



Cumberland County Multi-Hazard Mitigation Plan Update
Participating Jurisdiction Appendices

Appendix 10
Maurice River Township, New Jersey

August 22, 2022

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Part 1: Overview

Part 1.1: Cumberland County Multi-Hazard Mitigation Plan Update

The Cumberland County Multi-Hazard Mitigation Plan Update (CC HMPU) incorporates input from all 15 participating jurisdictions in Cumberland County, including Cumberland County and 14 separate municipalities.

The CC HMPU is an update of the Mitigation Plan for Four New Jersey Counties (NJ4 HMP) that was completed by all fifteen jurisdictions in Cumberland County along with over 70 additional jurisdictions from Camden, Gloucester, and Salem Counties. The Cumberland County portions of the NJ4 HMP were adopted by the participating jurisdictions and approved by the Federal Emergency Management Agency in 2016.

The CC HMPU has two main parts:

- Cumberland County Multi-Hazard Mitigation Plan Update, or the “Base Plan”.
- County and Municipal Appendices.

The Base Plan includes descriptions and information common to all 15 participating jurisdictions organized according to the following three focus areas:

- Planning Process
- Hazard Identification and Risk Assessment
- Mitigation Measures

The County and Municipal Appendices include specific information for these same three focus areas for each of the 15 participating jurisdictions. Detailed tabulations are included in these Municipal Appendices for critical facilities, the status of past mitigation activities, and proposed mitigation measures for each municipality.

Part 1.2: Maurice River Township Municipal Appendix

This Municipal Appendix is focused on Maurice River Township in Cumberland County, New Jersey.

The Maurice River Township Municipal Working Group developed the Maurice River Township Municipal Appendix for adoption by the Maurice River Township Committee and subsequent approval by Region II of the Federal Emergency Management Agency.

Part 2: Participation

Part 2.1: Municipal Working Group Participation

Part 2.1 includes:

- *Municipal Working Group members including positions in the community, meetings and work sessions attended, and specific contributions to the Municipal Appendix*
- *Municipal positions and organizations that were invited but were not able to participate in the plan update process*
- *Municipal positions and organizations that have been recommended by the Federal Emergency Management Agency (FEMA) as candidates for participation on Municipal Working Groups but do not exist in the municipality*

Table 10-1 identifies the Municipal Working Group members. As detailed in *Section 2: Planning Process* of the Base Plan, the Municipal Working Groups are comprised of community representatives who worked to make sure mitigation measures included in the Municipal Appendix addressed the risks faced by residents, businesses, and property owners and reflected the priorities of the community.

Municipal Working Group members reviewed briefing materials and contributed during Work Sessions and Meetings and reviewed the Preliminary Draft and Public Review Draft versions of the CC HMPU Base Plan and Appendices. The Working Group will also continue to stay involved during the implementation and maintenance of the CC HMPU.

Due to the on-going COVID-19 pandemic during the plan update process, Working Group meetings were conducted in a variety of ways including virtual meetings. However, when local conditions permitted, in-person meetings were conducted.

Note: Three members of the Working Group also participated in the development of the 2016 NJ4 HMP. These members are indicated with an () following their last names.*

Table 10-1: Maurice River Township Working Group

First Name	Last Name	Department	Position	Project Kick-off Meeting ¹	Round 1 Work Session ²	Round 2 Work Session ³	Contribution ⁴
Pat	Phillips	OEM / Fire Department	OEM Coordinator / Fire Department Representative	☑	☑	☑	Organized Working Group and Work Sessions.
Derek	Leary	Code Enforcement	Zoning Official / Construction Official / Floodplain Administrator			☑	
Ken	Whildin	Township Administration	Mayor		☑	☑	
Ashlee	Leigh	Township Administration / Land Use Board	Recycling Coordinator / Secretary (through April 2022)		☑		

¹ Project Kickoff Meeting was held on May 20, 2021.

² Round 1 Work Session was held on August 12, 2021.

³ Round 2 Work Session was held on January 18, 2022.

⁴ Additional or unusual contributions are noted in the far-right hand column.

Part 2: Participation

First Name	Last Name	Department	Position	Project Kick-off Meeting ¹	Round 1 Work Session ²	Round 2 Work Session ³	Contribution ⁴
Lynn	Perryman	Township Administration / Land Use Board	Recycling Coordinator / Secretary (starting in May 2022)				
Steve	Hageman *	Public Works	Supervisor			<input checked="" type="checkbox"/>	
Cormac	Morrisey *	Dixon Associates Engineering, LLC	Township Engineer		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Ben	Stowman *	Land Use Board	Chairman		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Provided detailed inventory of levees, recent failures, and proposed mitigation measures.
John	Campbell	OEM / Bayside Correctional Facility / School Board	Deputy Coordinator / Fire Marshal / Member (pending)		<input checked="" type="checkbox"/>		

The following lists candidate positions and organizations within the community that were extended invitations to participate during the development of the Municipal Appendix. These positions and organizations will continue to be extended invitations to participate during subsequent plan implementation and maintenance activities.

- Community Businesses
- Community / Faith-Based Organizations

The following lists positions and organizations that are generally recommended for consideration as members of the Municipal Working Groups by FEMA but do not currently exist within the community. An invitation to participate will be extended if positions are created or filled and as organizations are formed.

- GIS/IT Specialist (services provided by Cumberland County)
- Police (services provided by New Jersey State Police)
- Environmental Organizations
- Healthcare Institutions

Part 2: Participation

Part 2.2: Public Participation

Part 2.2 includes all opportunities provided to the public and interested parties in the municipality to participate during the plan update process.

Table 10-2 identifies the date, type of involvement, and location (where applicable) for all opportunities provided to the public and interested parties to participate in the development of the plan update.

Table 10-2: Public Participation

Date	Type of Involvement	Location
July 14, 2021	Link to Project Website ⁵ established and maintained.	Township website ⁶
August 19, 2021	Discussion item added to regularly scheduled Township Meeting.	Township Meeting (in-person and virtual)
September 8, 2021	Preliminary Draft Municipal Appendix available for public comment.	Project Website ⁵
April 1, 2022	Notice posted re: Public Review Draft Municipal Appendix review period with link to Project Website.	Township website ⁷
April 19, 2022	Public Review Draft Municipal Appendix available for public comment.	Project Website ⁵

Public comments and input received for the Preliminary Draft and Public Review Draft versions of the Municipal Appendix were considered by the Municipal Working Group and incorporated into the Municipal Appendix where appropriate. In addition, the Municipal Appendix was adopted as part of a regularly scheduled public meeting (see Attachment B: Adoption Resolution).

Public education and outreach is an on-going mitigation measure included in the Municipal Appendix.⁸ In addition, public participation will continue to be encouraged during subsequent plan implementation and maintenance activities.⁹

⁵ <https://www.mauricrivertp.org/CivicAlerts.aspx?AID=87>

⁶ See Mitigation Measure M-1 in Part 4 of the Municipal Appendix.

⁷ Public education and outreach is described in *Section 4: Mitigation Measures* of the CC HMPU Base Plan.

Part 3: Hazard Identification and Risk Assessment

Part 3: Hazard Identification and Risk Assessment

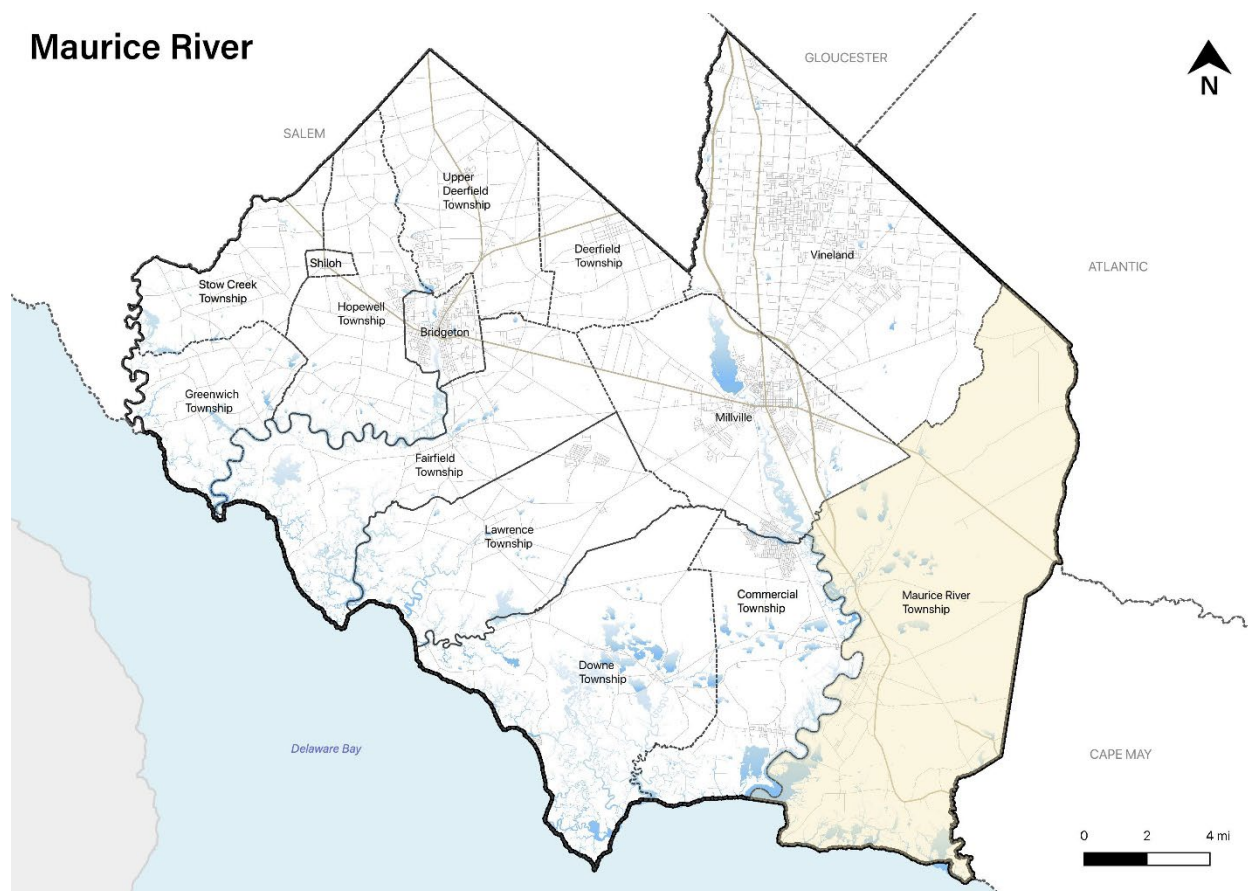
Part 3 includes seven subparts:

- *Part 3.1: Profile*
- *Part 3.2: General Building Stock*
- *Part 3.3: Critical Facilities*
- *Part 3.4: Hazard Exposure Assessment*
- *Part 3.5: Demographic Considerations*
- *Part 3.6: Observations*
- *Part 3.7: Hazard Priorities*

Part 3.1: Profile

Maurice River Township is located in the southeastern portion of Cumberland County (See Figure 10-1).

