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SECTION 6 MITIGATION STRATEGIES

This section presents mitigation actions for Brick Township to reduce potential exposure and losses identified as concerns in the Risk Assessment section of this FMP. The Planning Committee reviewed the risk assessment to identify and develop these mitigation actions, which are presented herein.

This section includes:

- 1) Background and past mitigation accomplishments
- 2) General mitigation planning approach
- 3) Town mitigation goals and objectives (CRS Step 6)
- 4) Town capability assessment
- 5) Identification, analysis, and implementation of potential mitigation actions for each hazard (CRS Step 7)
- 6) Proposed hazard mitigation actions (CRS Step 8)

Hazard mitigation reduces the potential impacts of, and costs associated with, emergency and disaster-related events. Mitigation actions address a range of impacts, including impacts on the population, property, the economy, and the environment.

Mitigation actions can include activities such as: revisions to and enforcement of building codes, revisions to land-use planning, training and education, and structural and nonstructural safety measures.

This section addresses both mitigation actions that are specific to particular hazards, as well as those that apply to multiple hazards.

6.1 Background and Past Accomplishments

This section is a discussion regarding past mitigation activities and an overview of past efforts which is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this FMP. The Township, through previous and ongoing activities, has demonstrated that it is proactive in protecting its physical assets and residents against losses from flooding hazards.

The Township has worked to improve hazard mitigation and foster resilience efforts throughout the community and plans to continue these efforts through additional infrastructure upgrades and enhancements, updated mitigation planning, assistance to impacted property owners, and an application to the Community Rating System (CRS) program. Examples of previous and ongoing actions, projects and capabilities include the following:

- County HMP: Adoption of the Ocean County HMP which includes goals, objectives, policies, and actions focused on reducing the extent, frequency and impacts of flooding.
- Flood Insurance: Participation in the NFIP and adoption of flood damage prevention regulations. Preparation to participate in the NFIP administered Community Rating System (CRS) to improve floodplain management and reduce flood insurance premiums for policy holders in recognition of community activities that exceed the minimum NFIP requirements.
- Regulatory Tools: The Township utilizes a number of local ordinances to regulate the use, design, and site planning of development projects including: Stormwater Management Ordinance, Floodplain Management Ordinance, Natural Hazard Ordinance, Environmental Assessment Ordinance, Riparian Buffer Ordinance, Dune Preservation Ordinance, Threatened and endangered species ordinance, Tree Protection Ordinance: regulates tree save areas during site plan review, Development permit/Site Plan Review, Zoning Ordinance, Subdivision Ordinance, and Building Code
- CAFRA: The Township of Brick is also federally regulated by the Coastal Areas Facility Review Act (CAFRA). The CAFRA Zone is New Jersey’s coastal zone in which NJDEP has the authority to



approve the location, design, and construction of major facilities with the intention of protecting coastal resources. (OC HMP)

- Flood Warning System: The Township currently utilizes a County-wide flood warning system consisting of a network of precipitation gages, tide gages along the coastline, and stream gages that all constantly monitor and potential flood conditions. This information is fed into a USGS forecasting program, which assesses the flood threat based on the amount of flow recorded by the devices.
- Sustainable Land Use planning: Given the current limitations on available development sites and growing vacancies in strip malls, the Township has committed to more sustainable land use practices. Future growth and development will be focused on infill and mixed-use redevelopment of existing areas to utilize existing infrastructure, prevent environmental degradation and increase quality of life.
- Open space preservation: Open space preservation efforts have been underway for many years in the Township and have successfully preserved approximately 3,000 acres. The Township uses an open space tax to provide funding for new acquisitions of open space.
- Beach and Dune Protection Program areas on the barrier island along the ocean are defined and regulated under the New Jersey Coastal Management Plan.
- Social Media: The Township provides storm and hazard updates via social media .
- Emergency Checks for seniors: The Township has reached out and performed emergency checks and evacuation procedures for senior communities. The community is proactively increasing its understanding of the locations of seniors and vulnerable populations to improve emergency response and public safety.
- Technical Assistance: Engineering department provides assistance to residents in achieving compliance with regulations.
- Watershed Planning: Brick Township has had an active role in the development of the Metedeconk Watershed Plan in conjunction with BTMUA, the upstream towns, Monmouth and Ocean counties, etc., which focuses primarily on stormwater management projects and public education. In addition the Township supports the Barnegat Bay Partnership regional planning efforts.
- Current and Future Projects: The Township has also undertaken several recent projects including:
 - Application for HMGP funding to install generators at the Municipal Complex, Department of Public Works, and Police substation/Pioneer Hose Fire Company Barrier Island Forward Command Post. Additional generators are still needed for other facilities.
 - Post storm cleaning and flushing of all outfalls and storm drains (1,682) identified in the Sandy floodplain.
 - Implementing beach erosion and stabilization control projects in high risk areas and areas subject to storm surge scouring
 - Implementing resilient (i.e., greater than pre-Superstorm Sandy levels) beach replenishment measures including construction of 25' high dunes and extension of the beach by about 200 feet
 - Installing man-made flood control structures in coastal risk areas including the installation of a steel seawall
 - Working on adding cell phone numbers to Reverse 9-1-1 to alert both full-time and seasonal property owners of potentially hazardous conditions
 - Improving protection for key roads including Route 35 and 70 via the steel seawall project and NJ DOT improvements to drainage systems



These past and ongoing activities have contributed to the Township's understanding of its hazard preparedness and future mitigation activity needs, costs, and benefits. These efforts provide a foundation for the Planning Committee to use in developing this FMP.

6.2 General Mitigation Planning Approach

The general mitigation planning approach used to develop this plan is based on four steps, which were used to support mitigation planning. These steps are summarized below and presented in more detail in the following sections.

- **Develop mitigation goals and objectives:** Mitigation goals were developed using the hazard characteristics, inventory, and findings of the risk assessment, and through the results of the public outreach program. By reviewing these outputs and other municipal and state policy documents, objectives tying to these overarching goals were identified and characterized into similar themes.
- **Identify and prioritize mitigation actions:** Based on the risk assessment outputs, the mitigation goals and objectives, existing literature and resources, and input from the participating entities, alternative mitigation actions were identified. The potential mitigation actions were qualitatively evaluated against the mitigation goals and objectives and other evaluation criteria. The mitigation capabilities within the Town (regulatory, administrative and fiscal) were assessed and considered in the selection and prioritization of appropriate, feasible actions. These actions were then prioritized into three categories: high, medium, and low.
- **Prepare an implementation strategy:** High priority mitigation actions are recommended for first consideration for implementation, as discussed under each hazard description in the following sections. However, based on community-specific needs and goals and available funding and costs, some low or medium priority mitigation actions may also be addressed or could be addressed before some of the high priority actions.
- **Document the mitigation planning process:** The mitigation planning process is documented throughout this plan.

6.3 Flood Mitigation Goals and Objectives

This section documents Township's mission statement and the efforts in identifying the flood mitigation goals and objectives to reduce or avoid long-term vulnerabilities to the flood hazard. From the Mission Statement and goals and objectives were identified, and the objectives were used in the selection and prioritization of recommended mitigation initiatives. These planning components all directly support one another. Mitigation initiatives were prioritized based on meeting multiple objectives.

6.3.1 Mission Statement

The mission of the Township of Brick Floodplain Management Plan is to create a safe, protected, and well-informed community with a comprehensive set of tools and the necessary capacity to identify and address vulnerabilities to flood related hazards. The Township of Brick will strive to protect the health, safety, and quality of life of community members and remain a safe, resilient, and prosperous place to live.



6.3.2 Goals and Objectives

The Steering and Planning Committees have developed mitigation goals based on the risk assessment results, discussions, research, and input from amongst the committee, existing authorities, polices, programs, resources, stakeholders and the public. For the purpose of this plan, goals are defined as follows:

Goals are general guidelines that explain what is to be achieved. They are usually broad, long-term, policy-type statements and represent global visions. Goals help define the benefits the FMP is trying to achieve. The success of the FMP, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).

The Brick Township FMP goals are compatible with the needs and goals expressed in other available community planning documents, including:

- State of New Jersey Hazard Mitigation Plan
- Ocean County Hazard Mitigation Plan

Each goal has a number of corresponding objectives that further define the specific actions or implementation steps. Achievement of these goals will define the effectiveness of a mitigation strategy. The goals are also used to help establish priorities.

Objectives are short-term aims which, when combined, form a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable. The objectives were developed by the Steering Committee through its knowledge of the local area, review of past efforts, findings of the risk assessment, qualitative evaluations, and identification of mitigation options. The objectives are used to (1) measure the success of the FMP once implemented, and (2) to help prioritize identified mitigation actions.

Table 6-1 presents the goals and objectives for the Township FMP. Although an objective is listed with each goal, the objectives were developed to meet multiple goals as demonstrated in Table 6-2.

Table 6-1. Brick Township Flood Mitigation Plan Goals

Goal Number	Goal
1	Reduce threats and damage from flooding, Stormwater, storm surge and sea level rise to protect life and property and to reduce vulnerabilities and negative impacts of flooding on critical facilities and infrastructure.
2	Protect environmental resources and maintain their natural ability to increase flood protection and community resilience.
3	Ensure that local government operations are not significantly disrupted by flood hazard events.
4	Provide a methodical approach to flood hazard planning that can integrate with other planning mechanisms that enhance or support floodplain management and create a decision-making tool for flood management policy.
5	Promote compliance with state and federal program requirements.
6	Foster all sectors of the community working together to create a flood-hazard-resilient community.



Table 6-2. Brick Township Flood Mitigation Plan Objectives

Obj. #	Objective Statement	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
Prevention							
1	Develop a long term strategy for mitigating potential flooding of properties, facilities, and infrastructure that are at risk for damage from future sea level rise including identification of critical facilities in the floodplain and determine potential options for relocation.	x			x		x
2	Improve capital improvement planning to ensure that future projects are constructed with storm- and flood- resilient features.	x		x	x	x	x
3	Utilize the best available data and resources including FEMA's updated flood mapping and local zoning and regulatory controls to guide growth and development to appropriate areas and rebuild using best practices.	x	x		x		x
4	Strive to participate in the CRS rating and realize greater resilience and lower insurance costs.	x			x		x
5	Update local ordinances to reflect and address flood hazards in the community including drainage system maintenance, boats, docks and marinas protection, green infrastructure, low impact design, water pollution prevention among others.	x	x		x		x
6	Promote sustainable development patterns to improve property protection, public safety, and natural resource conservation.	x	x		x		x
7	Maintain or expand planning and regulatory capabilities to support effective floodplain management and increased public safety.	x	x		x		
8	Identify additional resources to support the implementation of mitigation and recovery projects.	x			x	x	x
Property Protection							
9	Address any remaining damage and unmet needs from Hurricane Sandy, restore the tax base, and increase protection for homes and businesses against future hazards.			x			x
10	Improve structural and non-structural infrastructure, regulatory controls, and impervious surfaces to adequately manage stormwater and reduce the negative impacts on natural resources, infrastructure, and property.	x	x				
11	Reduce the adverse impact on critical facilities and infrastructure from flood hazard events within the community.	x		x			
12	Identify and support various options to increase property protection including elevation, acquisition, wet and dry floodproofing, structural protection, and infrastructure improvements.	x				x	x
13	Identify and support various options to increase infrastructure protection including road elevation, drainage improvements, flood gates, structural protection measures, and improved maintenance strategies.	x					x
14	Identify and/or provide assistance to second home owners who are typically disqualified from most types of financial aid to rebuild or elevate the structures.	x					x
Public Education and Awareness							
15	Expand outreach and education to support public awareness of flood hazards and vulnerabilities.						x



Obj. #	Objective Statement	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
Natural Resource Protection							
16	Reinforce and protect dune systems, coastal wetlands, and other natural coastal protective measures.	x	x				
17	Restore and enhance natural areas with flood protection benefits including riparian areas, wetlands, dune systems among others.	x	x				
18	Provide for adequate groundwater infiltration and recharge to replenish aquifer systems and protect water quality and quantity.	x	x		x		
Emergency Services							
19	Provide for enhanced community facilities including an Emergency Operations Center to support emergency preparedness and response and Improve local sheltering facilities and planning to improve public safety during and after a flood.	x		x			x
20	Improve evacuation routes and evacuation plans, particularly for low-lying areas to prepare for future storm surge and flooding.	x		x	x		x
21	Develop enhanced resources and techniques for greater public education including reverse 911, equipment purchases, training, and education materials among others.						x
22	Maintain reliable power sources for all critical community facilities to prevent disruption in essential services.	x		x			
Structural Projects							
23	Address stormwater infrastructure deficiencies including submerged outfall pipes, reactionary maintenance, clogging, areas with non-existing or outdated stormwater infrastructure, impervious surfaces, and water pollution. Improve stormwater collection areas and systems including bypass force mains and pump stations to allow for proper stormwater drainage and prevent submerged outflow pipes.	x			x		
24	Implement a series of green improvements to reduce stormwater quantity and improve stormwater quality including green roofs, bio swales, planter boxes, vegetated filter strips, permeable paving, and rain gardens.	x	x		x		

6.4 Capability Assessment

According to FEMA 386-3, a capability assessment is an inventory of a community’s missions, programs and policies; and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The assessment process enables identification, review and analysis of local and state programs, policies, regulations, funding and practices currently in place that may either facilitate or hinder mitigation.

