



Cumberland County Multi-Hazard Mitigation Plan Update  
**Participating Jurisdiction Appendices**

**Appendix 13**  
**Stow Creek Township, New Jersey**

Draft

May 13, 2022

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## Part 1: Overview

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### 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: Stow Creek Township Municipal Appendix

This Municipal Appendix is focused on Stow Creek Township in Cumberland County, New Jersey.

The Stow Creek Township Municipal Working Group **[will recommend]** the Stow Creek Township Municipal Appendix for adoption to the Stow Creek Township Committee.

The Stow Creek Township Committee **[will adopt]** the Municipal Appendix by resolution (see Attachment B: Adoption Resolution).

Region II of the Federal Emergency Management Agency **[will approve]** the Municipal Appendix (see Attachment C: Approval Letter).

## 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 13-1 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 **will review** the Preliminary Draft, Public Review Draft, and Final 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: Five 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 13-1: Stow Creek Township Working Group**

First Name	Last Name	Department	Position	Project Kick-off Meeting <sup>1</sup>	Round 1 Work Session <sup>2</sup>	Round 2 Work Session <sup>3</sup>	Working Group Meeting <sup>4</sup>	Contribution <sup>5</sup>
Christopher	Levick *	Office of Emergency Management (OEM)	Coordinator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Organized Working Group and Work Sessions.
Curtis	Homan *	OEM	Deputy Coordinator					
Kenneth	Mayhew *	OEM / Hopewell-Stow Creek Fire Department	Radiological Officer / Chief					
Randy	Dickinson *	Township Committee	Mayor					

<sup>1</sup> Project Kickoff Meeting was held on May 20, 2021.

<sup>2</sup> Round 1 Work Session was held on August 17, 2021.

<sup>3</sup> Round 2 Work Session was held on November 10, 2021.

<sup>4</sup> Working Group Meeting **will be** held on **to be determined (if applicable)**.

<sup>5</sup> 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 <sup>1</sup>	Round 1 Work Session <sup>2</sup>	Round 2 Work Session <sup>3</sup>	Working Group Meeting <sup>4</sup>	Contribution <sup>5</sup>
Scott	Lang *	Planning/Zoning Board	Secretary					
Teresa	Warburton	Code Enforcement	Enforcement Officer / Floodplain Administrator					

The following lists candidate positions and organizations within the community that 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.<sup>6</sup>

- School Board

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)
- Emergency Medical Services (services provided by City of Bridgeton)
- Major Employers and Businesses
- Community / Faith Based Organizations
- Environmental Organizations
- Healthcare Institutions

<sup>6</sup> Plan implementation and maintenance activities are described in *Section 4: Mitigation Measures* of the CC HMPU Base Plan.

## 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 13-2 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 13-2: Public Participation**

Date	Type of Involvement	Location
July 27, 2021	Link to Project Website <sup>7</sup> established and maintained.	Township website <sup>8</sup>
August 17, 2021	Public meeting conducted with presentation and open discussion.	
September 8, 2021	Preliminary Draft Municipal Appendix available for public comment.	Project Website <sup>7</sup>
September 12, 2021	Notice posted re: Preliminary Draft Municipal Appendix review period with link to Project Website.	Township website <sup>8</sup>
April 18, 2022	Notice posted re: Public Review Draft Municipal Appendix review period with link to Project Website.	Township website, "Announcements" tab <sup>8</sup>
April 19, 2022	Public Review Draft Municipal Appendix available for public comment.	Project Website <sup>7</sup>
[date to be determined]	Public hearing [will be] conducted regarding the Final Draft Municipal Appendix providing for open discussion and public comment prior to formal adoption.	[insert location]

Public comments and input received for the Preliminary Draft, Public Review Draft, and Final Draft versions of the Municipal Appendix [will be]:

- Considered by the Municipal Working Group and [will be] incorporated into the Municipal Appendix where appropriate.
- Included in Attachment A to the Municipal Appendix along with a brief explanation of if and how the comments were addressed in the Municipal Appendix.

In addition, the Municipal Appendix [will be] 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.<sup>9</sup> In addition, public participation will continue to be encouraged during subsequent plan implementation and maintenance activities.<sup>10</sup>

<sup>7</sup> <https://cchmpu21.com/documents>

<sup>8</sup> <http://stowcreektwp.com/>

<sup>9</sup> See Mitigation Measure M-1 in Part 4 of the Municipal Appendix.