Figure 10-1: Maurice River Township Location Map

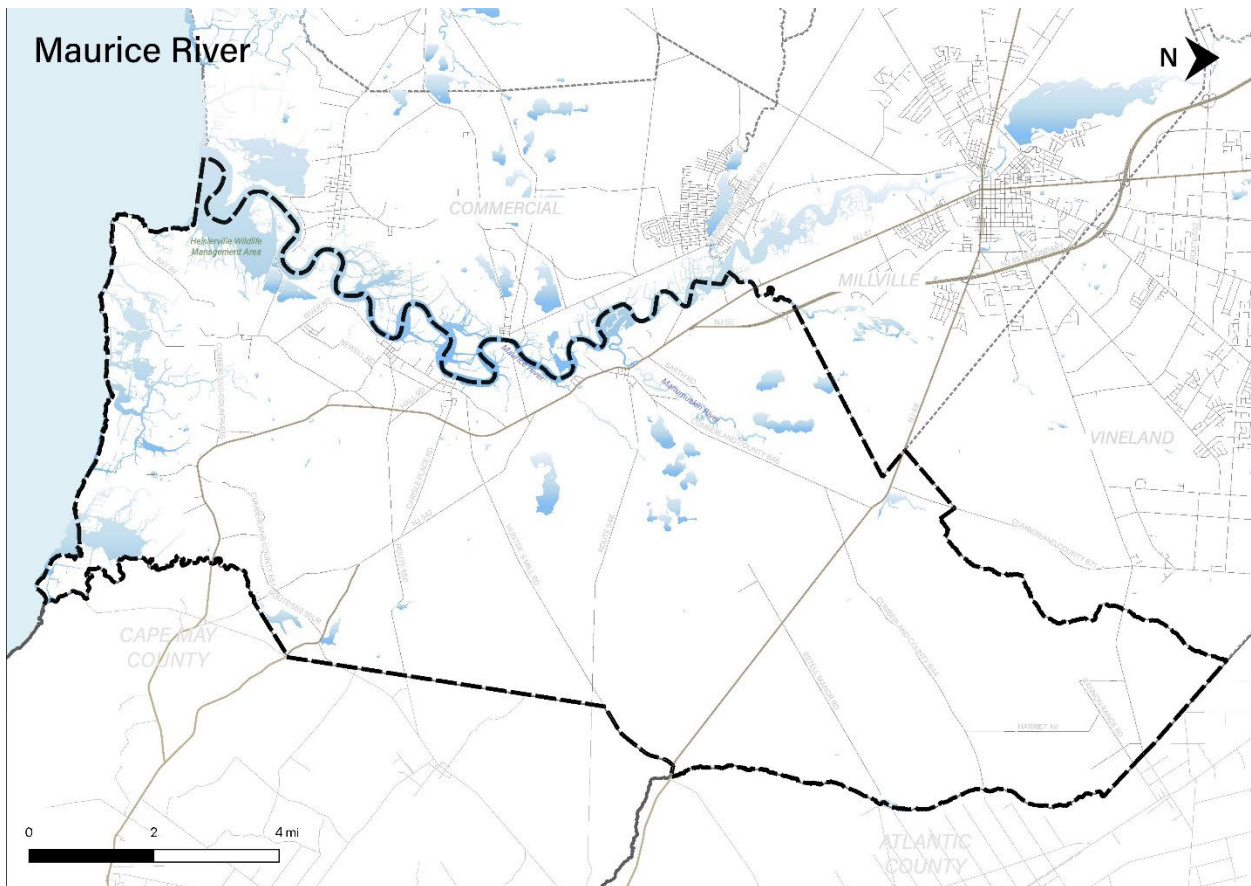


Part 3: Hazard Identification and Risk Assessment

Maurice River Township is a bay shore, rural residential community and is the largest in land area of all the municipalities in the four-county region. Villages are spread across the municipality including Bricksboro, Cumberland, Delmont, Dorchester, Heislerville, Leesburg, Port Elizabeth, and a portion of Milmay. Over 60% of the housing stock was built between 1940 and 1989, and only 10% in the last two decades.

Per Figure 10-2, major water bodies include the Delaware Bay, Maurice River, Tuckahoe River, West Creek, and Manumuskin River, which together form parts of the southern, western, and northwestern borders of the municipality, respectively. Major transportation routes include State Highway Routes 47 and 49. Most of the internal road network consists of Cumberland County maintained roads. The land is predominantly flat to gently rolling and a high percentage of existing land cover consists of forests and marshes with most of the township included in the Pinelands National Reserve.

Figure 10-2: Maurice River Township Base Map



Part 3: Hazard Identification and Risk Assessment

Part 3.2: General Building Stock

As of 2015, there are 2,761 buildings in Maurice River Township with a total assessed value of improvements of \$389,623,350. Figure 10-3 shows the footprints of these buildings.

Figure 10-3: Maurice River Township Building Footprints¹⁰

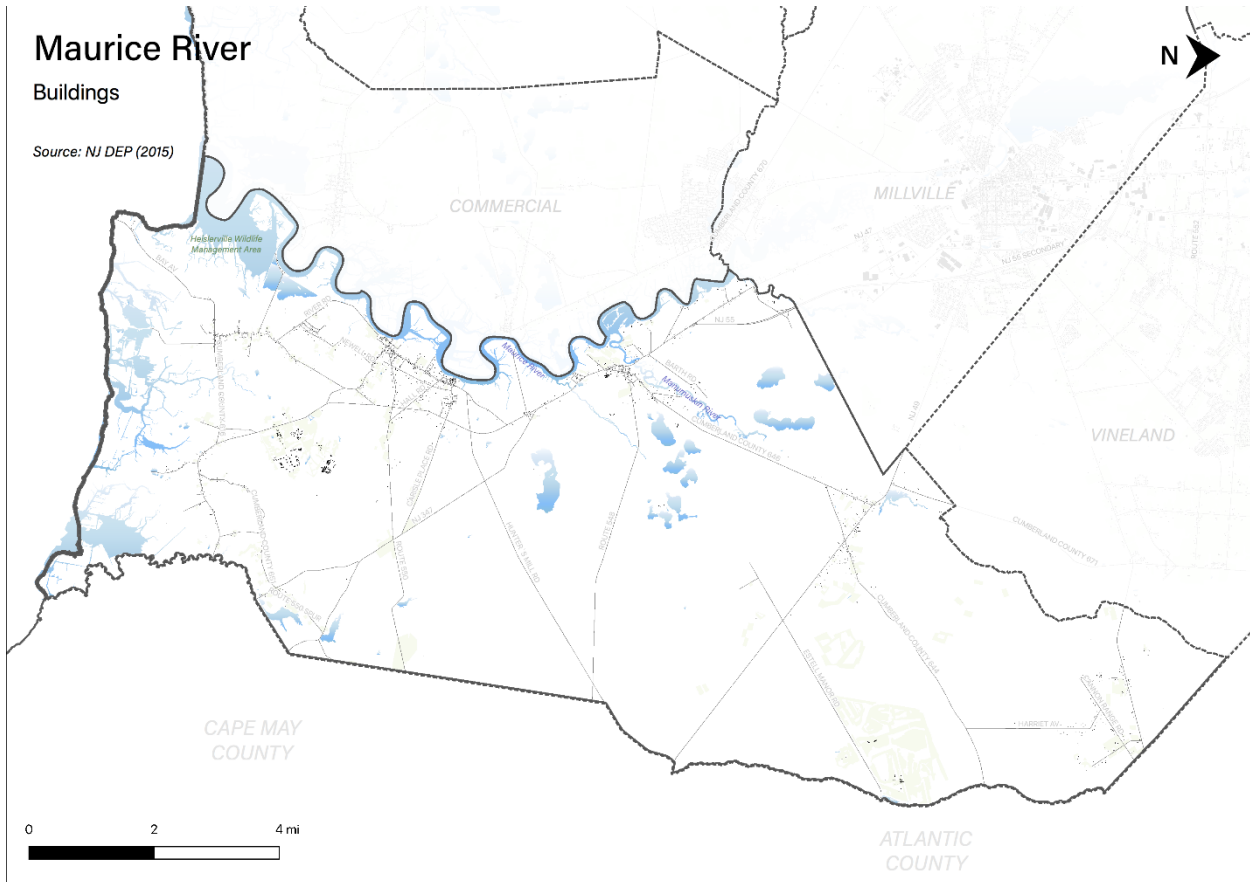


Table 10-3 shows the distribution of these structures according to land use distinctions.

Table 10-3: Maurice River Township Buildings per Land Use Type¹¹

Land Use Type	Residential	Commercial	Industrial	Other
Number of Buildings	1,966	124	44	430
% of Total	77%	5%	2%	16%

¹⁰ Building footprint data was isolated from “Impervious Surfaces” data (2015) per <https://gisdata-njdep.opendata.arcgis.com/>. Note: This (map/publication/report) was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.

¹¹ Land use types were isolated from MOD-IV Parcels and Tax Assessor data composite (2021) per <https://njgis-newjersey.opendata.arcgis.com/documents/parcels-and-mod-iv-of-cumberland-county-nj-shp-download/about> from the New Jersey Office of GIS

Part 3: Hazard Identification and Risk Assessment

Part 3.3: Critical Facilities¹²

As of April 2022, there are ten critical facilities in Maurice River Township.

