____

CRS Step	Note/Section/ Page	Score	Total
5. Assess the problem. (Max 52)			
a. Summary of each hazard identified in the hazard assessment and their community impact (REQUIRED) (2)	Section 7.4 through Section 7.28	2	52
b. If the plan includes a description of the impacts that the hazards identified in (25)	Section 7.4 through Section 7.28	5	
(1) 10 points, for life safety and public health	Section 7.4 through Section 7.28	5	
(2) 5 points, for critical facilities and infrastructure.	Section 7.4 through Section 7.28	5	
(3) 5 points, for the community's economy and major employers.	Section 7.4 through Section 7.28	5	
(4) 5 points, for the number and types of affected buildings	Section 7.10, Page 7.0-46	5	
d. Areas that provide natural floodplain functions (5)	Section 2,2, Page 2.0-2, Section 6.2, Page 6.0-4	5	
e. Development/redevelopment/Population Trends (7)	Section 7.10.6, Page 7.0-64	7	
f. Impact of future flooding conditions outlined in Step 4, item c (8)		8	
** RL Category: (Insert A, B or C) **Category C**			
6. Set goals. (required) (2)	Section 3.2, Page 3.0-2	2	2
7. Review possible activities. (Max 35)			
a. Preventive activities (5)	Depends on each local mitigation strategy		
b. Floodplain Management Regulatory/current & future conditions (5)	Depends on each local mitigation strategy		
c. Property protection activities (5)	Depends on each local mitigation strategy		
d. Natural resource protection activities (5)	Depends on each local mitigation strategy		
e. Emergency services activities (5)	Depends on each local mitigation strategy		
f. Structural projects (5)	Depends on each local mitigation strategy		
g. Public information activities (5)	Depends on each local mitigation strategy		

Manual Version: **2021/ 2026 Update**

Municipality: _____

CRS Step	Note/Section/Page	Score	Total
8. Draft an action plan. (Max 60)			
a. Actions must be prioritized (required)			
1. Recommendations for activities from two of the six categories (10)	Depends on each local mitigation strategy		
2. Recommendations for activities from three of the six categories (20)	Depends on each local mitigation strategy		
3. Recommendations for activities from four of the six categories (30)	Depends on each local mitigation strategy		
4. Recommendations for activities from five of the six categories (45)	Depends on each local mitigation strategy		
b. Post-disaster mitigation policies and procedures (10)	Depends on each local mitigation strategy		
c. Action items for mitigation of other hazards (5)	Depends on each local mitigation strategy		
9. Adopt the plan. (2)	Appendix E. Local Resolutions	2	2
10. Implement, evaluate and revise. (Max 26)			
a. Procedures to monitor and recommend revisions (required) (2)	Section 9.2, Page 9.0-2	2	26
b. Same planning committee or successor committee that qualifies under Section 511.a.2 (a) does the evaluation (24)	Section 9.2, Page 9.0-2	24	

Notes/Comments: Note if step 5c is missed, or if score is capped at 50 points, reference FEMA approval

APPENDIX D. ANNUAL PROGRESS REPORT

Reporting Period (Year):

Jurisdiction:

Contact Name/Title:

Agency/Department:

Contact Email:

Contact Phone:

1. Did any significant hazard events occur within the past year? Any changes to your hazards of concern?

2. Have there been any reports, studies, or documentation of change in potential hazards, that you are aware of?

3. Have there been any major changes in growth or development?

4. Are there any mitigation projects underway or completed? Any actions that no longer are applicable or needed? (Brief Project Description)

5. Are there any new projects you would like to add to your mitigation strategy?

6. Have you engaged the public on hazard mitigation? If so, how?

Annual Progress Log (For County Use)

Reporting Period	Jurisdiction	Contact	Recent Significant Hazard Events	Reports, Studies, or Documentation of Change	Changes in Growth or Development	Mitigation Actions Underway, Completed, or Withdrawn	New Mitigation Actions	Public Engagement

Reporting Period	Jurisdiction	Contact	Recent Significant Hazard Events	Reports, Studies, or Documentation of Change	Changes in Growth or Development	Mitigation Actions Underway, Completed, or Withdrawn	New Mitigation Actions	Public Engagement

Reporting Period	Jurisdiction	Contact	Recent Significant Hazard Events	Reports, Studies, or Documentation of Change	Changes in Growth or Development	Mitigation Actions Underway, Completed, or Withdrawn	New Mitigation Actions	Public Engagement

APPENDIX E. LOCAL RESOLUTIONS

UNION COUNTY Board of County Commissioners

RESOLUTION NUMBER: 2026-499
7/30/2026
Commissioner James E. Baker Jr.

WHEREAS, the Union County Board of County Commissioners recognizes the threat that natural hazards pose to people and property within the County of Union; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in Union County from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Union County Board of County Commissioners demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026:Now, Therefore, Be it Resolved by the Union County Board of County Commissioners to adopt the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 and that it authorizes the County Manager to take any actions necessary in furtherance of same; and

BE IT FURTHER RESOLVED, that while content related to Union County may require revisions to meet the plan approval requirements, changes occurring after

No Sufficiency of Funds Required	

Approved as to Form:		
Certifying as an Original Resolution:		
Certified as a True Copy:		

Vote Record - RES-2026-499

		Yes/Aye	No/Nay	Abstain	Absent
X Adopted	James E. Baker, Jr.	✓			
___ Adopted as Amended	Michèle S. Delisfort	✓			
___ Defeated	Lourdes M. Leon S	✓			
___ Tabled	Alexander Mirabella				✓
___ Withdrawn	Stanley J. Neron	✓			
	Kimberly Palmieri-Mouded	✓			
	Joseph Signorello III	✓			
	Rebecca L. Williams M	✓			
	Joseph C. Bodek	✓			

adoption will not require Union County to re-adopt any further iterations of the plan but any subsequent plan updates following the approval period for this plan will require separate adoption resolutions; and

BE IT FURTHER RESOLVED that the County Manager is hereby authorized to execute any documents necessary, upon approval by the County Counsel's Office, for the aforesaid plan.