<sup>10</sup> 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

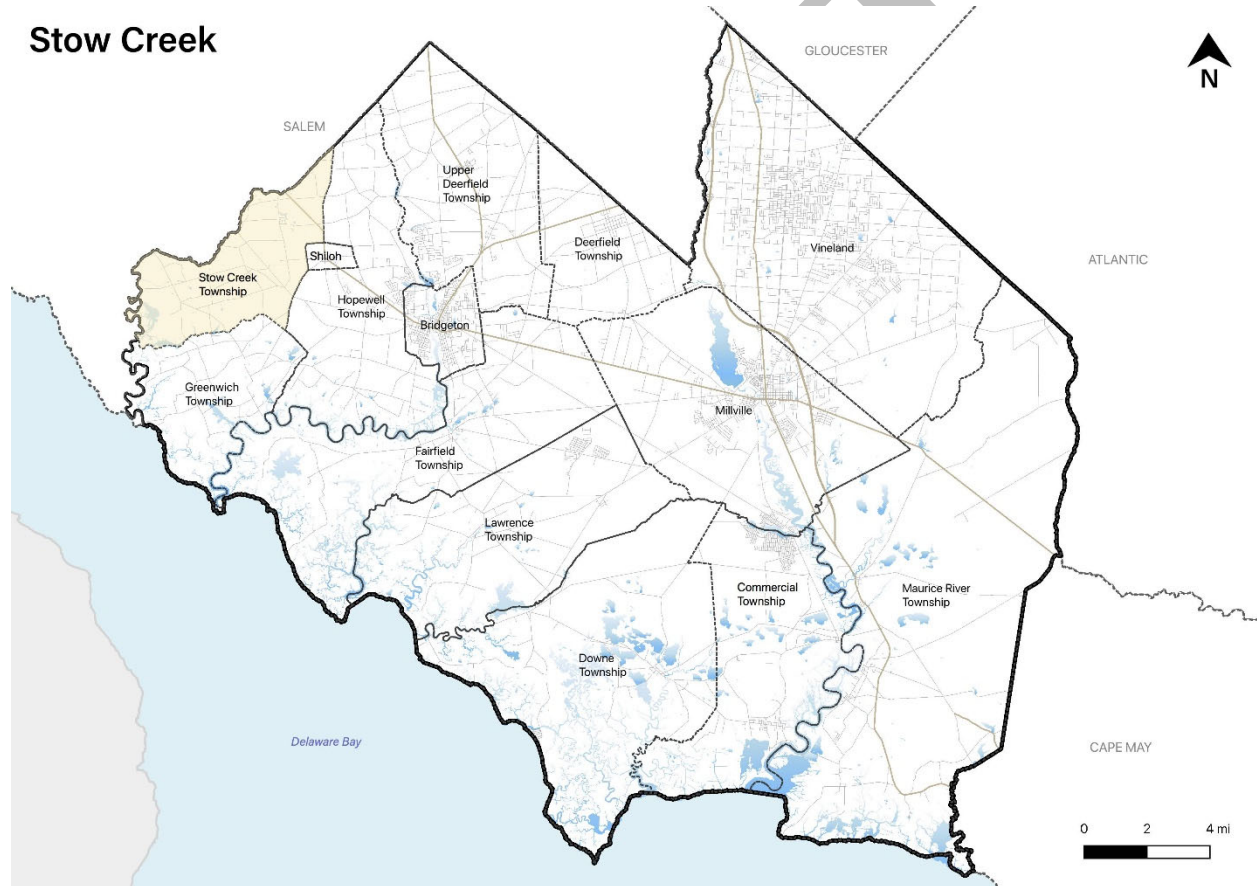
Part 3 includes seven subparts:

- *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

Stow Creek Township is located in the northwestern corner of Cumberland County (See Figure 13-1).

**Figure 13-1: Stow Creek Township Location Map**

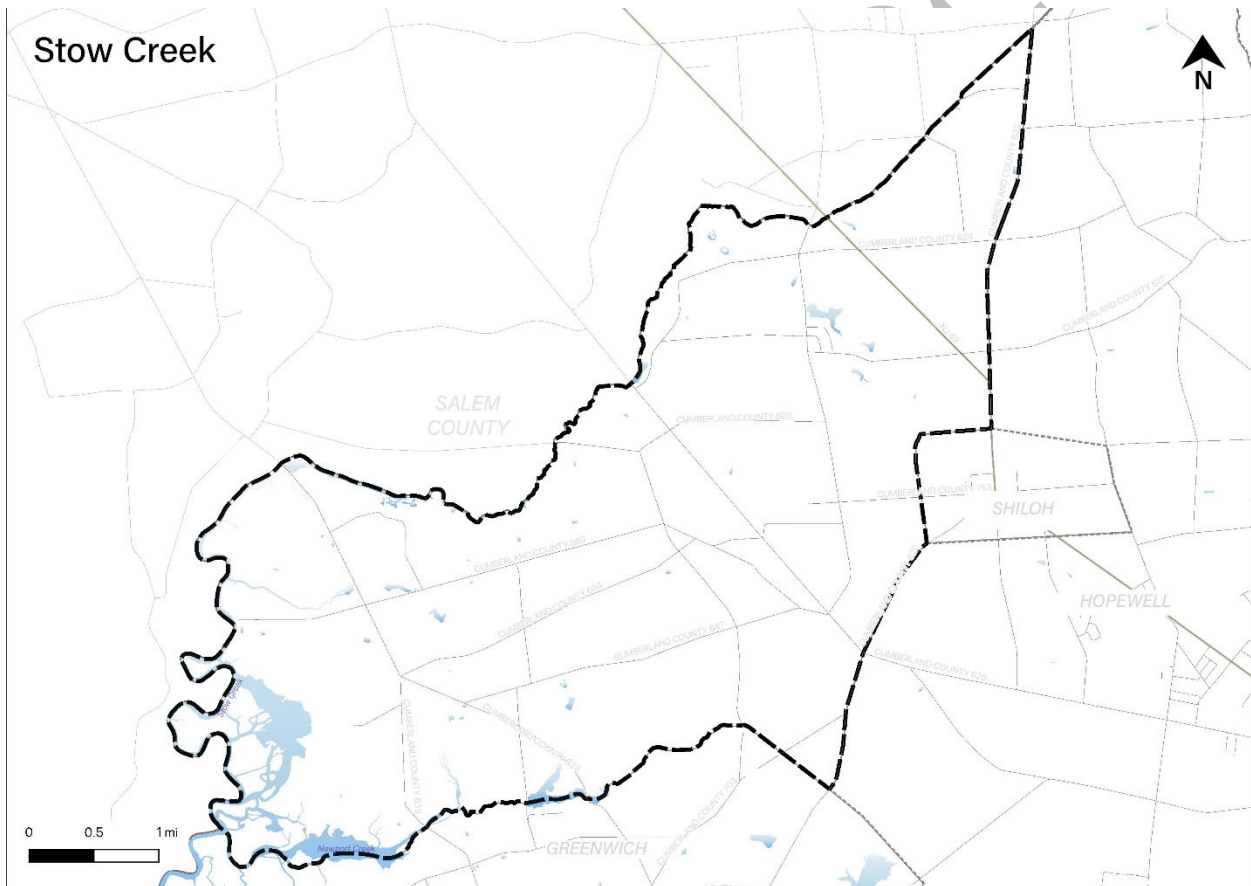


### Part 3: Hazard Identification and Risk Assessment

Stow Creek Township is inland, rural residential community with a stable population per recent census data. The Township includes large areas of lowlands and is among the least densely populated municipalities in the State of New Jersey.