During the planning process, Township identified and assessed their capabilities in the areas of planning and regulatory, administrative and technical, and fiscal. By completing this assessment, the Planning Committee learned how or whether they would be able to implement certain mitigation actions by determining the following:

- Limitations that may exist on undertaking actions;
- The range of local and/or state administrative, programmatic, regulatory, financial and technical resources available to assist in implementing their mitigation actions;
- Action is currently outside the scope of capabilities;





- Types of mitigation actions that may be technically, legally (regulatory) administratively, politically or fiscally challenging or infeasible;
- Opportunities to enhance local capabilities to support long term mitigation and risk reduction.

6.4.1 Planning and Regulatory Capability

Planning and regulatory capabilities are based on the implementation of ordinances, policies, local laws and state statutes, and plans and programs that relate to guiding and managing growth and development. Brick Township has various federal, state, county, and local policies, programs, and plans available to promote and support mitigation and reduce future damages.

6.4.2 Federal Programs

Hazard Mitigation Assistance

Federal mitigation grant funding (Stafford Act 404 and 406) is available to all communities with a current hazard mitigation plan (this plan); however most of these grants require a “local share” in the range of 10-25% of the total grant amount. FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. Currently, FEMA administers the following HMA grant programs: 1) Flood Mitigation Assistance (FMA); 2) Hazard Mitigation Grant Program; and 3) Pre-Disaster Mitigation (PDM).

Participation in FEMA 404 HMGP may cover mitigation activities including raising, removing, relocating or replacing structures within flood hazard areas.

National Flood Insurance Program

Established in 1968, the NFIP provides federally-backed flood insurance to residents of communities that enact and enforce regulations that more carefully regulate development within floodplain areas. For individual property owners to be eligible to buy the federally-backed flood insurance, their property must be located within a community that participates in NFIP.

In New Jersey, the NFIP is administered by the NFIP Coordinator within NJDEP. The NFIP Coordinator works closely with NJOEM on all NFIP issues, since eligibility for pre- and post-disaster programs relies on participation in the program. The three components of the program are: flood insurance, floodplain management, and flood hazard mapping. The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in the participating communities. Community participation in the NFIP is voluntary. Gaining municipality participation in the NFIP and encouraging property owners to purchase flood insurance significantly reduces disaster costs. Together these programs systematically reduce flood exposure to people and their property. The NFIP Coordinator works closely with FEMA to educate and inform communities of their responsibilities to maintain compliance. For a community to be eligible in NFIP, it must adopt and enforce a floodplain management ordinance to regulate proposed development in floodplains and officially designate a local floodplain coordinator/administrator. The intent of the program is to ensure that new construction does not exacerbate existing flood hazards and is designed to better withstand flooding.

The Township of Brick participates in the NFIP. The community also has Flood Insurance Rate Maps (FIRMs) that at a minimum, show FEMA Special Flood Hazard Areas (SFHA). Mitigation activities related to this program are included in Section 6 and data from FEMA Region II regarding NFIP Insurance Reports was used in the risk assessment for the flood hazard included in Section 5. The Township's floodplain manager has also been involved in the planning process, reviewed the plan documents, and provided direct input to the FMP.



Refer to Section 6 which identifies the Floodplain Administrator for the Township, and a subsection in the Capability Assessment which is dedicated to the Floodplain Administrator and NFIP.

Community Rating System

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

CRS is a voluntary program designed to reward participating jurisdictions for their efforts to create more disaster-resistant communities using the principles of sustainable development and management. The Township of Brick is interested in enrolling in CRS, as indicated in Section of this plan, and has developed this plan as a means of enhancing their eligibility for CRS, in addition to strengthening their local flood control programs. By enrolling in CRS, the Township can leverage greater flood protection while receiving flood insurance discounts. Active involvement in this program is included as mitigation activities in several of the municipal annexes in Section 6.

FEMA RiskMAP Program

RiskMAP, defined as Risk Mapping, Assessment, and Planning is a FEMA program that provides communities with flood information and tools to enhance their mitigation plans and take action to protect their citizens. It builds on flood hazard data and maps produced during the Flood Map Modernization (Map Mod) program. Through more precise flood mapping products, risk assessment tools, and planning and outreach support, Risk MAP strengthens local ability to make informed decisions about reducing risk. It combines quality engineering with state-of-the-art flood hazard data to assist communities in planning and preventing risk using the most current information.

Risk MAP collaborates with state, tribal, and local governments and delivers quality data that increases public awareness and leads to action that reduces risk to property and life. Risk MAP focuses on products and services beyond the traditional FIRMs and works with officials to help put flood risk data and assessment tools to use. Risk MAP also helps effectively communicate risk to citizens and enable communities to enhance their mitigation plans and actions (FEMA 2012).

Full and complete information on the program can be found on the FEMA website: <http://www.fema.gov/risk-mapping-assessment-planning>

FEMA Region II Coastal Analysis and Mapping

Under its Risk MAP Program, FEMA is providing quality flood hazard information to help communities plan for and reduce the risk from flooding. After Superstorm Sandy in order to help in rebuilding and recovery efforts, FEMA released Advisory Base Flood Elevation (ABFE) maps which were based on the partially completed flood study for certain communities. FEMA has released preliminary work maps that include full results of the coastal flood study to update the information shown on the FIRMs for the Township of Brick. Additional information on FEMA Region II's coastal analysis and mapping can be found at: <https://sites.google.com/site/region2coastal/> (NJ State HMP 2014).

U.S. Geological Survey Tidal Gauge Monitoring

The USGS maintains a network of gauges across New Jersey that continuously measure tidal levels. Funding for these gauges comes from both federal and state monies. These data sets are transmitted to the USGS and



made available over the Internet. As project needs and funding levels change, gauges may be added or deactivated, and deactivated gauges may be reactivated. The NJOEM and NJDEP coordinate this effort along with USGS with additional support from the NJAFM and the NJ League of Municipalities. Additional information can be found at: <http://waterdata.usgs.gov/nj/nwis/nwis>

U.S. Army Corps of Engineers

Congress allocated \$5.35 billion to the United States Army Corps of Engineers (USACE), including \$20 million to undertake the North Atlantic Coast Comprehensive Study. The purpose of the study is to address the flood risks of vulnerable coastal populations in the areas affected by Sandy, including New Jersey. The Township is committed to collaborating with the Army Corps to ensure that the study ultimately leads to implementable flood hazard mitigation projects for the community. The Township of Brick is coordinating with USACE on upcoming dune and beach replenishment projects.

Public Assistance

The objective of the FEMA Public Assistance (PA) Grant Program is to provide assistance to state, tribal, and local governments, and certain types of private nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President.

Through the PA Program, FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private nonprofit organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

The federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee (State of New Jersey) determines how the non-federal share (up to 25%) is split with the sub grantees (eligible applicants).

6.4.3 State Floodplain Management Programs and Support

The Community Rating System (CRS) provides Uniform Minimum Credit (UMC) for certain state laws, regulations, and standards that support floodplain management and have proven effective in reducing flood damage.

The following table summarizes UMC credit available to all communities. It also includes possible additional credit available for selected areas or state activities. The Insurance Services Office (ISO)/CRS Specialists and the communities need to determine which possible additional standards apply to their area.

According to the NFIP/CRS August State of New Jersey Uniform Minimum Credit Report the range of credit available to communities within the state is shown below. The credit is based on the 2013 CRS Coordinator’s Manual and is available to the Township of Brick.

Activity	Element	Credit	
		Riverine	Coastal
Uniform Minimum Credit			
340	Other Disclosure Requirements (ODR)	10	10
410	Higher Study Standards (HSS)	15 - 80	0
410	Floodway Standard (FWS)	0 - 90	0
410	New Study (NS)	variable	variable
410	State Review (SR)	variable	variable



Activity	Element	Credit	
		Riverine	Coastal
430	Building codes (BC)	40	40
430	Freeboard (FRB)	7.5 - 100	7.5 - 100
430	Development Limitations (DL3b)	2 - 20	2 - 20
430	State-mandated Standards (SMS)	20	20
450	Erosion and Sediment Control (ESC)	40	40
450	Water Quality (WQ)	20	20
450	Stormwater Management Regulations (SMR)	0 - 199	0
450	Watershed Master Planning (WMP)	0 - 120	0 - 120
	Total	154.5 - 739	139.5 - 370
Possible Additional Credit			
430	Development Limitations (DL)	0 - 130	0
430	Additional Building Codes (BC)	10	10
430	Local Drainage Protection (LDP)	10	10
430	State-Mandated Standards (SMS)	2 - 20	2 - 20
630	State Dam Safety (SDS)	0 - 45	0 - 45
	Total	22 - 464	22 - 334

NJ Coastal Management Program-Getting to Resilience

Originally developed by the State of New Jersey’s Coastal Management Program, the Getting to Resilience process was later adapted by the Coastal Training Program of the Jacques Cousteau National Estuarine Research Reserve (JC NERR), converted into a digital format, and placed on an interactive website. Further improving the questionnaire, the JC NERR added linkages to evaluation questions including the National Flood Insurance Program’s (NFIP) Community Rating System (CRS), Hazard Mitigation Planning, and Sustainable Jersey. While this website is publicly available, through the facilitated Getting to Resilience process, JC NERR Coastal Community Resilience Specialists met with representatives of the Township of Brick to provide community-specific recommendations, guided discussions with municipal representatives, a vulnerability analysis, and municipal plan reviews. (Brick Township “Getting to Resilience” Report, June 2014)

New Jersey DCA-Post Sandy Grant Funding

The purpose of the Post Sandy Planning Assistance Grant Program (the “Program”) is to support long range planning for community redevelopment in the municipalities and counties sustaining damage from Superstorm Sandy. Due to the damage caused by the storm, many New Jersey municipalities and counties face a myriad of recovery challenges. Among them is the need for planning support to develop community recovery plans that strategically address the issues that now confront them. In furtherance of its mission to provide local government officials with the tools needed to efficiently manage municipal operations, the Department of Community Affairs (DCA) has created a local planning assistance program that will supplement the ongoing efforts of storm-impacted local and county governments to rebuild and revitalize. The Township has obtained funding under this program to develop a suite of resiliency plans including a Floodplain Management Plan, Hazard Mitigation Plan, Repetitive Loss Area Analysis, Flood Warning and Response Plan, Neighborhood Specific Plans, Ordinance Preparation, Capital Improvement Plan, and Master Plan update.