No. 2026- 296

TOWNSHIP OF BERKELEY HEIGHTS
UNION COUNTY, NEW JERSEY

RESOLUTION

A RESOLUTION OF THE TOWNSHIP OF BERKELEY HEIGHTS ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Governing Body of the Township of Berkeley Heights recognizes the threat that natural hazards pose to people and property within Berkeley Heights; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in Berkeley Heights from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Township Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW, THEREFORE, BE IT RESOLVED by the Township of Berkeley Heights, County of Union, State of New Jersey that:

Section 1. The Township Council of the Township of Berkeley Heights hereby adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Township of Berkeley Heights may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Township of Berkeley Heights to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Approved this 15th day of September, 2026.

ATTEST:

Angela Lazzari

Angela Lazzari, RMC
Township Clerk

ROLL CALL	Aye	Nay	Abstain	Absent
FOSTER	✓			
ILLIS	✓			
MACHADO	✓			
MEDEIROS	✓			
MORAN	✓			
POAGE	✓			
TIE:				
MAYOR DEVANNEY				

TOWNSHIP OF CLARK
Resolution 26-169
June 25, 2026

A RESOLUTION OF THE TOWNSHIP OF CLARK ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the Governing Body recognizes the threat that natural hazards pose to people and property within Township of Clark; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the Governing Body demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW THEREFORE, BE IT RESOLVED BY THE TOWNSHIP OF CLARK, COUNTY OF UNION, STATE OF NEW JERSEY THAT:

Section 1. In accordance with (local rule for adopting resolutions), the Governing Body adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Township of Clark may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Township of Clark to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ATTEST:

NICOLE CASTELLUCCI
Acting Township Clerk

APPROVED:

WILLIAM F. SMITH
Council President

Res26/169 6-25 Hazard Mitigation Plan

			Motion	Second	Aye	Nay	Abstain	Absent	
		Hoff			✓				
		Hund			✓				
✓ Adopted		Mazzarella						✓	
Adopted as Amended		Minniti		✓	✓				
Defeated		O'Connor			✓				
Tabled		Toal	✓		✓				
Withdrawn		Smith			✓				
		Entire Council							
		TOTAL			6				

State of New Jersey)
County of Union) ss.

I, Nicole Castellucci, Township Clerk of the Township of Clark, County of Union, State of New Jersey, DO HEREBY certify that the foregoing is a true and correct copy of Resolution 26-169 as approved at a Special Meeting of the Township Council held on June 25, 2026.

Nicole Castellucci, Acting Township Clerk
Date: June 25, 2026

TOWNSHIP OF CRANFORD
CRANFORD, NEW JERSEY

RESOLUTION NO. 2026-252

WHEREAS, the Township of Cranford recognizes the threat that natural hazards pose to people and property within Cranford, New Jersey; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, Chapter 313 approved January 16th, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 identifies current and future national hazard risks, assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long-term risk to people and property in Cranford from the impacts of future natural hazards and disasters; and

WHEREAS, the Township of Cranford, Township Engineer, Township Emergency Management Coordinator, and Deputy Emergency Management Coordinator(s) have participated in the development of the portion of the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 that relates to the Township of Cranford with the County of Union; and

WHEREAS, adoption by the Township of Cranford demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026; and

WHEREAS, Emergency Operations Plans and the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 are exempt from public disclosure according to NJ Executive Order 21 (McGreevy, 2002), and NJ Government Records Council Final Decision 2005-193 (GRC FAD, February 17, 2006) and accordingly, the plan may not be released to members of the public according to a records request, nor should it be posted in a publicly accessible location or medium; and

WHEREAS, the Custodian of Record for the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 is the County of Union.

NOW, THEREFORE, BE IT RESOLVED, by the Township Committee of the Township of Cranford, that the Township of Cranford hereby adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

BE IT FURTHER RESOLVED, that a copy of this Resolution shall be provided to the County of Union Office of Emergency Management, and the Township Clerk may retain a copy of the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

Certified to be a true copy of a resolution adopted by the Township Committee of the Township of Cranford at a meeting held June 22, 2026.

Patricia Donahue, RMC
Township Clerk

Dated: June 22, 2026

BY CITY COUNCIL AS A WHOLE:

A RESOLUTION OF CITY OF ELIZABETH ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the City Council of the City of Elizabeth recognizes the threat that natural hazards pose to people and property within City of Elizabeth; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in City of Elizabeth from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the City Council of the City of Elizabeth demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF ELIZABETH, NJ THAT:

Section 1. The City Council of the City of Elizabeth adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the City of Elizabeth may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Elizabeth to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of 8 in favor and 0 against, and 0 abstaining, this 23rd day of JUNE. (1 absence)

By: Yolanda M. Roberts (print name)

ATTEST: By: Grace Baqueira (print name)

ADOPTED BY CITY COUNCIL OF ELIZABETH, NJ AT MEETING

JUN 23 2026

YOLANDA M. ROBERTS
MUNICIPAL CLERK

Mayor ✓	Police Dir. ✓	Personnel	Bd Adjus
Bus. Admin ✓	Pub Works ✓	Judge	Plan Bd.
City Atty ✓	Recreation Dir.	Assessor	Fin. Off.
Finance Dir.	Treasurer	Engineer ✓	Plann & Comm. ✓
Fire Dir. ✓	Auditor	Bd. Educ.	Traffic
H & HS ✓	Purchasing ✓	EHIP	Central Lic.