Per Figure 13-2, major water courses include Stow Creek, Macanippuck Run and Bishop Run. Major transportation routes include State Highway 49 and Cumberland County Route 626. The land is predominantly flat.

**Figure 13-2: Stow Creek Township Base Map**



## Part 3: Hazard Identification and Risk Assessment

### Part 3.2: General Building Stock

As of 2015, there are 1,155 buildings in Stow Creek Township with a total assessed value of improvements of \$81,279,900. Figure 13-3 shows the footprints of these buildings.

**Figure 13-3: Stow Creek Township Building Footprints<sup>11</sup>**

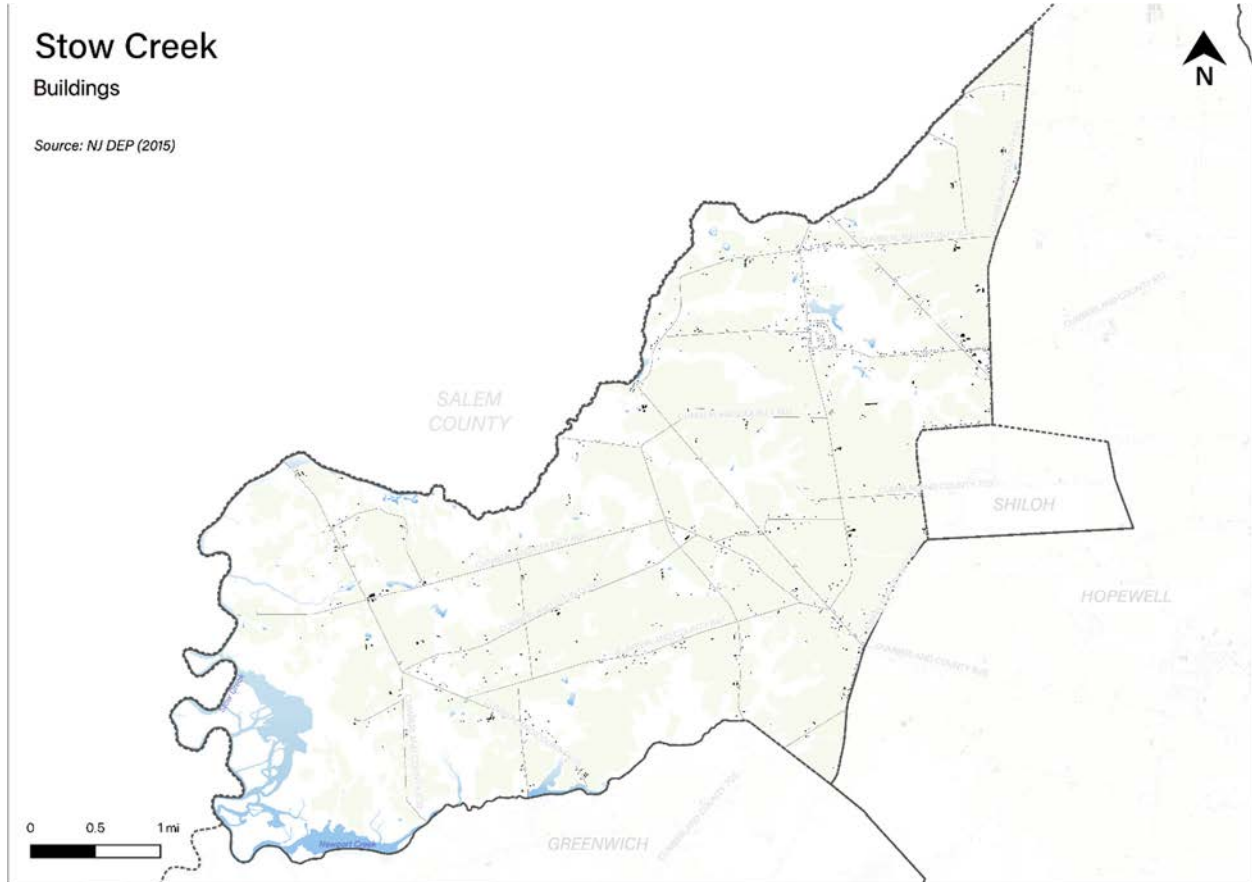


Table 13-3 shows the distribution of these structures according to land use distinctions.

**Table 13-3: Stow Creek Township Buildings per Land Use Type<sup>12</sup>**

Land Use Type	Residential	Commercial	Industrial	Other
Number of Buildings	567	45	0	488
% of Total	52%	4%	0%	44%

<sup>11</sup> 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.

<sup>12</sup> Land use types were isolated from MOD-IV Parcels and Tax Assessor data composite (2021) per <https://njogis-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 Facilities<sup>13</sup>

As of April 2022, there are four critical facilities in Stow Creek 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 13-4 includes current inventory information for municipal critical facilities and cross-references to related mitigation measures identified in Part 4 of the Municipal Appendix. Figure 13.4 shows the location of these critical facilities.