New Jersey Association for Floodplain Management

In 2006, the Floodplain Management Committee became a chapter of the Association of State Floodplain Managers, under the name New Jersey Association for Floodplain Management (NJAFM). The purpose of the





organization is described in the organization's constitution, and includes a range of floodplain management-related issues, including promoting public awareness of proper floodplain management, encouraging the exchange of ideas about floodplain management, informing concerned individuals about pending floodplain and coastal management legislation, and studying and supporting floodplain management legislation, among other missions. NJAFM is an active supporter of flood mitigation in the state. One example of this support is the NJAFM annual conference. The annual conference provides an opportunity for professionals in engineering, hydrology, geology, planning, code enforcement, floodplain management, and emergency management to participate in plenary sessions and concurrent sessions on a broad range of relevant topics. The conference also includes a number of training opportunities and networking events.

At the 2015 conference, the Township and planning consultant jointly presented a summary of the 2015 Flood Management Plan as well as associated planning initiatives in a break-out session. This forum provided an opportunity to conference attendees which included neighboring coastal communities as well as local, state and federal agencies to discuss or ask questions regarding the plan.

New Jersey Coastal Management Program

NJDEP is involved in a variety of hazard mitigation initiatives as part of the Coastal Zone Management (CZM) Program and as part of the Department's interaction with FEMA related to the National Flood Insurance Program (NFIP). The Coastal Area Facilities Review Act (New Jersey Statutes Annotated [N.J.S.A.] 13:19), the Waterfront Development Law (N.J.S.A. 12:5-3), and the Wetlands Act of 1970 (N.J.S.A. 13:9A) provide rules and regulations governing development in vulnerable coastal areas of New Jersey. Department staff routinely provides information to and work directly with municipal officials and property owners in the hazard identification, vulnerability analysis, and mitigation planning. Through the NJDEP regulatory programs, hazard mitigation activities are often required as a condition of a permit approval.

Improved hazard-resistant construction techniques and hazard sensitive building standards are resulting in more storm-resistant coastal development.

Coastal hazard vulnerability, particularly along the intensely developed oceanfront areas of New Jersey, is often influenced by the management practices on the adjacent beaches, dune systems, and shorelines. Protection, management, and enhancement of these important features, is a critical component of the New Jersey Coastal Management Program. With more than 50 municipalities, numerous beach associations and hundreds of private property owners controlling beach and dune areas, management practices and the resultant degree of vulnerability vary greatly.

New Jersey's Coastal Management Program has responded to these hazards in several ways. New Jersey has adopted a number of enforceable policies that deal directly with development in hazardous areas. These standards are codified in the CZM rules. These standards are designed to facilitate sound management of beaches, dunes, and shorelines throughout the coast to establish and support a consistent line of protection in the form of well-maintained and protected beaches and dunes. The standards are also intended to reduce development in the most vulnerable areas and reduce potential damage from coastal hazards for future development, and ensuring development does not adversely affect either the adjacent shorelines or structures or ecosystem. For more information on these standards go to: www.stae.nj.us/dep/cmp/czm_enforcepolicies.html.

In oceanfront and bay front areas, NJDEP rules prevent additions to, or tearing down and rebuilding homes that result in placing the home closer to an eroding shoreline, or in additional encroachment on dunes that is not mitigated. Mitigation can include enhancing the dune as a shore protection feature. These enforceable policies also govern residential development in V-zones, as well as regulate beach and dune disturbance.



Further, these CZM rules contain standards for beach and dune management and implementation of best management practices. These standards also maximize the benefits of the federal/state beach nourishment program by restoring the natural and beneficial functions of the beach and dune systems.

Among the enforceable policies in riverine and bay front areas are regulations that encourage the use of bioengineering as a preferred alternative to hard shoreline protection structures, particularly along the lower energy shorelines of the back-bays and rivers. By reflecting wave and current energy, bulkheads have frequently caused scour and erosion of sensitive environmental resources. NJDEP has also successfully promoted construction of sloped riprap revetments as an alternative to bulkheads. Sloped revetments have less impact on marine and estuarine resources because they tend to dissipate wave and current energy and thus reduce erosive and scour effects.

The NJDEP Coastal Management Office is the conduit for federal CZM grants that may be used for hazard mitigation activities such as historical shoreline change mapping projects, educational programs and coastal area planning initiatives. Under NOAA's 309 Grant Program, the Coastal Management Office has provided and will continue to provide pertinent information for local and state hazard mitigation plans. These efforts include disseminating coastal hazards information through the Coastal Management Program website; working with municipalities to provide the public with information regarding the limitations of beach nourishment; and collecting data, such as beach and dune mapping and beach profile mapping to determine the degrees of vulnerability of coastal communities. Pursuant to 15 CFR 930, federal activities affecting the coastal zone are required to be consistent with approved state coastal management programs.

More information on the NJDEP Coastal Regulation Program can be found at their web site at: www.state.nj.us/dep/cmp/. (NJ State HMP 2014)

Coastal Permitting

There are two linked rules which govern the review of all coastal project proposals: the Coastal Permit Program Rules and the CZM rules. The Coastal Permit Program Rules at N.J.A.C. 7:7E provide the processes for permit reviews. It includes details on what activities need permits; the qualifications for general permits or permits-by-rule; the details for pre-application meetings, contents and fees; review procedures and deadlines; permit appeals; and enforcement of the coastal laws and rules (NJDEP 2013).

The CZM rules at N.J.A.C. 7:7E defines Special Areas of Environmental Interest, details requirements for development projects and sets forth the compliance criteria for permit approval. Certain general permits require compliance of specific sections of the CZM rule, for example "dunes" or "shellfish habitat". Individual permit applications must address and demonstrate compliance with each applicable component of the CZM rules for the specific site and regulated activity to be approved (NJDEP 2013).

The State regulates projects based upon at least one of the two characteristics:

1. The proposed activity is a regulated activity; and/or
2. The project occurs within or adjacent to a regulated coastal area (NJDEP 2013)

To be certain if a specific project is considered regulated or occurs in a regulated coastal area, one must apply for a Jurisdictional Determination (JD). A JD is the Division of Land Use Regulation's formal determination whether a state-issued permit would be required for the specific project and site. A JD does not guarantee the proposed activity would be approved (NJDEP 2013).



Department of Community Affairs –Sandy Recovery Division

The Sandy Recovery Division manages the majority of the federal funds being used to assist the State in recovering from Superstorm Sandy. These funds come from the Community Development Block Grant (CDBG) Disaster Recovery programs of the U.S. Department of Housing and Urban Development. The Sandy Recovery Division is committed to efficiently and effectively addressing the long-term needs of New Jersey's Sandy-impacted residents and communities through programs designed to help homeowners, tenants, landlords, developers and local governments. For additional information visit: <http://www.state.nj.us/dca/divisions/sandyrecovery/index.html>

Open Space Acquisition Programs

New Jersey is the most densely populated state in the country and has been a leader in attempts to preserve open space since 1962 when the first of many Green Acres bonds were issued. That first bond issue authorized the sale of \$60 million in bonds with which to acquire lands for recreation and conservation purposes. Since that time, the State has repeatedly pursued additional bonds for acquisition of lands in the floodways of the Delaware River, Passaic River, and the Raritan River, and their respective tributaries, for recreation and conservation purposes. Though a sustainable source of funding for this program has not been secured, preserving open space near riverine and coastal systems remains a State priority.

Coastal Blue Acres

The Coastal Blue Acres (CBA) was created with the passage of the Green Acres, Farmland, Historic Preservation and Blue Acres Bond Act of 1995. The bond act contained \$15 million for grants and loans to municipalities and counties to acquire lands in coastal areas that have been damaged by storms, which may be prone to storm damage, or that buffer or protect other lands from storm damage, for recreation and conservation purposes. The act defines coastal areas as those within the CAFRA zone (NJDEP 2012). CBA funds were divided into two parts:

Pre-storm: \$6 million for the acquisition of unimproved and largely unimproved storm-prone buffer lands that are funded with 75% grant and 25% loan. As of November 1998, all pre-storm funds have been committed to projects and no pre-storm funds are currently available.

Post-storm: \$9 million for the acquisition of lands that have suffered at least a 50% reduction in value as a result of storm damage that will be funded with 50% grant and 50% loan (NJDEP 2012).

Eight counties and 122 municipalities are eligible to apply for CBA funds. Coastal area lands eligible for purchase with CBA funds can be anywhere on a coastal barrier island, lands within 150 feet of the mean high water line of a tidal waterway, or lands within 150 feet of the landward limit of a beach or dune (NJDEP 2012).

The purpose of CBA is to provide grants and loans to county and municipal governments to acquire, for recreation and conservation purposes, lands in the coastal areas that:

- Have been damaged by storms or storm related flooding
- May be prone to incurring damage by storms or storm-related flooding
- Buffer or protect other lands from storm damage

CBA acquisitions can only be made from willing sellers. The CBA legislation specifically prohibits the use of eminent domain by a local government in acquiring land using CBA funding. Municipalities must be willing participants in the program as well. Sites acquired with CBA funding will be restricted to minimal



improvements for public access. The development of recreation facilities that could become a storm hazard is prohibited.

The CBA legislation also states that all lands acquired with CBA funds shall be regulated under existing Green Acres rules. This includes submission of a recreation and open space inventory and the attachment of contractual restriction to all CBA acquired lands and all other lands held by a local government for conservation and recreation purpose. (NJ State HMP 2014)

Statewide Building and Construction Codes

The State of New Jersey signed the Uniform Construction Code (UCC) Act into law in 1975. The Commissioner of the New Jersey Department of Community Affairs (NJDCA) is authorized to implement and enforce rules pertaining to construction codes and provides for the management and implementation of those rules throughout the State. The development of the UCC (N.J.A.C. 5:23) in 1977, included the UCC Act and all rules issued under the Act relating to the administration and enforcement of construction regulations. The UCC includes four technical subcodes for construction: building, electrical, fire protection, and plumbing. The UCC also contains technical subcodes for fuel gas installations, mechanical installations, one and two family dwellings, accessible construction, the rehabilitation of existing buildings, the construction of manufactured homes, asbestos hazard abatement, radon hazard abatement, and playground safety.

The UCC includes town building codes that address different hazards that affect New Jersey. The State has adopted the 2009 International Building Code (IBC) and the 2009 International Residential Code (IRC) with state amendments. These address the construction of new buildings and their relationship to weather-related and geological hazards. More information on the NJDCA Building Code Programs can be found at their website: www.state.nj.us/dca (NJ State HMP 2014).

6.4.4 Local Hazard Mitigation Programs

Examples of local hazard mitigation programs in which Brick Township is involved with include the participation in the Ocean County Multi-Jurisdictional Hazard Mitigation Plan and the FEMA 404 and 406 programs. These programs assist the Township in receiving funding for flood mitigation projects and flood insurance. Data from the Township, based on participation in these programs, was incorporated in the risk assessment in Section 5 and used to identify mitigation options in Section 6. Continued involvement in these flood-related programs will help to administer funds and resources to support this plan.

National Flood Insurance Program (NFIP)

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

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



NFIP Community Rating System (CRS)

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

Land Use Planning Policy

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

Every municipal agency shall adopt and may amend reasonable rules and regulations, not inconsistent with this act or with any applicable ordinance, for the administration of its functions, powers, and duties. These plans help jurisdictions review their land use plans and policies with public participation. The Municipal Land Use Law requires that each municipality prepare a comprehensive plan and update that plan every 6 years.