Others Pedro Pons

City 44448

BOROUGH OF FANWOOD

UNION COUNTY, NEW JERSEY

RESOLUTION: 2026-06-149	**Date of Adoption**: June 15, 2026

A RESOLUTION OF THE BOROUGH OF FANWOOD ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the Mayor and Council recognizes the threat that natural hazards pose to people and property within the Borough of Fanwood; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the Borough of Fanwood from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the Borough of Fanwood demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED BY THE BOROUGH OF FANWOOD, NJ THAT:

Section 1. In accordance with (local rule for adopting resolutions), the Borough of Fanwood adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Borough of Fanwood may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Borough of Fanwood to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Certified to be a true copy of a Resolution adopted by the Governing Body of the Borough of Fanwood at the duly held Meeting on the 15th day of June, 2026. Courtney Agnello **Courtney Agnello, Borough Clerk**	**MOTION:**	Banks
	SECOND:	Mitchell
	YES:	Banks, Carter, McElroy Barker, Mitchell, Walsh
	NO:	None
	ABSTAIN:	None
	ABSENT:	Berry

BOROUGH OF GARWOOD

UNION COUNTY, NEW JERSEY
MUNICIPAL BUILDING
403 SOUTH AVENUE
GARWOOD, NEW JERSEY 07027

RESOLUTION NO. 26-128

A RESOLUTION OF THE BOROUGH OF GARWOOD ADOPTING THE UNION COUNTY MULTI JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Borough Council of the Borough of Garwood recognizes the threat that natural hazards pose to people and property within the Borough of Garwood, and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024, and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Borough Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026; and

NOW THEREFORE, BE IT RESOLVED BY THE BOROUGH OF GARWOOD, NEW JERSEY THAT:

The Borough Council of the Borough of Garwood hereby adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to Borough of Garwood may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Borough of Garwood to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

[Recorded Vote of Council and Clerk Certification on following page]

RECORDED VOTE OF COUNCIL						
Council Members	***Motion***	***Second***	***Aye***	***Nay***	***Abstain***	***Absent***
K. Boto			✓			
S. Bianco			✓			
K. Annarelli		***S***	✓			
H. Sureka						***AB***
C. Padusniak						***AB***
C. Nolde	***M***		✓			
✓- Indicates Vote	***NV: Not Voting/Abstain***		***AB: Absent***	***M: Motion***	***S: Seconded***	

CLERK CERTIFICATION

I, Nicole M. Kotiga, Borough Clerk of the Borough of Garwood, do hereby certify the foregoing to be a true copy of a Resolution adopted by the Borough Council of the Borough of Garwood at a duly convened meeting held on Thursday, June 25, 2026.

NICOLE M. KOTIGA
Borough Clerk

TOWNSHIP OF HILLSIDE
RESOLUTION R-26-135

RESOLUTION OF THE TOWNSHIP OF HILLSIDE ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Township Council recognizes the threat that natural hazards pose to people and property within Township of Hillside; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the **Robert T. Stafford Disaster Relief and Emergency Assistance Act**, as amended; the **National Flood Insurance Act of 1968**, as amended; and the **National Dam Safety Program Act**, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Township Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW THEREFORE, BE IT RESOLVED by the Township Council of the Township of Hillside, County of Union, State of New Jersey that:

Section 1. In accordance with (local rule for adopting resolutions), the Township Council adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to Township of Hillside may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Township of Hillside to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Dr. Angela R. Garretson, Council President

ATTEST:
I, Rayna E. Harris, Township Clerk of the Township of Hillside, County of Union, State of New Jersey, do hereby certify that this is a true copy of a resolution adopted by the Township Council at a meeting held on July 14, 2026.

Rayna E. Harris, Township Clerk

MOTION	SECOND	NAME	YEAS	NAYS	ABSTAIN	ABSENT	EXCUSED
		Bonanno	X				
X		Cook	X				
		DaSilva	X				
		Joyner	X				
	X	Lofton	X				
		Feuerstein, VP					X
		Garretson, Pres.	X				

No. 26-193

RESOLUTION
KENILWORTH, NJ

ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the Borough of Kenilworth recognizes the threat that natural hazards pose to people and property within Kenilworth; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the governing body of the Borough of Kenilworth demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED BY THE BOROUGH OF KENLWOPRTH, NJ THAT:

Section 1. In accordance with Section 5-16 of the Code of the Borough of Kenilworth and applicable New Jersey law, the governing body of the Borough of Kenilworth hereby adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Borough of Kenilworth may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Borough of Kenilworth to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

	MOVED	SECONDED	AYES	NAYS	ABSTAIN	ABSENT
Councilman Patrick Boyle			x			
Councilman Joseph Finistrella	x		x			
Councilwoman Toni Giordano Picerno			x			
Councilman William Mauro		x	x			
Councilman Douglas Piper						x
Councilman Savino Scorese			x			
Mayor Linda Karlovitch						
ON CONSENT AGENDA	Yes _x		No _			

I hereby certify that the above Resolution was adopted by the Borough Council of the Borough of Kenilworth at a Meeting held on August 19, 2026.

Laura Reinertsen, Borough Clerk

RESOLUTION: 2026-317

A RESOLUTION OF THE CITY OF LINDEN ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, certain the City of Linden recognizes the threat that natural hazards pose to people and property within the City of Linden; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the City of Linden from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the City of Linden demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF LINDEN, STATE OF NEW JERSEY THAT:

Section 1. In accordance with local rule for adopting resolutions, the City of Linden adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While the content related to the City of Linden may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Linden to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate resolutions.