**Table 13-4: Stow Creek Township Critical Facilities Inventory**

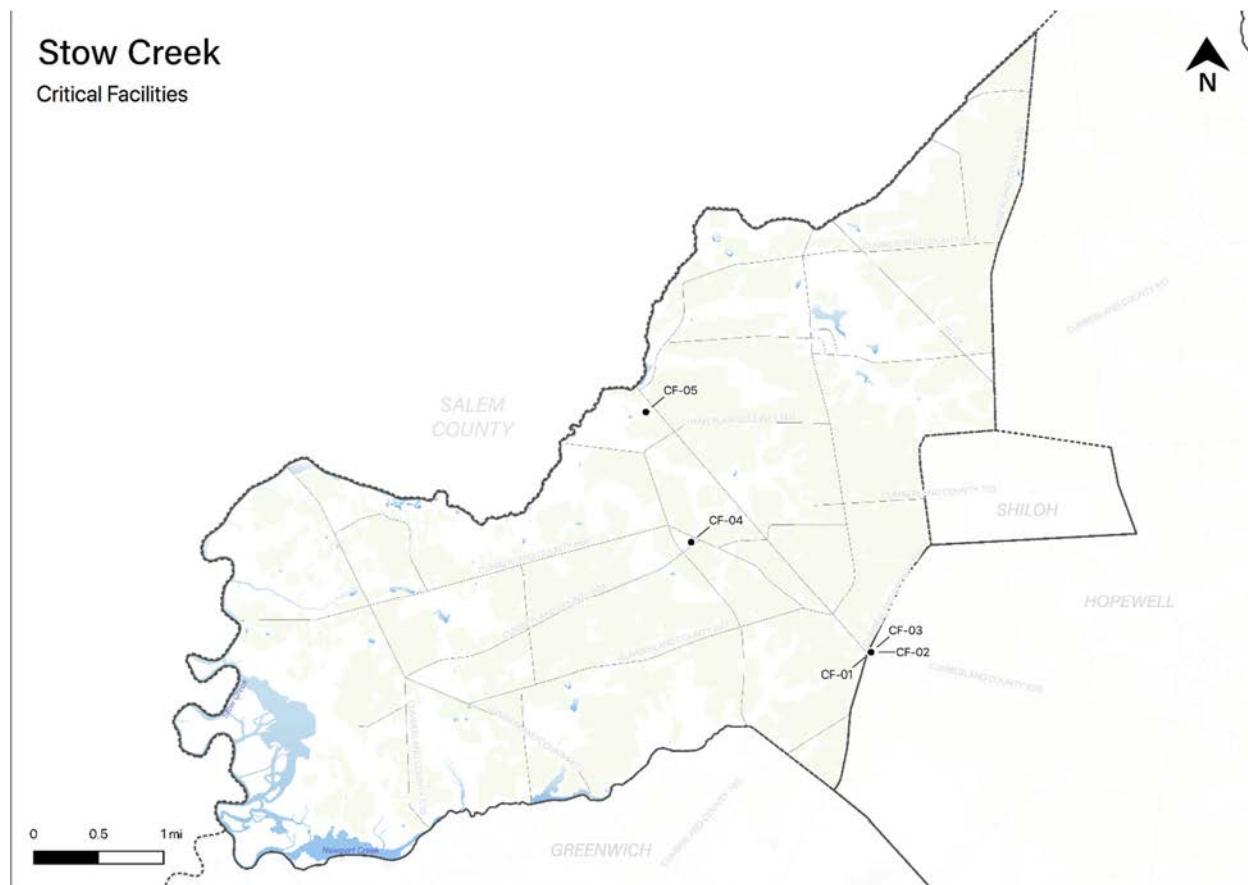
CF #	Name	Type	Sub-Type	Address	Co-located CF #	Shelter (Y/N)	Generator (Y/N)	Comments	Mitigation Measure #
CF-1	Emergency Operations Center	EOC	Co-located Facilities	751 Roadstown Road, Bridgeton	CF-1	N	Y		MJ-3
CF-2	Hopewell / Stow Creek Fire Department	FireStations	Stations	751 Roadstown Road, Bridgeton	CF-1	N	Y		MJ-3
CF-3	Stow Creek Township Elementary School	Schools	Public Schools	11 Gum Tree Corner Road, Bridgeton		Y <sup>14</sup>	N		MJ-1
CF-4	Woodland Country Day School	Schools	Private Schools	1216 Roadstown Road, Bridgeton		N <sup>14</sup>	N	Private Grades K - 8	M-2 and M-3

are

<sup>13</sup> Critical facility definitions and considerations are described in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

<sup>14</sup> Stow Creek Township Elementary School and Woodland Country Day School are both located within 10-mile radius Emergency Planning Zone (EPZ) of the Salem Nuclear Power Plant. The elementary school has been surveyed by American Red Cross. However, potential use of the school as shelter is contingent on a non-radiological emergency. In addition, as of 2022, Township is now planning for most foreseeable situations to direct residents to shelter in Greenwich Township per agreement with Township officials (which has shelter capacity with a generator)