Brick Township Master Plan

The Brick Township Master Plan, approved in 2007, is an update to the Township's 1997 Master Plan. It provides the policy framework for how and where the Township will grow and develop over the coming years. The Township Master Plan focuses on economic growth, development, and redevelopment in anticipation of population growth in the Township and the broader region. The Master Plan includes the following major elements:

- Land Use Element
- Population Growth Element
- Utilities Element
- Recycling Element
- Stormwater Management Element
- Conservation and Open Spaces Element
- Recreation Element
- Historic Element
- Community and Forestry Element
- Circulation and Transportation Element
- Housing Element

Master Plan elements that are particularly applicable to the implementation of the floodplain management plan are the Stormwater Management Element, the Conservation and Open Spaces Element, and the Land Use element (Brick Township Master Plan 2007).

Township of Brick Planning Board

The Township Planning Board is responsible for preparing, amending and adopting the municipal master plan. The master plan is the blueprint for the development for the township and consists of land use, recreation, housing, utility, recycling, traffic and conservation elements. The Planning Board reviews and reports to the Township Council on any municipal zoning ordinances or revisions/amendments to existing ordinances before its adoption. The Planning Board also reviews applications for subdivisions and reviews site plans.



Floodplain Management Policy

The New Jersey State Law Flood Hazard Area Control Act (NJSA 58:16A-52) and subsequent regulations attempt to minimize damage to life and property from flooding caused by development within fluvial and tidal flood hazard areas, to preserve the quality of surface waters, and to protect the wildlife and vegetation that exist within and depend upon such areas for sustenance and habitat. While it does not require local adoption, as it is enforced by the NJDEP, the floodplain ordinances of each municipality need to be reviewed to be in compliance with this new regulation.

The Brick Township Council adopted the Flood Damage Prevention Ordinance on February 19, 2013, through Ordinance Number 3-13. The Township has amended and will continue to amend the Ordinance, as needs and updates are identified. The Flood Damage Prevention Ordinance meets State and Federal compliance requirements for the National Flood Insurance Program. The ordinance also contains some regulations exceeding federal minimums, most notably the requirement of one foot of freeboard. Brick Township designed the Flood Damage Prevention Ordinance with the following goals in mind:

- Protect human life and health
- Minimize the expenditure of public money for costly flood control projects
- Minimize the need for rescue and relief efforts associated with flooding
- Minimize prolonged business interruptions
- Minimize damage to public facilities and utilities
- Help maintain a stable tax base by providing for second use and development areas of special flood hazard so as to minimize future flood blight areas
- Ensure that potential buyers are notified that property is in an area of special flood hazard
- Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions

This ordinance also contains provisions for coastal flooding and properties in the V-zone in an effort to address not only riverine flooding but all flooding which may affect the community (Brick Township, 2013).

Stormwater Management Policy

The Township of Brick Stormwater Management Plan is an element of the master plan, adopted May 2007. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major developments, defined as projects that disturb one or more acres of land. These standards are intended to minimize the adverse impacts of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water

Building Codes Policy

Uniform Construction Code (Uniform Construction Code Act of 1975 [UCC]) requires all jurisdictions to have current land use master plans, zoning, and other land development ordinances. The UCC adopts up-to-date building codes as its Building Subcode and One- and Two-Family Subcode. These subcodes contain requirements that address construction in both A and V flood zones.

Building codes mandate best practices and technology, much of which is designed to reduce or prevent damage from occurring when structures are under stress. New Jersey State Law requires that all municipalities adopt ordinances that follow the UCC. In January 2013, the state established by emergency rule the best available data from FEMA's latest flood maps, plus one foot of freeboard, as the general rebuilding standard to adapt to changing flood hazard risks and corresponding federal flood insurance rates. All municipalities in Passaic County have an active building code.





Zoning Ordinance

The Township of Brick monitors zoning and land use regulations through Chapter 245 (Land Use) of the Township Code. This chapter was designed to promote safe and sustainable development of land in Brick, per the Township's overall goals of promoting public health, safety, morals, and general welfare. Specifically, the ordinance also considers the impact of various hazards, including floods, fire, and other natural/manmade disasters, in land use development.

Article XXXVIIIA of this chapter focuses specifically on the development of land in a designated special flood hazard area, per the current FIRMs and in agreement with the Township flood damage prevention ordinance. This section of the code was last updated by the Township in March 2013.

Subdivision Ordinance

Subdivision regulations vary per local jurisdictions in New Jersey. In the Township of Brick, they are considered under Part 3 of the zoning ordinance (Chapter 245), as described above. Subdivision regulations can also be used to strengthen the Township's overall flood management program by supporting zoning and other flood legislation.

In the case of Brick Township, the Township requires all subdivision design standards to consider the potential for flooding and that land subject to flooding or otherwise deemed uninhabitable cannot be utilized for residential purposes.

Capital Improvement Plans

Capital improvement plans outline capital spending and investments necessary for public improvements. The Township of Brick is updating its capital improvement plan to include mitigation and green infrastructure projects. This intentional integration of planning is being implemented to facilitate and increase the resiliency of the community as well as to support future grant funding of mitigation projects. The plan will be used to fund mitigation projects and demonstrate integration into daily operations.

Emergency Management Plan

According to State Police Directive 101, each county and municipality shall prepare, adopt, and maintain an emergency operations plan that meets the requirements of the State Emergency Operations Plan guidelines and checklist. The plan describes the hazards faced by the jurisdiction as well as the jurisdictions capabilities, needs, demands, and emergency management structure.

Brick Township "Getting to Resilience" Recommendations

The New Jersey DEP Office of Coastal Management developed the Getting to Resilience (GTR) questionnaire as a means to promote municipal resiliency from flooding, coastal events, and sea level rise. This questionnaire focuses on identifying areas of vulnerability and ways to increase preparedness. The Jacques Cousteau National Estuarine Research Reserve enhanced this original tool by providing linkages to the CRS program, Hazard Mitigation Planning, and Sustainable Jersey. In June 2014, Township-specific recommendations were released. Although the project began prior to Superstorm Sandy, the importance of this event led to its response and resiliency efforts also being included in the evaluation.

The Recommendations report identifies one of the Township's greatest strengths as the versatility and knowledge of its planning, emergency management, and floodplain management staff. The Township also identified challenge areas for resiliency, including funding programs, the beach zone and coastal flooding, and the stormwater system (maintenance and older/inadequate infrastructure). The report also identifies Township



goals and recommendations for resiliency, including projects like reducing the threat of overwash and wave damage through a steel seawall and the implementing a more robust outreach program (Brick Township GTR 2014).

Brick Township Strategic Recovery Planning Report

Brick Township developed a Strategic Recovery Planning Report (SRPR) to serve as the blueprint for its recovery from the impacts of Superstorm Sandy and to reduce community vulnerability to future storms. The SRPR has three primary purposes, including:

- Evaluate the impacts on affected community features in Brick and address conditions created or exacerbated by the storm
- Articulate the planning goals, strategies, and priority projects and actions that are most urgently needed to improve public safety, increase resistance to damage from future storms, and stimulate economic recovery
- Provide detailed descriptions of each proposed action and project, a statement of need demonstrating how each action or project relates to the impacts of Superstorm Sandy, why the action or project is important to the economic and environmental health of the community, and the major tasks associated with each action or project

In addition to providing a substantial starting point for the Township’s flood mitigation plan projects and actions, the SRPR also provides recent data about the impacts of an unusually severe storm event on the Township and how Superstorm Sandy has affected the Township’s overall response and mitigation capabilities. This plan also highlights the Township’s dedication to implementing a stronger and more comprehensive flood control and mitigation program. Highlighted projects proposed in the report include but are not limited to promoting shore protection techniques and open space preservation, protecting and restoring stream and river banks, concentrating development in areas not vulnerable to sea level rise, and promoting public awareness of hazard mitigation (SRPR 2014).

Brick Township Sustainable Jersey Community Certification Report

Sustainable Jersey is a state certification program designed to help municipalities implement long-term “green” initiatives to ultimately increase quality of life, the quality of the local environment, and save costs on non-sustainable energy sources. The Certification Report is issued when the community joins the program and contains a summary of the Township’s overall sustainability-focused efforts and projects.

As part of this initiative and to enhance their ability to join the program, Brick Township highlighted several key projects, such as drafting the SRPR; the Sustainable Brick Township Committee, which is made up of representatives of local government, residents, business owners, board of education, utility authority, environmental commission, planners and engineers who want to develop strategies for sustainable green initiatives; the completion of an energy audit of municipal facilities; the installation of sustainable projects, like a solar system, rain garden, and turbine; and the adoption of environmental protection measures. Many of the ordinances adopted have secondary benefits of strengthening the Township’s flood management program as well. The ordinances include an Environmental Assessment Ordinance, Riparian Buffer Ordinance, Dune Preservation Ordinance, Threatened and Endangered Species Ordinance, and Tree Protection Ordinance (Brick Township Sustainable Jersey Certification Report).



Ocean County Long Term Community Recovery Plan

In response to the devastation and severe impacts of Superstorm Sandy, Ocean County developed a countywide long term recovery plan, released in 2014. This plan was sponsored by Together New Jersey through the Sustainable Communities Regional Planning Grant (a program by the U.S. Department of Housing and Urban Development). Although specifically focused on helping the County and its jurisdictions recover from Superstorm Sandy, the document provides recovery strategies that can be applied to other severe storm and flooding events as well.

In addition to reviewing the County's impacts from Superstorm Sandy and initial recovery actions, the document also contains a recovery needs assessment, recovery strategy, and implementation plan. The plan's ultimate goal is to build a year-round community that is environmentally, economically, socially, and culturally stronger. Specific steps to achieve this include, but are not limited to, elevating and acquiring flood-prone homes, developing a risk-preparedness campaign, improving the County evacuation plan and shelter management plan, developing Countywide tools to support CRS participation, and strengthening the marinas for better and safer boat storage (Ocean County 2014).

Ocean County Multi-Jurisdictional All-Hazards Mitigation Plan

Brick Township participated in the development of the 2014 County Hazard Mitigation Plan (HMP). This version is the first approved HMP, and examines the hazards most likely to impact the County and its jurisdictions, identifies County capabilities for response and mitigation, and prioritizes mitigation actions to help reduce County vulnerability to hazards.

The County identified and profiled 15 natural and human-caused hazards, including flooding, coastal erosion, and climate change. Flood events were ranked as the most severe hazard in the County, while climate change ranked at seventh and coastal erosion ranked as eighth. In the Comparative Jurisdictional Risk Factor section, Brick Township noted that it had a higher overall vulnerability to those three hazards than compared to other municipalities in the County. In regards to flood-related mitigation actions, the County and Township identified a variety of goals focused on structural/infrastructure upgrades, education and outreach, natural resources protection, and local plans and regulation that can serve as a starting point for flood mitigation goals for this flood mitigation plan (Ocean County HMP 2014).

Ocean County Flood Insurance Study

The Federal Emergency Management Agency (FEMA) provided a revised Flood Insurance Study (FIS) for Ocean County in 2014, as an update to the 2006 FIS. The 2014 FIS is currently still preliminary and has not yet been finalized. The FIS provides a significant resource to both the County and Township in identifying areas of greater flood risk. In addition to flood profiles and update Flood Insurance Rate Maps (FIRMs), the FIS summarizes principal flood problems in the community, existing flood protection measures, and relevant engineering analyses on primary waterways. The engineering analyses include both hydrologic and hydraulic information, as well as coastal analyses and transect data (FEMA FIS 2014).

Strategies for Flood Risk Reduction for Vulnerable Coastal Populations around Barnegat Bay

Barnegat Bay is one of the more significant watersheds in the Township and in Ocean County. The Bay area itself is also a major ecological resource for the community and home to many private residences. During Superstorm Sandy, many of these residences were negatively impacted due to the low-lying areas around the Bay. When the storm identified the increased vulnerability of these residences, a report was developed to aid the State of New Jersey in identifying actions to reduce the risk for property owners and residents near Barnegat Bay.



