



9.12 TOWNSHIP OF UPPER

This section presents the jurisdictional annex for the Township of Upper. The annex includes a general overview of the Township of Upper; an assessment of the Township of Upper’s risk, vulnerability, and mitigation capabilities; and a prioritized action plan to implement prior to a disaster to reduce future losses and achieve greater resilience to natural hazards.

9.12.1 Hazard Mitigation Planning Team

The following individuals are the Township of Upper’s identified HMP update primary and alternate points of contact and NFIP Floodplain Administrator.

Table 9.12-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Paul Dietrich, Municipal Engineer 2100 Tuckahoe Road, Petersburg NJ 08270 (609) 628-2011x244 engineer@uppertownship.com	Scott Morgan Director OEM 2100 Tuckahoe Road, Petersburg NJ 08270 (609) 628-2011x257 smorgan@uppertownship.com
NFIP Floodplain Administrator	
Paul Dietrich, Municipal Engineer 2100 Tuckahoe Road, Petersburg NJ 08270 (609) 628-2011x244 engineer@uppertownship.com	

9.12.2 Jurisdiction Profile

The Township of Upper is located on the northernmost portion of Cape May County, New Jersey. It is bounded on the north by Atlantic County, New Jersey, on the east by the City of Ocean City and the Atlantic Ocean, on the south-southwest by the Borough of Woodbine and Township of Dennis and the west by portions of the Township of Dennis and Cumberland County, New Jersey. It is part of the Ocean City Metropolitan Statistical Area. The Township is made up of 10 small villages or towns: Beesleys Point, Marmora, Palermo, Seaville, Tuckahoe, Greenfield, Marshallville, Steelmantown, Petersburg and Strathmere. Strathmere, which includes ~1.3 miles of Atlantic beachfront, adjoins with the city of Sea Isle City on its south end.

According to the U.S. Census, the 2010 population for the Township of Upper was 12,373. The estimated 2018 population was 11,909, a 3.75 percent increase from the 2010 Census. Data from the 2018 U.S. Census American Community Survey indicate that 4.6 percent of the population is 5 years of age or younger and 17.9 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

9.12.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction’s overall risk to its hazards of concern. Table 9.12-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development. Figure 9.12-1 at the end of this annex illustrates the geographically-delineated hazard areas and the location of potential new development.



Table 9.12-2. Recent and Expected Future Development

Type of Development	2015	2016	2017	2018	2019
Number of Building Permits for New Construction Issued Since the Previous HMP					
Single and Two-Family Units	9	12	11	14	21
Multi-Family	0	0	2	0	2
Other (commercial, mixed-use, etc.)	1	0	1	1	1
Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zone(s)*	Description / Status of Development
Recent Major Development and Infrastructure from 2015 to Present					
Osprey Cove	Res.	110	2058 Rt-US9 So.	n/a	Mobile Home Park is 90% complete
Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years					
Heritage Acres	Res.	133	550 Tuckahoe Rd	n/a	Mobile Home Park

* Only location-specific hazard zones or vulnerabilities identified.

New homes constructed in the floodplain are required to have two feet of freeboard to the lowest horizontal member in both the AE and V Zones. Homes in the Resort Residential District are required to have a minimum garage/ground floor elevation of 7.0 NAVD 1988.

9.12.4 Capability Assessment

The Township of Upper performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 6 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Information on National Flood Insurance Program (NFIP) compliance.
- Classification under various community mitigation programs.
- The community's adaptive capacity for the impacts of climate change.

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. Areas with current mitigation integration are summarized in Capability Assessment (Section 9.12.4). The Township of Upper identified specific integration activities that will be incorporated into municipal procedures are included in the updated mitigation strategy.

PLANNING, LEGAL AND REGULATORY CAPABILITY



The table below summarizes the legal and regulatory tools that are available to the Township of Upper and where hazard mitigation has been integrated.

Table 9.12-3. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	Have aspects of this been integrated into your mitigation plan?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Building Code	Yes	State & Local	Yes	No	--
Comment: <ul style="list-style-type: none">State mandated on local level under NJAC 5:23-3.14. International Building Code – New Jersey Edition, 2018, NJAC 5:24-3.14 Adopted 9/3/2019 (with NJ edits dated March 14, 2020 coming soon)Building and Housing, Chapter 10, adopted by the Township Committee in 1976 and amended through 2019. There is hereby established in the Township a State Uniform Construction Code enforcing agency to be known as the Township Construction Department consisting of a Construction Official, Building Subcode Official, Plumbing Subcode Official, Electrical Subcode Official, Fire Protection Subcode Official. The Construction Official shall be the chief administrator of the enforcing agency.The Ordinance contains no specific mitigation actions other than those required in the Uniform Construction Code.					
Zoning Code	Yes	State & Local	Yes – if municipality has a Planning Board	No	--
Comment: <ul style="list-style-type: none">State permissive on local level. Per State of NJ Municipal Land Use Law (MLUL) L. 1975, s. 2, eff Aug 1, 1976, 40-55D-62: 49. Power to zone, requires all jurisdictions to have current zoning and other land development ordinances after the planning board has adopted the land use element and master plan.Zoning, Chapter 20, adopted by Township Committee in 2002 and amended through 2019. A comprehensive Chapter regulating and limiting the uses and development of land and the uses and locations of buildings and structures; regulating and restricting the height and bulk of buildings and structures and determining the area of yards, courts and other open spaces; regulating and restricting the density of population.This Flood Damage Control, Chapter 18 incorporates controls and protection methods from other sections of the Code related to flood hazards and Stormwater Control, Chapter 19-7.7 incorporates controls and protection methods for stormwater management					
Subdivisions	Yes	County & Local	Yes – if municipality has a Planning Board	No	--
Comment: <ul style="list-style-type: none">P.L.1975, c.291 (C.40:55D-47): 40:55D-37. Grant of power; referral of proposed ordinance; county planning board approval a. The governing body may by ordinance require approval of subdivision plats by resolution of the planning board as a condition for the filing of such plats with the county recording officer and approval of site plans by resolution of the planning board as a condition for the issuance of a permit for any development, except that subdivision or individual lot applications for detached one or two dwelling-unit buildings shall be exempt from such site plan review and approval; provided that the resolution of the board of adjustment shall substitute for that of the planning board whenever the board of adjustment has jurisdiction over a subdivision or site plan pursuant to subsection 63b. of this act . Dictated by the Municipal Land Use Law. NJ Statute 40:27-6.2 - the board of freeholders of any county having a county planning board shall provide for the review of all subdivisions of land within the county by said county planning board and for the approval of those subdivisions affecting county road or drainage facilities as set forth and limited hereinafter in this section.Land Subdivision, Site Plan and Land Use Administration, Chapter 19, adopted by the Township Council in 2002 and amended through 2019. The purpose of this chapter shall be to provide rules, regulations and standards to guide land development in the Township of Upper. It shall be administered to insure orderly growth and development, the conservation, protection and proper use of land, and adequate provisions for circulation, utilities and services in order to assure and promote the comfort, health, safety, convenience and general welfare of the Municipality.Flood protection methods and stormwater controls are covered extensively in Chapter 18 and 19-7.7.					



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	Have aspects of this been integrated into your mitigation plan?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Stormwater Management	Yes	Local (State & County based on project)	Yes	No	--
Comment: <ul style="list-style-type: none"> See Title 7 of the NJ Administrative Code, N.J.A.C. 7:8 Land Subdivision, Site Plan and Land Use Administration, Chapter 19, adopted by the Township Council in 2002 and amended through 2019. While not a separate Ordinance, Stormwater controls are covered in a comprehensive manner in the Site Plan section 79-7.7. 					
Post-Disaster Recovery	No	N/A	No	No	--
Comment:					
Real Estate Disclosure	Yes	State, Division of Consumer Affairs	Yes	No	--
Comment: N.J.A.C. 13:45A-29.1 - Before signing a contract of sale, all purchasers must receive a New Jersey Public Offering Statement (POS) approved by the New Jersey Real Estate Commission. The POS provides information such as estimated completion dates for improvements, fees for services and amenities, the type of title and ownership interest being offered, its proximity to hospitals, schools, fire and police, as well as any hazards, risks or nuisances in or around the subdivision. <ul style="list-style-type: none"> Real Estate disclosure of flood and other hazards could become an Ordinance Requirement for transfers of title and/or a written policy for disclosing a property's Flood information. Also, providing flood insurance information for impacted properties could be an additional requirement the Township may want to consider. It should be noted that Section 18-1.2 of the Township's Flood Damage Control Ordinance 'Statement of Purpose' has a provision to ensure that potential buyers are notified that property is in an area of special flood hazard. 					
Growth Management	Yes	State & Local	Yes – if municipality has a Planning Board	No	--
Comment: <ul style="list-style-type: none"> State Mandated on a municipal level. See Zoning Ordinance, Chapter 20; Also - Plan Endorsement Process via the State Development & Redevelopment Plan provides for the delineation of Growth Areas and Environs; Use of the endorsed plans in the implementation of state environmental regulations makes the Plan Endorsement process a growth management strategy. Plan Endorsement Petition, adopted by the Township Planning Board on November 16, 2006. Plan Endorsement is the process established by the New Jersey Office of Smart Growth (NJOSG) to review municipal and regional plans for consistency with the New Jersey State Development and Redevelopment Plan. An important part of this study is the reassessment and refinement of the development Centers in the Township. These Centers, which are now regulated through the New Jersey Coastal Zone Management rules, were terminated as Coastal Area Facility Review Area (CAFRA) Centers in February 2005. Through this Plan Endorsement process with the NJOSG, Centers may be established and designated in the State Plan. The Township is currently working with the NJOSG to recertify the Upper Township's Centers Wastewater Management Plan, Municipal Buildout Report, dated January 15, 2019. This analysis has been prepared in order to assess the amount of remaining developable lands within the Township of Upper and to assess the amount of potential development, if these lands were fully developed to their maximum potential. Utilizing GIS (geographic information system) technology, the amount of developable land has been assessed based on lot area and bulk requirements as compared to the minimum requirements of each individual zone district. 					
Site Plan Review	Yes	County & Local	Yes – if municipality has a Planning Board	No	--
Comment: <ul style="list-style-type: none"> Dictated by the Municipal Land Use Law which sets forth minimum requirements for plans, etc., timeframes for development review. NJ Statute 40:27-6.2: The board of freeholders of any county having a county planning board shall provide for the review of all subdivisions of land within the county by said county planning board and for the approval of those subdivisions affecting county road or drainage facilities as set forth and limited hereinafter in this section. 40:27-6.10 In order that county planning boards shall have a complete file of the planning and zoning ordinances of all municipalities in the county, each municipal clerk shall file with the county planning board a copy of the planning and zoning ordinances of the municipality in effect on the effective date of this act and shall notify the county planning board of the introduction of any revision or amendment of such an ordinance which affects lands adjoining county roads or other county lands, or lands lying within 200 feet of a municipal boundary, or proposed facilities or public lands shown on the county master plan or official county map. Such notice shall be given to the county planning board at least 10 days prior to the public hearing thereon by personal delivery or by certified mail of a copy of the official notice of the public hearing together with a copy of the proposed ordinance. Land Subdivision, Site Plan and Land Use Administration, Chapter 19, adopted by the Township Council in 2002 and amended through 2019. The purpose of this chapter shall be to provide rules, regulations and standards to guide land development in the Township of Upper. It shall 					