Critical facilities are prime candidates for mitigation measures due to important functions staged from these facilities prior to, during, and after natural hazards including emergency services and housing vulnerable populations.

Table 10-4 includes current inventory information for municipal critical facilities and cross-references to related mitigation measures identified in Part 4 of the Municipal Appendix. Figure 10.4 shows the location of these critical facilities.

Table 10-4: Maurice River Township Critical Facilities Inventory

CF #	Name	Type	Sub-Type	Address	Co-located CF #	Shelter (Y/N)	Generator (Y/N)	Comments	Mitigation Measure #
CF-1	Township Hall	Municipal	Administrative Offices	590 Main Street, Leesburg		Y	Y ¹³	Shelter of last resort	
CF-2	Office of Emergency Management / Emergency Operations Center	EOC	Stand-alone Facilities	556 Main Street, Leesburg		Y	Y		
CF-3	Communications Towers	Communications	Communications Towers	Multiple locations (see below)				Note: All of the following except for Cumberland Fire House are commercial towers located on private property.	
CF-3A	Communications Towers	Communications	Communications Towers	Cumberland Fire Station, 5272 State HWY 49, Millville			Y	County Owned/Operated	

¹² Critical facility definitions and considerations are described in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

¹³ Existing generator is considered adequate for all necessary functions.

Part 3: Hazard Identification and Risk Assessment

CF #	Name	Type	Sub-Type	Address	Co-located CF #	Shelter (Y/N)	Generator (Y/N)	Comments	Mitigation Measure #
CF-3B	Communications Towers	Communications	Private Communications Towers	Main Street, Dorchester, near Route 47			N ¹⁴	(2) separate towers located on opposite sides of the road.	
CF-3C	Communications Towers	Communications	Private Communications Towers	4584 North Delsea Drive, Delmont			N ¹⁴		
CF-3D	Communications Towers	Communications	Private Communications Towers	3335 Route 47, Port Elizabeth			N ¹⁴		
CF-3E	Communications Towers	Communications	Private Communications Towers	On Route 49 east of intersection Hess Town Road			N ¹⁴		
CF-4	Public Works Facility	Public Works	Equipment Storage, gas and diesel fueling, administrative offices	552 Main Street, Leesburg		N	Y		
CF-5	Heislerville Station	FireStation/EMS	Stations	164 Main Street, Heislerville		N	N		M-3
CF-6	Leesburg Station	FireStation/EMS	Stations	550 Main Street, Leesburg		N	Y		
CF-7	Cumberland Station	FireStation/EMS	Stations	5272 State Highway 49, Millville		N	Y ¹³	Located in wildland-urban interface area	M-6
CF-8	Port Elizabeth Station	FireStation/EMS	Stations	7 Port Elizabeth Cumberland Road, Port Elizabeth		N	N		M-4
CF-9	Maurice River Township Elementary School	Schools	Public Schools	3593 State Highway 47, Port Elizabeth		N	N	The school is currently being considered as a shelter location ¹⁵].	M-2

¹⁴ Includes battery power backup which typically lasts for a few hours.

¹⁵ No commitments re: use of school as shelter per previous concern regarding designated evacuation routes from shore communities in Cape May County in recent history. However, change in State sheltering strategy may address concern. New school board recently elected that took office in January 2022 will take up issue.

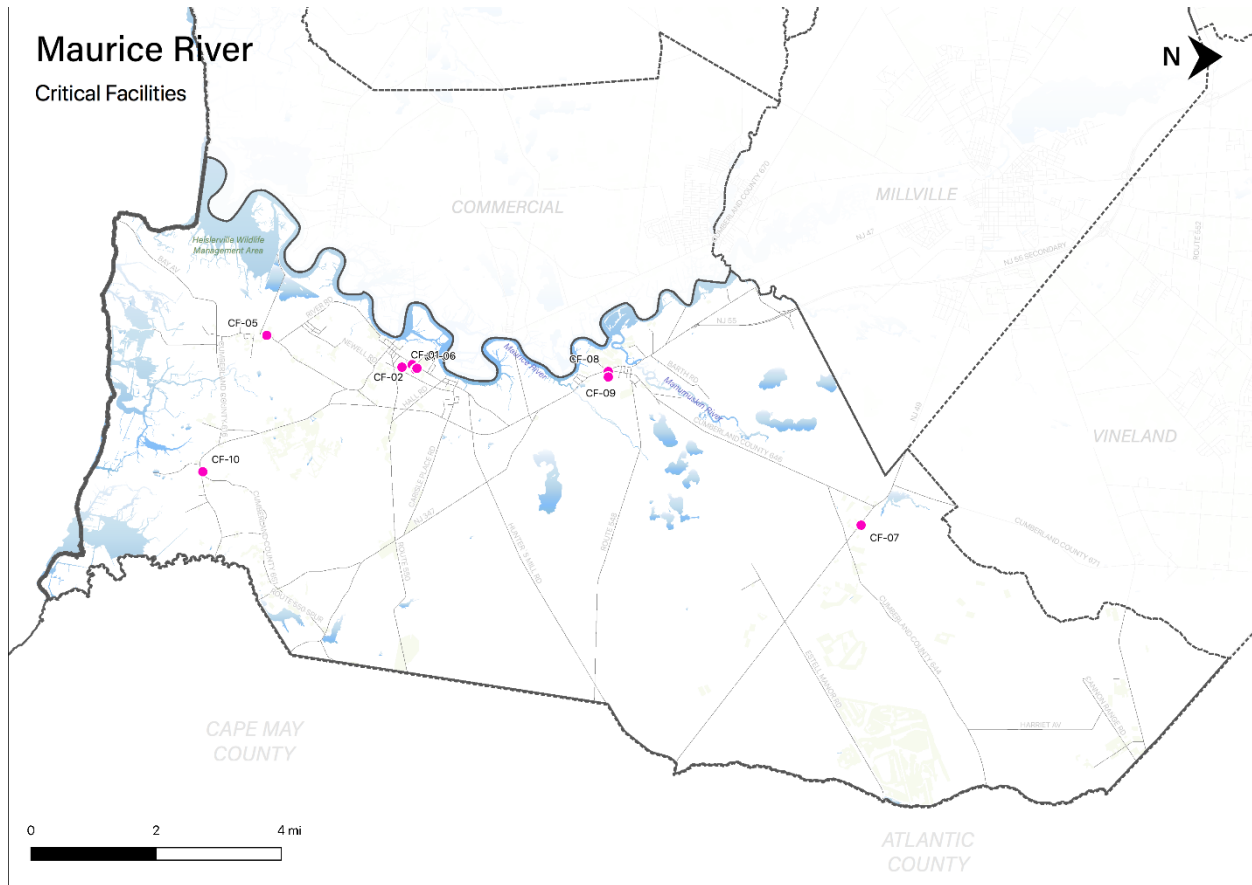
Part 3: Hazard Identification and Risk Assessment

CF #	Name	Type	Sub-Type	Address	Co-located CF #	Shelter (Y/N)	Generator (Y/N)	Comments	Mitigation Measure #
CF-10	Delmont Building	EMS	Private Stations	4507 State Highway 47, Delmont		N	N	Houses the Delmont Post Office	
C-11	Gibson's Kids Town Child Care	Vulnerable Populations Facilities	Private Child Day Care	135 Port Elizabeth Cumberland Road, Port Elizabeth		N	N	Only certified day care facility in the Township.	
C-12	Special needs individuals	Vulnerable Populations Facilities	Private Care Facility	Multiple, each Fire District has list.		N/A	N/A	>20 individuals completed annual submittal forms and are incorporated as part of Township EOP. Each Fire District has list and normally will reach out to individuals in advance of a notice event.	

In addition, the Township Working Group identified a number of levees, berms, and ditches that are considered part of the critical infrastructure for the community. See the discussion of Levee Failure in Part 3.4 for details.

Part 3: Hazard Identification and Risk Assessment

Figure 10-4: Maurice River Township Critical Facilities



Part 3.4: Hazard Exposure Assessment

Hazard exposure assessments were completed for the eleven (11) natural hazards identified in the CC HMPU Base Plan¹⁶.

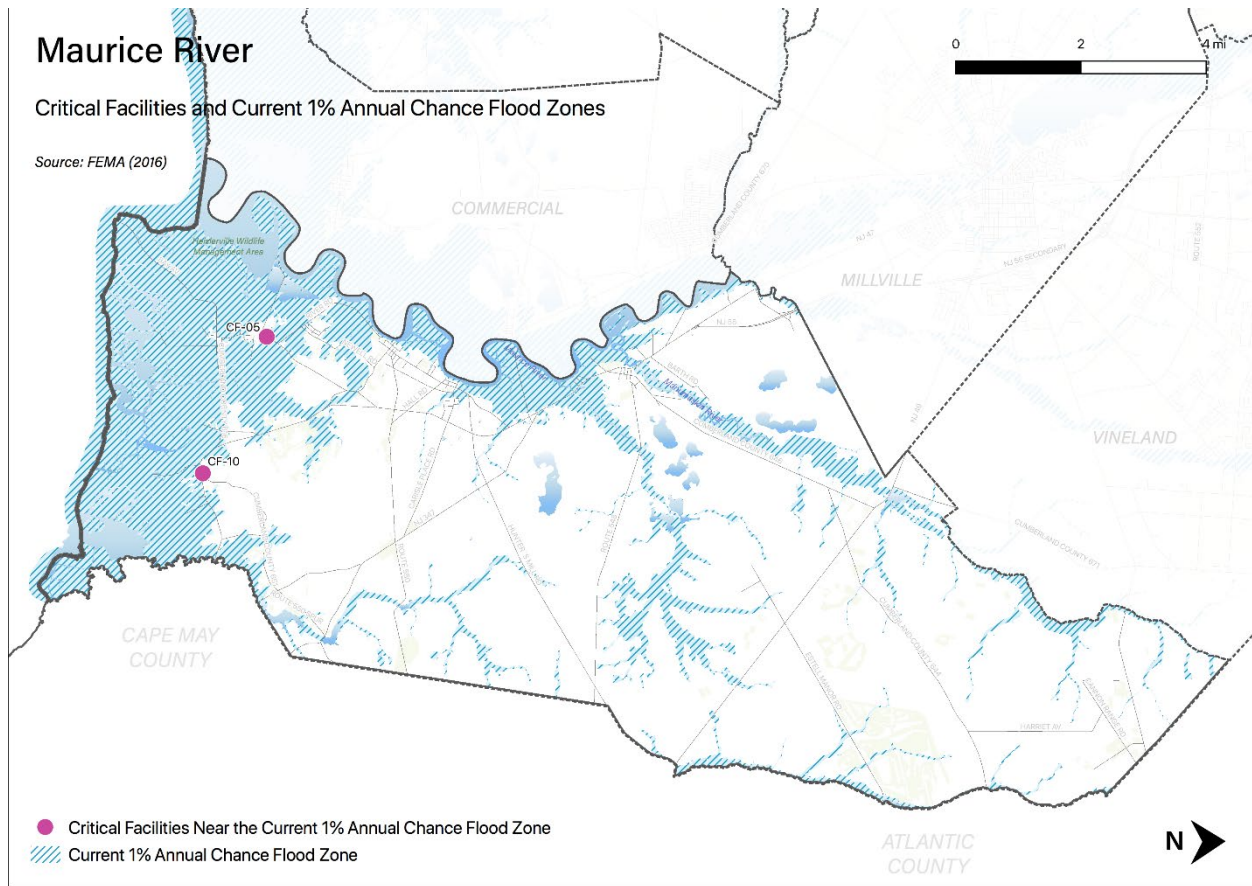
Key results for Maurice River Township are depicted in the following.