PASSED: July 21, 2026

President of Council

APPROVED: July 22, 2026

Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

RESOLUTION CERTIFICATION BOX

	MOVED	SECONDED	AYES	NAYS	ABSENT	ABSTAIN
Councilman Rene Dierkes					✓	
Councilman Steven Matejek			✓			
Councilwoman Donna Pacifico		✓	✓			
Councilman Donald Rinaldo	✓		✓			
Councilman Alex Van Deusen			✓			
Councilwoman Valerie Wass			✓			
Mayor Paul Mirabelli						

I hereby certify that the above Resolution was adopted by the Borough Council of the Borough of Mountainside at a Meeting held on July 21, 2026.

Martha Lopez, Borough Clerk

RESOLUTION 95-2026

A RESOLUTION OF BOROUGH OF MOUNTAINSIDE ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Mayor and Council recognizes the threat that natural hazards pose to people and property within the Borough of Mountainside; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in local government from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the Mayor and Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED, by the Borough of Mountainside, NJ that:

Section 1. In accordance with local rule for adopting resolutions, the Mayor and Council adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Borough of Mountainside may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Borough of Mountainside to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

RESOLUTION
Of the
BOROUGH OF NEW PROVIDENCE
Resolution No. 2026-237

Council Meeting Date: 06-23-2026 Date Adopted: 06-23-2026

TITLE: A RESOLUTION OF THE BOROUGH OF NEW PROVIDENCE ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Councilperson McKnight submitted the following resolution, which was duly seconded by Councilperson Cumiskey.

WHEREAS, The New Providence Borough Council recognizes the threat that natural hazards pose to people and property within The Borough of New Providence; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the Borough from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the New Providence Borough Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED, by the Mayor and Council of the Borough of New Providence, County of Union, State of NJ, that they hereby adopt the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to Borough of Nw Providence may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Borough of New Providence to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

APPROVED, this 23rd day of June, 2026.

RECORD OF VOTE

	AYE	NAY	ABSENT	NOT VOTING
CUMISKEY	X			
DOLAN	X			
GARDNER	X			
GEOFFROY	X			
LERNER	X			
MCKNIGHT	X			
MORGAN			TO BREAK COUNCIL TIE VOTE	

I hereby certify that the above resolution was adopted at a meeting of the Borough Council held on the 23rd day of June, 2026.

Denise Brinkofski, Borough Clerk

Borough Of New Providence
County Of Union
State Of New Jersey

Allen Morgan, Mayor

CITY OF PLAINFIELD

R 261-26

A RESOLUTION OF THE CITY OF PLAINFIELD, NJ ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2026

WHEREAS, the City Council recognizes the threat that natural hazards pose to people and property within the City of Plainfield, New Jersey; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, Chapter 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future national hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the City of Plainfield from the impacts of future natural hazards and disasters; and

WHEREAS, Union County Emergency Services has advised that the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, has been approved by FEMA as "Approvable Pending Adoption (APA)"; and

WHEREAS, adoption of the Union County Multi-Jurisdictional Hazardous Mitigation Plan 2026, will ensure the City of Plainfield remains eligible for the Hazard Mitigation Assistance and FEMA Grant funding following severe weather events, flooding, and other disasters; and

WHEREAS, adoption by the City Council demonstrates its commitment to Hazard Mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026; and

NOW THEREFOR BE IT RESOLVED BY THE City Council of the City of Plainfield, County of Union, State of New Jersey, that:

Section 1. In accordance with (local rule for adopting resolutions), the City Council adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the City of Plainfield may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Plainfield to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED BY THE MUNICIPAL COUNCIL **July 13, 2026**

Abubakar Jalloh, R.M.C.
Municipal Clerk

CLERK'S CERTIFICATION

I, Abubakar Jalloh, City Clerk of the City of Plainfield do hereby certify that the foregoing is a true copy of a resolution duly adopted by the Plainfield City Council.

Abubakar Jalloh, R.M.C.
Municipal Clerk

✓ Vote Record - Resolution R 261-26

- ☑ Adopted
- ☐ Adopted as Amended
- ☐ Defeated
- ☐ Tabled
- ☐ Withdrawn
- ☐ Consensus

		Yes/Aye	No/Nay	Abstain	Absent
Richard Wyatt	Voter	☑	☐	☐	☐
Charles McRae	Voter	☑	☐	☐	☐
Steve Hockaday	Seconder	☑	☐	☐	☐
Terri Briggs Jones	Voter	☑	☐	☐	☐
Robert Graham	Mover	☑	☐	☐	☐
Julienne Cherry	Voter	☑	☐	☐	☐
Darcella Sessomes	Voter	☑	☐	☐	☐

RESOLUTION
CITY OF RAHWAY, NEW JERSEY

No. AR-158-26 **Date of Adoption: July 6, 2026**

A 2026 RESOLUTION OF THE CITY RAHWAY ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the City of Rahway recognizes the threat that natural hazards pose to people and property within City of Rahway; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, a copy of which is on file in the office of the Municipal Clerk, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the City of Rahway from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the City of Rahway demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED by the Municipal Council of the City of Rahway, County of Union, State of New Jersey that:

Section 1. The City of Rahway adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the City of Rahway may require revisions to meet the plan's approval requirements, changes occurring after adoption will not require the City of Rahway to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Certified to be a true copy of a Resolution adopted by the Municipal Council of the City of Rahway, County of Union, State Of New Jersey at the duly held meeting on July 6, 2026

Heather Capone

Heather Capone, RMC
City Clerk

CONSENT AGENDA
MOTION: Newbury **SECOND: Eastman**

YES: Brown, Eastman, Gibilisco, Mojica, Montesdeoca, Newbury, Timmons, Brooks
NO: None
ABSTAIN: None
ABSENT: Miles

RESOLUTION #26-49

WHEREAS, the Rahway Valley Sewerage Authority ("Authority") recognizes the threat that natural hazards pose to people and property within the Authority's service area; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313, approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 identifies current and future natural hazard risks, assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in Union County from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Authority demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW, THEREFORE, BE IT RESOLVED that the Rahway Valley Sewerage Authority hereby adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

BE IT FURTHER RESOLVED that while content related to the Authority may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Authority to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Offered this 17th day of September, 2026.