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	Have aspects of this been integrated into your mitigation plan?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
<i>be administered to insure orderly growth and development, the conservation, protection and proper use of land, and adequate provisions for circulation, utilities and services in order to assure and promote the comfort, health, safety, convenience and general welfare of the Municipality.</i>					
<ul style="list-style-type: none"><i>Flood protection methods and stormwater controls are covered extensively in the Subdivision Section of this Chapter.</i>					
Environmental Protection	Yes	Local	No	No	--
Comment: <ul style="list-style-type: none"><i>Land Subdivision, Site Plan and Land Use Administration, Chapter 19, adopted by the Township Council in 2002 and amended through 2019. Although not a separate Ordinance, Section 19-7.16 of this Chapter requires an Environmental Assessment for development projects. The impact on the environment associated with development projects necessitates a comprehensive analysis of the variety of problems that may result and the measures that can be taken to minimize the adverse impacts. It is recognized that the level of detail required for the variety of development applications will vary depending on the size of the project, the site conditions, the location of the project and the information already in the possession of the Township. As used here, environmental assessment means a written description and analysis of all possible direct and indirect effects the development will have on the site, as well as on the region, with particular attention to the potential effects on public health, safety and welfare, and the preservation and enhancement of the natural environment, and historic, cultural and other sensitive resources.</i>					
Flood Damage Prevention	Yes	State & Local	Yes	No	--
Comment: <ul style="list-style-type: none"><i>The NJ State Law Flood Area Control Act (N.J.S.A. 58:16A-52) and the National Flood Control Act of 1968 (NFIP) are state and federal acts to support minimization of flood losses. They do not require local adoption but as enforced by the NJDEP, the floodplain ordinances of each municipality must be reviewed for compliance with these regulations. In addition, participation in the NFIP requires a floodplain ordinance. Regulations for the Flood Control Hazards Act were adopted in 2007 and amended effective June 20, 2016.</i><i>Flood Damage Control, Chapter 18, approved by the Township Committee in 1987 and amended through 2017. It is the purpose of this section to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed: To protect human life and health; To minimize expenditure of public money for costly flood control projects.; To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.; To minimize prolonged business interruptions; To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, and sewer lines, and streets and bridges located in areas of special flood hazard.; To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas.; To ensure that potential buyers are notified that property is in an area of special flood hazard.; and To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.</i><i>In order to accomplish its purposes, this Chapter includes methods and provisions for: Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities; Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; Controlling the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters; Controlling filling, grading, dredging and other development which may increase flood damage; and Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.</i><i>New construction and substantial improvement of any residential structure, commercial, industrial or other nonresidential structure located in an A or AE Zone shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor, including basement and utilities (electrical, heating, ventilation, plumbing, duct work and air-conditioning equipment), be elevated two feet above the flood protection elevation.</i>					
Wellhead Protection	No	N/A	No	No	--
Comment:					
Emergency Management	No	N/A	No	No	--
Comment:					
Climate Change	No	No	No	No	--
Comment:					
Disaster Recovery Ordinance	No	No	No	No	--
Comment:					
Disaster Reconstruction Ordinance	No	No	No	No	--



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				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Comment:					
Other	Yes	State & Local	No	No	--
Comment: <ul style="list-style-type: none">Construction of Bulkheads, Chapter 17, approved by the Township Committee in 2015 and amended through 2018. It is the purpose of this Chapter to promote public health, safety and general welfare, and to minimize public and private losses due to flood conditions. Bulkheads are an integral component for Flood Damage Control and are designed to: Reduce the extent of flood waters that may flow across public and private property which may cause flood damage; and Reduce flood wave velocities.This Chapter sets minimum standards for bulkhead construction and minimum heights for bulkheads that vary according to their location within different Flood Hazard Areas in the Township.					
Planning Documents					
Comprehensive / Master Plan	Yes	State & Local	Yes	No	--
Comment: <ul style="list-style-type: none">2018 Revised NJ Statute 40:27-2; the county planning board shall make and adopt a master plan for the physical development of the county. The master plan of a county, with the accompanying maps, plats, charts, and descriptive and explanatory matter, shall show the county planning board's recommendations for the development of the territory covered by the plan, and may include, among other things, the general location, character, and extent of streets or roads, viaducts, bridges, waterway and waterfront developments, parkways, playgrounds, forests, reservations, parks, airports, and other public ways, grounds, places and spaces; the general location and extent of forests, agricultural areas, and open-development areas for purposes of conservation, food and water supply, sanitary and drainage facilities, or the protection of urban development, and such other features as may be important to the development of the county. The county planning board shall encourage the co-operation of the local municipalities within the county in any matters whatsoever which may concern the integrity of the county master plan and to advise the board of chosen freeholders with respect to the formulation of development programs and budgets for capital expenditures. Per State of NJ Municipal Land Use Law (MLUL) L. 1975, s. 2, eff Aug 1, 1976 40:55D-28 provides the required components of a municipal Master Plan and requires that each municipality prepare a master plan and update it every 6 years. Further, all zoning ordinances must be consistent with the Master Plan or will not be benefitted from a presumption of validity.Master Plan 1993, adopted by the Township Planning Board January 27, 1994 and 2020 Master Plan Re-examination Report and Master Plan Update. In accordance with the New Jersey Municipal Planning Enabling Act, the purpose of Upper Township's Master Plan is to provide a guide to accomplish a coordinated and harmonious development of the municipality. Based on the analyses of present and future needs, the plan is designed to promote health, safety, and general welfare, as well as efficiency and economy in the land development process, and the maintenance of property values. Included in the goals of the 1994 Plan, is the continued provision for the preservation of open space by protecting woodlands, open fields, stream corridors, tidal marsh, wetlands, floodplains, and bodies of water. Use these natural features to organize and separate different types and intensities of land uses where necessary. Establish controls on the permitted disturbance of critical resources during land developmentThe Township is currently taking the necessary steps to extend their Plan Endorsement with the Office of State Planning. The Township's State endorsed centers are set to expire on June 30, 2020. The Township has decided to pursue extending their Plan Endorsement for the designated areas under the jurisdiction of the State Plan. This decision will protect the planning and designations of centers and development areas that were completed through the original Plan Endorsement process.					
Capital Improvement Plan	No	N/A	No	No	--
Comment:					
Disaster Debris Management Plan	Yes	N/A	No	No	--
Comment: <ul style="list-style-type: none">Upper Township has established two Temporary Debris Management Areas (TDMA) and were approved by the NJDEP on January 16, 2018.10 Sunset Drive is setup to accept Vegetative Debris, Construction & Demolition Debris and Bulky Solid Wasted1060 Stagecoach Rd is setup to accept E-Waste and White Goods					
Floodplain or Watershed Plan	Yes	Local	No	Yes	--
Comment: <ul style="list-style-type: none">Annual Progress Report, Floodplain Management Planning, September 16, 2019. Upper Township participated with the County of Cape May in preparing an All Hazards Mitigation Plan. This plan was completed in May 2016 and Upper Township approved the plan on June 13, 2016 with Resolution No. 146-2016. The plan was submitted and approved by FEMA Region II on June 9, 2016 with an expiration date of June 9, 2021. This plan serves as the Township's Floodplain Management Plan.The Plan includes amendments that should be made to actions included in the June, 2016 Plan that would carry-over into the HMP update.					



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Stormwater Management Plan	Yes	State & Local	Yes	No	--
Comment: <ul style="list-style-type: none"> The Stormwater Management rules (N.J.A.C. 7:8) rules were published in the February 2, 2004 NJ Register. These rules set forth the required components of regional and municipal stormwater management plans and establish the stormwater management design and performance standards for new (proposed) development. The design and performance standards for new development include groundwater recharge, runoff quantity controls, and runoff quality controls. The rules emphasize, as a primary consideration, the use of nonstructural stormwater management techniques including minimizing disturbance, minimizing impervious surfaces, minimizing the use of stormwater pipes, preserving natural drainage features, etc. The rules also set forth requirements for groundwater recharge, stormwater runoff quantity control, stormwater runoff quality control, and the prohibition of major development to be located within or to discharge runoff from the major development into a 300-foot riparian zone without prior authorization from the Department under the Flood Hazard Area Control Act Rules, N.J.A.C. 7:13. Township of Upper Stormwater Management Plan, dated January 12, 2005, revised November 16, 2006. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. A "build-out" analysis has been included in this plan based upon existing zoning and land available for development. The plan also addresses the review and update of existing ordinances, the Township Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The goals of this MSWMP are to: reduce flood damage, including damage to life and property; minimize, to the extent practical, any increase in stormwater runoff from any new development; reduce soil erosion from any development or construction project; assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures; maintain groundwater recharge; prevent, to the greatest extent feasible, an increase in nonpoint pollution; maintain the integrity of stream channels for their biological functions, as well as for drainage; minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water; and protect public safety through the proper design and operation of stormwater basins. To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. 					
Stormwater Pollution Prevention Plan	Yes	State & Local	Yes	No	--
Comment: <ul style="list-style-type: none"> The Phase II New Jersey Pollutant Discharge Elimination System Stormwater Regulation Program (NJPDES) rules (N.J.A.C. 7:14A) were published in the February 2, 2004, NJ Register. These NJPDES rules are intended to address and reduce pollutants associated with existing stormwater runoff. The NJPDES rules establish a regulatory program for existing stormwater discharges as required under the Federal Clean Water Act. These NJPDES rules govern the issuance of permits to entities that own or operate small municipal separate storm sewer systems, known as MS4s. Under this program, permits must be secured by municipalities, certain public complexes such as universities and hospitals, and State, interstate and federal agencies that operate or maintain highways. The permit program establishes the Statewide Basic Requirements that must be implemented to reduce nonpoint source pollutant loads from these sources. The Statewide Basic Requirements include measures such as: the adoption of ordinances (litter control, pet waste, wildlife feeding, proper waste disposal, etc.); the development of a municipal stormwater management plan and implementing ordinance(s); requiring certain maintenance activities (such as street sweeping and catch basin cleaning); implementing solids and floatables control; locating discharge points and stenciling catch basins; and a public education component. Stormwater Pollution Prevention Plan, updated 04-29-20. The Plan consists of the updated annual reporting forms required by the Rule. 					
Urban Water Management Plan	No	N/A	No	No	--
Comment:					
Habitat Conservation Plan	Yes	N/A	No	No	--
Comment: <ul style="list-style-type: none"> Conservation Plan Update, adopted by the Township Planning Board, February 17, 2011. This Conservation Plan is adopted as an Element of the Upper Township Master Plan and constitutes an update and replacement of the current Conservation Plan Element prepared as part of the 1994 Master Plan. The Master Plan reflects the overall vision for the future of Upper Township and the Conservation Plan Element provides the structure for the protection, preservation, conservation and utilization of natural and cultural resources, including energy, open space, water supply, forests, soils, marshes, wetlands, rivers, fisheries, endangered or threatened wildlife species and other resources. Recommended Strategies for Floodplains in the Plan include; Continue to pursue and promote the preservation of open space, through municipal, county, state or not-for-profit entities, to protect natural floodplains. Naturally vegetated riparian corridors help reduce the extent of flooding; that the Township has a Flood Damage Control Ordinance in place, which includes provisions for flood hazard reduction in the Township. The Township should continue to enforce these provisions in order to implement the Goals and Objectives listed above; and that 					