Mapping: Figure 10-5 is illustrative of the type of mapping available as a result of the hazard exposure assessment. This figure shows critical facilities that are located in or near (i.e., within 500 feet) the 1% annual flood zone on FEMA's Flood Insurance Rate Maps (FIRMs) or within a potential future 1% annual chance flood zone (i.e., within 1,000 feet).

¹⁶ Hazard profiles are included for all eleven natural hazards in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

Part 3: Hazard Identification and Risk Assessment

Figure 10-5: Maurice River Township Critical Facilities and 1% Annual Chance Flood Zone



Mapping results are available for general building stock and critical facilities for the following hazards:¹⁷

- Coastal Erosion & Sea Level Rise
- Earthquake
- Extreme High Temperature
- Flood - per FEMA FIRM mapping
- High Wind and Severe Weather (heavy summer rains and winter snow loads)
- Wildfire

Tabulations: Selected data culled from the hazard exposure assessment process is displayed in the following tables:

- Table 10-5 indicates hazard exposure for general building stock
- Table 10-6 indicates hazard exposure for critical facilities

¹⁷ All mapping corresponding to results described in Parts 3.3 through 3.5 can be viewed in .pdf format at: <https://www.dropbox.com/sh/gd2nk7iohmnbuig/AADLPoxoRSze-8mWtBmYyDkxa?dl=0>.

Part 3: Hazard Identification and Risk Assessment

Table 10-5: Maurice River Township General Building Stock Hazard Exposure

Hazard	Number of Exposed Buildings	Percent of Total Buildings in the Jurisdiction	Value of Exposed Buildings	Percent of Total Value in the Jurisdiction
Coastal Erosion ¹⁸	2	-	\$80,800	-
Sea Level Rise - 3 feet increase	239	8.66%	\$21,920,363	5.63%
Flood - Within 1 % Annual Chance Zone	461	17%	\$43,852,155	11%
Flood - Near (within 500 feet) of 1% Annual Chance Zone	995	36%	\$127,023,781	33%
Earthquake – Structure built before 1927 ¹⁹	586	28%	\$70,824,400	26%
High Winds / Severe Weather – Structure built before 1975	1,387	67%	\$165,237,100	62%
Wildfire – Composite score > 2.5 ²⁰	12	-	\$967,600	0.25%

Table 10-6: Maurice River Township Critical Facilities Hazard Exposure²¹

Hazard	Number of Critical Facilities	CF #s
Coastal Erosion	None	N/A
Sea Level Rise	None	N/A
Flood - Within 1 % Annual Chance Zone	None	N/A
Flood - Near (within 500 feet) of 1% Annual Chance Zone	2	CF-5, CF-10
Flood – Future potential (within 1,000 feet) 1% Annual Chance Zone	4	CF-01, CF-02, CF-08, CF-09
Wildfire	6	CF-01, CF-02, CF-04, CF-06 CF-07, CF-09

In addition, all critical facilities in Cumberland County are exposed to the following hazards and potentially subject to power outages, and structural and/or contents damage:

- Earthquake
- Extreme Temperatures
- High Winds
- Severe Weather – Summer (including heavy rains)
- Severe Weather – Winter (including heavy snow loads)

Information from the 2016 NJ4 HMP HIRA was also reviewed with the Working Group to determine the need for updates to hazard exposure results for Dam Failure and Levee Failure.

¹⁸ All supporting data for Coastal Erosion, Sea Level Rise (3-foot rise), Flood (all) can be viewed at https://docs.google.com/spreadsheets/d/1fcN5hL3Jz4X7mldFyKs6wol6J6lAR9bSsvJPIgE_A0Q/edit?usp=sharing

¹⁹ All supporting data for Earthquake, High Winds, and Severe Weather can be viewed at <https://docs.google.com/spreadsheets/d/1Zx1LZwKQ8esgqv4c9hbbSZurtMjH4UITQWJY1LrZezc/edit?usp=sharing>

²⁰ All supporting data for Wildfire can be viewed at https://docs.google.com/spreadsheets/d/1JAbfd3A-eCHI93pZFaPVuM_H2yvuUzeHCmoijv-oxsw/edit?usp=sharing

²¹ All supporting data for critical facility hazard exposure can be viewed at <https://docs.google.com/spreadsheets/d/1MPLiOANm7fHoyKuxyWqyang26LTSPayTxJvLmK5lGPg/edit?usp=sharing>

Part 3: Hazard Identification and Risk Assessment

Dam Failure

Per the New Jersey Department of Environmental Protection (NJDEP) data²²:

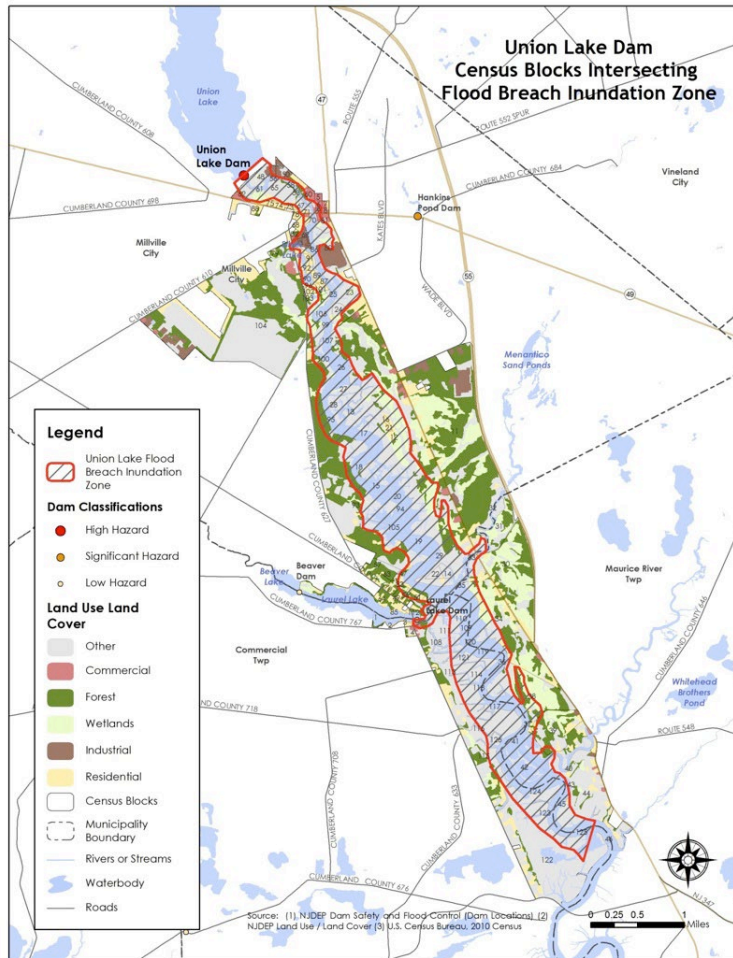
- There are two (2) “Significant Hazard” dams located in the Township:
 - Cumberland Pond Dam on the Manumuskin River
 - Hands Mill Dam on West Creek

In addition, the Township is downstream from a “High Hazard” dam located in Millville City:

- Union Lake Dam
- No (0) dam failure incidents had been recorded in the Township as of 2014

Figure 10-6 depicts results from the 2016 NJ4 HMP HIRA showing land use within Census Blocks intersecting the Flood Breach Inundation Zone for the Union Lake dam. An estimated 98 housing units and 217 residents are potentially located downstream of the dam within Maurice River Township.

Figure 10-6: Union Lake Dam Land Use/Land Cover for Census Blocks Intersecting Flood (With Breach) Inundation Zone



²² (1) NJDEP Dam Safety and Flood Control (Dam Locations); (2) NJDEP Land Use / Land Cover; (3) US Census Bureau 2010 Census

Part 3: Hazard Identification and Risk Assessment

Levee Failure

Per the South Jersey Levee Inventory (SJLI)²³:

- There are two (2) levees in the Township:
 - Heislerville (NCRS #82)
 - Thompson (NCRS #107)
- One (1) levee failure incident has been recorded in the Township with the Heislerville Levee in 2012 (due to Superstorm Sandy)

Working Group members were asked the following questions for Dam and Levee Failure:

- ✓ *Are these facilities still in operation?*
- ✓ *Are there updated Emergency Action Plans or inundation maps for these facilities?*
- ✓ *Have there been any other incidents of failure since the reported records?*

Per the Maurice River Township Working Group, there were multiple refinements to the SJLI information regarding Levee Failure, including the following levees, berms, and bulkheads, with information about recent failures where relevant:

- Locations where Mitigation Measures are proposed.