Karen Musialowicz, Secretary-Treasurer

Chairman

I hereby certify the foregoing to be a true resolution adopted by the Commissioners of the Rahway Valley Sewerage Authority at its meeting held on September 17, 2026.

Board Secretary

BOROUGH OF ROSELLE

RESOLUTION NUMBER 2026-255

A RESOLUTION OF THE BOROUGH OF ROSELLE ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the Mayor and Council of the Borough of Roselle in the County of Union, State of New Jersey recognizes the threat that natural hazards pose to people and property within the Borough of Roselle; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the Mayor and Council of the Borough of Roselle demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW, THEREFORE, BE IT RESOLVED, by the Borough Council of the Borough of Roselle in the County of Union, State of New Jersey that:

Section 1. In accordance with (local rule for adopting resolutions), the Mayor and Council of the Borough of Roselle adopt the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Borough of Roselle may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Borough of Roselle to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

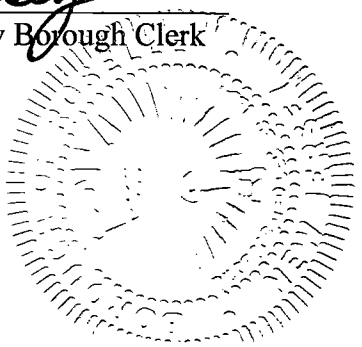
I, Lydia Massey, Deputy Borough Clerk of the Borough of Roselle, in the County of Union, State of New Jersey, do hereby certify that the foregoing is a true and correct copy of a resolution

adopted by the Borough Council of the Borough of Roselle, County of Union, State of New Jersey, at a Workshop Meeting of said Council held July 8, 2026.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Borough of Roselle in the County of Union and State of New Jersey, this 8TH day of July, 2026.

Lydia Massey

Lydia Massey, Deputy Borough Clerk



RESOLUTION NO. 146-26

ADOPTING THE UNION COUNTY MULTI-JURISTRIUCIONAL HAZARD MITIGATION PLAN

WHEREAS, the Borough of Roselle Park recognizes the threat that natural hazards pose to people and property within Roselle Park; and,

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as "Union County Multi-Jurisdictional Hazard Mitigation Plan 2026," in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, the National Flood Insurance Act of 1968, as amended, and the National Dam Safety Program Act, as amended, and New Jersey P.L. 2023, c. 313 as approved January 16, 2024; and,

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and,

WHEREAS, adoption by the Mayor and Council of the Borough of Roselle Park demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW, THEREFORE, BE IT RESOLVED that the Mayor and Council of the Borough of Roselle Park, County of Union, State of New Jersey adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026; and,

BE IT FURTHER RESOLVED that while content related to the Borough of Roselle Park may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Roselle Park to re-adopt any further iterations of the plan; however, subsequent plan updates following the approval period for this plan will require separate resolutions.

ADOPTED: June 18, 2026

I hereby certify that the foregoing Resolution was acted upon by the governing body on June 18, 2026 with the below captioned results on a motion to adopt.

Andrew J. Casais, RMC
Borough Clerk

COUNCIL	INTRODUCED	SECONDED	AYE	NAY	ABSTAIN	ABSENT
SIGNORELLO (Mayor)						
PETROSKY			✓			
JOHNSON						✓
ROBAINA	✓		✓			
LYONS		✓	✓			
PATEL			✓			
CASALINS						✓
ON CONSENT AGENDA	✓ YES		___NO			

TOWNSHIP OF SCOTCH PLAINS

RESOLUTION NO. 2026-194

RESOLUTION ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the Township of Scotch Plains recognizes the threat that natural hazards pose to people and property within Scotch Plains and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the Township of Scotch Plains demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED by the Township of Scotch Plains County of Union State of New Jersey, NJ as follows:

Section 1. The Township of Scotch Plains adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to Scotch Plains may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Scotch Plains to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Dated: August 18, 2026

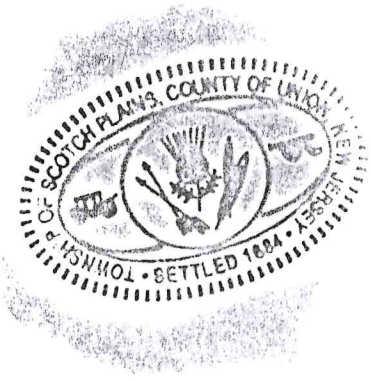
RECORD OF VOTE

COUNCILMEMBER	YES	NO	NV	AB	COUNCILMEMBER	YES	NO	NV	AB
ADAMS	X				ZIMMERMAN				X
STAMLER	X				MAYOR LOSARDO				X
WHITE				X	COMMENT				
MOTION	ADAMS				SECOND	ZIMMERMAN			
X- INDICATES VOTE AB- ABSENT NV-NOT VOTING									

Certified copy of a resolution adopted at a regular meeting of the Township Council of the Township of Scotch Plains, Union County, New Jersey on

AUGUST 18, 2026

Bozena Lacina, RMC
Municipal Clerk



Explanation: This resolution of the Township Committee, Township of Springfield adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan.

TOWNSHIP OF SPRINGFIELD
RESOLUTION NO. 2026-191

WHEREAS the Township of Springfield recognizes the threat that natural hazards pose to people and property within Township of Springfield; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 effective January 16, 2024 (N.J.S.A. App.A:9-43.7a); and

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property, including within the Township of Springfield, from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the Township of Springfield demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, a draft of which can be found at https://ucnj.org/wp-content/uploads/2026/02/Draft-HMP-2026.pdf.