The risk-reduction strategies were designed to be novel, feasible, affordable, and environmentally friendly. Most of the relevant projects that would benefit the Township were either structural or preventative in nature. Suggested actions included, but are not limited to:

- Increasing the height of bulkheads along Barnegat Bay with or without movable panels
- New types of water pumps driven by green energies are conceptually designed to protect against power outages during storm events
- New metal sheet bulkheads with or without movable panels and incorporate check valves inside the bulkheads
- Construct new concrete flood walls with or without movable flood panels and incorporate check valves inside the walls
- Construct flood gates and pump stations

Similar to other Township and County plans, these projects provide a good base for potential flood control projects to be included in this flood mitigation plan (Rutgers 2014).

The following table provides a summary of Township planning and regulatory capabilities.

Table 6-3. Summary of Township Planning and Regulatory Capabilities

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master Plan	Yes, 2007 and 2011	Local/County	Township Division of Land Use and Planning, County Planning Board	(1) Township Plan is an update from 1997 Master Plan (2007) (2) County Plan was updated in 2011
Capital Improvements Plan	Yes	Local/County	Governing Body	Annual County Capital Improvement Program (addressed in Chapter 4 of County Master Plan) in addition the Township is developing a community capital improvements plan under the NJ DCA HUD funded post-Sandy Program for annual infrastructure update.
Brick Township 100 Day Plan	Yes, 2014	Local	Governing Body	Major focuses include Cost Cutting/Saving Measures, Improving Township Services, Increasing Non-Tax Township Revenues, Government Efficiency, Environmental Go-Green, Economic Development, Expand E-Government Services, Brick “Government at Work” Program, Public Health and Safety, Improving Quality of Life for Brick Seniors, Make Brick a Better Place for Youth, and Sandy Recovery and Storm Preparedness



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Flood Insurance Study	Yes, 2014	Local, County, Federal	FEMA	FEMA update to the 2006 Flood Insurance Study
Hazard Management Plan	Yes, 2014	Local/County	OEM	DMA 200 Ocean County Multi-Jurisdictional All Hazard Mitigation Plan, adopted by Township
Stormwater Management Plan	Yes, 2007 and 2011	Local/County	Division of Land Use and Planning	(1) Chapter 7 of Township Master Plan – Stormwater Management Plan (2007) (2) Chapter 14 of County Master Plan – Stormwater Management (2011)
Open Space Plan	Yes, 2007 and 2011	Local/County	Division of Land Use and Planning	(1) Chapter 9 of Township Master Plan – Conservation and Open Space Plan Element (2007) (2) Chapter 10 of County Master Plan – Open Space, Parks, and Recreation (2011)
Wetland Management Plan	Yes, 2014	State	Governor’s Office of Rebuilding and Recovery	Beneficial Use of Dredged Material to Restore Wetlands for Coastal Flood Mitigation, Barnegat Bay, New Jersey
Watershed Management or Protection Plan	Yes, 2010 and 2014	State	DEP	Governor Christie’s Comprehensive Action Plan to Address the Ecological Decline of Barnegat Bay, 2010 initial plan and 2014 Update; Metetekonk Plan
Regional Flood Mitigation Report- Barnegat Bay Study Area Flood Mitigation Report	Yes	State	DEP	Strategies for Flood Risk Reduction for Vulnerable Coastal Populations around Barnegat Bay
Economic Development Plan	Yes, 2014 and 2011	Local/County	Economic Development Committee, Ocean County Planning Board	(1) Current project of Buy In Brick to promote local shopping and dining (2014) (2) In progress is an Economic Revitalization Audit to identify, chart, and target growth opportunities in specific Brick business districts (2014) (3) Chapter 3 of County Master Plan – Economic Planning and Workforce Development (2011)
Comprehensive Emergency Management Plan	Yes	Local/Municipal	OEM	Brick Township Emergency Management Plan
Emergency Operation Plan	Yes, 2013	Local/County	Department of Public Safety	Office of Emergency Management
Post-Disaster Recovery Plan	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Transportation Plan	Yes, 2011	County	Ocean County Transportation Services Department, Ocean County Transportation Advisory Board	Chapter 4 of County Master Plan – Transportation and Mobility
Strategic Recovery Planning Report	Yes, 2014	Local/County	Planning Board, Township Council, Ocean County Department of Planning	(1) Phase 2 Strategic Recovery Planning Report (2) Ocean County Long Term Community Recovery Plan
Vulnerable Coastal Populations around Barnegat Bay	Yes, 2014	State	Governor’s Office of Rebuilding and Recovery	Strategies for Flood Risk Reduction for Vulnerable Coastal Populations around Barnegat Bay (Focuses on possible mitigation projects for the communities around the Bay)
Resilience Plan/Report	Yes, 2014	Local, County, State	OEM	Brick Township Getting to Resilience Recommendations Report
Sustainable and Environmental Plan	Yes, 2012	Local	Sustainable Brick Township Committee	Brick Township Sustainable Jersey Community Certification Report
Meteteconk Watershed Management Plan	Yes, 2013	Local	NJDEP Watershed Restoration Program	May 2013
Regulatory Capability				
Building Code	Yes, 2014	State/Local	Construction Officer	Chapter 145, State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.)
Zoning Ordinance	Yes, 1979	Local	Principal Planner (Planning Board)	Chapter 245 (Land Use) – Part 2 Article XXXVIII A contains Supplemental Land Use and Zoning Regulations in Special Flood Hazard Areas
Subdivision Ordinance	Yes, 1979	Local	Planning Board	Chapter 245 (Land Use) – Part 3 (Subdivision of Land)
NFIP Flood Damage Prevention Ordinance	Yes, 2013	Federal, State, Local	Municipal Engineer	Chapter 196
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes, 2013	State, Local	Municipal Engineer	Chapter 196-18 (Specific Standards), one foot of freeboard for residential construction



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Growth Management Ordinances	Yes	State/Local	Planning Board	Chapter 2 – Part 9 – Article XXIV: Economic Development Commission (amended approximately 2008) Chapter 2 – Part 3 – Article XIA: Division of Land Use Planning (amended 2014)
Site Plan Review Requirements	Yes, 1979	State/Local	Planning Board	Chapter 245 (Land Use) – Part 4 (Site Plan Review)
Stormwater Management Ordinance	Yes, 2005	State/Local	New Jersey Department of Environmental Protection	Chapter 396
Municipal Separate Storm Sewer System (MS4)	Yes, 2011	State/Local	Township Construction Code Official	Chapter 352: Sewers
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes, 2008	State	-	State of New Jersey Real Estate Sales Full Disclosure Act (NJSA 45:15-16.27 et seq.)
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Yes	Federal, State, Local	Chief of Police and Township Council (Dune Preservation), Planning Board and Construction Code Official (Riparian Buffer)	Chapter 162: Dune Preservation (adopted June 1988) Chapter 10: Beaches and Waterfront Areas (last amended March 2008) Chapter 245-Part 5: Landscaping and Buffer Requirements – 245-415: Riparian Buffer (added July 2007)

6.4.5 Administrative and Technical Capability

According to the FEMA Local Mitigation Handbook, administrative and technical capability refers to a community’s staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. It also refers to the ability to access and coordinate these resources effectively. Local mitigation is further supported by county, regional, state, and federal administrative and technical capabilities.

The following summarizes the administrative and technical capabilities available in Brick Township. Based upon the capability assessment conducted, municipal administrative and technical capabilities vary across the county.



Table 6-5. Administrative and Technical Capabilities

	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	May include Citizens Advisory Committee
Mitigation Planning Committee	Yes	Sandy Recovery and Mitigation Committee
Environmental Board/Commission	Yes	Environmental Commission
Open Space Board/Committee	Yes	Council Land Use Committee
Economic Development Commission/Committee	Yes	Economic Development Commission (Ad Hoc Committee)
Maintenance Programs to Reduce Risk	Yes	Sandy Recovery and Mitigation Committee
Mutual Aid Agreements	Yes	Police, Municipal Building Officials
Sustainable/Green Commission/Committee	Yes	Sustainable Brick Township Committee
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Division of Land Use Planning
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Division of Land Use/Building Department
Planners or engineers with an understanding of natural hazards	Yes	Division of Land Use
NFIP Floodplain Administrator	Yes	Municipal Engineer
Surveyor(s)	Yes	Contractors
Personnel skilled or trained in GIS and/or Hazus-MH applications	Yes	Two GIS Trained Staff in Land Use Planning
Scientist familiar with natural hazards	Yes	Marine Biologist
Emergency Manager	Yes	Emergency Management Coordinator
Grant Writer(s)	Yes	Grant Administrator
Staff with expertise or training in benefit/cost analysis	Yes	Consultant
Professionals trained in conducting damage assessments	Yes	Construction Code Official and Consultants

6.4.6 Fiscal Capabilities

Mitigation projects and initiatives are largely or entirely dependent on available funding. Brick Township is able to fund mitigation projects through existing local budgets, local appropriations (including referendums and bonding), and through a myriad of federal and state loan and grant programs. Additional information on funding sources may be found in the 2014 State of New Jersey HMP. The Township currently accesses funding from the following sources for mitigation work:

- Federal and state funding programs such as the CDBG and CDBG Disaster Recovery (CDBG-DR)
- Capital improvements project funding
- Authority to levy taxes for specific purposes
- Incur debt through general obligation funds and special tax bonds
- Withhold public expenditures in hazard-prone areas



- Open Space and Farmland Preservation Trust Fund
- Corridor Enhancement Program Fund

The following table summarizes the fiscal capabilities available to Brick Township.

Table 6-6. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community development Block Grants (CDBG, CDBG-DR)	Yes/Ocean County Housing Consortium, Ocean County Department of Planning, and Brick Township Planning Department
Capital Improvements Project Funding	Yes/Planning Board
Authority to Levy Taxes for specific purposes	Yes-Special Assessment
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	No
Stormwater Utility Fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other Federal or State Funding Programs	Yes/Hazard Mitigation Grant Program
Open Space Acquisition Funding Programs	Yes/Open Space Trust Fund Tax
Other	

6.4.7 Education/Outreach and Community Classifications

Brick Township also considered the impact of public education programs and outreach methods used by the Township to implement mitigation activities and to further communicate risk awareness to residents. The classifications listed below relate to the Township’s ability to provide effective services to lessen its vulnerability to the hazards identified.

Table 6-7. Education/Outreach and Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	In progress
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	4/4	
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	3	
Storm Ready	No	-	-
Firewise	No	-	-
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	No		
Public Education Program/Outreach (through	Yes	Social Media and	



Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
website, social media)		Township Website	
Public-Private Partnerships	Yes	Various Senior Service Agencies and Others	

The classifications listed above relate to the community’s effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

- Criteria for classification credits are outlined in the following documents:
- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

6.5 Mitigation Strategy Development

This subsection discusses the identification, prioritization, analysis and implementation plan of mitigation actions for the Brick Township planning partnership.

6.5.1 Mitigation Alternatives

The planning team developed a catalog of flood hazard mitigation alternatives through a facilitated process with Township staff involved in floodplain management. A session held June 17, 2015 to look at local strengths, weaknesses, obstacles and opportunities was the basis for the alternatives considered as well as the mitigation initiatives selected for implementation. The catalog represents the comprehensive range of alternatives considered for complying with Step 7 of the CRS 10-step process. The Steering Committee reviewed this catalog in conjunction with the findings of public outreach efforts, the risk assessment results and the Ocean County HMP and Brick Township SRPR. The catalog was enhanced based on this review and then used by Township staff to select hazard mitigation initiatives.

Catalogs of flood hazard mitigation alternatives were developed that present a broad range of alternatives to be considered for use in the planning area (CRS Step 7). The catalogs are listed in Tables 6-8 through 6-11. The catalogs present alternatives that are categorized in two ways:

- By what the alternative would do:
 - Manipulate a hazard
 - Reduce exposure to a hazard



- Reduce vulnerability to a hazard
- Increase the ability to respond to or be prepared for a hazard
- By who would have responsibility for implementation:
 - Individuals
 - Businesses
 - Government.