Figure 13-4: Stow Creek Township Critical Facilities



### Part 3.4: Hazard Exposure Assessment

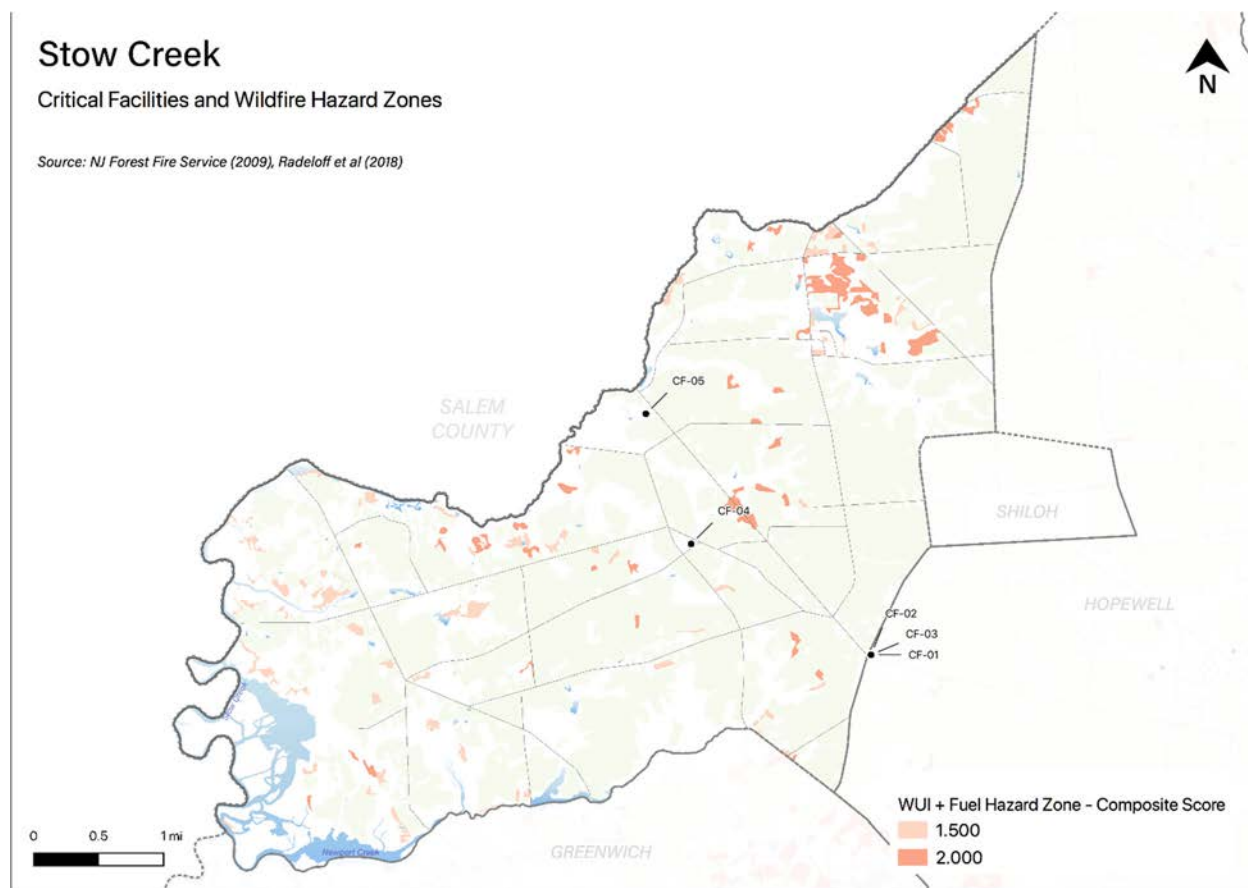
Hazard exposure assessments were completed for the eleven (11) natural hazards identified in the CC HMPU Base Plan<sup>15</sup>.

Key results for Stow Creek Township are depicted in the following.

**Mapping:** Figure 13-5 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).

<sup>15</sup> Hazard profiles are included for all eleven natural hazards in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

Figure 13-5: Stow Creek Township Critical Facilities and Wildfire Hazard Zones



Mapping results are available for general building stock and critical facilities for the following hazards:<sup>16</sup>

- 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 13-5 indicates hazard exposure for general building stock
- Table 13-6 indicates hazard exposure for critical facilities

<sup>16</sup> 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/vm343y598g1oab/AABGZ61cC0myZXgcEAu21ema?dl=0>.

**Part 3: Hazard Identification and Risk Assessment**

**Table 13-5: Stow Creek 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 <sup>17</sup>	1	-	no data	N/A
Sea Level Rise - 3 feet increase	9	0.78%	\$974,000	1.2%
Flood - Within 1 % Annual Chance Zone	9	1%	\$785,600	1%
Flood - Near (within 500 feet) of 1% Annual Chance Zone	158	13%	\$12,651,400	16%
Earthquake – Structure built before 1927 <sup>18</sup>	134	23%	\$17,090,500	23%
High Winds / Severe Weather – Structure built before 1975	359	62%	\$43,027,800	58%
Wildfire – Composite score > 2.5 <sup>19</sup>	0	N/A	\$0	N/A

**Table 13-6: Stow Creek Township Critical Facilities Hazard Exposure<sup>20</sup>**

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	None	N/A
Flood – Future potential (within 1,000 feet) 1% Annual Chance Zone	None	N/A
Wildfire	None	N/A

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)

<sup>17</sup> All supporting data for Coastal Erosion, Sea Level Rise (3-foot rise), Flood (all) can be viewed at [https://docs.google.com/spreadsheets/d/1fcN5hL3Jz4X7mldFyKs6wol6J6IAR9bSsvJPiQE\\_A0Q/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1fcN5hL3Jz4X7mldFyKs6wol6J6IAR9bSsvJPiQE_A0Q/edit?usp=sharing)

<sup>18</sup> All supporting data for Earthquake, High Winds, and Severe Weather can be viewed at <https://docs.google.com/spreadsheets/d/1Zx1LZwKQ8esqdv4c9hbbSZurtMjH4UITQWJY1LrZezc/edit?usp=sharing>

<sup>19</sup> All supporting data for Wildfire can be viewed at [https://docs.google.com/spreadsheets/d/1JAbfd3A-eCHI93pZFaPVuM\\_H2yvuUzeHCmoijv-oxsw/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1JAbfd3A-eCHI93pZFaPVuM_H2yvuUzeHCmoijv-oxsw/edit?usp=sharing)

<sup>20</sup> All supporting data for critical facility hazard exposure can be viewed at <https://docs.google.com/spreadsheets/d/1MPLiOANm7fHoyKuxyWqyang26LTSPayTxJvLmK5IGPg/edit?usp=sharing>

### Part 3: Hazard Identification and Risk Assessment

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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.