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the Township should consider amending its Flood Damage Control Ordinance to provide additional level of protection to homes in the Special Flood Hazard Area, which would provide protection to homes and provide lower flood insurance premiums.					
<ul style="list-style-type: none">This Conservation Plan Element, together with the Upper Township Natural Resources Inventory (NRI), addresses the MLUL guidelines. The NRI was adopted by the Township of Upper Planning Board on November 16, 2006. It provides a detailed inventory of the Township's natural assets and environmental resources. The NRI serves to inform the planning process by providing a factual basis for land use decision-making.					
Economic Development Plan	No	N/A	No	No	--
Comment:					
Shoreline Management Plan	Yes	Local & State	Yes – if located in a coastal zone	No	--
Comment: <ul style="list-style-type: none">NJ Coastal Area Facility Review Act (N.J.S.A. 13:19) or CAFRA regulates almost all development along the coast for activities including construction, relocation, and enlargement of buildings or structures, and excavation, grading, shore protection structures, and site preparation. This law is implemented through NJ's Coastal Zone management Rules N.J.A.C. 7:7E-1 et seq.NJ Resilient Coastline Initiative, no date. The Plan addresses shoreline initiatives for the Township, such as Living Shorelines, including Marsh Sills and Breakwaters. The creation of living shorelines can attenuate waves in moderate energy environments, lead to a reduction in erosion, enhance sediment accretion, and enhance aquatic habitat benefits for fish and bivalves. The Plan also recommends potential funding sources for the Shoreline project.The Township protects the shoreline through two mechanisms:<ul style="list-style-type: none">Sand Dune Regulations, Chapter 3-4, which prohibits construction beyond the Dune Line;The Township has ownership or perpetual open space easements on all beach properties in Strathmere					
Community Wildfire Protection Plan	No	N/A	No	No	No
Comment:					
Community Forest Management Plan	Yes	N/A	No	No	--
Comment: <ul style="list-style-type: none">Adopted a Community Forestry Plan in 2016.					
Transportation Plan	Yes	State & Local	No	No	--
Comment: <ul style="list-style-type: none">Complete Streets. The Township adopted a Resolution in 2019 endorsing a complete streets policy for Township of Upper.Upper Township, Bicycle Plan, no date. Upper Township in Cape May County has developed a bicycle plan as part of the New Jersey Department of Transportation's (NJDOT) Local Bicycle/Pedestrian Planning Assistance Program, which seeks to foster the development of non-motorized transportation modes in accordance with statewide goals and local needs.In 2016, Upper Township requested a review of bicycle conditions along North Shore Road (formerly US Route 9) between Roosevelt Boulevard and Harbor Road, as well as conditions along Harbor Road connecting to the soon to be completed multi-use facility along the new Great Egg Harbor Bridge. Following an initial review of this corridor, the study scope was expanded to include an analysis of on- and off-road bicycle conditions throughout the Township. This report provides an overview of the existing conditions and recommendations for bicyclists in Upper Township. It includes an analysis of crash data; identification of key bicycle traffic generators; review of key corridors for non-motorized traffic; and an assessment of the roadway network's bicycle Level of Traffic Stress (LTS). This report also highlights the recommendations developed by the project team to improve conditions for bicyclists in Upper Township.The Planning Board adopted the Upper Township Bicycle Plan in April 2019.Traffic Analysis Report, dated November, 2012. A comprehensive traffic analysis was performed to assess the traffic impacts associated with the Marmora Village Center redevelopment					
Agriculture Plan	No	N/A	No	No	--
Comment:					
Climate Action Plan	Yes	Local	No	No	--
Comment: <ul style="list-style-type: none">Getting to Resilience, dated April, 2015. While going through GTR municipal officials identified infrastructure projects that have been planned and implemented as resiliency strengths. Some of these projects include raising the lowpoint of roads along the bayside of Strathmere by 1.5 feet, working with the county to raise Tuckahoe Road to the 100 year storm level, and attaining a grant for a boat ramp and berm on the bayside of Strathmere. By June of 2015 the Township has successfully raised one road in Strathmere. Officials also identified					



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	Have aspects of this been integrated into your mitigation plan?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
<p>that the Township is participating in FEMA's Community Rating System (CRS) and has reached a class 6, meaning that National Flood Insurance Program flood insurance premiums receive a 20% discount. During Sandy Upper Township was able to shelter Township residents as well as additional residents from Ocean City. One thing the Township is working on to improve their shelters is attaining a mobile kitchen that can supply food to the shelters and thereby make the shelters more self-sufficient and resilient.</p> <ul style="list-style-type: none">The Plan contains 27 recommendations that may have been or can be included as actions in the HMP. Also, many of the recommendations in this report are connected to the CRS program and as the Township had learned through the implementation of a successful CRS Program, it helps communities save money and become better prepared.					
Tourism Plan	No	N/A	No	No	--
Comment:					
Business Development Plan	No	N/A	No	No	--
Comment:					
Other	No	N/A	No	No	--
Comment: <ul style="list-style-type: none">					
Response/Recovery Planning					
Comprehensive Emergency Management Plan (CEMP) / Emergency Operations Plan (EOP)	Yes	Local	Yes	No	--
Comment: <ul style="list-style-type: none">Each county and municipality in the State shall prepare a written Emergency Operations Plan with all appropriate annexes necessary to implement the plan. Each Emergency Operations Plan shall be adopted no later than one year after the State Emergency Planning Guidelines have been adopted by the State Office of Emergency Management and shall be evaluated at such subsequent scheduled review of the State Emergency Operations Plan. L.1989, c.222, s.19.Emergency Operations Plan, approved by the State Emergency Management Section on February 24, 2017 and valid through February 28, 2021.					
Threat & Hazard Identification & Risk Assessment (THIRA)	No	N/A	No	No	--
Comment:					
Post-Disaster Recovery Plan	No	N/A	No	No	--
Comment:					
Continuity of Operations Plan	No	N/A	No	No	--
Comment:					
Public Health Plan	No	N/A	No	No	--
Comment:					
Other	No	N/A	No	No	--
Comment: <ul style="list-style-type: none">					

Table 9.12-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? - If no, who does? If yes, which department?	Yes Construction and Zoning Office
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? -If yes, please describe briefly. -If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes



Criterion	Response
	Maintained on GIS. Buildout was prepared as part of the 2019 Wastewater Management Plan Update

ADMINISTRATIVE AND TECHNICAL CAPABILITY

The table below summarizes potential staff and personnel resources available to the Township of Upper.

Table 9.12-5. Administrative and Technical Capabilities

Staff/Personnel Resource	Available?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Planning Board; Zoning Board
Mitigation Planning Committee	No	
Environmental Board / Commission	Yes	Green Team
Open Space Board / Committee	No	
Economic Development Commission / Committee	No	
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	Onsolve/ CodeRED Flood Warning System for Strathmere
Maintenance program to reduce risk	Yes	Public Works/Engineering
Mutual aid agreements	Yes	Ocean City
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Planning Office/Public Works
Engineers or professionals trained in building or infrastructure construction practices	Yes	Construction/Engineering/Public Works
Planners or engineers with an understanding of natural hazards	Yes	Engineering
Staff with training in benefit/cost analysis	No	
Staff with training in green infrastructure	Yes	Engineering
Staff with education/knowledge/training in low impact development	Yes	Engineering
Surveyor	No	Consultant on contract for Tax Map & GIS updates
Stormwater engineer	Yes/No	Engineering
Personnel skilled or trained in GIS applications	Yes	Engineering
Local or state water quality professional	No	
Scientist familiar with natural hazards in local area	Yes	Consultant – Stockton Coastal Resource Center
Emergency manager	Yes	OEM
Watershed planner	Yes	Consultant – Stockton Coastal Resource Center
Environmental specialist	Yes	Consultant – ARH (LSRP services)
Grant writers	No	
Resilience Officer	No	
Other		

**FISCAL CAPABILITY**

The table below summarizes financial resources available to the Township of Upper.

Table 9.12-6. Fiscal Capabilities

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Clean Water Act 319 Grants (Nonpoint Source Pollution)	Yes
Other	

EDUCATION AND OUTREACH CAPABILITY

The table below summarizes the education and outreach resources available to the Township of Upper.

Table 9.12-7. Education and Outreach Capabilities

Criterion	Response
Do you have a public information officer or communications office?	No
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? -If yes, briefly describe.	Yes – have dedicated pages for Hazard Mitigation Plan, Stormwater Management and Floodplain Management
Do you use social media for hazard mitigation education and outreach? -If yes, briefly describe.	Yes, Facebook
Do you have any citizen boards or commissions that address issues related to hazard mitigation? -If yes, briefly describe.	Yes – Upper Township Green Team
Do you have any other programs already in place that could be used to communicate hazard-related information? If yes, briefly describe.	YES, CERT program training

COMMUNITY CLASSIFICATIONS

The table below summarizes the classifications for community programs available to the Township of Upper.

Table 9.12-8. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System	Yes	5	5/1/2017
Building Code Effectiveness Grading Schedule (BCEGS)	Building Code Effectiveness Grading Schedule (BCEGS)	4 Residential 3 Commercial	12/6/2018
Public Protection (Fire ISO Protection Class)		District 1 – 6 District 2 – 8B-10 District 3 – 3/3Y District 4 5/5Y	
Storm Ready Certification	Yes	StormReady	9/10/2019



Program	Participating?	Classification	Date Classified
Firewise Community Classification	No		
Sustainable Jersey	Yes	Bronze	12/12/2019

ADAPTIVE CAPACITY

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current ability to adjust to, protect from, or withstand a hazard event. This term is often discussed in reference to climate change; however, adaptive capacity also includes an understanding of local capacity for adapting to current and future risks and changing conditions. The table below summarizes the adaptive capacity for each hazard and the jurisdiction’s rating.

Table 9.12-9. Adaptive Capacity of Climate Change

Hazard	Adaptive Capacity (Capabilities) – Strong/Moderate/Weak
Climate Change and Sea Level Rise	Moderate
Coastal Erosion	Moderate
Disease Outbreak (new)	Moderate
Drought (new)	Moderate
Flood	Moderate
Hurricane	Moderate
Nor’Easter	Moderate
Severe Weather	Moderate
Severe Winter Weather	Strong
Tsunami	Medium
Wildfire	Medium

Notes:

High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;

Low = Capacity does not exist or could use substantial improvement; Unsure = Not enough information is known to assign a rating.

The Township has access to resources to determine the possible impacts of climate change. The Engineering office can produce the GIS based maps to show future impacts and extent of sea-level rise.



NATIONAL FLOOD INSURANCE PROGRAM

This section provides specific information on the management and regulation of the regulatory floodplain.

Table 9.12-10. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering & Construction
Who is your floodplain administrator? (name, department/position)	Paul Dietrich, Municipal Engineer, Floodplain Manager, CRS Coordinator
Are any certified floodplain managers on staff in your jurisdiction?	Yes, municipal engineer
What is the date that your flood damage prevention ordinance was last amended?	10/2017
Does your floodplain management program meet or exceed minimum requirements? -If exceeds, in what ways?	Exceeds
When was the most recent Community Assistance Visit or Community Assistance Contact?	3/16/2016
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? -If so, state what they are.	No
Are any RiskMAP projects currently underway in your jurisdiction? If so, state what they are.	Yes, FEMA Region II NY & NJ Coastal Restudy
Do your flood hazard maps adequately address the flood risk within your jurisdiction? -If no, state why.	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? - If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? -If yes, is your jurisdiction interested in improving its CRS Classification? -If no, is your jurisdiction interested in joining the CRS program?	Yes, currently Class 5 and working towards Class 4 during upcoming recertification
How many flood insurance policies are in force in your jurisdiction?*	545 Policies
-What is the insurance in force?	\$131,426,600.00 Insurance in force
-What is the premium in force?	\$491,465.00 Policy Premiums
How many total loss claims have been filed in your jurisdiction?*	387 # of closed paid losses
-How many claims are still open or were closed without payment?	\$9,378,480 closed paid losses
-What were the total payments for losses?	
Do you maintain a list of properties that have been damaged by flooding?	Yes
Do you maintain a list of property owners interested in flood mitigation?	yes

*According to FEMA statistics as of October 2020

ADDITIONAL AREAS OF EXISTING INTEGRATION

- Upper Township is a Bronze certified community by Sustainable Jersey. One of the Township's credited activities is the identification and outreach to vulnerable populations.
- A Beach Replenishment completed by the USACE in November 2019.
- The Township installed a living shoreline at the Bayview Ave Boat Ramp.
- The Township is continuing local and regional efforts to achieve CRS Class 6.
- The Municipal Emergency Manager, with support from the County OEM and New Jersey OEM, are continuing to develop, enhance, and implement existing emergency plans.
- The Township is creating, enhancing, and maintaining mutual aid agreements with neighboring communities.
- Local departments support County-wide initiatives identified in Section 9.1 of the County Annex.
- The Township is reconstructing Bayview Drive in Strathmere for drainage improvements.