Flood hazard mitigation initiatives recommended in this plan were selected from among the alternatives presented in the catalogs. The catalogs provide a baseline of mitigation alternatives that are backed by a planning process, are consistent with the goals and objectives, and are within the capabilities of Brick Township to implement. However, not all the alternatives meet all the selection criteria.

Table 6-8. Mitigation Alternatives to Manipulate the Flood Hazard

Personal Scale	Corporate Scale	Government Scale
<p>Clear stormwater drains and culverts</p> <p>Institute low-impact development techniques on property</p>	<p>Clear stormwater drains and culverts</p> <p>Institute low-impact development techniques on property</p>	<p>Maintain drainage system</p> <p>Institute low-impact development techniques on property</p> <p>Sediment management and debris removal and providing regional retention areas</p> <p>Stormwater management regulations and master planning.</p> <p>Strategize responsible land protection methods to maintain/restore natural floodplain functions.</p> <p>Provide dredging, levee and bulkhead construction, revetments or channelization, where appropriate.</p> <p>Implement rainfall interception techniques such as increased vegetation, green roofs, bioswales, vegetated filter strips, porous paving, rain gardens, planter boxes, rain barrels, soil amendment, and bulkhead/vertical walls.</p> <p>Implement increased water storage, including retention, detention, infiltration, and constructed wetland areas.</p> <p>Increase conveyance including sewer, channel, dredging, culvert sizing, debris removal, de-snagging, and ewer flushing.</p> <p>Participate in regional watershed management.</p> <p>Investigate the benefits of bypass force main, tide barriers, stormwater pump systems, surge barriers, and mobile flood barriers.</p>



Table 6-9. Mitigation Alternatives to Reduce Exposure to the Flood Hazard

Personal Scale	Corporate Scale	Government Scale
<p>Locate outside of hazard area</p> <p>Elevate utilities above base flood elevation</p> <p>Institute low impact development techniques on property</p>	<p>Locate businesses, critical facilities, or functions outside hazard area.</p> <p>Institute low-impact development techniques on property</p>	<p>Locate or relocate critical facilities outside of hazard area.</p> <p>Acquire or relocate identified repetitive loss properties.</p> <p>Promote flood-compatible land uses in identified high hazard areas via techniques such as: community education, natural resource inventory, comprehensive planning, zoning provisions, floodplain protection ordinance, and the environmental review process.</p> <p>Adopt appropriate land development criteria.</p> <p>Institute low-impact development techniques on property.</p> <p>Acquire land or promote open space uses in developing watersheds to control increases in runoff.</p>

Table 6-10. Mitigation Alternatives to Reduce Vulnerability to the Flood Hazard

Personal Scale	Corporate Scale	Government Scale
<p>Retrofit structures (elevate structures above base flood elevation).</p> <p>Elevate items within house above base flood elevation.</p> <p>Build new homes above base flood elevation.</p> <p>Flood-proof existing structures.</p>	<p>Build redundancy for critical functions or retrofit critical buildings.</p> <p>Provide flood-proofing measures when new critical infrastructure must be located in floodplains.</p>	<p>Participate in CRS.</p> <p>Implement as-built regulatory requirements.</p> <p>Implement site review ordinances/requirements.</p> <p>Harden infrastructure.</p> <p>Bridge replacement program.</p> <p>Provide redundancy for critical functions and infrastructure.</p> <p>Adopt appropriate regulatory standards such as increased freeboard standards, cumulative substantial improvement or damage, lower substantial damage threshold, compensatory storage, or non-conversion deed restrictions.</p> <p>Stormwater management regulations and master planning.</p> <p>Adopt “no-adverse impact” floodplain management policies that strive to not increase the flood risk on downstream communities.</p> <p>Update existing regulations to account for the impacts of climate change as flooding is becoming more frequent and severe.</p> <p>Consider low impact development techniques that include green infrastructure.</p>



Table 6-11. Mitigation Alternatives to Increase Preparation Capability

Personal Scale	Corporate Scale	Government Scale
<p>Buy flood insurance.</p> <p>Develop household mitigation plan, such as retrofit savings, communication capability with outside, 72-hour self-sufficiency during and after an event.</p> <p>Comply with NFIP requirements.</p> <p>Register cell phones with Township Nixel system.</p>	<p>Keep cash reserves for reconstruction.</p> <p>Support and implement hazard disclosure for the sale/resale of property in identified risk zones.</p> <p>Solicit cost-sharing through partnerships with other stakeholders on projects with multiple benefits.</p> <p>Develop a flood response plan.</p>	<p>Prepare inundation maps for use by emergency management personnel to prepare for flood warning and evacuation.</p> <p>Develop field deployed electronic mapping system.</p> <p>Obtain additional high-wheeled vehicles for rescue operations.</p> <p>Fully automate EOC with state of the art audio/visual equipment.</p> <p>Install generators at critical facilities.</p> <p>Create website for pre-storm information dissemination.</p> <p>Educate the public on location of information regarding shelter locations.</p> <p>Develop an app to link to public website for pre-, during, and post-disaster information.</p> <p>Build stand-alone EOC.</p> <p>Create system to document FEMA reimbursable expenses.</p> <p>Integrate climate change into design codes and standards.</p> <p>Mitigate MUA facilities, including additional booster pump stations, communications, portable generators, and converting pump stations to submersible pumps.</p> <p>Upgrade sewerage system generators.</p> <p>Enhance emergency signage, especially in Cherry Quay.</p> <p>Elevate evacuation routes including South Drive.</p> <p>Install outlet structure on pond in Cherry Quay by Boom Lane.</p> <p>Install Tideflex valves where appropriate.</p> <p>Construct beach revetment.</p> <p>Provide beach fill.</p> <p>Obtain electric grid maps to assist in recovery after disruption of power.</p> <p>Participate in CRS.</p> <p>Implement/participate in regional monitoring networks.</p> <p>Provide technical information and guidance.</p> <p>Enact tools to help manage development in hazard areas (stronger controls, tax incentives, and information).</p>



Personal Scale	Corporate Scale	Government Scale
		<p>Incorporate retrofitting or replacement of critical system elements in capital improvement plan.</p> <p>Utilize post-disaster assistance.</p> <p>Warehouse critical infrastructure components.</p> <p>Develop and adopt a continuity of operations plan (COOP).</p> <p>Maintain existing data and gather new data needed to define risks and vulnerability.</p> <p>Identify critical facilities and infrastructure that require early notification during flood responses.</p> <p>Enhance flood threat recognition capability.</p> <p>Create a building and elevation inventory of structures in the floodplain.</p> <p>Develop and implement a public information strategy.</p> <p>Integrate floodplain management policies into other mechanisms within the planning area.</p> <p>Consider the residual risk associated with structural flood control in future land use decisions.</p> <p>Enforce NFIP requirements.</p> <p>Capture/survey high water marks after flood events.</p> <p>Identify public-private partnerships, plan integration, formation of public utilities or taxing districts to support flood loss reduction.</p> <p>Include future conditions in risk assessment planning.</p>

6.5.2 Township Mitigation Strategy Development

Throughout the course of the planning process, Township mitigation actions have been identified. These were identified through the following:

- Review of the results and findings of the risk assessment;
- Review of available regional and local plans, reports and studies;
- Direct input from county departments and other county and regional agencies, including:
 - Brick Township Land Use Planning
 - Brick Township Office of Emergency Management
 - Brick Township Department of Public Works
 - Brick Township Administrator
 - Brick Township Council



- Jacques Cousteau National Estuarine Research Reserve
- Brick Township Municipal Utilities Authority (BTMUA)
- Input received through the public and stakeholder outreach process.

The Steering Committee determined that some initiatives from the flood hazard mitigation catalog could be implemented to provide flood mitigation benefits. TABLE lists the recommended initiatives, the lead agency for each, and the proposed timeline. The parameters for the timeline are as follows:

- Short Term – to be completed in one to five years
- Long Term – to be completed in greater than five years
- Ongoing – currently being funded and implemented under existing programs

6.5.3 Benefit/Cost Review

The action plan is prioritized according to a benefit/cost analysis of the proposed projects and their associated costs (CRS Step 8). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Costs are the total cost for the action or project, and may include administrative costs, construction costs (including engineering, design and permitting), and maintenance costs.

Benefits are the savings from losses avoided attributed to the implementation of the project, and may include life-safety, structure and infrastructure damages, loss of service or function, and economic and environmental damage and losses.

When available, the Township was asked to identify the actual or estimated dollar value for project costs and associated benefits. Having defined costs and benefits allows a direct comparison of benefits versus costs, and a quantitative evaluation of project cost-effectiveness. Often, however, numerical costs and/or benefits have not been identified, or may be impossible to quantitatively assess.

For the purposes of this planning process, the Township was tasked with evaluating project cost-effectiveness with both costs and benefits assigned to “High,” “Medium,” and “Low” ratings. Where quantitative estimates of costs and benefits were available, ratings/ranges were defined as:

- Low < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where quantitative estimates of costs and/or benefits were not available, qualitative ratings using the following definitions were used:



Table 6-12. Qualitative Cost and Benefit Ratings

Costs	
High	Existing funding levels are not adequate to cover the costs of the proposed project, and implementation would require an increase in revenue through an alternative source (e.g., bonds, grants, and fee increases).
Medium	The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
Low	The project could be funded under the existing budget. The project is part of or can be part of an existing, ongoing program.
Benefits	
High	Project will have an immediate impact on the reduction of risk exposure to life and property.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
Low	Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

For some of the Brick Township initiatives identified, the Planning Committee may seek financial assistance under FEMA’s HMGP or HMA programs. These programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed when funding applications are prepared, using the FEMA benefit/cost analysis model process. The Planning Committee is committed to implementing mitigation strategies with benefits that exceed costs. For projects not seeking financial assistance from grant programs that require this sort of analysis, the Planning Committee reserves the right to define “benefits” according to parameters that meet its needs and the goals and objectives of this HMP.

6.5.4 Prioritization

TABLE lists the priority of each initiative as assigned by the planning team, using the same parameters used in selecting the initiatives. A qualitative benefit-cost review was performed for each of these initiatives. The priorities are defined as follows:

High Priority—A project that meets multiple objectives, has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for a grant program. High priority projects can be completed in the short term (1 to 5 years). The key factors for high priority projects are that they have funding secured and can be completed in the short term.

Medium Priority—A project that meets goals and objectives, that has benefits that exceed costs, and for which funding has not been secured but that is grant eligible. Project can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured. The key factors for medium priority projects are that they are eligible for funding, but do not yet have funding secured, and they can be completed within the short term.

Low Priority—A project that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for FEMA grant funding, and for which the time line for completion is long term (1 to 10 years). Low priority projects may be eligible for grant funding from other programs. Low priority projects are “blue-sky” projects. How they will be financed is unknown, and they can be completed over a long term.



6.5.5 Analysis of Mitigation Initiatives

Each recommended initiative was classified based on the hazard it addresses and the type of mitigation it involves. Mitigation types used for this categorization are as follows:

Prevention—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.

Property Protection—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.

Public Education and Awareness—Actions to inform citizens and elected officials about flood hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.

Natural Resource Protection—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Emergency Services—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.

Structural Projects—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

Tables 6-13 and 6-14 present the results of this analysis and prioritization.