Note: References to multi-jurisdictional mitigation measures (e.g., "MJ-#") in the following list correspond to entries in Table 10-12.

- Bricksboro Railroad Crossing (at NJ Route 47 at Muskee Creek) – A State Evacuation route from Cape May County. Flooding events occur as many as two times per year. Berms at the location (coupled with road raising) would eliminate this critical flooding problem for our residents; not to mention people trying to access NJ Route 47 during a coastal storm evacuation event. Improvements to this crossing are included as MJ-3 (as a carry-over project from NJ4 HMP).
- Mauricetown Causeway (County Road 670) – Berms may be needed along the Mauricetown Causeway, close to the entrance to the Mauricetown Bridge. Flooding occurs as many as three times per year during moon perigee tides, sometimes coupled with storm events holding water in the Delaware Bay. Improvements to this causeway are included as MJ-4 (as a carry-over project from NJ4 HMP).
- River Road Levee/Berm (between Skunk Hill and Boarworld) – No failures so far. Improvements to this levee/berm are included as MJ-6 (as a carry-over project from NJ4 HMP).
- East Point Lighthouse Geotube and Levee/Berm Protection System (installed by NJ DEP along the beach in September 2019) – There has not been any beachhead erosion in front of the Lighthouse since the protection system was installed. However, there have been as many as seven events to date when moon perigee tides and/or high wind conditions have put flood waters "around the North end" of the Geotube system. The Township has placed minor quantities of fill material after those events. Improvements to this levee/berm system are included as MJ-12 (as a new project).

²³ US Department of Agriculture, National Resources Conservation Services (NRCS) South Jersey Levee Inventory, 2010.

Part 3: Hazard Identification and Risk Assessment

- East Point Bay Avenue Parking Lot Bulkhead – In August 2020, Tropical Storm Isaias compromised the bulkhead flooding the parking lot. Improvements to this levee/berm are included as part of MJ-13 (as a new project).
- East Point Road Levee/Berm and Wooden Bridge – No breaches have occurred in recent years. Wooden Bridge had to be rebuilt a few years ago; but still wood construction. Improvements to this levee and bridge are included as MJ-15 (as a new project). *Note: One area along East Point Road is already included as MJ-5 (as a carry-over project from NJ4 HMP). This location is near the “Kline Campground”.*
- Railroad Embankment (between Mauricetown Causeway and Muskee Creek) – Embankment is effectively a levee that protects the Maurice River Recycling Center, potential business area, and NJ Route 47). No failures so far, but the area to the east of the embankment is zoned for commercial development to be allowed by the Township. Improvements to this embankment are included as MJ-16 (as a new project).
- Bricksboro “McGinty” Dike (along the Maurice River from “in front of Front Lane” northward to where Market Street goes to the river) – No breaching has occurred in recent years; however repairs are being considered for a water evacuation conduit at the pipe’s mouth. Improvements to this dike are included as MJ-17 (as a new project).
- Manumuskin Creek Bulkhead (just south and west of the Port Elizabeth Bridge (NJ Route 47), where Broad Street (County Road) ends) - Bulkhead is compromised. Inaction for repairs will lead to the parking lot (designed for water access in that locale) to be washed out. Improvements to this bulkhead are included as MJ-18 (as a new project).
- Drainage Ditches (mostly old mosquito ditches) – Lack of sustained regular maintenance prolongs floodwater clearance and increases disease potential. The Township is working with Cumberland County to place those many ditches on a priority list; and interacts with the State as well; whenever those ditches had their “beginnings” along a state highway. Regular and sustained ditch maintenance is included as MJ-19 (as a new project).
- Locations where Mitigation Measures are not proposed at this time:
 - Moore’s Beech Road and Quillan Avenue Levee/Berm – Roadways flood as many as four times per year during moon perigee tides, sometimes coupled with deep low-pressure systems nearby.
 - Matt’s Landing to Menhaden Road Bike Path/Levee – This levee is believed to be what kept Superstorm Sandy from changing the course of the Maurice River in 2012. No breaches have occurred since Sandy, but Township occasionally has placed minor quantities of fill material to maintain integrity.
 - Bricksboro Bulkhead/Dike – Recently refurbished in 2019 with a ditch outflow pipe restored; the bulkhead has not allowed storm or major moon perigee tides to flood Union or Market Streets. Bulkhead was extended to the south of the ditch and to the Northward with residents utilizing permits obtained by the Township for the core of the bulkhead.

Otherwise, there were no changes to the NJ4 HMP HIRA Dam Failure and Levee Failure hazard exposure results.

Part 3: Hazard Identification and Risk Assessment

National Flood Insurance Program Information

One additional metric discussed with the Working Group was statistical information from the National Flood Insurance Program (NFIP)²⁴. The following are relevant numbers for Maurice River Township as provided by the New Jersey Office of Emergency Management (NJOEM)²⁵:

- Active Policies – eighty-two (82) active NFIP flood insurance policies
- Claims History – one hundred and eight (108) claims made against the NFIP between 1977 and 2020
- Repetitive Loss Properties (RL) – ten (10) properties designated as RL

For comparison relative to the number of active NFIP flood insurance policies, the following are the number of potentially exposed buildings (per Table 10-5), which are significantly higher than the number of active policies:

- Flood - Within 1 % Annual Chance Zone: 461 buildings ~ 17% of total buildings, with a value of \$43,852,155~ 11% of the total building value in the Township.
- Flood - Near (within 500 feet) of 1% Annual Chance Zone: 995 buildings ~ 36% of total buildings, with a value of \$127,023,781 ~ 33% of the total building value in the Township.

²⁴ Information on the NFIP is described in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

²⁵ Spreadsheets provided by NJOEM in October 2021.

Part 3: Hazard Identification and Risk Assessment

Part 3.5: Demographic Considerations

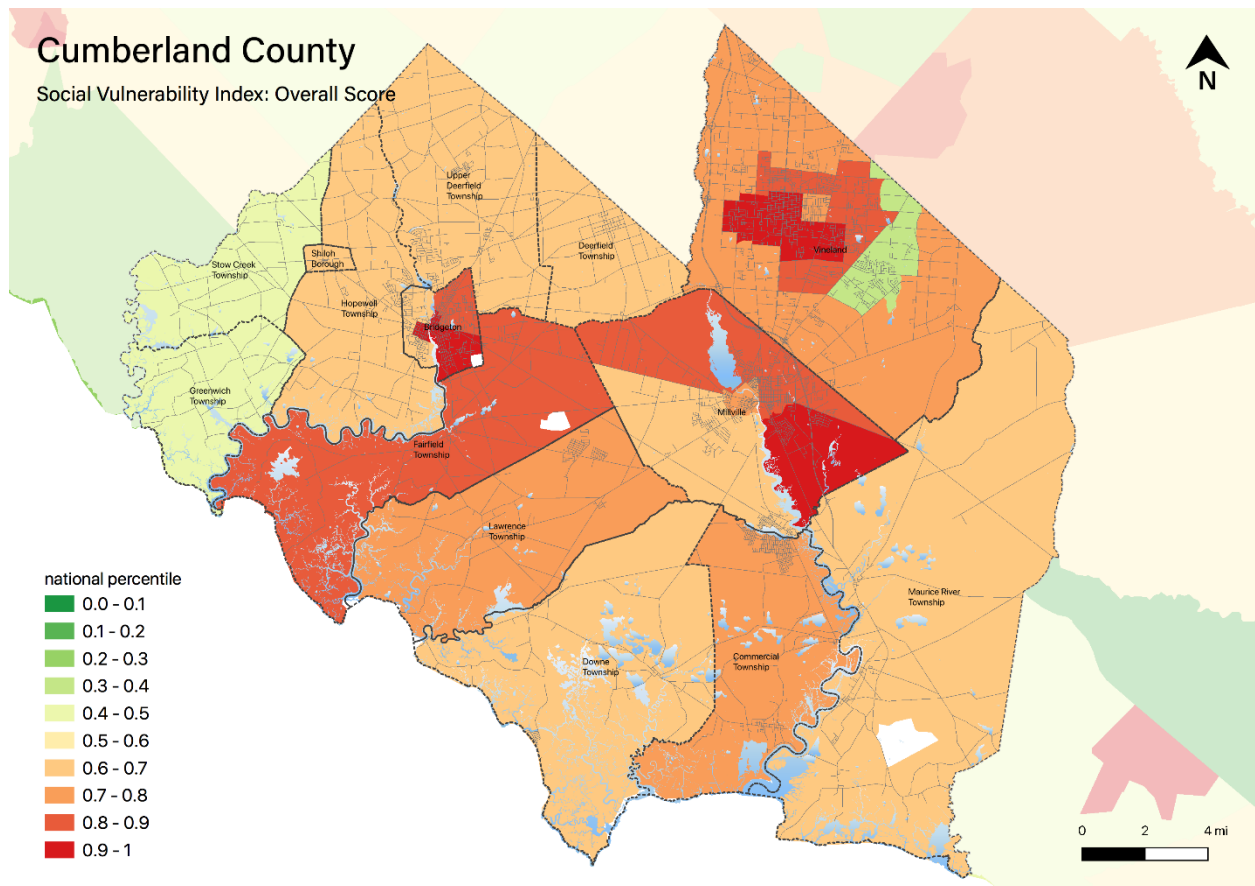
Demographic considerations include general population and land use factors. Table 10-7 includes current population estimates and changes since the previous US Census²⁶:

Table 10-7: Maurice River Township General Population Demographics

Metric	Current Estimates
2010 Population	7,976
2019 Population	7,484
Percent Population Change (2010-2019)	- 6.17%
Land Area	93.11 sq. miles
Population Density	80.4 / sq. mile

Demographic considerations also include differences in social vulnerability²⁷. Figure 10-7 shows the overall Social Vulnerability (SVI) Index overall scores for Cumberland County.