- The Township is identifying flood preparedness activities for the Township's CRS program.
- The Township is continuing to support the flood warning system.
- The Township is implementing the recommendations of the Getting to Resilience report.

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9.12.5 Hazard Event History Specific to the Jurisdiction

Cape May County has a history of hazard events, as detailed in Section 5 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles in Section 5.4 (Hazard Profiles) and includes a chronology of events that affected Cape May County and its jurisdictions. The Township of Upper's history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Cape May County. Table 9.12-11 provides details regarding municipal-specific loss and damages the Township experienced during hazard events. Information provided in the table below is based on reference material or local sources.

Table 9.12-11. Hazard Event History

Date(s) of Event	Event Type (disaster declaration if applicable)	Cape May County Designated?	Summary of Event	Summary of Local Damages and Losses
January 22, 2016 - January 24, 2016	Jonas (DR-4264)	Yes	A severe winter storm struck the mid-Atlantic region, bringing significant snowfall as well as coastal flooding to Cape May County.	Strathmere <\$100,000 from Jonas for property/flooding. General cleanup/flooding
August 2, 2020	Tropical Storm Isaias (Tornado)	Yes .	T.S. Isaias moved up the coast and during its landfall it spawned a tornado (EF1) that made landfall at approximately the 23.8 mile marker on GSP and moved S.E. to N.W. through the Marmora business district crossing the 500 block of Shore Rd and 300 Block of Stagecoach Rd	Structural damage to over 20 residential and commercial structures; Severe Tree damage; \$1,400,000 Private Sector Damage; \$204,500 Public Sector Damage

Source:

Note:

9.12.6 Jurisdiction-Specific Vulnerabilities and Hazard Ranking

The hazard profiles in Section 5 (Risk Assessment) provide detailed information regarding each plan participant's vulnerability to the identified hazards. A gradient of certainty was developed to summarize the confidence level regarding the input used to populate the hazard ranking. Refer to Section 5.1 (Methodology) and Section 5.3 (Hazard Ranking) for a detailed summary for the Township of Upper risk assessment results and data used to determine the hazard ranking.

REPETITIVE FLOOD LOSSES

The table below summarizes the repetitive and severe repetitive flood losses in the Township of Upper.

- Number of repetitive loss (RL) properties: 36
- Number of severe repetitive loss (SRL) properties: 7
- Number of RL/SRL properties that have been mitigated: 13

Source: FEMA 2020

Note: The number of SRL properties excludes RL properties.



CRITICAL FACILITIES

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain.

Table 9.12-12. Potential Flood Losses to Critical Facilities and Lifelines

Name	Type	Exposure	
		1% Event	0.2% Event
Strathmere Vol. Fire Co.	Fire Station	Yes	Yes
NJAW – Water Tower and Public Well	Wells	Yes	Yes
Longport Media Tower	Communications Tower	Yes	Yes
ACE Sub-Station BL England	Electric Sub-Station	No	Yes
Ace Sub-Station W. of Wilkie Blvd	Electric Sub-Station	No	Yes

*Identified lifeline

IDENTIFIED ISSUES

The jurisdiction has identified the following vulnerabilities within their community:

- Stormwater flooding occurs on
 - Old Tuckahoe Rd South (County Rd-) and Roosevelt Blvd (County Rd-623)
 - Roosevelt Blvd (County Rd-623) and Garden State Parkway
 - Red Oak Drive
- Groundwater flooding has occurred in 2009 and 2019 due to extremely high groundwater
 - Peach Orchard Rd
 - Mt. Pleasant – Tuckahoe Rd
 - Steelmantown Area

HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were generated for the Township of Upper that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Township of Upper has significant exposure. A map of the Township of Upper hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.

HAZARD RANKING

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard; its potential impacts on people, property, and the economy; community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each plan participant may have differing degrees of risk exposure and vulnerability compared to Cape May County as a whole. Therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community factoring in their capabilities to withstand impacts and rebound after the event. The table below summarizes the hazard rankings of potential natural hazards for the Township of



Upper. The Township of Upper has reviewed the Cape May County hazard ranking table and has provided input to its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard ranking, the Township assented to the proposed hazard ranking.

Table 9.12-13. Township of Upper Hazard Ranking Input

Climate Change and Sea Level Rise	Coastal Erosion	Disease Outbreak	Drought	Flood	Hurricane
Medium	Medium	Medium	Medium	High	High

Nor'easter	Severe Weather	Severe Winter Weather	Tsunami	Wildfire
High	High	High	Medium	High

9.12.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and provides action prioritization.

PAST MITIGATION INITIATIVE STATUS

The following table summarizes the jurisdiction's progress on their mitigation strategy identified in the 2015 HMP. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can also be found under 'Capability Assessment' presented previously in this annex.

Table 9.12-14. Status of Previous HMP Mitigation Actions

			Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
2015 Action Number	Action Description	Responsible Party		Check if Yes	Enter 2020 HMP Action #
TU-1a (former TU-1a)	Support retrofits (e.g. elevation) of floodprone structures, with repetitive loss and severe repetitive loss properties as priority.	Township (likely through NFIP Floodplain Administrator); State OEM, County OEM	No progress, did not receive funding from FEMA in 2018 and 2019.	Yes	2020-UpperTwp-xxx
TU-1b (former TU-1b)	Support acquisition/relocation of floodprone structures, with repetitive loss and severe repetitive loss properties as priority	Township (likely through NFIP Floodplain Administrator); State OEM, County OEM	No Progress	Yes	2020-UpperTwp-xxx
TU-2 (former TU-2 (CMC-2))	Continue local and regional efforts to achieve CRS Class 6.	Township	Ongoing Capability, Received CRS Class 5; continue to improve CRS Class level	Yes	
TU-3 (former TU-5)	Continue to develop, enhance, and implement existing emergency plans.	Municipal Emergency Manager with support from County OEM and NJOEM	Ongoing Capability	Yes	
TU-4 (former TU-6)	Create/enhance/ maintain mutual aid agreements with neighboring communities.	Township	Ongoing Capability	Yes	



2015 Action Number Action Description		Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update? Check if Yes	Enter 2020 HMP Action #
TU-5 (former TU-7)	Support County-wide initiatives identified in Section 9.1 of the County Annex.	Local departments (as applicable for specific initiative)	Ongoing Capability		
TU-6 (former TD-8)	Continue to conduct beach replenishment to maintain minimum beach profile for storm protection (maintain their Engineered Beach).	Town, with support from NJDEP	Project is now coordinated with the USACE project.		
TU-7 (former TD-9)	Reconstruct Bayview Drive in Strathmere for drainage improvements.	Township	Ongoing Capability	yes	
TU-8 (former TD-11)	Conduct a study of bulkhead to determine substandard (lower than 7.5') or non-existent bulkheads	Township	Completed		
TU-9 (former TD-12)	Develop and implement projects to install and/or upgrade bulkheads, based on the results of the TU-11 study	Township	In Progress. Township has upgraded two Township owned bulkheads.	Yes	2020-UpperTwp-xxx
TU-10 (former TU-13 (CMC-28, SIC-8)	Install permanent protection to CR-619, from the Whale Beach area in Sea Isle City to the Strathmere section of Upper Township, to replace the existing GeoTube installed in the late 1990s. The GeoTube is beyond its design life.	County and ACOE, with municipal support	No Progress	Yes	2020-UpperTwp-xxx
TU-11 (former TU-14 (CMC-29, OC-13)	Upgrade existing revetment wall (needs to be extended to the south and existing sections upgraded) and provide additional road protection to CR-619 in Strathmere to Ocean City, and elevate sections of road as needed.	County Engineering	In Progress. County has extended the revetment wall. Continue work on elevating road for evacuation and constructing living shoreline project.	Yes	2020-UpperTwp-xxx
TU-12 (former TU-15 (CMC-30)	Intersection of Roosevelt Boulevard (CR-623) and the Garden State Parkway (Upper Township) – Roosevelt Boulevard. Elevate roadway and ramps, which will first require elevation of the Parkway bridge overpass.	NJTPA, County Engineering	No Progress	Yes	2020-UpperTwp-xxx
TU-13 (former TU-16 (CMC-31)	Elevate Roosevelt Boulevard (CR-623) from the Parkway into Ocean City proper.	County Engineering	No Progress	Yes	2020-UpperTwp-xxx
TU-14 (former TU-17 (CMC-33)	Elevate Tuckahoe Road (CR-636) from Butter Road to CR-610. A conceptual design for this project is available.	County Engineering with municipal support	No Progress	Yes	2020-UpperTwp-xxx
TU-15 (former TU-18 (CMC-34)	Work with the State DOT to address vulnerabilities on SR-50 along Cedar Swamp Creek.	State DOT with County and municipal support	In Progress. NJDOT is progressing with design plans for new bridge. Approaches will not be raised to flood elevation.	Yes	2020-UpperTwp-xxx
TU-16 (former TU-19 (CMC-35) and TU-24)	Develop an engineering solution for severe flooding problems along CR-650 and Hope Corson Road (CR-671). County has design work on this project, except for drainage issues at western end of Route 50.	County Engineering with municipal support	Completed. County completed project in 2019/2020		



			Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
2015 Action Number	Action Description	Responsible Party		Check if Yes	Enter 2020 HMP Action #
TU-17 (former TU-20)	Address localized flooding on Evergreen Drive and Stagecoach Road. Part of the problem here is sand/silt infiltration into the drainage system exacerbated by the local sand plant.	Township	No Progress		
TU-18 (former TU-21 (CMC-41))	Identify proper locations for and install water draw (siphon) stations to increase fire-fighting capabilities.	County Fire and OEM with support from local fire and OEM	No Progress		
TU-19 (former TU-22 (CMC-61, OC-31))	Install shore protection along Ocean Drive (CR619) at Corsons Inlet in Upper Township and Ocean City	County Engineering with municipal support	No Progress	Yes	2020-UpperTwp-xxx
TU-20 (former TU-25 (CMC-69))	Become a National Fire Protection Association (NFPA) “Firewise” community.	Local Fire Chiefs working with County Fire Coordinator	No Progress	Yes	2020-UpperTwp-xxx
TU-21	Enhanced Wildfire Public Awareness and Education	Local Fire Chiefs	No Progress	Yes	2020-UpperTwp-xxx
TU-22	Critical facilities should be equipped with emergency power sources to maintain their critical mission during loss or interruption of power due to flood or wind.	Township	Completed. All critical Township facilities have emergency power sources.		
TU-23	The Garden State Parkway should be elevated 1’ above the base flood elevation.	Garden State Parkway	In Progress. Township has had discussion with the Garden State Parkway	Yes	2020-UpperTwp-xxx
TU-24	The tidal creeks that flow under the Garden State Parkway should be controlled with flood gates to prevent tidal flooding on the West side of the Garden State Parkway.	Garden State Parkway	In Progress. Township has had discussion with the Garden State Parkway		
TU-25	Facilities that are used for emergency storm shelters should have a design analysis to determine conformance with ASCE7, FEMA 55 & 361 and ICC500 – 2008. And then retrofitted for conformance.	Township	No Progress	Yes	2020-UpperTwp-xxx
TU-26	Extend outfall pipe at Seacliff Ave & Strathmere Bay	Township	No Progress	Yes	2020-UpperTwp-xxx
TU-27	Identify flood preparedness activities for the Township’s CRS program.	Township	Ongoing capability	Yes	
TU-28	Develop a Program for Public Information (PPI)	Township & Coastal Coalition	Completed. Township coordinates PPI with the NJ Coastal Coalition Regional MJPP		
TU-29	Flood warning system	Township	In Progress. Township has installed system at Webster Ave. Township should evaluate for possible other locations.	Yes	2020-UpperTwp-xxx
TU-30	Backbay Dune system to prevent tidal flooding in Strathmere & Whale Beach	Township, Conservation Organizations, NJDEP & USACE	No Progress		



			Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
2015 Action Number	Action Description	Responsible Party		Check if Yes	Enter 2020 HMP Action #
TU-31	Implement the recommendations of the Getting to Resilience report.	Township	Ongoing Capability	Yes	
TU-32	Install gates at Garden State Parkway Entrance/Exit for reverse lane operation	Township/ County OEM	No Progress		

PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

The Township of Upper participated in a risk assessment workshop in September 2020 in which detailed information was provided about assets exposed and vulnerable to the identified hazards of concern. The Township of Upper participated in a mitigation action workshop in October 2020 and was provided a Mitigation Toolbox that included a mitigation catalog developed specifically for Cape May County and its hazards of concerns; challenges and opportunities identified during the capability and risk assessments; and the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 *Selecting Appropriate Mitigation Measures for Floodprone Structures* (March 2007) and FEMA *Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards* (January 2013). Section 6 (Mitigation Strategy) and Appendix X (Mitigation Strategy Supplement) provide a more complete description of the Mitigation Toolbox and its resources.

Table 9.12-15 summarizes the comprehensive-range of specific mitigation initiatives the Township of Upper would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this HMP update. Initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the 4 FEMA mitigation action categories and the 6 CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as *High*, *Medium*, or *Low*. The table below summarizes the evaluation of each mitigation initiative, listed by action number.

Table 9.12-16 provides a summary of the prioritization of all proposed mitigation initiatives for this HMP update.



Table 9.12-15. Proposed Hazard Mitigation Initiatives

Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-UpperTwp-001 (Former TU-1a)	Structure Retrofits and Elevation	Problem: The Township has a number of pre-FIRM properties that remain vulnerable to flooding and were not constructed to flood resistant standards. This includes 43 unmitigated repetitive loss/severe repetitive loss properties spread throughout the Township. Solution: The Township proposes the retrofit and elevation of existing structures in the Special Flood Hazard Area.	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm	1	Township of Upper; Private Owners	NJDCA; FEMA-FMA; Private funds	High - Reduced risk of property damage from flooding	High	12 - 18 Months	High	SIP	PP
2020-UpperTwp-002 (Former TU-1b)	Vulnerable Structure Acquisition	Problem: Due to technical or financial factors, the elevation of each floodprone structure in the Special Flood Hazard Area is not currently feasible. This includes structures at very low ground elevations where future infrastructure provision may not be feasible. Solution: The Township proposes to acquire certain structures in vulnerable, floodprone areas of the Township.	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm	1, 5	Township of Upper; NJDEP Blue Acres	Township Funds; Blue Acres; FEMA FMA	High - Eliminate risk of property damage from flooding	High	Long Term	Low	SIP	PP
2020-UpperTwp-003 (Former TU-9)	Bulkhead Upgrades	Problem: Bulkheads are hardened shorelines found throughout the Township. Bulkheads throughout the Township have high variability in condition and age. Failing bulkheads threaten properties located on the landward side of the bulkheads and can cause areal flooding when breached. Solution: Institute upgrades based on the Township's bulkhead inventory and study.	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm	1, 4	Township of Upper; Private Owners	NJDCA; BRIC; Private Funds; Township Funds	High- continued protection of landward properties and wave attenuation	High	Short Term	Medium	SIP	PP
2020-UpperTwp-004 (Former TU-10)	CR-619 Protection	Problem: CR-619 is a major roadway and evacuation route connecting Strathmere to Sea Isle City and points west and to Ocean City and points north and west. The existing geo-tube was installed in the late 1990s and is beyond its design life.	Existing	Climate Change/Sea Level Rise; Coastal Erosion; Flood;	1, 3, 4	Township of Upper; Cape May County	BRIC; County Funds; Township Funds	High- continued access and mobility in	High	Long Term	Medium	SIP	SPC



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		Solution: Install protection to this roadway that increases the level of protection.		Nor'easter; Hurricane and Tropical Storm									
2020-UpperTwp-005 (Former TU-11)	CR-619 Revetment Wall	<p>Problem: There is a revetment wall located along CR-619 between Upper Township and Ocean City that connects Strathmere to Ocean City and serves as an evacuation route. The road requires additional protection for the continued service of the road. The County has extended the revetment wall and the Township plans to continue work on elevating road for evacuation and constructing living shoreline project.</p> <p>Solution: Undertake improvements to the existing revetment wall to enhance the level of protection and maintain utility of the roadway.</p>	Existing	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter; Hurricane and Tropical Storm	1, 3, 4	Township of Upper; Cape May County; NJDEP	NJDEP; County Funds; BRIC	High- continued access and mobility in Strathmere	High	Long Term	Medium	SIP	SP
2020-UpperTwp-006 (Former TU-12)	Roosevelt Boulevard Ramp Elevations	<p>Problem: The intersection of Roosevelt Boulevard (CR-623) and the Garden State Parkway is located at a low elevation that is subject to flooding. This intersection has an AADT in excess of 19,000 vehicles and is a major evacuation route for County residents, particularly those in Ocean City.</p> <p>Solution: The roadway, ramps, and overpass bridge require elevation in order to continue providing access during flooding conditions.</p>	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm	1, 3, 4	Township of Upper; Cape May County; NJ Turnpike Authority	NJTA capital funds; Cape May County funds; BRIC	High- continued access and utilization during flooding events for a major population center	High	18-24 Months	High	SIP	SP
2020-UpperTwp-007 (Former TU-13)	Roosevelt Boulevard Elevation	Problem: Roosevelt Boulevard is one of two connections to the mainland from Ocean City. The Boulevard has an AADT of approximately 11,000 vehicles in the off-season and 25,000 vehicles in the on-season and is a designated evacuation route. Roosevelt Boulevard is vulnerable	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane	1, 3, 4	Cape May County; Township of Upper; NJDEP	County Funds; NJDOT Local Aid; BRIC	High-enhanced level of protection during	High	Long Term	High	SIP	SP



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		to flooding at two feet above mean higher high water (MHHW). Solution: Elevate Roosevelt Boulevard to a higher degree of flood protection from the Garden State Parkway into Ocean City. The final elevation is TBD based on cost and funding availability.		and Tropical Storm									
2020-UpperTwp-008 (Former TU-14)	Tuckahoe Road Elevation	Problem: Tuckahoe Road is a low-lying road and a state-designated evacuation route for Cape May County. Its AADT is approximately 10,000 vehicles. Tuckahoe Road begins in Marmora and continues inland to Route 50. Though much of the road is at a higher elevation, the stretch between Butter Road and Dennisville-Petersburg Road (CR-610) is vulnerable to flooding and will be inundated with a storm bringing tide levels between 2 and 3 feet above MHHW. Solution: Elevate Tuckahoe Road to a higher elevation. A conceptual design for the project has already been completed.	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm	1, 3, 4	Cape May County; Township of Upper; NJDEP	County Funds; NJDOT Local Aid; BRIC	High-continued functionality of an evacuation route	High	Long-term	High	SIP	SP
2020-UpperTwp-009 (Former TU-15)	Route 50 Elevation	Problem: State Route 50 crosses Cedar Swamp Creek in Petersburg and serves as a state-designated evacuation route that carries approximately 7,000 vehicles each day. The roadway is vulnerable to flooding beginning at water levels that exceed two feet above MHHW. Solution: The Township proposes to collaborate with NJDOT to increase the elevation of Route 50 and address acute vulnerabilities.	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm	1, 3, 4	NJDOT	NJDOT Transportation Trust Fund; BRIC	High-continued functionality of an evacuation route	High	2-4 Years	High	SIP	SP
2020-UpperTwp-010 (Former TU-19)	Ocean Drive Shore Protection	Problem: Ocean Drive in Upper Township experiences significant erosion in the vicinity of Corson's Inlet. Various attempts have been made to arrest erosion in this area, which threatens to washout CR-619 (which serves as an evacuation route). The roadway requires protection that enhances the	Existing	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter;	1, 3, 4, 5	County Engineering ; NJDEP	County Funds; NJDOT Local Aid; BRIC	High-continued functionality of an evacuation route	High	12-18 months	Medium	SIP	SP



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		surrounding ecosystem and protects the existing infrastructure. Solution: Develop a shore protection solution that offers an enhanced level of protection for the roadway and enhances adjacent wetlands habitat.		Hurricane and Tropical Storm									
2020-UpperTwp-011 (Former TU-20)	Firewise Program Participation	Problem: Upper Township features a dense forest cover that covers much of the Township. Approximately 98% of the Township resides in the wildland-urban interface (WUI), and approximately 250 residents (or 2.1% of the population) reside in an area with high to extreme wildfire fuel hazard. Approximately 97% of the Township's buildings are in the WUI, representing \$6.2 billion in RCV. The Township has identified a need to enhance public outreach relating to wildfire risk in the Township. Solution: The Township seeks a status as a Firewise community through the facilitation of public outreach/awareness projects and fire risk reduction activities.	Existing	Wildfire	1, 2, 3, 4, 5, 6	NJ State Forest Fire Service; Cape May County Fire Chiefs Association; Upper Twp fire districts; Township of Upper	Existing Township funds	High- Improved local capabilities to manage wildfire risk	Low	Short	Low	EAP	PI
2020-UpperTwp-012 (Former TU-21)	Enhanced Wildfire Protection	Problem: Upper Township features a dense forest cover that covers much of the Township. Approximately 98% of the Township resides in the wildland-urban interface (WUI), and approximately 250 residents (or 2.1% of the population) reside in an area with high to extreme wildfire fuel hazard. Approximately 97% of the Township's buildings are in the WUI, representing \$6.2 billion in RCV. The Township has identified a need to enhance mitigation measures to reduce wildfire risk. Solution: Participate in State/County actions and trainings to enhance public outreach and knowledge of wildfire and potential mitigation measures. This will entail the participation of Township officials in trainings and seminars and	Existing	Wildfire	1, 2, 3, 4, 5, 6	NJ State Forest Fire Service; Cape May County Fire Chiefs Association; Upper Twp fire districts; Township of Upper	Existing Township funds	High- Improved local capabilities to manage wildfire risk	Low	Short	Low	EAP	PI