Table 6-13. Flood Mitigation Initiatives

Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
Redundant Power Supply/Generators							
1	Install permanent generators in Township schools which serve as shelters (Brick Memorial High School, Brick Township High School, Herbertsville School, Lake Riviera Middle School, Midstreams Elementary School, Osbornville School, and Veterans Memorial Middle School), the Township Municipal Building (home of the EOC), senior centers (Laurelton Village, Meridian Nursing & Rehab, Ocean Medical Center Acute Care of the Elderly Unit, and Shorrock Gardens Care Center), and temporary housing centers, as well as Mantoloking Road, Morris Avenue, and Ridge Road Water booster stations	Brick Township Administrator, BTMUA, BT Board of Education	Y HMGP PDM	Short	3 (11, 19, 22)	SP and ES	High
2	Priority focus on permanent generator installation is for the Municipal Complex, Department of Public Work and the Police Sub-Station/ Pioneer Hose Fire Company Barrier Island Forward Command Post	Brick Township Engineering	Y HMGP PDM	Short	2 (11, 22)	SP and ES	High
3	Develop an alternate fuel supply for the emergency generators at the William Miller Water Treatment Plant	BTMUA	Y HMGP PDM	Short	2 (11, 22)	SP and ES	High
4	Upgrade sewer system generators	BTMUA	Y HMGP PDM	Short	2 (11, 22)	SP; ES; and PP	High
5	Upgrade generators at five of the transition centers, including: Brick Township High School, Ocean County Vocational-Technical School, Emma Havens Young School, and Veterans Memorial Middle School	Brick Township Board of Education	Y HMGP PDM	Short	3 (11, 19, 22)	SP and ES	Medium
6	Elevate electrical equipment, controls, instrumentation and emergency generators in all municipal facilities above the base flood elevation to continue critical community services during utility interruptions and storm events	Brick Township Engineering	Y HMGP PDM FMA	Short	4 (11, 12, 19, 22)	SP; ES; and PP	High
Evacuation							
7	Develop a FEMA 361 Shelter for New Police Department Station	Brick Township OEM	Y HMGP PDM	Short	2 (11, 19)	SP and ES	Medium



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
8	Enhance emergency evacuation signage, especially in Cherry Quay.	Brick Township OEM	N	Short	4 (10, 15, 20, 21)	ES and PI	Medium
9	Elevate evacuation routes, including South Drive in Princeton Midstreams and the Shore Acres Neighborhood. The elevation would be for approximately 400 feet of South Drive and would eliminate a local low point that causes the repeated flooding of residential structures. This elevation would also provide overland flow relief and allow the road to drain via gravity.	Brick Township Engineering	Y HMGP PDM FMA	Short	5 (1, 2, 10, 13, 20)	ES, SP, PP	High
Drainage and Sewage Infrastructure Improvements							
10	Improve drainage at six locations, including the installation of a floodgate at Brick Beach 3	Brick Township Engineering	Y HMGP PDM FMA	Short	5 (2, 9, 10, 13, 23)	PP, SP	Medium
11	Maintain current drainage systems at appropriate care level	Brick Township DPW	N	Ongoing	5 (2, 9, 10, 13, 23)	PP, SP	High
12	Increase conveyance through sewer and channels by dredging, culvert sizing, debris removal, de-snagging, and sewer flushing	Brick Township DPW	Y HMGP PDM FMA	Short	4 (9, 10, 13, 23)	PP, SP	High
13	Clean all critical sewer pipes and drainage facilities from debris	Brick Township DPW	Y HMGP	Ongoing	6 (9, 10, 11, 12, 13, 23)	PP, SP	High
14	Improve/repair failing septic systems.	Brick Township Code Enforcement	Y HMGP PDM FMA	Short	4 (9, 11, 13, 23)	PP, SP	Medium
15	Promote I&I protection of sewer systems	Brick Township Engineering	Y HMGP PDM FMA	Ongoing	4 (9, 11, 13, 23)	PP, SP	Medium
16	Elevate the equipment from dry wells	Brick Township Engineering	Y HMGP PDM FMA	Short	4 (10, 11, 13, 22)	PP, SP	Medium



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
17	Install Tideflex valves where appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	4 (10, 12, 13, 23)	PP, SP	Medium
	Acquire a drainage easement of over 300 square feet of private property abutting Broad Avenue and South Harbor Lagoon to develop a low-lying runoff collection point, reconstruct the drainage system, and provide a tide check valve on the outfall pipe. This would allow the Broad Avenue pavement surface to be elevated to prevent flooding without causing flooding to adjacent properties.	Brick Township Planning	Y HMGP PDM FMA	Long	6 (2, 10, 11, 12, 13, 23)	PP, SP	High
19	Install an outlet structure on the pond in Cherry Quay by Boom Lane. The outlet structure should be constructed to maintain a consistent water surface elevation range. Overflow would be conveyed through the existing drainage system in residential streets and outfall into the Barnegat Bay through an existing drainage outfall. A path of overflow for overland flood relief would be provided for when the pond elevation reaches a flood stage that cannot be conveyed hydraulically through the existing drainage system.	Brick Township Engineering	Y HMGP PDM FMA	Short	6 (2, 10, 11, 12, 13, 23)	PP, SP	High
Utilities Infrastructure Improvement							
20	Support BTMUA in upgrading and improving infrastructure and capacity to allow for uninterrupted service during hazard events. Measures may include: i. Flood proofing the raw water pump stations located on the Metedeconk River and Bay Harbor Boulevard, Drum Point Road, and Riverside Drive ii. Installing additional booster pump stations iii. Enhancing local communications iv. Converting pump stations to submersible pumps v. Evaluating and building resiliency for the long-term implications of sea-level rise for water supply operations.	BTMUA, Brick Township Administrator	Y HMGP PDM FMA	Long	8 (2, 8, 9, 10, 11, 13, 22, 23)	ES, SP	High
Transportation Infrastructure Improvements							
21	Elevate roads, particularly those adjacent to waterways.	Brick Township Engineering	Y HMGP PDM FMA	Short	5 (1, 2, 10, 13, 20)	ES, SP	Low



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
22	Elevate Snake Road to prevent overtopping of roadway during regular lunar tidal events. Surface elevation needs to be increased by approximately 4,000 feet of the access road. This road is the sole vehicular access point for the Seawood Harbor residential community.	Brick Township Engineering	Y HMGP PDM FMA	Short	5 (1, 2, 10, 13, 20)	ES, SP	Medium
23	Consider raised roads with side protection, which can dual function as levees, near Barnegat Bay	Brick Township Engineering	Y HMGP PDM FMA	Short	7 (1, 2, 8, 10, 12, 13, 20)	ES, SP, PP	Low
24	Harden existing infrastructure	Brick Township Engineering	Y HMGP PDM FMA	Ongoing	3 (10, 11, 13)	SP and PP	High
25	Replace older and unsafe bridges and culverts including the Route 70 and Route 88 culverts, the Jordan Road White Bridge (raise) and those identified in the capital improvement plan.	Brick Township Engineering	Y HMGP PDM FMA	Ongoing	4 (10, 11, 13, 20)	SP and PP	High
26	Improve street sweeping methods and frequencies to reduce pollutants entrained in runoff from impervious streets and parking lots.	Brick Township DPW	N	Ongoing	4 (10, 13, 23, 24)	NB, PP	Low
Property/Structural Retrofits and Mitigation							
27	<p>Purchase, relocate, and/or retrofit structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.</p> <p>Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation and inform candidates/public as appropriate.</p> <p>Phase 2: Where retrofitting is determined to be a viable option, work with the property owner to implement that action based on available funding from FEMA and local match availability.</p> <p>This action supports and promotes retrofitting and elevation of 2,000 homes that fall within flood vulnerable areas and the acquisition and demolition of 45 homes as identified by the Township.</p>	Brick Township Planning	Y HMGP PDM FMA	Long	5 (3, 9, 12, 14, 15)	SP and PP	High



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
28	Support funding for acquisition or elevation of four Severe Repetitive Loss properties. This may be addressed by submitting a Township or joint municipal HMA (FMA) grant application.	Brick Township Planning	Y HMA/FMA	Short	5 (3, 9, 12, 14, 15)	SP and PP	High
29	Support funding for acquisition or elevation of 20 Repetitive Loss properties. This may be addressed by submitting a Township or joint municipal HMA grant application	Brick Township Planning	Y HMA/FMA	Short	5 (3, 9, 12, 14, 15)	SP and PP	High
30	Support and promote the retrofit 600 buildings to meet hurricane-force wind needs	Brick Township Planning	Y HMGP PDM	Long	4 (2, 8, 9, 12)	SP and PP	High
31	Locate new or relocate existing critical facilities outside of the floodplain, where possible.	Brick Township Planning	Y HMGP PDM FMA	Ongoing	6 (2, 3, 9, 11, 12, 14)	SP, ES, and PP	High
Barnegat Bay Structural Projects							
32	Increase the height of the bulkheads along Barnegat Bay (with or without movable panels) as appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	2 (16, 17)	NB, SP	Low
33	Construct new metal sheet bulkheads (with or without movable panels) and incorporate check valves inside the bulkheads as appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	2 (16, 17)	NB, SP	Low
34	Construct new concrete flood walls and flood gates (with or without movable flood panels) and incorporate check valves inside the walls as appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	2 (16, 17)	NB, SP	Low
35	Construct new levee/dike including culvert or pipe with flap gate/check valve as appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	2 (16, 17)	NB, SP	Low
36	Construct sluice gates or in-water barriers for dredged lagoons as appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	2 (16, 17)	NB, SP	Low
37	Placeholder						



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
38	Add stormwater collection areas and bypass force mains for elevated areas to improve stormwater drainage and prevent issues related to submerged outflow pipes as appropriate	Brick Township Engineering	Y HMGP PDM FMA	Short	4 (16, 17, 23, 24)	NB, SP, PP	High
39	Construct stormwater gravel wetlands, which rely on a dense root mat, crushed stone, and an anaerobic and microbe-rich subsurface.	Various	Y HMGP PDM FMA	Short	4 (16, 17, 23, 24)	NB, SP	High
Public Education/Outreach							
40	Township officials provide technical information and guidance, when needed	Brick Township Administrator, Planning	N	Ongoing	2 (15, 21)	RS, PI	Medium
41	Provide information on residential, business, and natural resource grant programs to residents	Township Planning, Engineering, Administrator	N	Ongoing	1 (15)	PI	Medium
42	Develop an app to link to public website for pre-, during- and post-disaster information.	Township Planning	N	Short	2 (15, 21)	PI, ES	Medium
43	Create website for pre-storm information dissemination, including shelter locations	Township Planning	N	Short	2 (15, 21)	PI, ES	Medium
44	Acquire computers for senior communities so that residents have access to information on disaster mitigation, preparedness, response and recovery	Township Administrator	Y HMGP PDM	Short	2 (15, 21)	PI, ES	Medium
45	Continue Police outreach programs in schools to include children in outreach and to improve families' disaster response capabilities	Township Police	N	Ongoing	2 (15, 21)	PI, ES	High
Enhanced Response Capabilities							
46	Acquire critical warehouse infrastructure components	Township OEM, DPW	Y HMGP PDM FMA	Short	2 (8, 11)	PP	Medium
47	Develop field-deployed electronic mapping system	Township GIS/Planning	Y HMGP PDM FMA	Short	2 (3, 8)	ES	Medium



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
48	Obtain additional high wheeled vehicles for rescue operations.	Township OEM	Y HMGP PDM FMA	Short	1 (2)	ES	Low
49	Upgrade and automate the EOC to ensure state-of-the-art audio/visual equipment, sufficient space and security, and stand-alone ability	Township OEM	Y HMGP PDM	Short	3 (2, 19, 21)	ES	Medium
50	Develop reverse 911 system to assist in communication for all hazards	Township OEM	Y HMGP PDM	Short	2 (19, 21)	ES, PI	High
51	Support continuous operations of Emergency Support Services for the Barrier Island	Township OEM	N	Ongoing	2 (19, 21)	ES	High
52	Mitigate Barrier Island Police Substation and Pioneer Fire Station to protect from flood related hazards	Township Police Dept.	Y HMGP PDM FMA	Short	3 (11, 19, 21)	ES, PP	High
53	Create system to document FEMA reimbursable expenses.	Township Planning	N	Short	2 (7, 8)	ES, RS	High
54	Capture/survey high water marks after flood events.	Brick Township Engineering, Various	N	Ongoing	3 (3, 7, 8)	RS	High
55	Utilize post-disaster assistance	Township Administrator/OEM	Y HMGP	Ongoing	3 (7, 8, 9)	RS	High
56	Obtain electric grid maps to assist in recovery after disruption of power	Township OEM	N	Short	3 (7, 8, 9)	ES	High
Monitoring and Notification Capabilities							
57	Implement/participate in regional precipitation monitoring networks and other programs that enhance flood threat recognition capability	Township Engineering/OEM	N	Ongoing	3 (1, 3, 8)	ES, PI	Medium
58	Identify critical facilities/infrastructure that require early notification during flood responses	Township OEM	N	Ongoing	3 (7, 11, 19)	PP, ES	Medium
59	Maintain existing data and gather new data needed to define risks and vulnerability	BTMUA, BT Engineering, BT DPW	N	Ongoing	1 (3)	RS, PI	High
Planning - Stormwater Management							