NOW, THEREFORE, BE IT RESOLVED by the Township Committee of the Township of Springfield, County of Union, State of New Jersey as follows:

1. The Township Committee hereby adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

2. The Township is aware that, (a) while content related to the Township of Springfield may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Township Committee to re-adopt any further iterations of the plan; and (b) subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

3. This Resolution shall take effect immediately.

TOWNSHIP OF SPRINGFIELD

By: _____
Harris Laufer, Mayor

Adopted:
June 23, 2026
I hereby certify that this is true and correct copy.

Linda M. Donnelly, RMC
Township Clerk

	Motion	Second	Aye	Nay	Abstain	Absent
Mayor Harris Laufer			✓			
Deputy Mayor Alexander Keiser	✓		✓			
Committeeman Christopher Capodice						✓
Committeeman Richard Huber						✓
Committeeman Chris Weber		✓	✓			

42119

ADOPT UNION COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN

July 28, 2026

WHEREAS the City recognizes the threat that natural hazards pose to people and property within City of Summit; and

WHEREAS the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the City from the impacts of future natural hazards and disasters; and

WHEREAS adoption by the City demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

NOW THEREFORE, BE IT RESOLVED BY THE COMMON COUNCIL OF THE CITY OF SUMMIT, COUNTY OF UNION, NEW JERSEY:

That it does hereby adopt the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026.

FURTHER RESOLVED, that while content related to the City may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Dated: July 28, 2026

I, Rosalia M. Licatese, City Clerk of the City of Summit, do hereby certify that the foregoing resolution was duly adopted by the Common Council of said City at a regular meeting held on Tuesday evening, July 28, 2026.

City Clerk

RESOLUTION NO. 2026-187
TOWNSHIP MEETING: June 23, 2026

RESOLUTION

ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Township of Union recognizes the threat that natural hazards pose to people and property within the Township of Union; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including Robert Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; New Jersey P.L. 2023, Chapter 313 approved January 16, 2024.

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in local government from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Township of Union demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED BY THE TOWNSHIP OF UNION, NJ THAT:

Section 1. In Accordance with (local rule for adopting resolutions) the Township of Union adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Township of Union may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Township of Union to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

I, Eileen Birch, Clerk of the Township of Union, in the County of Union, do hereby certify that the above is a true copy of Resolution No. 2026-187, passed at a regular meeting of the Township Committee of said Township held on the 23rd day of June, 2026.

In Witness Whereof, I have hereunto set my hand and seal of the Township of Union this 24th day of June, 2026.

Eileen Birch, Township Clerk

Approved as to form by:
Daniel Antonelli, Township Attorney

Printed: 06/24/26 at 12:33 PM

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO. 166-2026

PUBLIC SAFETY, TRANSPORTATION & PARKING COMMITTEE **JUNE 23, 2026**

WHEREAS, the Mayor and Town Council of the Town of Westfield recognize the threat that natural hazards pose to people and property within the Town of Westfield; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024; and

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026 identifies current and future natural hazard risks, assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in the Town of Westfield from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Town of Westfield demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW, THEREFORE, BE IT RESOLVED, the Town of Westfield does hereby adopt the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Town of Westfield may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Westfield to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

****

I hereby certify that the within Resolution is a true and exact copy of the Resolution adopted by the Westfield Town Council at their meeting on June 23, 2026

M. Lawshe

_____

Maureen Lawshe, RMC
Town Clerk

TOWNSHIP OF WINFIELD – RESOLUTION 26-41
COUNTY OF UNION, STATE OF NEW JERSEY
ADOPTING THE UNION COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Winfield Township Committee recognizes the threat that natural hazards pose to people and property within the Township of Winfield; and

WHEREAS, the County of Union has prepared a multi-hazard mitigation plan, hereby known as Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, in accordance with federal and state laws, including the ***Robert T. Stafford Disaster Relief and Emergency Assistance Act,*** as amended; the ***National Flood Insurance Act of 1968,*** as amended; and the ***National Dam Safety Program Act,*** as amended; and New Jersey P.L. 2023, CHAPTER 313 approved January 16, 2024.

WHEREAS, the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026, identifies current and future natural hazard risks, and assesses the vulnerability of facilities, infrastructure, and populations, and defines mitigation goals and actions to reduce or eliminate long term risk to people and property in (local government) from the impacts of future natural hazards and disasters; and

WHEREAS, adoption by the Township Committee of the Township of Winfield demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026;

NOW THEREFORE, BE IT RESOLVED, by the Township of Winfield:

1. In accordance with (local rule for adopting resolutions), the Township Committee of the Township of Winfield adopts the Union County Multi-Jurisdictional Hazard Mitigation Plan 2026. While content related to the Township of Winfield may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Winfield Township to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Dated: August 17, 2026

	MOVED	SECONDED	AYES	NAYS	ABSENT	ABSTAIN
MAYOR ADAM D. KOOMER			✔			
COMM. JOSEPH P. BYRNE	✔		✔			
COMM. ROBERT A. CARSEY		✔	✔			

I hereby certify that the above Resolution was adopted by the Township Committee of the Township of Winfield at a meeting held on August 17, 2026