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		the enhancement of wildfire prevention and response capabilities.											
2020-UpperTwp-013 (Former TU-23)	Garden State Parkway Elevation	<p>Problem: The Garden State Parkway is the busiest and highest-volume roadway in Cape May County. There are two Parkway exits in Upper Township. Portions of the Parkway in Ocean View are in the Special Flood Hazard Area and are vulnerable to flooding and sea level rise.</p> <p>Solution: The Garden State Parkway should be elevated 1' above the base flood elevation. The Parkway's utility as an evacuation route should be supported and enhanced by ensuring a higher level of protection.</p>	Existing	Flood, Coastal Storm	1, 4, 6	Garden State Parkway	NJHA, BRIC	High	High	Long-term	Medium	SIP	SP
2020-UpperTwp-015 (Former TU-25)	Storm Shelter Retrofit	<p>Problem: Upper Township features numerous buildings (including its elementary and middle schools) that provide shelter for residents of the Township and adjacent communities during hazard events. However, the facilities require further study for determining their compliance with structural shelter requirements and their ability to withstand storms.</p> <p>Solution: Facilities that are used for emergency storm shelters should have a design analysis to determine conformance with ASCE7, FEMA 55 & 361 and ICC500 – 2008. And then retrofitted for conformance</p>	Existing	All hazards	1, 3, 4	Township	BRIC; Township funds; BOE funds	High	High	Long-term	Medium	LPR/ SIP	ES
2020-UpperTwp-016 (Former TU-26)	Seacliff Ave Outfall	<p>Problem: Stormwater from the vicinity of Seacliff Ave drains via an outfall to the back bay. The outfall is frequently clogged with sedimentation due to currents and littoral drift. The clogging of the outfall occurs inconsistently and causes stormwater flooding along Seacliff Ave.</p> <p>Solution: To permanently mitigate the clogging issue, the Township proposes to</p>	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm;	1	Township	Local; HMGP	Medium	Medium	Short	High	SIP	SP



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		extend the outfall pipe 20 to 30 feet to go beyond the current. Neighbor is looking to do dredging		Severe Storm									
2020-UpperTwp-017 (Former TU-29)	Flood Warning System	Problem: Upper Township does not have a 24-hr local police to help notify when rising flood waters occur. In 2020 the Township installed a flood warning device at one location but needs to be expanded to address other localized flooding areas. Solution: Install 3-4 additional flood warning gauges to create a better network for notifying the public when flooding is impending.	New	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm; Severe Storm	1, 2, 4	Township	Township funds; HMGP	High	Medium	Short	High	EAP	PI/PP
2020-UpperTwp-018	Dry-Floodproof Strathmere Fire Hall	Problem: The garage area where the Strathmere Fire Co stores their equipment and parks the fire apparatus is below the base flood elevation. During Superstorm Sandy, water just covered the garage floor. Solution: Dry-floodproof the garage doors and exterior walls.	Existing	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm; Severe Storm	1, 3, 4		HMGP; FMA; Fire District Funds	Medium	\$75,000	Short	High	SIP	PP
2020-UpperTwp-019	Living Shoreline/Marsh Protection Zone	Problem: The shoreline south of Bayview Dr Boatramp has been eroding and destroying the marsh. The marsh area creates a buffer to lessen the impact of wave energy and flooding to Strathmere. Solution: Study needs to be performed to determine how to reconstruct the shoreline and restore its natural function. Construct a living shoreline along the area.	New	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter; Hurricane and Tropical Storm	1, 5	Township	BRIC; NJDEP; FWS; NFWF	Reduced erosion and enhanced ecosystem services.	TBD	Long	Medium - High	NSP	NR

Notes:

Acronyms and Abbreviations:

Potential FEMA HMA Funding Sources:

Timeline:





CAV Community Assistance Visit
 CRS Community Rating System
 DPW Department of Public Works
 FEMA Federal Emergency Management Agency
 FPA Floodplain Administrator
 HMA Hazard Mitigation Assistance
 N/A Not applicable
 NFIP National Flood Insurance Program
 OEM Office of Emergency Management

FMA Flood Mitigation Assistance Grant Program
 HMGP Hazard Mitigation Grant Program
 PDM Pre-Disaster Mitigation Grant Program

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- **Local Plans and Regulations (LPR)** – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- **Structure and Infrastructure Project (SIP)** - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- **Natural Systems Protection (NSP)** – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- **Education and Awareness Programs (EAP)** – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- **Preventative Measures (PR)** - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- **Property Protection (PP)** - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Information (PI)** - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- **Natural Resource Protection (NR)** - Actions that minimize hazard loss and preserve or restore the functions of natural systems. Actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Structural Flood Control Projects (SP)** - Actions that involve the construction of structures to reduce the impact of a hazard. Structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Emergency Services (ES)** - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.



Table 9.12-16. Summary of Prioritization of Actions

Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-UpperTwp-001 (Former TU-1a)	Structure Retrofits and Elevation	1															
2020-UpperTwp-002 (Former TU-1b)	Vulnerable Structure Acquisition																
2020-UpperTwp-003 (Former TU-9)	Bulkhead Upgrades																
2020-UpperTwp-004 (Former TU-10)	CR-619 Protection																
2020-UpperTwp-005 (Former TU-11)	CR-619 Revetment Wall																
2020-UpperTwp-006 (Former TU-12)	Roosevelt Boulevard Ramp Elevations																
2020-UpperTwp-007 (Former TU-13)	Roosevelt Boulevard Elevation																
2020-UpperTwp-008 (Former TU-14)	Tuckahoe Road Elevation																



Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-UpperTwp-009 (Former TU-15)	Route 50 Elevation																
2020-UpperTwp-010 (Former TU-19)	Ocean Drive Shore Protection																
2020-UpperTwp-011 (Former TU-20)	Firewise																
2020-UpperTwp-012 (Former TU-22)	Enhanced Wildfire Protection																
2020-UpperTwp-013 (Former TU-23)	Garden State Parkway Elevation																
2020-UpperTwp-015 (Former TU-25)	Storm Shelter Retrofit																
2020-UpperTwp-016 (Former TU-26)	Seacliff Ave Outfall																
2020-UpperTwp-017 (Former TU-29)	Flood Warning System																



Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-UpperTwp-018	Dry-Floodproof Strathmere Fire Hall																
2020-UpperTwp-019	Living Shoreline/Marsh Protection Zone																

Notes: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).

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Table 9.12-17. Analysis of Mitigation Actions by Hazard and Category

Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Climate Change and Sea Level Rise								
Coastal Erosion								
Disease Outbreak (new)								
Drought (new)								
Flood								
Hurricane								
Nor'Easter								
Severe Weather								
Severe Winter Weather								
Tsunami								
Wildfire								

Note: Section 6 (Mitigation Strategy) provides for an explanation of the mitigation categories.

RED high ranked hazard

ORANGE medium ranked hazard

YELLOW low ranked hazard

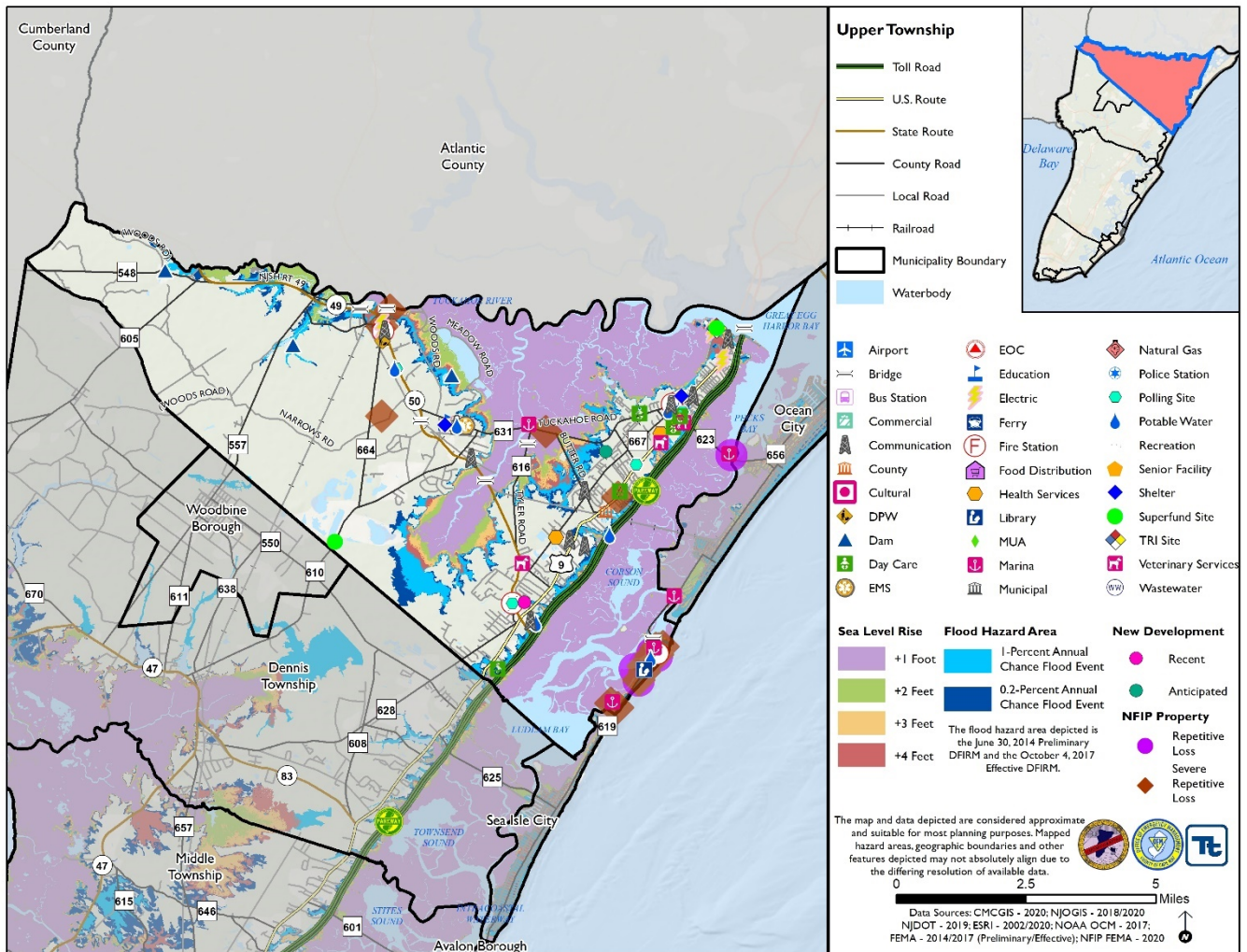
9.12.8 Staff and Local Stakeholder Involvement in Annex Development