#### Dam Failure

Per the New Jersey Department of Environmental Protection (NJDEP) data<sup>21</sup>:

- There are two (2) “Significant Hazard” dams located in the Township:
  - Jericho Pond Dam on Stow Creek
  - Arrowhead Lake Dam on a branch of Horse Run
- No (0) dam failure incidents had been recorded in the Township as of 2014

#### Levee Failure

Per the South Jersey Levee Inventory<sup>22</sup>:

- There are no (0) levees in the Township but two (2) parcels within a 1,000-foot buffer from a levee or levees located in Lower Alloways Township in Salem County:
- No (0) levee failure incidents had been recorded in the Township as of 2014

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 Stow Creek Township Working Group, there is a belief that the Jericho Pond Dam, which is privately owned, has been cut and drained. Otherwise, there were no changes to the NJ4 HMP HIRA Dam Failure and Levee Failure hazard exposure results.

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<sup>21</sup> (1) NJDEP Dam Safety and Flood Control (Dam Locations); (2) NJDEP Land Use / Land Cover; (3) US Census Bureau 2010 Census

<sup>22</sup> US Department of Agriculture, National Resources Conservation Services (NRCS) South Jersey Levee Inventory, 2010.



### Part 3: Hazard Identification and Risk Assessment

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#### National Flood Insurance Program Information

One additional metric discussed with the Working Group was statistical information from the National Flood Insurance Program (NFIP)<sup>23</sup>. The following are relevant numbers for Stow Creek Township as provided by the New Jersey Office of Emergency Management (NJOEM)<sup>24</sup>:

- Active Policies – one (1) active NFIP flood insurance policy
- Claims History – one (1) claim made against the NFIP in 2011
- Repetitive Loss Properties (RL) – no (0) 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 13-5), which are significantly higher than the number of active policies:

- Flood - Within 1 % Annual Chance Zone: 9 buildings ~ 1% of total buildings, with a value of \$785,600 ~ 1% of the total building value in the Township.
- Flood - Near (within 500 feet) of 1% Annual Chance Zone: 158 buildings ~ 13% of total buildings, with a value of \$12,651,400 ~ 13% of the total building value in the Township.

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<sup>23</sup> Information on the NFIP is described in *Section 3: Hazard Identification and Risk Assessment* of the CC HMPU Base Plan.

<sup>24</sup> Spreadsheets provided by NJOEM in October 2021.

## Part 3: Hazard Identification and Risk Assessment

### Part 3.5: Demographic Considerations

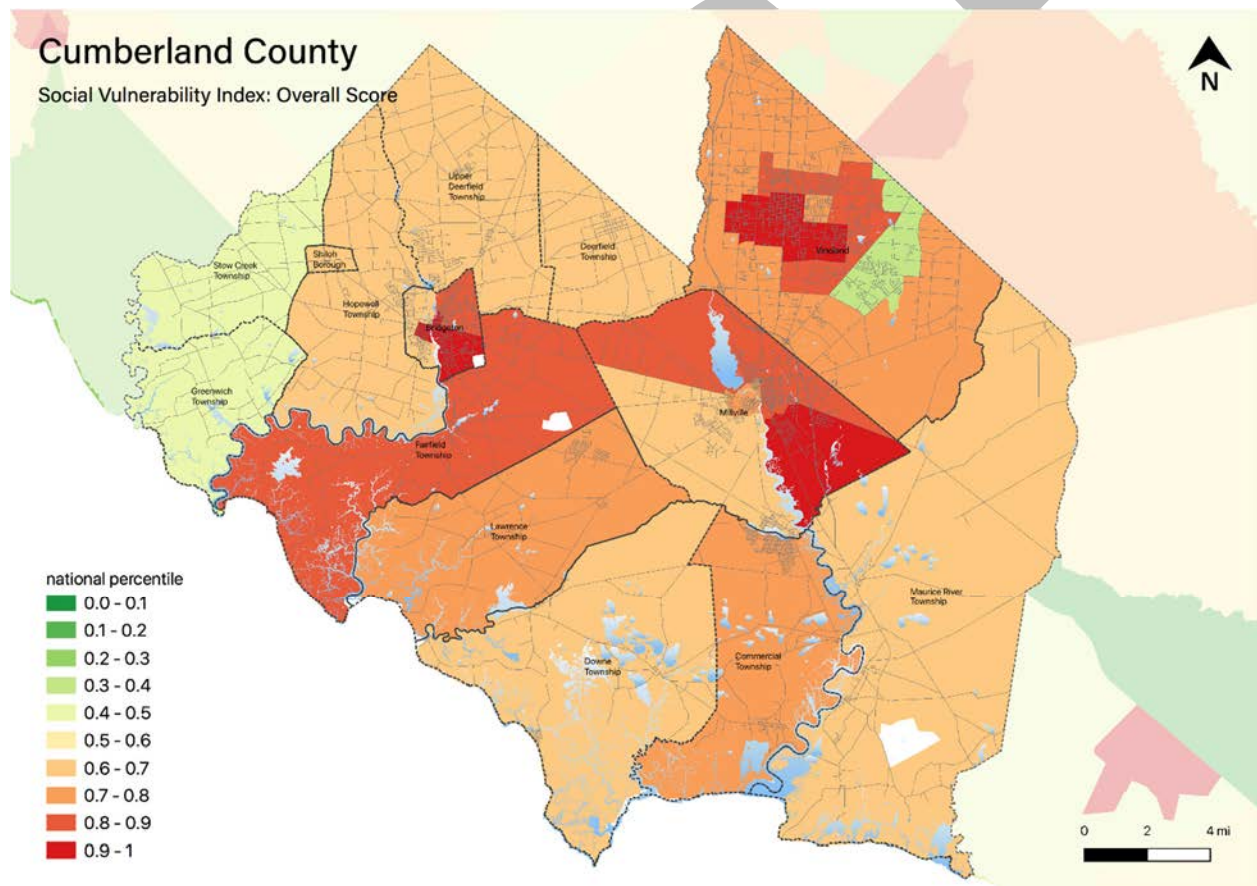
Demographic considerations include general population and land use factors. Table 13-7 includes current population estimates and changes since the previous US Census<sup>25</sup>:

**Table 13-7: Stow Creek Township General Population Demographics**

Metric	Current Estimates
2010 Population	1,431
2019 Population	1,390
Percent Population Change (2010-2019)	- 2.12%
Land Area	18.30 sq. miles
Population Density	76.0 / sq. mile

Demographic considerations also include differences in social vulnerability<sup>26</sup>. Figure 13-6 shows the overall Social Vulnerability (SVI) Index overall scores for Cumberland County.

**Figure 13-6: Cumberland County Social Vulnerability Index: Overall Scores**



<sup>25</sup> US Census, 2019 ACS 5 Year Estimates, Table ID DP5

<sup>26</sup> 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 Stow Creek Township, Table 13-8 includes selected metrics where social vulnerability considerations are noteworthy when compared with all national census tracts:

**Table 13-8: Stow Creek Township Social Vulnerability Considerations<sup>27</sup>**

Metric	Comparison with all National Census Tracts
Percentage of persons: Older than 65 years of age	Higher than 88%
Percentage of persons: With a disability	Higher than 81%

In addition, the percentage of residents earning below poverty level = 8.5% (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).
- Priority for follow-up should also be focused on identifying and addressing any 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).

<sup>27</sup> All supporting data for SVI can be viewed at [https://docs.google.com/spreadsheets/d/10zb\\_Qlg2CqGxb45\\_fcKiP46swaC16-fORxYTIOiAKP0/edit#gid=1481479799](https://docs.google.com/spreadsheets/d/10zb_Qlg2CqGxb45_fcKiP46swaC16-fORxYTIOiAKP0/edit#gid=1481479799)

### 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

- Drought
- High Wind

#### Moderate Priority

- Severe Weather – Summer
- Severe Weather – Winter

#### Low Priority

- Coastal Erosion & Sea Level Rise
- Dam Failure
- Earthquake
- Extreme Temperature: Hot & Cold
- Flood
- Wildfire

One additional hazard was considered but was not considered applicable to the municipality:

- Levee Failure

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## Part 4: Mitigation Measures

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### 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
- 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 13-9 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 13-9.

**Table 13-9: Status of Stow Creek Township NJ4 HMP Mitigation Measures**

Mitigation Action, Program, or Project	Status	Comments	Mitigation Measure # 2829
<b>M-1:</b> 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"> <li>▪ Use of Township website for emergency or hazard information dissemination</li> <li>▪ Informal discussions among Township officials, etc.</li> </ul>	Carried over as part of M-1
<b>M-2:</b> Prioritize critical facilities and complete site and facility surveys to identify vulnerabilities and potential mitigation measures.			
<b>M-3:</b> Conduct regular Municipal Working Group meetings.			
<b>M-4:</b> Provide permanent backup emergency power to the Stow Creek Elementary School (CF-4).	Not completed, exploring alternatives.	Stow Creek Township is exploring possible alternate use of Greenwich Township sheltering options. However, this mitigation measure should be carried over pending possible school consolidation.	Carried over as M-2
<b>M-5:</b> Provide hardening against wind and snow at Stow Creek Elementary School (township shelter) (CF-4).	Work-in-progress	New windows were installed in 2014 by using School Board funds	Carried over as M-3
<b>MJ-1:</b> Alleviate drainage problems along Roadstown Road near the Stow Creek-Hopewell Firehouse (County Roads 620 and 626) (CF-3).	No progress	Minor issue, not likely to be high priority for potential partners	Carried over as multi-jurisdictional mitigation measure MJ-1

<sup>28</sup> Detailed information for identification and implementation of municipal (M-#) mitigation measures is included in Tables 13-10 and 13-11.

<sup>29</sup> Detailed information for identification and implementation of multi-jurisdictional (MJ-#) mitigation measures is included in Table 13-12.

## Part 4: Mitigation Measures

Mitigation Action, Program, or Project	Status	Comments	Mitigation Measure # 2829
<b>MJ-2:</b> Alleviate drainage problems on State Highway 49 north of Shiloh Borough.	No progress	Same as MJ-1	Carried over as multi-jurisdictional mitigation measure MJ-2
<b>MJ-3:</b> Provide hardening against wind for Hopewell – Stow Creek Fire House (CF-1 and CF-2).	No progress		Carried over as multi-jurisdictional mitigation measure MJ-3

### Part 4.3: Municipal Mitigation Measures – Identification

Table 13-10 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)<sup>30</sup> if applicable

Table 13-10 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

<sup>30</sup> 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 13-10: Stow Creek 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"> <li>▪ Conduct outreach and education for residents, businesses, and property owners</li> <li>▪ Complete critical facility field evaluations to identify potential vulnerabilities and mitigation measures</li> <li>▪ Compile relevant data regarding hazard impacts</li> <li>▪ Support regular interactions of the Township Working Group</li> <li>▪ Seek integration of hazard mitigation with other parallel planning initiatives</li> </ul>	All	Goal #s 1, 2, and 3	All
M-2	Provide permanent backup emergency power to the Stow Creek Elementary School (CF-4).	Power outage due to multiple hazard types.	Goal #4	Existing
M-3	Provide additional hardening against wind and snow at Stow Creek Elementary School (CF-4).	High Wind, Severe Winter Weather	Goal #4	Existing

### Part 4.4: Municipal Mitigation Measures – Implementation

Table 13-11 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 criteria<sup>31</sup>
- Project Type to help determine funding options and implementation mechanisms at the municipal level<sup>32</sup>
- 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

<sup>31</sup> Section 4: Mitigation Measures of the CC HMPU Base Plan includes a description of evaluation criteria considered by the Municipal Working Group.