Figure 10-7: Cumberland County Social Vulnerability Index: Overall Scores



²⁶ US Census, 2019 ACS 5 Year Estimates, Table ID DP5

²⁷ Social vulnerability considerations are described in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

Part 3: Hazard Identification and Risk Assessment

For Maurice River Township, Table 10-8 includes selected metrics where social vulnerability considerations are noteworthy when compared with all national census tracts:

Table 10-8: Maurice River Township Social Vulnerability Considerations²⁸

Metric	Comparison with all National Census Tracts
Percentage of persons: Older than 65 years of age	Higher than 83%
Percentage of persons: With a disability	Higher than 83%

In addition, the percentage of residents earning below poverty level = 4.2% (compared with the average in New Jersey of 10.4%).

Part 3.6: Observations

- Outreach and guidance should be provided for residents, business owners, and property owners for:
 - Properties in or near coastal erosion, sea level rise, flood zones, or wildfire hazard areas.
 - Older buildings to help evaluate potential risk of damage due to hazards such as Earthquake, High Winds, and Severe Winter Weather (i.e., heavy snow loads).
- All critical facilities are potentially vulnerable to Earthquake, High Winds, and Severe Weather (heavy rains in summer and snow loads in winter).
- A few critical facilities are potentially vulnerable to Flood and Wildfire and will be identified as priorities for follow-up critical facility field evaluations.
- Priority for follow-up should also be focused on critical facilities housing vulnerable populations related to Extreme Temperature and Severe Weather hazards. For example, determining and documenting (cross referencing EOP) how residents will be moved to facilities providing shelter including cooling and warming centers (all of which would need adequate back-up power and hardening).

²⁸ All supporting data for SVI can be viewed at https://docs.google.com/spreadsheets/d/10zb_Qlg2CgGxb45_fcKiP46swaC16-fORxYTIOiAkP0/edit#gid=1481479799

Part 3: Hazard Identification and Risk Assessment

Part 3.7: Hazard Priorities

As a key step in the Hazard Identification and Risk Assessment (HIRA) process, the eleven (11) natural hazards identified in the CC HMPU Base Plan were discussed during the Municipal Working Group Work Sessions and the relative priority of these hazards was identified.

Based on their personal experience as well as the results of the HIRA, the Municipal Working Group rated the hazards as follows:

High Priority

- Coastal Erosion and Sea Level Rise
- Flood (ditches functioning as drainage systems but subject to sediment, vegetation, e.g., Bricksboro)
- High Wind
- Levee Failure
- Wildfire

Moderate Priority

- Dam Failure
- Extreme Temperature
- Severe Weather – Summer
- Severe Weather – Winter

Low Priority

- Drought
- Earthquake

Other hazards or conditions of concern for the Working Group included:

- Tornadoes – due to recent occurrences. However, tornadoes are accounted for under the High Wind hazard.
- Sequence of events leading to high ground water creating issues for tree fall (and related issues with downed trees on roadways and power lines), septic system failure, etc.

Part 4: Mitigation Measures

Part 4: Mitigation Measures

Part 4 includes six subparts:

- *Part 4.1: Mitigation Goals and Strategy*
- *Part 4.2: NJ4 HMP Mitigation Measures*
- *Part 4.3: Municipal Mitigation Measures – Identification*
- *Part 4.4: Municipal Mitigation Measures – Implementation*
- *Part 4.5: Multi-Jurisdictional Mitigation Measures*
- *Part 4.6: Authorities, Policies, Programs, Resources, and Plan Integration*

Part 4.1: Mitigation Goals and Strategy

Goals were originally established by the SDVR Hazard Mitigation Steering Committee and validated by the four County Hazard Mitigation Working Groups in response to risk and capability assessment results.

As part of the NJ4 HMP plan update process, these goals were reviewed and edited by the Municipal Working Groups for use in the Municipal Appendices. In addition, the Municipal Working Groups for the CC HMPU reviewed and reaffirmed these goals for continued use in the Appendices.

All mitigation measures in the Municipal Appendix are related to at least one of these four goal statements.

- **Goal 1: Improve education and outreach efforts** regarding potential risk of natural hazards and appropriate mitigation measures that can be used to reduce risk (including programs, activities, and projects)
- **Goal 2: Improve data collection, use, and sharing** to reduce the risk of natural hazards
- **Goal 3: Improve capabilities and coordination** at municipal, county, and state levels to plan and implement hazard mitigation measures
- **Goal 4: Plan and implement projects** to mitigate identified natural hazards, known problems, and areas of concern

Based on these goals, the results of the HIRA, and experience of participants in the plan update process, the Municipal Working Group identified an overarching strategy for mitigation:

- Identify and address known problems or areas of concern for critical facilities and vulnerable populations
- Provide opportunities for residents and property owners to access available information about risk reduction and mitigation measures, e.g., useful links added to municipal websites, in particular for Repetitive Flood Loss properties
- Institutionalize hazard mitigation into municipal activities and programs through regular interactions of the Municipal Working Group and integration of related regulatory programs and planning initiatives
- Stay informed regarding changing conditions and related improvements in hazard and risk data due to future natural hazard events and increasing understanding of the effects of climate change and use the information as part of periodic evaluations of and refinements or additions to the municipality's mitigation program

The mitigation measures described in Parts 4.3 through 4.5 of the Municipal Appendix reflect this strategy.

Part 4: Mitigation Measures

Part 4.2: NJ4 HMP Mitigation Measures

Known problems and areas of concern were the basis for mitigation measures identified in the NJ4 HMP. In cases where these problems and concerns still exist at the time of the CC HMPU, the related NJ4 HMP mitigation measures were candidates for inclusion in the Municipal Appendix.

Table 10-9 identifies the status of mitigation measures included in the NJ4 HMP. These entries were based on information provided by the Municipal Working Group. In some cases, the NJ4 HMP mitigation measures were carried over as part of the Municipal Appendix as indicated in the “Comments” column and the far right-hand column of Table 10-9.

Table 10-9: Status of Maurice River Township NJ4 HMP Mitigation Measures

Mitigation Action, Program, or Project	Status	Comments	Mitigation Measure # ^{29 30}
M-1: Identify and pursue outreach and education opportunities to inform municipal residents, businesses, and property owners.	Work-in-progress	Work-in-progress included: <ul style="list-style-type: none"> ▪ Use of Township website and Facebook bulletin board for emergency or hazard information dissemination including recent high tide incidents. ▪ Follow-up with facilities regarding projects. ▪ Informal discussions among Township officials regarding on-going projects such as dredging the mouth of the river. 	Carried over as part of M-1
M-2: Prioritize critical facilities and complete site and facility surveys to identify vulnerabilities and potential mitigation measures.			
M-3: Prioritize recurrent drainage problem areas and initiate data collection to track unreimbursed damages and related response and recovery expenses.			
M-4: Conduct regular Municipal Working Group meetings.			
M-5: Install 85 kV backup emergency power generator at Maurice River Township Hall (CF-1).	Completed	Completed in 2018 using HMGP from Superstorm Sandy ³¹	N/A
M-6: Install 125 kV backup emergency power generator at Maurice River Township Elementary School (CF-9).	No progress, lack of funding		Carried over as M-2
M-7: Install backup emergency power generator at Heislerville Fire Station (CF-5).	Work-in-progress	Township is seeking quotes.	Carried over as M-3
M-8: Install backup emergency power generator at Cumberland Fire Station (CF-7).	Completed	Completed in 2019 using HMGP from Superstorm Sandy ³¹	N/A
M-9: Install backup emergency power generator at Port Elizabeth Fire Station (CF-8).	No progress, lack of funding		Carried over as M-4

²⁹ Detailed information for identification and implementation of municipal (M-#) mitigation measures is included in Tables 10-10 and 10-11.

³⁰ Detailed information for identification and implementation of multi-jurisdictional (MJ-#) mitigation measures is included in Table 10-12.

³¹ Cumberland County Round 1 Generator Program.

Part 4: Mitigation Measures

Mitigation Action, Program, or Project	Status	Comments	Mitigation Measure # ^{29 30}
M-10: Require backup emergency power generator at communications towers (CF-3).	No longer relevant	Original issue was regarding a communication tower that has since been abandoned and functions transferred to Cumberland County Tower	N/A
M-11: Address identified Repetitive Flood Loss Properties.	Work-in-Progress	OEM Coordinator has been working to establish status of RL properties. As of February 2022, two of the identified properties have been determined to be n other municipalities.	Carried over as M-5
M-12: Create safety zones around critical facilities in or near wildfire risk areas including Cumberland Fire Station (CF-7).	Work-in-Progress	Regular prescribed burning is conducted in the area – NJ Forest Fire Service Division C (with 12 sections) Sections 2 and 4. Burn plans are submitted by Section Wardens each year and then, after approval, the work proceeds in coordination with Township.	Carried over as M-6
MJ-1: Alleviate flooding at Main Street, Dorchester at Crowder Run (CR 616).	No progress, lack of funding and permitting with NJ Department of Environmental Protection (NJDEP) issues	See Part 3.4 discussion regarding “Levee Failure” for information regarding current status and recent failures for many of these proposed mitigation measures. In addition, on-going discussions with NJDEP are focused on how to proceed including consideration of how impact of permitting requirements specifically relate to Delaware River communities.	Carried over as Multi-Jurisdictional Mitigation Measures MJ-1 through MJ-9
MJ-2: Alleviate flooding at Glade Road, between Heislerville and Delmont (CR 616).			
MJ-3: Alleviate flooding at NJ 47 (State Evacuation Route) in Bricksboro.			
MJ-4: Alleviate flooding at Mauricetown Causeway (CR 670).			
MJ-5: Alleviate flooding at East Point Road.			
MJ-6: Alleviate flooding at River Road.			
MJ-7: Alleviate flooding at Newell Road (CR 616).			
MJ-8: Alleviate flooding at NJ 47 (State Evacuation Route) & Whitney Point.			
MJ-9: Alleviate flooding at Carlisle Place Road at Crowder Run Branch Crossing in Dorchester (CR 709).			