Melanie Slowik, Twp. Clerk

APPENDIX F. EMAIL INVITATIONS TO STAKEHOLDERS

From:	Dremluk, Brittany
To:	George.Vessels@bridgewayrehab.org; Mconstantin@communityhope-nj.org; Qharper@theelizabethcoalition.org; rgrady@familypromise.org; tMcCoy@tgfymca.org; lindefoodpantry@yahoo.com; claudia.lengerke@use.salvationarmy.org; lindefoodpantry@yahoo.com; Luis.Ramirez@ucnj.org; aweathers@cfbnj.org; trodgriguez@ccannj.org; ssarkar@proceedinc.com; Alison.Millan@rescue.org; Levibarnes@hotmail.com; rclsecretary@reformedchurch.comcastbiz.net; cicdirector@yahoo.com; egranovsky@njrrentry.org; Alira@lsnj.org; bbernard@uloucnj.org; marion.grogan@rwjbh.org; kmoriak@mountainside-nj.com; info@JFSCentralNJ.org; spfministerum@gmail.com; walter.droz@use.salvationarmy.org; capcfacilities@crescentonline.org; cfamilycare@gmail.com; alwcmail@gmail.com; info@arcunion.org; tcrane@fspymca.org; mgoldstein@jccnj.org; luke.barney@use.salvationarmy.org; john@groundworkelizabeth.org; info@JFSCentralNJ.org; philip.solomon@rwjbh.org; michelle@futurecityinc.org; office.stannegarwood@gmail.com; jbruno@cfbnj.org; vluna@cspnj.org; jschlossberg@mhanj.org; help@bridgesoutreach.org; esantiago@proceedinc.com; westfieldcomctr@aol.com; john@groundworkelizabeth.org; pastorsharonsnow@gmail.com
Cc:	Michael Scanio; Elizabeth Stamler; Bill Kane; Anand, Irawati
Subject:	Union County HMP Stakeholder Meeting Invite
Date:	Thursday, February 13, 2025 5:10:00 PM

Good Evening,

Michael Baker is assisting Union County update their hazard mitigation plan (HMP). In recognition that different populations have different vulnerabilities, and capacity to prepare, respond and recover from hazard events, we are **seeking input from members of the public and organizations that work with residents and businesses on the risks natural hazards pose in the community** and **what actions can help reduce the risk to residents, businesses, visitors**.

Your organization was identified as a potential key stakeholder. We invite you to join a virtual meeting to discuss this hazard mitigation plan update. Please forward to any organization not included in this email.

The Virtual Meeting details are below. I will forward a meeting invite following this message.

Date: Tuesday, March 11, 2025
Time: 11:00 – 11:30 am

Link to MS Team Meeting

Call in number:
(412) 634-6334
Meeting Code: 913 584 283#

For more information on Union County's hazard mitigation plan, visit: https://ucnj.org/union-county-2026-multi-jurisdictional-all-hazard-mitigation-plan/

We look forward to hearing from you. Thanks!

Brittany Dremluk, AICP, PP, LEED Green Associate
Project Manager | Senior Associate
300 American Metro Boulevard | Hamilton, NJ 08619 | [O] 609-807-9556 | [M] 513-652-3772

From:	Dremluk, Brittany
To:	hjohnson@jmeuc.com; agetz@lowerraritanwatershed.org; DeFlorio, Joshua; rpeter@essexsheriff.com; msteinberg@essexsheriff.com; Chapman, Tiffany; angwong@panynj.gov; cvlawrence@panynj.gov; jhatfiel@kean.edu; Ashlyn Spector; oem@co.morris.nj.us; jbarilla@co.morris.nj.us; EmergencyMgmt@co.somerset.nj.us; Kevin.wiater@co.middlesex.nj.us; linda.weber@co.middlesex.nj.us
Cc:	Anand, Irawati; Elizabeth Stamler; Bill Kane; Michael Scanio
Subject:	Union County HMP - Regional Stakeholder Meeting Invite
Date:	Thursday, February 13, 2025 5:32:00 PM

Good Afternoon,

Michael Baker is assisting Union County update their hazard mitigation plan. In recognition that **neighboring communities, regional agencies and organizations involved in hazard mitigation**, **and agencies that have the authority to regulate development** have the capacity to prepare, respond, and recover from hazard events, we are seeking input from members of these organizations and agencies. We would also like to hear what actions can help reduce risk to residents, businesses, visitors. Your organization was identified as a potential key stakeholder.

We invite you to join a virtual meeting to discuss this hazard mitigation plan update. Please forward to any organization not included in this email.

The Virtual Meeting details are below. I will forward a meeting invite following this message.

Date: Wednesday, March 12, 2025
Time: 11:00 – 11:30 am

Link to MS Team Meeting

Call in number:
(412) 634-6334
Meeting Code: 575 852 707#

For more information on Union County's hazard mitigation plan, visit: https://ucnj.org/union-county-2026-multi-jurisdictional-all-hazard-mitigation-plan/

We look forward to hearing from you. Thanks!

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From:	Dremluk, Brittany
To:	kristin.bianco@amwater.com; John Buonocore; JWohlrab@wm.com; Gary Trapnell; rflynn@firstenergycorp.com; Jgerhardt@firstenergycorp.com; ortizj@firstenergycorp.com; Michael Redding; Joseph Prusik
Cc:	Elizabeth Stamler; Bill Kane; Michael Scanio; Anand, Irawati; Lisa DaSilva
Subject:	Union County HMP - Regional Utility Authorities Meeting Invite
Date:	Thursday, February 13, 2025 5:40:00 PM

Good Evening,

Michael Baker is assisting Union County update their hazard mitigation plan. In recognition that **regional utility authorities** have the capacity to prepare, respond, and recover from hazard events, we are seeking input from members of these organizations and agencies. We would also like to hear what actions can help reduce risk to residents, businesses, visitors. Your organization was identified as a potential key stakeholder.

We invite you to join a virtual meeting to discuss this hazard mitigation plan update. Please forward to any organization not included in this email.

The Virtual Meeting details are below. I will forward a meeting invite following this message.