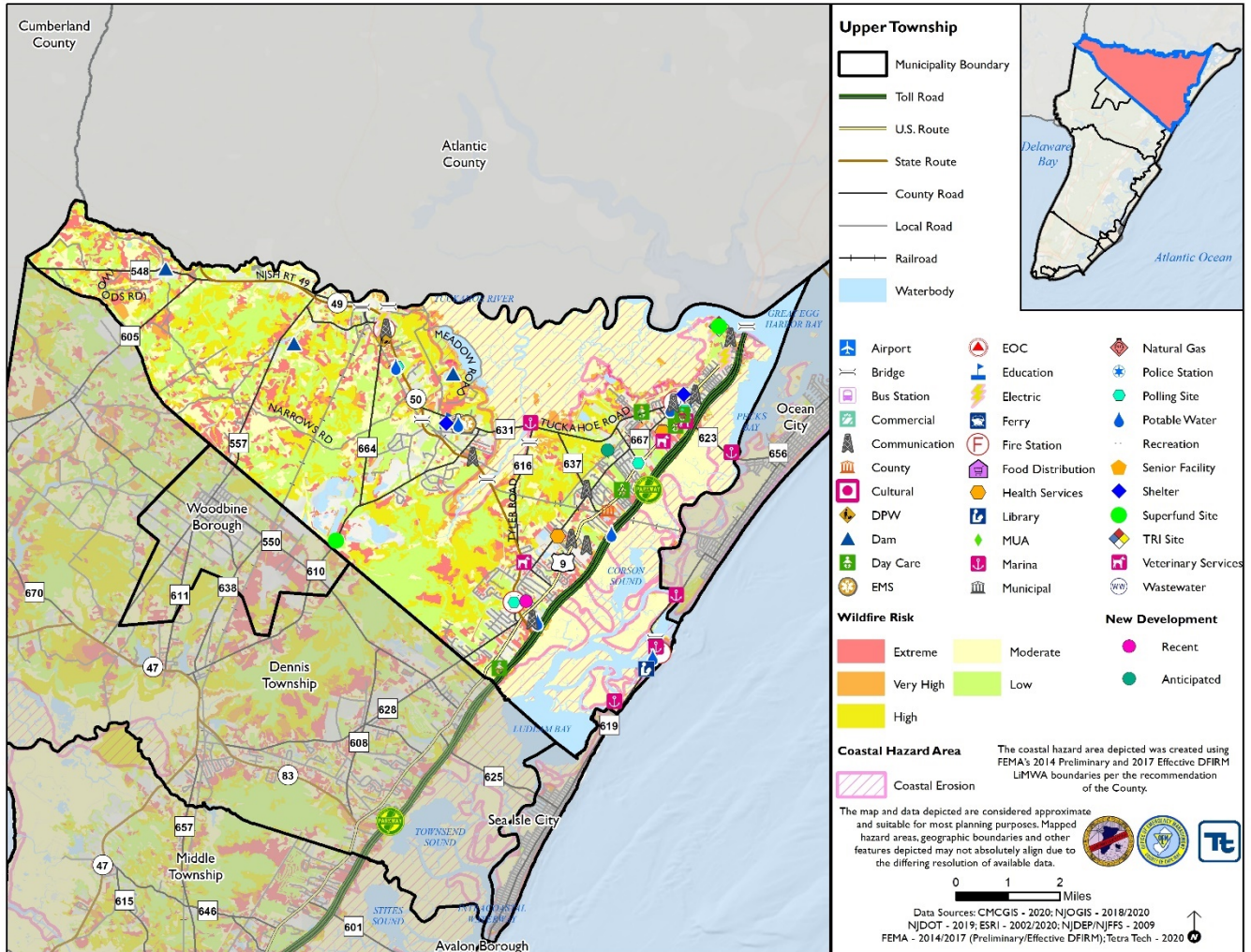
The Township of Upper followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many jurisdiction representatives. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization. The following table summarizes who participated and in what capacity. Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix **X** (Meeting Documentation).

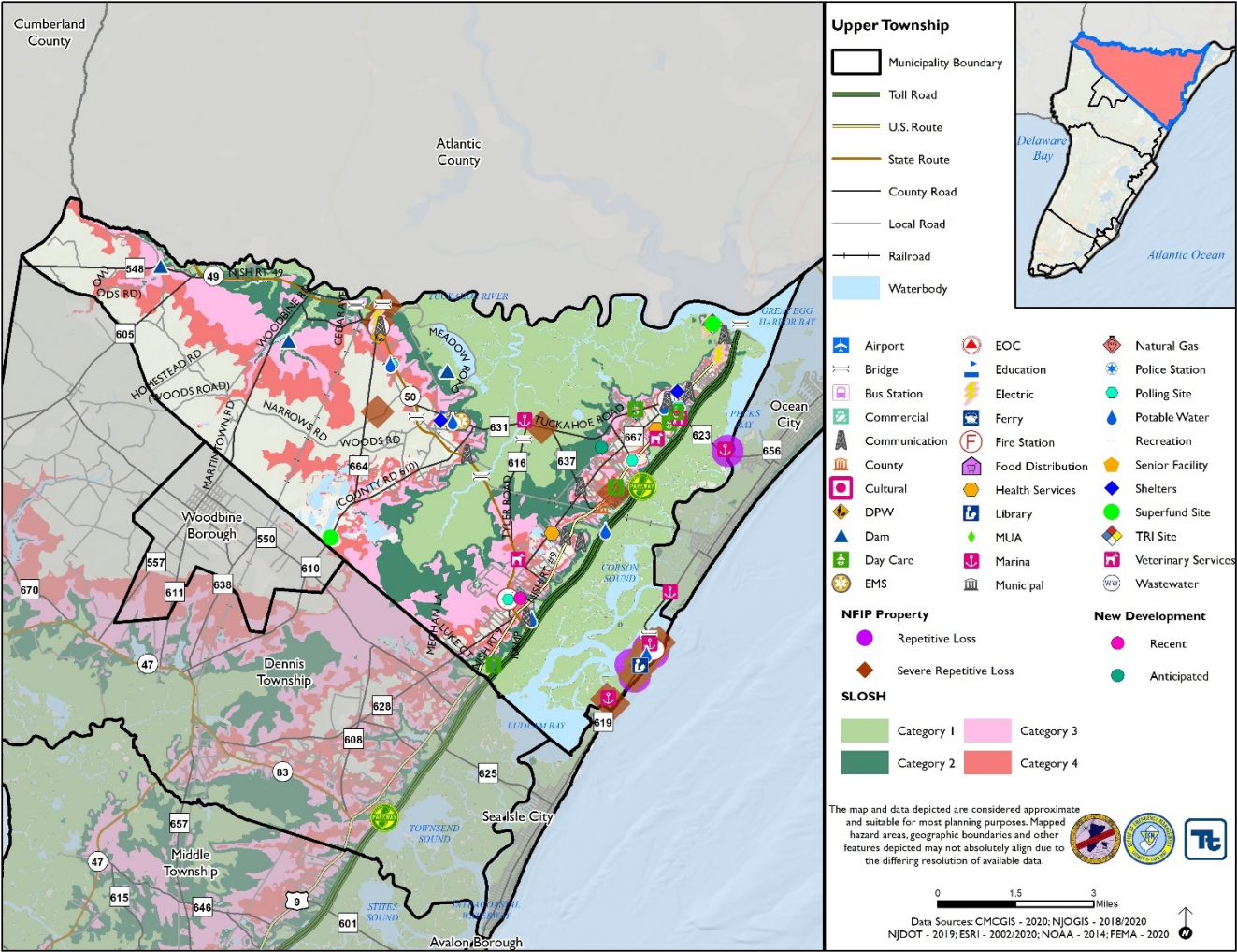
Table 9.12-18. Contributors to the Annex

Name	Title	Method of Participation
Paul Dietrich	Township Engineer	Annex preparation/Annex review/Meeting attendance
Scott Morgan	Township Administrator	Annex preparation/Annex review/Meeting attendance