Part 4: Mitigation Measures

Mitigation Action, Program, or Project	Status	Comments	Mitigation Measure # ²⁹ ₃₀
MJ-10: Improvement of dike network in Heislerville at Matt's Landing. This network protects Delmont and Heislerville from flooding.	Work-in-Progress	2017 NJDEP elevated and fortified edge of dike but work was compromised in August 2020 – waiting on FEMA Public Assistance program funding for repairs (DR 4580). In addition, the American Littoral Society has received funding for a phased project to protect eroding marshes at the mouth of the Maurice River. ³²	Carried over as Multi-Jurisdictional Mitigation Measure MJ-10
MJ-11: Impact of Sea Level Rise on septic systems and cess pools.	No progress	Bay front communities where water table has risen over the years with related difficulties in maintaining existing systems and installing new systems.	Carried over as Multi-Jurisdictional Mitigation Measure MJ-11

Part 4.3: Municipal Mitigation Measures – Identification

Table 10-10 includes the list of mitigation measures that are considered the responsibility of the municipality. These mitigation measures:

- Reflect the goals and strategy identified in Part 4.1
- Include projects carried over from NJ4 HMP as detailed in Part 4.2
- Include new projects, programs or activities identified by the Municipal Working Groups including measures to address known problems or areas of concern for critical facilities and vulnerable populations
- Address Repetitive Flood Loss (RL) and Severe Repetitive Flood Loss Properties (SRL)³³ if applicable

Table 10-10 includes:

- Brief description of the mitigation action, program, or project
- Hazard(s) addressed by the measure
- Relevant goal(s) addressed by the measure
- Whether the measure pertains to existing or new structures or both

³² See MJ-10 in Table 10-12 for more detailed description of American Littoral Society project.

³³ *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan includes a description of RL and SRL properties.

Part 4: Mitigation Measures

Table 10-10: Maurice River Township Municipal Mitigation Measures Identification

#	Mitigation Action, Program, or Project	Hazard(s)	Goal (s)	Existing or New Structures
M-1	<p><u>Township Mitigation Program</u> – including sustained efforts in cooperation with Cumberland County Office of Emergency Management (CC OEM) to:</p> <ul style="list-style-type: none"> ▪ Conduct outreach and education for residents, businesses, and property owners ▪ Complete critical facility field evaluations to identify potential vulnerabilities and mitigation measures ▪ Compile relevant data regarding hazard impacts ▪ Support regular interactions of the Municipal Working Group ▪ Seek integration of hazard mitigation with other parallel planning initiatives 	All	Goal #s 1, 2, and 3	All
M-2	Install 125 kV backup emergency power generator at Maurice River Township Elementary School (CF-9).	Power outage due to multiple hazard types.	Goal #4	Existing
M-3	Install backup emergency power generator at Heislerville Fire Station (CF-5).	Power outage due to multiple hazard types.	Goal #4	Existing
M-4	Install backup emergency power generator at Port Elizabeth Fire Station (CF-8).	Power outage due to multiple hazard types.	Goal #4	Existing
M-5	Address identified Repetitive Flood Loss Properties.	Flood	Goal #4	Existing
M-6	Create safety zones around critical facilities in or near wildfire risk areas including Cumberland Fire Station (CF-7).	Wildfire	Goal #4	Existing

Part 4: Mitigation Measures

Part 4.4: Municipal Mitigation Measures – Implementation

Table 10-11 includes information identified by the Municipal Working Group:

- Part(ies) responsible for following up with implementation of the measure
- Priority for implementation considering a range of criteria³⁴
- Project Type to help determine funding options and implementation mechanisms at the municipal level³⁵
- Estimated Cost, including estimates provided by the Municipal Working Group or approximate ranges for projects that are in early stages of development
- Target Date, indicating desired completion dates assuming availability of funding
- Next step(s) anticipated to implement the identified mitigation measures at the municipal level

Table 10-11: Maurice River Township Municipal Mitigation Measures Implementation

#	Mitigation Action, Program, or Project	Responsible Part(ies)	Priority	Project Type	Estimated Cost (\$)	Target Date	Next Step(s)
M-1	Township Mitigation Program	Township OEM and Township Working Group	High	Program	Staff Time	On-going, sustained effort	<ul style="list-style-type: none"> ▪ Identify outreach and education objectives and methods (working with CC OEM) ▪ Set priorities (if necessary) and conduct critical facility field evaluations ▪ Identify schedule for plan updates (including sustained public participation and plan integration efforts)
M-2	Install 125 kV backup emergency power generator at Maurice River Township Elementary School (CF-9).	Township School District	High	Back-up Emergency Power Generator	\$135K ³⁶	One year	<ul style="list-style-type: none"> ▪ Conduct project scoping.³⁷ ▪ Identify funding source(s).
M-3	Install backup emergency power generator at Heislerville Fire Station (CF-5).	Township Board of Fire Commissioners	High	Back-up Emergency Power Generator	< \$100K	One year	Complete bidding process and installation.
M-4	Install backup emergency power generator at Port Elizabeth Fire Station (CF-8).	Township Board of Fire Commissioners	High	Back-up Emergency Power Generator	< \$100K	One year	Same as M-2

³⁴ Section 4: Mitigation Measures of the CC HMPU Base Plan includes a description of evaluation criteria considered by the Municipal Working Group.

³⁵ Section 4: Mitigation Measures of the CC HMPU Base Plan includes a description of project types and related information regarding funding options and implementation mechanisms.

³⁶ Quote provided by Maurice River Township OEM (as part of NJ4 HMP).

³⁷ Project scoping for M-2 and M-4 to include determining feasibility to install hookups and transfer switch for using portable generator(s) to accommodate need, at least as a temporary measure

Part 4: Mitigation Measures

#	Mitigation Action, Program, or Project	Responsible Part(ies)	Priority	Project Type	Estimated Cost (\$)	Target Date	Next Step(s)
M-5	Address identified Repetitive Flood Loss Properties. ³⁸	Floodplain Administrator	Moderate	Private Property Flood Mitigation	Staff time commitment	Six months	<ul style="list-style-type: none"> ▪ Confirm properties are still valid RLs ▪ For any still-valid properties, prior to initiating landowner contacts, identify flood insurance implications and mitigation options including eligible activities per FEMA HMA programs.
M-6	Create safety zones around critical facilities in or near wildfire risk areas including Cumberland Fire Station (CF-7).	Township Board of Fire Commissioners	High	Public Property Wildfire Mitigation	Staff time commitment	One year	Conduct clearing and vegetation management consistent with Maurice River Township Fire Management Plan (2012).

The following are additional notes regarding the implementation of Mitigation Measure M-1 (consistent with *Part 3.6: Observations*):

- Outreach and guidance should be provided for owners of :
 - Properties with valid Repetitive Loss designations
 - Buildings potentially exposed to Coastal Erosion, Sea Level Rise, Dam Failure, Levee Failure, and/or Wildfire.
 - Buildings in or near the 1% annual flood zone regarding potential risk and availability of NFIP flood insurance.
 - Older buildings to help evaluate potential risk of damage due to hazards such as Earthquake, High Winds, and Severe Weather (heavy rains in summer and heavy snow loads in winter).
- Considerations for prioritizing and conducting critical facility field evaluations should include:
 - All CFs are potentially vulnerable to Earthquake, High Winds, and Severe Weather (heavy rains in summer and heavy snow loads in winter).
 - In addition, some CFs are potentially vulnerable to Flood and/or Wildfire and should also be considered as candidates for follow-up facility-level evaluations.
 - Priority for follow-up should also be focused on critical facilities housing vulnerable populations, e.g., group homes, related to Extreme Temperature and Severe Weather hazards. For example, determining and documenting (cross referencing the jurisdiction's Emergency Operations Plan) how residents will be moved to facilities providing shelter including cooling and warming centers (all of which would need adequate back-up power and hardening).
- Provisions for Plan Maintenance include :
 - Sustain public outreach and participation (including but not limited to targeted outreach and guidance efforts)
 - Conduct regular interactions of the Working Group to keep the plan current (e.g., an annual plan review and amendment process at a minimum)
 - Track and take advantage of plan integration opportunities including noting all upcoming plan updates as part of regular Working Group interactions

³⁸ Maurice River Township does not favor large scale buyouts but will consent if landowner is willing.

Part 4: Mitigation Measures

Part 4.5: Multi-Jurisdictional Mitigation Measures

During the Municipal Working Group Work Sessions, the Working Group identified some NJ4 HMP mitigation measures to be carried over, as well as adding new areas of concern, all of which were designated as multi-jurisdictional mitigation measures. Implementation of these measures, in the opinion of the Municipal Working Groups, requires participation or leadership from other levels of government, including county, state, and federal agencies. These multi-jurisdictional mitigation measures have been compiled in Table 10-12.

These measures have been referred to the County Working Group for consideration. As part of the implementation of the CC HMPU, the County Working Group will be working with the municipalities to:

- Confirm identified issues are valid multi-jurisdictional measures
- Identify specific responsibilities amongst different level(s) of government to address these problem areas
- Identify mitigation measures or related projects which may address the described problem areas that are already acknowledged as County responsibilities including identifying the appropriate County agency or department taking the lead role and status of implementing these mitigation measures
- Identify which, if any, additional mitigation measures the member agencies of the County Working Group will assume responsibility to implement

Table 10-12: Maurice River Township Multi-Jurisdictional Mitigation Measures

#	Problem Description	Hazard(s) Addressed	Goal Addressed	Applies to Existing or New Structures	Potential Partners	Priority
MJ-1	Alleviate flooding at Main Street, Dorchester at Crowder Run (CR 616).	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-2	Alleviate flooding at Glade Road, between Heislerville and Delmont (CR 616).	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-3	Alleviate flooding at NJ 47 (State Evacuation Route) in Bricksboro.	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-4	Alleviate flooding at Mauricetown Causeway (CR 670).	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-5	Alleviate flooding at East Point Road.	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-6	Alleviate flooding at River Road.	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High

Part 4: Mitigation Measures

#	Problem Description	Hazard(s) Addressed	Goal Addressed	Applies to Existing or New Structures	Potential Partners	Priority
MJ-7	Alleviate flooding at Newell Road (CR 616).	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-8	Alleviate flooding at NJ 47 (State Evacuation Route) & Whitney Point.	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-9	Alleviate flooding at Carlisle Place Road at Crowder Run Branch Crossing in Dorchester (CR 709).	Flood	Goal #4	Both	Township OEM, Cumberland County Departments of Public Works and Engineering, NJDOT, NJDEP	High
MJ-10	Mouth of the Maurice River Habitat Restoration Project. ³⁹	Sea Level Rise / Levee Failure	Goal #4	Existing	Township OEM, Commercial Township OEM, Cumberland County DPW, USACE, NJDEP (Fish & Wildlife), FEMA Public Assistance, PSE&G, American Littoral Society	High
MJ-11	Impact of Sea Level Rise on septic systems and cess pools.	Sea Level Rise	Goal #4	Existing	Township OEM, Cumberland County Department of Health, NJ DEP	Low
MJ-12 ⁴⁰	East Point Lighthouse Protection ⁴¹	Coastal Erosion and Sea Level Rise	Goal #4	Existing	Township OEM et al to be determined	High
MJ-13 ⁴⁰	East Point Road and Bay Avenue Protection ⁴³	Coastal Erosion and Sea Level Rise	Goal #4	Existing	Township OEM et al to be determined	High

³⁹ MJ-10 includes a coordinated effort by local, county, state, and federal agencies and non-governmental partner American Littoral Society (ALS). ALS has received a \$4.2M grant to address deteriorating conditions at the mouth of the Maurice River and provide protection for natural resource areas as well as communities and facilities along the river's edge.