Date: Wednesday, March 12, 2025
Time: 1:00 – 1:30 pm

Link to MS Team Meeting

Call in number:
(412) 634-6334
Meeting Code: 733 145 85#

For more information on Union County's hazard mitigation plan, visit: https://ucnj.org/union-county-2026-multi-jurisdictional-all-hazard-mitigation-plan/

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APPENDIX G. CAPABILITY ASSESSMENT FOR ALL MUNICIPALITIES

	Planning & Regulatory Capabilities																
	Master Plan	Capital Improvement Plan	Local Emergency Operations Plan/Continuity of Operations Plan	Floodplain Development Ordinance	Floodplain Management Plan	Stormwater Management Ordinance	Stormwater Management Plan	Watershed Management Plan	Sheltering Plan	Evacuation Plan	Substantial Damage/Improved Structures Response	Repetitive Loss Plan	Disaster Debris Management Plan	Tracking elevation certificates and/or Letter of Map Change	Post-Disaster Recovery Plan	Current/recent redevelopment plans or studies
Berkeley Heights, Township of	X	X	X	X												
Clark, Township of	X		X	X	X	X	X		X	X			X			
Cranford, Township of	X	X	X	X	X	X	X		X		X		X	X		
Elizabeth, City of	X	X	X	X		X	X		X	X	X		X	X		X
Fanwood, Borough of	X	X			X	X										
Garwood, Borough of	X	X	X	X	X	X	X		X	X	X	X	X	X	X	
Hillside, Township of	X	X	X	X			X						X			
Kenilworth, Borough of	X	X	X	X	X	X	X				X		X	X	X	X
Linden, City of	X	X	X	X	X	X	X		X	X			X	X		X
Mountainside, Borough of	X	X	X	X	X	X	X							X		X
New Providence, Borough of	X	X	X	X	X	X	X		X	X	X			X		
Plainfield, City of	X	X	X				X									
Rahway, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Roselle, Borough of	X		X	X		X	X		X	X			X		X	X
Roselle Park, Borough of	X	X		X	X	X			X	X	X		X	X		X
Scotch Plains, Township of	X	X	X		X				X		X			X	X	
Springfield, Township of	X		X	X		X	X			X			X	X		X
Summit, City of	X	X		X		X	X		X				X	X	X	
Union, Township of	X	X			X	X	X		X	X	X			X		X
Westfield, Town of	X	X	X	X	X	X	X	X								
Winfield, Township of			X			X	X			X						
Total	**20**	**17**	**17**	**16**	**13**	**17**	**17**	**2**	**12**	**11**	**9**	**2**	**12**	**13**	**6**	**9**

					Administrative and Technical Capabilities						Education and Outreach Capabilities					
	Community Wildfire Protection Plan	Climate Adaptation Plan	Other Plans that discuss hazard mitigation	Other ordinance and regulation that mitigate the impacts of natural hazards	Floodplain Administrator	Grant Writer	Staff trained to support mitigation	Existing mutual aid or technical assistance agreements to support hazard mitigation projects	Non-governmental organizations/other partners that work with the municipality on mitigation projects	Organizations that work with socially vulnerable or underserved populations	Communicate natural and human-based hazards to the public	StormReady	Firewise USA	Severe Weather Awareness Week	Community Rating System (CRS)	FEMA BRIC
Berkeley Heights, Township of							X				X					
Clark, Township of					X						X					
Cranford, Township of				X	X	X		X	X		X				X	
Elizabeth, City of					X	X	X		X	X	X					
Fanwood, Borough of			X	X	X		X				X					
Garwood, Borough of			X		X	X	X	X	X	X	X	X		X	X	
Hillside, Township of					X	X	X	X			X				X	
Kenilworth, Borough of					X		X				X					
Linden, City of					X	X	X	X	X	X	X				X	
Mountainside, Borough of			X		X	X					X					
New Providence, Borough of				X	X	X	X	X		X	X					
Plainfield, City of					X	X	X	X	X	X	X			X		X
Rahway, City of				X	X	X				X	X	X			X	
Roselle, Borough of	X				X	X	X	X		X	X				X	
Roselle Park, Borough of				X	X		X	X			X					
Scotch Plains, Township of	X			X	X		X				X					
Springfield, Township of					X		X				X			X		
Summit, City of					X	X	X			X	X					
Union, Township of				X	X	X	X	X	X		X					
Westfield, Town of					X	X	X	X			X					
Winfield, Township of										X	X					
Total	**2**	**0**	**3**	**7**	**19**	**13**	**16**	**10**	**6**	**9**	**21**	**2**	**0**	**3**	**6**	**1**

	Financial Capabilities								
	FEMA FMA	FEMA Public Assistance	FEMA HMGP	Non-FEMA Federal Funding Programs	Other FEMA resources	NJ Infrastructure Bank	Other state municipal assistance or grant programs	Evaluation process on the prioritization of risk reduction projects against other local activities	Other ongoing efforts to build additional financial capabilities
Berkeley Heights, Township of		X							
Clark, Township of		X							
Cranford, Township of	X	X	X	X		X			
Elizabeth, City of		X	X			X	X	X	X
Fanwood, Borough of									
Garwood, Borough of	X	X	X				X		
Hillside, Township of			X			X			
Kenilworth, Borough of								X	
Linden, City of									X
Mountainside, Borough of									
New Providence, Borough of		X						X	X
Plainfield, City of	X	X	X	X		X	X	X	X
Rahway, City of		X						X	X
Roselle, Borough of							X		X
Roselle Park, Borough of		X						X	
Scotch Plains, Township of		X	X	X					
Springfield, Township of									
Summit, City of		X	X			X	X		
Union, Township of	X	X	X				X		
Westfield, Town of							X		
Winfield, Township of									
Total	**4**	**12**	**8**	**3**	**0**	**5**	**7**	**6**	**6**