Figure 9.12-1. Township of Upper Hazard Area Extent and Location Map









Action Worksheet			
Project Name:	Elevate Floodprone Properties		
Project Number:	2020-UpperTwp-001 (Former TU-1a)		
Risk / Vulnerability			
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	The Township has a number of pre-FIRM properties that remain vulnerable to flooding and were not constructed to flood resistant standards. This includes 43 unmitigated repetitive loss/severe repetitive loss properties spread throughout the Township.		
Action or Project Intended for Implementation			
Description of the Solution:	The Township proposes the retrofit and elevation of existing structures in the Special Flood Hazard Area.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	100-year	Estimated Benefits (losses avoided):	Reduce flood costs; Protect life/ property of residents and businesses
Useful Life:	30 year	Goals Met:	1
Estimated Cost:	\$150,000 per property	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within two years
Estimated Time Required for Project Implementation:	12-18 months	Potential Funding Sources:	NJDCA; FEMA-FMA; Private funds
Responsible Organization:	Township of Upper; Private Owners	Local Planning Mechanisms to be Used in Implementation if any:	Master Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Home acquisition	Variable	Too expensive/not practical
	Home elevation	\$150K/property	Maintains quality of life
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Elevate Floodprone Properties	
Project Number:	2020-UpperTwp-001 (Former TU-1a)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Project Name:	Vulnerable Structure Acquisition		
Project Number:	2020-UpperTwp-002 (Former TU-1b)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	Due to technical or financial factors, the elevation of each floodprone structure in the Special Flood Hazard Area is not currently feasible. This includes structures at very low ground elevations where future infrastructure provision may not be feasible.		
Description of the Solution:	The Township proposes to acquire certain structures in vulnerable, floodprone areas of the Township.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	High - Eliminate risk of property damage from flooding
Useful Life:	Perpetual	Goals Met:	1, 5
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within five years
Estimated Time Required for Project Implementation:	Long term	Potential Funding Sources:	Township Funds; Blue Acres; FEMA FMA
Responsible Organization:	Township of Upper; NJDEP Blue Acres	Local Planning Mechanisms to be Used in Implementation if any:	Master Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Structure rebuilds	Low	Continued exposure
	Acquisition	High	Removes exposure
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Vulnerable Structure Acquisition	
Project Number:	2020-UpperTwp-002 (Former TU-1b)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Project Name:	Bulkhead Upgrades		
Project Number:	2020-UpperTwp-003 (Former TU-9)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	Bulkheads are hardened shorelines found throughout the Township. Bulkheads throughout the Township have high variability in condition and age. Failing bulkheads threaten properties located on the landward side of the bulkheads and can cause areal flooding when breached.		
Description of the Solution:	Institute upgrades based on the Township's bulkhead inventory and study.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	Base flood elevation	Estimated Benefits (losses avoided):	High- continued protection of landward properties and wave attenuation
Useful Life:	30 years	Goals Met:	1, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Short-term
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	NJDCA; BRIC; Private Funds; Township Funds
Responsible Organization:	Township of Upper; Private Owners	Local Planning Mechanisms to be Used in Implementation if any:	Bulkhead inventory
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Remove bulkheads	High	Causes erosion
	Bulkhead elevation	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Bulkhead Upgrades	
Project Number:	2020-UpperTwp-003 (Former TU-9)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	CR-619 Protection		
Project Number:	2020-UpperTwp-004 (Former TU-10)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	CR-619 is a major roadway and evacuation route connecting Strathmere to Sea Isle City and points west and to Ocean City and points north and west. The existing geo-tube was installed in the late 1990s and is beyond its design life.		
Description of the Solution:	Install protection to this roadway that increases the level of protection.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	Base flood elevation	Estimated Benefits (losses avoided):	High- continued access and mobility in Strathmere
Useful Life:	20 years	Goals Met:	1, 3, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Long term
Estimated Time Required for Project Implementation:	3 years	Potential Funding Sources:	BRIC; County Funds; Township Funds
Responsible Organization:	Township of Upper; Cape May County	Local Planning Mechanisms to be Used in Implementation if any:	Master Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Bridge	High	Cost prohibitive
	Shore protection	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	CR-619 Protection	
Project Number:	2020-UpperTwp-004 (Former TU-10)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	CR-619 Revetment Wall		
Project Number:	2020-UpperTwp-005 (Former TU-11)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	There is a revetment wall located along CR-619 between Upper Township and Ocean City that connects Strathmere to Ocean City and serves as an evacuation route. The road requires additional protection for the continued service of the road. The County has extended the revetment wall and the Township plans to continue work on elevating road for evacuation and constructing living shoreline project.		
Description of the Solution:	Undertake improvements to the existing revetment wall to enhance the level of protection and maintain utility of the roadway.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	High- continued access and mobility in Strathmere
Useful Life:	20 years	Goals Met:	1, 3, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Within five years
Estimated Time Required for Project Implementation:	18-24 months	Potential Funding Sources:	NJDEP; County Funds; BRIC
Responsible Organization:	Township of Upper; Cape May County; NJDEP	Local Planning Mechanisms to be Used in Implementation if any:	Capital Improvement Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Road abandonment	Low	Not feasible
	Revetment wall improvement	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	CR-619 Revetment Wall	
Project Number:	2020-UpperTwp-005 (Former TU-11)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Roosevelt Boulevard Ramp Elevations		
Project Number:	2020-UpperTwp-006 (Former TU-12) See also 2020-CapeMayCounty-019 (Former CMC 31)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	The intersection of Roosevelt Boulevard (CR-623) and the Garden State Parkway is located at a low elevation that is subject to flooding. This intersection has an AADT in excess of 19,000 vehicles and is a major evacuation route for County residents, particularly those in Ocean City.		
Description of the Solution:	The roadway, ramps, and overpass bridge require elevation in order to continue providing access during flooding conditions.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	Base flood elevation	Estimated Benefits (losses avoided):	High- continued access and utilization during flooding events for a major population center
Useful Life:	60 years	Goals Met:	1, 3, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 10 years
Estimated Time Required for Project Implementation:	Long Term DOF	Potential Funding Sources:	NJTA capital funds; Cape May County funds; BRIC
Responsible Organization:	Township of Upper; Cape May County; NJ Turnpike Authority	Local Planning Mechanisms to be Used in Implementation if any:	CIP; SJTPO
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Interchange Relocation	High	Cost prohibitive
	Interchange elevation	High	Feasible
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Roosevelt Boulevard Ramp Elevations	
Project Number:	2020-UpperTwp-006 (Former TU-12) See also 2020-CapeMayCounty-019 (Former CMC 31)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Ocean City CR-623 Elevation		
Project Number:	2020-UpperTwp-007 (Former TU-13) See also 2020-CapeMayCounty-020 (Former CMC 32)		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood; Hurricane/Tropical Storm; Nor'easter; Climate Change and Sea Level Rise		
Description of the Problem:	Roosevelt Boulevard (CR-623) is a major access road and evacuation route between Ocean City and the mainland. The road sees average daily traffic of between 10,000 and 25,000 vehicles depending on the season. The Boulevard sees flooding beginning at water levels that are two feet above high tide.		
Action or Project Intended for Implementation			
Description of the Solution:	Elevate Roosevelt Boulevard (CR-623) from the Parkway into Ocean City proper.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	Base flood elevation	Estimated Benefits (losses avoided):	High
Useful Life:	40 years	Goals Met:	1, 3, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Within 10 years
Estimated Time Required for Project Implementation:	Long Term DOF	Potential Funding Sources:	HMA grants with local match
Responsible Organization:	County Engineering	Local Planning Mechanisms to be Used in Implementation if any:	CIP
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Bridge	High	Environmentally prohibitive/costly
	Roadbed elevation	High	Feasible
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Ocean City CR-623 Elevation	
Project Number:	2020-CapeMayCounty-020 (Former CMC 32)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Tuckahoe Road Elevation		
Project Number:	2020-UpperTwp-008 (Former TU-14)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	Tuckahoe Road is a low-lying road and a state-designated evacuation route for Cape May County. Its AADT is approximately 10,000 vehicles. Tuckahoe Road begins in Marmora and continues inland to Route 50. Though much of the road is at a higher elevation, the stretch between Butter Road and Dennisville-Petersburg Road (CR-610) is vulnerable to flooding and will be inundated with a storm bringing tide levels between 2 and 3 feet above MHHW.		
Description of the Solution:	Elevate Tuckahoe Road to a higher elevation. A conceptual design for the project has already been completed.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	500-year flood zone	Estimated Benefits (losses avoided):	High- continued functionality of an evacuation route
Useful Life:	50 years	Goals Met:	1, 3, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Long term
Estimated Time Required for Project Implementation:	1-2 years	Potential Funding Sources:	County Funds; NJDOT Local Aid; BRIC
Responsible Organization:	Cape May County; Township of Upper; NJDEP	Local Planning Mechanisms to be Used in Implementation if any:	Capital Improvement Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Road floodproofing	High	Not practical
	Elevation	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Tuckahoe Road Elevation	
Project Number:	2020-UpperTwp-008 (Former TU-14)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Route 50 Elevation		
Project Number:	2020-UpperTwp-009 (Former TU-15)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	State Route 50 crosses Cedar Swamp Creek in Petersburg and serves as a state-designated evacuation route that carries approximately 7,000 vehicles each day. The roadway is vulnerable to flooding beginning at water levels that exceed two feet above MHHW.		
Description of the Solution:	The Township proposes to collaborate with NJDOT to increase the elevation of Route 50 and address acute vulnerabilities.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	500-year flood level	Estimated Benefits (losses avoided):	High- continued functionality of an evacuation route
Useful Life:	50 years	Goals Met:	1, 3, 4
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Long term
Estimated Time Required for Project Implementation:	2-4 years	Potential Funding Sources:	NJDOT Transportation Trust Fund; BRIC
Responsible Organization:	NJDOT	Local Planning Mechanisms to be Used in Implementation if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Road floodproofing	High	Not feasible
	Route 50 Elevation	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Route 50 Elevation	
Project Number:	2020-UpperTwp-009 (Former TU-15)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Ocean Drive Shore Protection		
Project Number:	2020-UpperTwp-010 (Former TU-19)		
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	Ocean Drive in Upper Township experiences significant erosion in the vicinity of Corson's Inlet. Various attempts have been made to arrest erosion in this area, which threatens to washout CR-619 (which serves as an evacuation route). The roadway requires protection that enhances the surrounding ecosystem and protects the existing infrastructure.		
Description of the Solution:	Develop a shore protection solution that offers an enhanced level of protection for the roadway and enhances adjacent wetlands habitat.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	500-year flood elevation	Estimated Benefits (losses avoided):	High- continued functionality of an evacuation route
Useful Life:	49 years	Goals Met:	1, 3, 4, 5
Estimated Cost:	High	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Long term
Estimated Time Required for Project Implementation:	12-18 months	Potential Funding Sources:	County Funds; NJDOT Local Aid; BRIC
Responsible Organization:	County Engineering; NJDEP	Local Planning Mechanisms to be Used in Implementation if any:	CIP
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Road abandonment	Low	Loss of access
	Shore protection	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Ocean Drive Shore Protection	
Project Number:	2020-UpperTwp-010 (Former TU-19)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Storm Shelter Retrofit		
Project Number:	2020-UpperTwp-015 (Former TU-25)		
Hazard(s) of Concern:	All hazards		
Description of the Problem:	Upper Township features numerous buildings (including its elementary and middle schools) that provide shelter for residents of the Township and adjacent communities during hazard events. However, the facilities require further study for determining their compliance with structural shelter requirements and their ability to withstand storms.		
Description of the Solution:	Facilities that are used for emergency storm shelters should have a design analysis to determine conformance with ASCE7, FEMA 55 & 361 and ICC500 – 2008. And then retrofitted for conformance		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	500-Year flood	Estimated Benefits (losses avoided):	High
Useful Life:	30 years	Goals Met:	1, 3,4
Estimated Cost:	High	Mitigation Action Type:	LPR/ SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Within ten years
Estimated Time Required for Project Implementation:	Long-term	Potential Funding Sources:	BRIC; Township funds; BOE funds
Responsible Organization:	Township	Local Planning Mechanisms to be Used in Implementation if any:	Emergency management plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Build new shelters	High	Not cost effective
	Retrofit	High	Cost effective
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Storm Shelter Retrofit	
Project Number:	2020-UpperTwp-015 (Former TU-25)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Flood Warning System		
Project Number:	2020-UpperTwp-017		
Risk / Vulnerability			
Hazard(s) of Concern:	Tidal Flooding, Hurricane, Nor'Easter		
Description of the Problem:	Upper Township does not have a 24-hr local police to help notify when rising flood waters occur. In 2020 the Township installed a flood warning device at one location but needs to be expanded to address other localized flooding areas.		
Action or Project Intended for Implementation			
Description of the Solution:	Install 3-4 additional flood warning gauges to create a better network for notifying the public when flooding is impending.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	High- distribution of hazard information
Useful Life:	20 years	Goals Met:	1, 2, 4
Estimated Cost:	\$100,000	Mitigation Action Type:	EAP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Short
Estimated Time Required for Project Implementation:	Within 1 year	Potential Funding Sources:	Township funds; HMGP
Responsible Organization:	Township	Local Planning Mechanisms to be Used in Implementation if any:	Emergency Management Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Manual flood reports	Low	Not reliable
	Flood warning system	Low	Automatic
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Flood Warning System	
Project Number:	2020-UpperTwp-017	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		



Action Worksheet			
Project Name:	Dry-Floodproof Strathmere Fire Hall		
Project Number:	2020-UpperTwp-018		
Risk / Vulnerability			
Hazard(s) of Concern:	Tidal Flooding, Hurricane, Nor'Easter		
Description of the Problem:	The garage area where the Strathmere Fire Co stores their equipment and parks the fire apparatus is below the base flood elevation. During Superstorm Sandy, water just covered the garage floor.		
Action or Project Intended for Implementation			
Description of the Solution:	Dry-floodproof the garage doors and exterior walls.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	100-year event	Estimated Benefits (losses avoided):	Reduce flood damages
Useful Life:	30 years	Goals Met:	1, 3, 4
Estimated Cost:	\$100,000	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	1 year
Estimated Time Required for Project Implementation:	6 months	Potential Funding Sources:	Strathmere Fire Budget, HMGP, BRIC
Responsible Organization:	Strathmere Fire Company, support from Township Floodplain Manager	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Dry-Floodproofing	\$100,000	Can't move fire apparatus once system is installed during event
	Raise building	\$5,000,000	Costly, access issues due to grade difference between garage and Commonwealth Ave
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Dry-Floodproof Strathmere Fire Hall	
Project Number:	2020-UpperTwp-018	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	-1	Can't move fire apparatus during event
Property Protection	1	Fire apparatus will not be damaged
Cost-Effectiveness	1	Better alternative than raising building
Technical	1	Easy engineering solution
Political	1	
Legal	1	
Fiscal	1	Better alternate than raising building
Environmental	1	Better alternate than raising building
Social	0	
Administrative	1	
Multi-Hazard	0	
Timeline	1	Can be implemented quickly once funded.
Agency Champion	1	
Other Community Objectives	0	
Total	9	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Living Shoreline and Marsh Protection Zone		
Project Number:	2020-UpperTwp-019		
Risk / Vulnerability			
Hazard(s) of Concern:	Climate Change/Sea Level Rise; Coastal Erosion; Flood; Nor'easter; Hurricane and Tropical Storm		
Description of the Problem:	The shoreline south of Bayview Dr Boatramp has been eroding and destroying the marsh. The marsh area creates a buffer to lessen the impact of wave energy and flooding to Strathmere.		
Action or Project Intended for Implementation			
Description of the Solution:	Study needs to be performed to determine how to reconstruct the shoreline and restore its natural function. Construct a living shoreline along the area.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Reduced erosion and enhanced ecosystem services.
Useful Life:	5 years	Goals Met:	1, 5
Estimated Cost:	TBD	Mitigation Action Type:	NSP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Within 5 years
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	BRIC; NJDEP; FWS; NFWF
Responsible Organization:	Township	Local Planning Mechanisms to be Used in Implementation if any:	Capital Improvement plan, master plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Shoreline hardening	High	Ecosystem degradation
	Living shoreline	High	Ecosystem enhancement
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Living Shoreline and Marsh Protection Zone	
Project Number:	2020-UpperTwp-019	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		