Phases I and II of the project involve construction of rock revetments and nearshore breakwaters respectively at Basket Flats in Commercial Township. Phases I and II work is funded and anticipated to proceed in 2022. In addition, in 2022, the USACE will be placing dredged materials in front of the Heislerville Wildlife Management Area. The dredged material will be later enhanced during Phase III of the ALS project when a series of hybrid breakwaters will be installed. It is anticipated that Phase III will more directly benefit Maurice River Township. However, additional funding will need to be secured for Phase III.

⁴⁰ MJ-12 through MJ-19 are new projects identified by the Maurice River Township Working Group.

⁴¹ MJ-12 and MJ-13 involve on-going problem with 1849 lighthouse historic site and active navigation facility (per both the Township and NJ) and bay shore properties, respectively. Interim solutions did not work and may have compounded problems. Seeking permanent bulkheads or appropriate protective measures.

Part 4: Mitigation Measures

#	Problem Description	Hazard(s) Addressed	Goal Addressed	Applies to Existing or New Structures	Potential Partners	Priority
MJ-14 ⁴⁰	Absorption Booms Anchoring / Mooring Points ⁴²	Hazardous Material (Oil Spill) Releases	Goal #4	Existing	Township OEM et al to be determined	High
MJ-15 ⁴⁰	East Point Road Levee/Berm and Wooden Bridge Improvements	Levee Failure	Goal #4	Existing	Township OEM, Cumberland County, et al	Moderate
MJ-16 ⁴⁰	Railroad Embankment (between Mauricetown Causeway and Muskee Creek) Improvements	Levee Failure	Goal #4	Existing	Township OEM, Cumberland County, et al	Moderate
MJ-17 ⁴⁰	Bricksboro "McGinty" Dike (along the Maurice River from "in front of Front Lane" northward to where Market Street goes to the river) Improvements	Levee Failure	Goal #4	Existing	Township OEM, Cumberland County, et al	Moderate
MJ-18 ⁴⁰	Manumuskin Creek Bulkhead (just south and west of the Port Elizabeth Bridge (NJ Route 47), where Broad Street (County Road) ends) Improvements	Levee Failure	Goal #4	Existing	Township OEM, Cumberland County, NJ DEP, et al	High
MJ-19 ⁴⁰	Drainage Ditch Maintenance Program	Levee Failure	Goal #4	Existing	Township OEM, Cumberland County, et al	High

⁴² MJ-14 refers to a joint project by NJ and the Coast Guard to re-establish and install new anchoring / mooring points for absorption booms (also potentially relevant for Commercial Township). The project was identified following a fuel spill in 2021. Mayor has met with County et al regarding how to proceed. The project could also benefit anticipated new shipyard construction and activity in the Township and adjacent communities related to offshore alternative energy generation sites.

Part 4: Mitigation Measures

Part 4.6: Authorities, Policies, Programs, Resources, and Plan Integration

Part 4.6 includes three (3) subparts:

- Authorities, Policies, and Programs - Cross referencing relevant information and recommendations in the CC HMPU Base Plan regarding existing authorities, policies, and programs in the County and specific information about the Maurice River Township's participation and continued compliance in the National Flood Insurance Program (NFIP)
- Resources - Cross referencing relevant information and recommendations in the CC HMPU Base Plan regarding improving capabilities and coordination at the County and municipal level and specific information about Maurice River Township's available resources
- Plan Review and Integration – Identifying plans and programs included in the development of Plan Integration recommendations in the CC HMPU Base Plan

4.6.1: Authorities, Policies, and Programs

Section 4.6: Authorities, Policies, Programs, Resources, and Plan Integration of the CC HMPU Base Plan summarizes relevant authorities, policies, and programs related to hazard mitigation in Cumberland County including the NFIP.

Continuing participation in the NFIP as part of the implementation of the CC HMPU includes:

- Involvement of Floodplain Manager / Administrator during the CC HMPU implementation process
- Commitment to adopt updated FIRMs (if appropriate) and evaluate / update the municipality's Flood Damage Prevention Ordinance as appropriate per recommendations included in Section 4.6 of the CC HMPU Base Plan and under Part 4.6.3: Plan Review and Integration of this Appendix.

4.6.2: Resources

The update of the NJ4 HMP included reexamining participating jurisdictions' hazard mitigation and floodplain management capabilities; potential for improving capabilities and coordination within and between jurisdictions; and plan integration considerations, including:

- *Section 4: Mitigation Measures* of the CC HMPU Base Plan includes summary observations and recommendations concerning:
 - Capabilities for hazard mitigation planning and mitigation measure implementation and floodplain management for the participating jurisdictions
 - Coordination within municipal governments, between municipal governments and their communities, and between municipal, county, and state agencies responsible for hazard mitigation
- *Section 4.6: Authorities, Policies, Programs, Resources, and Plan Integration* of the CC HMPU Base Plan also includes summary statements regarding county and municipal resources and the impact of resource limitations on the overall approach to the CC HMPU mitigation strategies.

Table 10-13 compares the results of the Capability Assessment Survey for the County as a whole and Maurice River Township.

Part 4: Mitigation Measures

Table 10-13: Maurice River Township Capability Assessment Survey Results

Metric	Maurice River Township Results (n=6)	Cumberland County "as a whole" Results (n=85)
Position Type: Full-time	33.33%	51.76%
Position Type: Part-time	50.00%	36.47%
Position Type: Volunteer	16.67%	11.76%
Time in Position: Less than 1 year	0.00%	12.94%
Time in Position: 1 to 2 years	33.33%	8.24%
Time in Position: 2 to 5 years	16.67%	23.53%
Time in Position: More than 5 years	50.00%	55.29%
Prior Experience: None	66.67%	57.65%
Prior Experience: with hazard mitigation planning	33.33%	31.76%
Prior Experience: with HMA grant administration	16.67%	12.94%
Prior Experience: with floodplain management	0.00%	7.06%
Training / Certifications: None	83.33%	75.29%
Training / Certifications: for hazard mitigation planning and implementation	0.00%	9.41%
Training / Certifications: for floodplain management	16.67%	15.29%

In general terms, when compared to the sampled individuals from across all the Working Groups, Maurice River Township has:

- Lower percentage of full-time staff
- Similar average time in current positions
- Similar percentage of staff with experience in hazard mitigation planning and HMA grant administration
- Lower percentage of staff with experience in floodplain management
- Lower percentage of staff with training for hazard mitigation planning and implementation
- Similar percentage of staff with training for floodplain management

Part 4: Mitigation Measures

4.6.3: Plan Review and Integration

Section 4.6: *Authorities, Policies, Programs, Resources, and Plan Integration* of the CC HMPU Base Plan includes:

- Table BP.4-2 that identifies primary plans and documents collected from each of the participating municipalities.
- Includes results of reviewing primary plans and documents to determine the extent to which these documents reflect up-to-date hazard risk and mitigation.
- Includes recommendations for integrating the results of the CC HMPU, including hazard mitigation data, goals, measures, and/or recommendations with existing plans and programs at the municipal level that are relevant to all participating municipalities and incorporated by reference in each of the jurisdiction-specific Appendices

The plan maintenance process articulates and specifies a commitment to review and follow these recommendations during future scheduled updates of these various documents as considered appropriate by the Working Group and the governing body of the municipality.

Specific documents obtained during the plan update process from the Maurice River Township Working Group include:

- Flood Damage Prevention Ordinance
- Maurice River Township Emergency Operations Plan (2021)
- Maurice River Township Wildland Fire Management Plan (2012)
- Maurice River Township Master Plan (2000)
- Maurice River Township Master Plan Reexamination Report (2006)
- Maurice River Township Master Plan Amendment re: Municipal Stormwater Management Plan (2008) Ordinance amended 2021 – will be revised again for Pinelands-related process, likely in 2022
- Maurice River Township Master Plan Reexamination Report (2012)
- Maurice River Township Master Plan Amendment (2013)
- Maurice River Township Zoning Map (2005) (per www.mauricerivertwp.org)
- Maurice River Township Land Development Regulations Supplementary District Regulations 35-8.4: Floodplain Delineation and Management (2002)
- Maurice River Township 2014 Capital Improvement Budget and Capital Improvement Program
- Cumberland County Delaware Bayshore Recovery Plan (2013)
- NJDEP Coastal Community Resilience Evaluation for Maurice River Township

In addition, the following is status regarding the status of the Flood Damage Prevention Ordinance::

- Current version was adopted in 2016 and is consistent with the most recent FDPO per NJDEP]
- The Construction Official is the responsible party for enforcement. The individual who currently holds that position is included on the Working Group and has completed the capability assessment survey.
- The document is accessible to the public via internet⁴³.

⁴³ <https://ecode360.com/34975252>

Part 4: Mitigation Measures

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