<sup>32</sup> 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.



## Part 4: Mitigation Measures

**Table 13-11: Stow Creek 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"> <li>▪ Identify outreach and education objectives and methods (working with CC OEM)</li> <li>▪ Set priorities (if necessary) and conduct critical facility field evaluations</li> <li>▪ Identify schedule for plan updates (including sustained public participation and plan integration efforts)</li> </ul>
M-2	Provide permanent backup emergency power to the Stow Creek Elementary School (CF-4).	Township OEM and Stow Creek School Board	High	Back-up Emergency Power Generator	< \$100K	One to three years	<ul style="list-style-type: none"> <li>▪ Conduct project scoping.</li> <li>▪ Identify funding source(s).</li> </ul>
M-3	Provide additional hardening against wind and snow at Stow Creek Elementary School (CF-4).	Township OEM and Stow Creek School Board	High	Building Retrofits	To be determined	One to three years	<ul style="list-style-type: none"> <li>▪ Conduct project scoping, including assessing the condition of the roof.</li> </ul>

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 :
  - 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).
  - 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).

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## Part 4: Mitigation Measures

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- 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

### 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 13-12.

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

**Part 4: Mitigation Measures**

**Table 13-12: Stow Creek Township Multi-Jurisdictional Mitigation Measures**

#	Problem Description	Hazard(s) Addressed	Goal Addressed	Applies to Existing or New Structures	Potential Partners	Priority
MJ-1	Alleviate drainage problems along Roadstown Road near the Stow Creek-Hopewell Firehouse (County Roads 620 and 626) (CF-3).	Flood	Goal #4	Both	Township OEM, Cumberland County Road Department.	Moderate
MJ-2	Alleviate drainage problems on State Highway 49 north of Shiloh Borough.	Flood	Goal #4	Both	Township OEM, Hopewell Township OEM, Cumberland County Road Department, NJ DOT.	Moderate
MJ-3	Provide hardening against wind for Hopewell – Stow Creek Fire House (CF-1 and CF-2).	High Wind	Goal #4	Existing	Township OEM, Hopewell Township OEM	High
MJ-4 <sup>33</sup>	Alleviate flooding on Causeway Road.	Flood	Goal #4	Existing	Township OEM, Cumberland County Road Department.	Moderate

<sup>33</sup> MJ-4 is a new project identified by the Stow Creek Township Working Group due to recent flooding.

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## Part 4: Mitigation Measures

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### 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 Stow Creek 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 Stow Creek 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 13-13 compares the results of the Capability Assessment Survey for the County as a whole and Stow Creek Township.

**Part 4: Mitigation Measures**

**Table 13-13: Stow Creek Township Capability Assessment Survey Results**

Metric	Stow Creek Township Results (n=5)	Cumberland County "as a whole" Results (n=85)
Position Type: <b>Full-time</b>	20.00%	51.76%
Position Type: <b>Part-time</b>	40.00%	36.47%
Position Type: <b>Volunteer</b>	40.00%	11.76%
<b>Time in Position:</b>		
Time in Position: <b>Less than 1 year</b>	0.00%	12.94%
Time in Position: <b>1 to 2 years</b>	0.00%	8.24%
Time in Position: <b>2 to 5 years</b>	40.00%	23.53%
Time in Position: <b>More than 5 years</b>	60.00%	55.29%
<b>Prior Experience:</b>		
Prior Experience: <b>None</b>	40.00%	57.65%
Prior Experience: <b>with hazard mitigation planning</b>	60.00%	31.76%
Prior Experience: <b>with HMA grant administration</b>	0.00%	12.94%
Prior Experience: <b>with floodplain management</b>	0.00%	7.06%
<b>Training / Certifications:</b>		
Training / Certifications: <b>None</b>	80.00%	75.29%
Training / Certifications: <b>for hazard mitigation planning and implementation</b>	0.00%	9.41%
Training / Certifications: <b>for floodplain management</b>	20.00%	15.29%

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

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

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## Part 4: Mitigation Measures

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### 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 Stow Creek Township Working Group include:

- Flood Damage Prevention Ordinance
- Stow Creek Township Emergency Operations Plan 2020
- Stow Creek Township Master Plan (2007) and Reexamination Report 2007)
- Stow Creek Township Land Use Ordinance (1979)<sup>34</sup>(2017)
- Stow Creek Township Zoning Map (2016)

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 Zoning Officer 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 the Township and is not available online.

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<sup>34</sup> <http://www.stowcreektwp.com/>

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**Attachment A: Public Review Comments**

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Public review comments [will be] recorded during the public review of the Stow Creek Township Preliminary Draft, Public Review Draft, and Final Draft versions of the Municipal Appendix on [dates to be determined]:

**Table 13.A-1: Public Review Comments**

Comment Date and Time	Comment	Response

*Note: As of May 13, 2022, no public comments have been received.*

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## Attachment B: Adoption Resolution

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Following this page [will be] the Adoption Resolution for the Stow Creek Township Municipal Appendix as approved by the Stow Creek Township Committee.

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**Attachment C: Approval Letter**

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Following this page [will be] the Approval Letter for the Stow Creek Township Municipal Appendix.

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