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
60	Expand the Best Management Practices (BMP) subsection of the Stormwater Management Plan to emphasize green stormwater management techniques, such as bio-swales, rain gardens, offline regional treatment, and vegetative rooftop overs	BTMUA, BT Engineering	N	Short	4 (2, 6, 23, 24)	RS, NB	High
61	Assess the stormwater management BMPs in other parts of the country for potential benefit to the Township	BTMUA, BT Engineering	N	Ongoing	2 (2, 3)	RS, NB	High
62	Supplement the Stormwater Management Plan to include details on drainage system maintenance and keeping channels and storage basins clear of debris for sufficient flood carrying and storage capacity	Township DPW	N	Short	3 (2, 3, 23)	RS	High
63	Encourage compliance with NJ Department of Transportation legislation on state highway stormwater management issues for Routes 9, 35, 37, 70, 72, 88 and 166	Township Engineering	N	Ongoing	3 (2, 7, 8)	RS	High
64	Coordinate County, State, and Federal funding to maximize the effectiveness of stormwater protection and rehabilitation efforts	BTMUA, BT Planning	N	Ongoing	3 (3, 7, 8)	RS	High
65	Identify and restore impaired stormwater management facilities to improve infiltration and reduce runoff throughout the watershed.	BTMUA, BT Engineering, BT DPW	Y HMGP PDM FMA	Short	3 (10, 23, 24)	PP, SP	High
66	Construct additional facilities to collect and provide temporary storage of stormwater runoff to promote infiltration through highly permeable soils.	BTMUA, BT Engineering	Y HMGP PDM FMA	Short	2 (10, 23)	PP, SP	Low
67	Investigate the benefits of bypass force main, tide barriers, stormwater pump systems, surge barriers, and mobile flood barriers.	Township Engineering	N	Ongoing	3 (3, 10, 23)	PP, SP	Medium
68	Identify BMPs that individual property owners can implement.	BTMUA, BT Engineering	N	Ongoing	3 (8, 14, 15)	PP, PI	High
Planning - Regulations and Ordinances (Flooding)							
69	Enforce minimum National Flood Insurance Program requirements and proactively support floodplain management property protection and outreach requirements	Township Code Official/Engineer	N	Ongoing	7 (3, 4, 5, 6, 7, 8, 15)	RS, PI	High
70	Adopt appropriate enhanced regulatory standards, such as increased freeboard standards, cumulative substantial improvement or damage, lower substantial damage threshold, compensatory storage, and non-conversion deed restrictions	Township Code Official/Engineer, Planning	N	Short	4 (3, 4, 5, 7)	RS, PP	High



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
71	Supplement the Flood Prevention Ordinance or adding regulations to the Township Code requiring removal or securing of boats, floating docks, gangways, etc. from water bodies within a specified period from the issuance of an order from Emergency Management personnel.	Township Code Official/Engineer, Planning	N	Short	3 (4, 5, 7)	RS	High
72	Prohibit the construction of occupied structures seaward of the mean high water line or on piers or platforms except for essential structures for “functionally dependent uses” such as marinas or boatyards	Township Code Official/Engineer, Planning	N	Short	3 (4, 5, 7)	RS	High
73	Update existing regulations to account for the impacts of climate change	Township Code Official/Engineer, Planning	N	Short	4 (1, 4, 5, 7)	RS	High
74	Adopt a “no-adverse impact” floodplain management policy that strives to not increase the flood risk on downstream communities.	Township Code Official/Engineer, Planning	N	Short	5 (1, 4, 5, 7, 8)	RS	High
75	Implement as-built regulatory requirements	Township Code Official/Engineer, Planning	N	Short	3 (4, 5, 7)	RS	High
76	Use Re-sale Certification of Occupancy to catch up with substantially damaged structures and regulate safe re-building practices	Township Code Official/Engineer, Planning	N	Ongoing	6 (2, 3, 5, 6, 7, 9)	RS	High
77	Utilize the most recent FEMA FIRMs to assist property owners in rebuilding to or above regulatory standards	Township Code Official/Engineer, Planning	N	Ongoing	3 (3, 4, 9)	RS, PP	High
78	Join CRS program to complete pro-active floodplain management and assist residents with flood insurance costs	Township Code Official/Engineer, Planning	N	Short	2 (3, 4)	RS	High
Planning - Regulations and Ordinances (Other)							
79	Implement site review ordinances/requirements	Township Code Official/Engineer, Planning	N	Ongoing	3 (5, 6, 7)	RS	High
80	Integrate climate change into design codes and standards.	Township Code Official/Engineer, Planning	Y HMGP	Short	6 (1, 2, 3, 5, 6, 7)	RS, PP	High



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
81	Develop design standards to address the visual impact of mitigation measures such as elevating bulkheads, elevating buildings on foundations or pilings	Township Code Official/Engineer, Planning	N	Short	1 (5)	RS, PP	Low
82	Continue to enforce building codes to require building, renovations, and re-building to that all buildings meet or exceed the Uniform Construction Code	Township Code Official/Engineer, Planning	N	Ongoing	3 (5, 7, 8)	RS, PP	High
83	Institute low-impact development techniques on property	Township Code Official/Engineer, Planning	N	Short	4 (3, 5, 7, 8)	RS, PP	High
84	Develop a Fertilizer Application Ordinance to control reduce the amount of damaging non-point source pollution during storm events	Township Code Official/Engineer, Planning	N	Short	4 (5, 6, 7, 24)	RS	High
85	Ensure post-disaster code enforcement and inspection to protect properties in the process if being re-built and built	Township Code Official/Engineer, Planning	Y HMGP	Ongoing	5 (2, 6, 7, 8, 9)	RS, PP	High
86	Continue to take a proactive approach to the NJ Soils Health Legislation by working with the Ocean County Soil Conservation District to promote construction practices to maintain soil health and reduce compaction.	BTMUA, BT Engineering	N	Ongoing	3 (7, 8, 24)	RS	High
87	Encourage and support compliance with the NJ Fertilizer Law.	BTMUA, BT Planning	N	Ongoing	3 (7, 8, 24)	RS	High
88	Enact tools to help manage development in hazard areas (stronger controls, tax incentives, and information)	Township Planning	N	Ongoing	6 (1, 2, 3, 5, 6, 8)	RS	High
Other Planning Initiatives							
89	Adopt appropriate land development criteria such as planned unit developments, density transfers clustering	Township Planning	N	Short	6 (2, 3, 5, 6, 7, 8)	RS	High
90	Consider the residual risk associated with structural flood control in land use and land development plans	Township Planning	N	Ongoing	6 (2, 3, 5, 6, 7, 8)	RS	High
91	Develop and adopt a continuity of operations plan (COOP)	Township OEM	Y HMGP PDM	Short	2 (4, 7)	RS	High
92	Maintain the all-hazards Emergency Operations Plan	Township OEM	N	Ongoing	2 (4, 7)	RS, ES	High
93	Develop and implement Shelter Management Plans	Township OEM	Y HMGP PDM	Ongoing	3 (4, 7, 19)	RS, ES	High



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
94	Integrate hazard mitigation into the Master Plan	Township Planning	Y HMGP PDM FMA	Short	4 (4, 5, 7, 8)	RS	High
95	Integrate flood management policies into other Township planning mechanisms	Township Planning	Y HMGP PDM FMA	Ongoing	4 (4, 5, 7, 8)	RS	High
96	Incorporate retrofitting/replacement of critical system elements in the capital improvement plan	Township Planning	Y HMGP PDM	Short	3 (2, 7, 11)	RS, PP	High
97	Continue to work with the Barnegat Bay Partnership to target research and assessment efforts.	Township Planning, Engineering	N	Ongoing	2 (3, 8)	NB	High
98	Develop a building and elevation inventory of structures in the floodplain	Township Engineering	Y HMGP PDM FMA	Short	3 (2, 3, 8)	PP	Medium
99	Improve the Township's mapping capability to increase access to information and adding additional AutoCAD software, as necessary to support mapping capabilities	Township Engineering	Y HMGP PDM FMA	Ongoing	3 (2, 3, 8)	RS, PP	Medium
100	Conduct Local Emergency Planning Committee meetings every month and perform drills to prevent hazardous materials accidents	Township OEM	Y HMGP PDM	Ongoing	2 (7, 8)	PI	High
101	Identify agricultural BMPs to control runoff from crops and livestock.	BTMUA, BT Engineering	N	Short	3 (6, 7, 24)	PI, RS	High
102	Implement stronger pet waste and fertilizer management protocols and ordinances to reduce pathogen and nutrient contributions at the household scale. Goose management programs have been recommended for implementation in the fecal coliform and total coliform total maximum daily loads (TMDLs) throughout the watershed.	BTMUA, BT Engineering, BT Planning	N	Short	3 (6, 7, 24)	RS, NB	High
Dune/Beach Replenishment and Other Beach Projects							



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
103	Support the USACE beach repair, restoration, and replenishment project	Township Engineering	Y HMGP PDM FMA	Short	4 (8, 9, 16, 17)	NB, SP	High
104	Provide beach fill as necessary	Township Engineering	Y HMGP PDM FMA	Ongoing	4 (8, 9, 16, 17)	NB, SP	High
105	Maintain and improve dunes and maintain natural beach habitat and bay habitat	Township Engineering	Y HMGP PDM FMA	Ongoing	4 (8, 9, 16, 17)	NB, SP	High
106	Repair and install bulkheads to protect from coastal erosion	Township Engineering	Y HMGP PDM FMA	Short	4 (8, 9, 16, 17)	NB, SP	Medium
107	Construct beach revetment	Army Corps/Township Engineering	Y HMGP PDM FMA	Short	4 (8, 9, 16, 17)	NB, SP	Medium
108	Support easements for the ACOE beach replenishment project on the Barrier Island	Township Engineering/Planning	Y HMGP PDM FMA	Ongoing	4 (8, 9, 16, 17)	NB, SP	High
109	Implement erosion control projects for Dock Road Beach, such as constructing a minor geotextile system to be installed upstream and downstream of the beach and/or establishing scour protection and velocity control at an existing drainage pipe outfall to Metedeconk River.	Township Engineering	Y HMGP PDM FMA	Short	5 (8, 9, 16, 17, 18)	NB, SP	Medium
Natural Functions Strengthening							
110	Complete soil stabilization project at Bay Harbor Beach and install geotextiles at park next to Windward Beach	Township Engineering	Y HMGP PDM FMA	Short	3 (16, 17, 18)	NB, SP	Medium



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
111	Restore a fire break on North Riverside Drive. The current fire break and soil stabilization systems are inadequate to prevent future disaster of the shoreline and to protect the adjacent Vanada Woods neighborhood from potential wildfire. The project would include demolition of the Macintosh House, boathouse, and partial removal of the bulkhead so that the shoreline can be stabilized. Ideally, the entire parcel will be returned to a more natural state.	Township Engineering	Y HMGP PDM	Short	3 (13, 16, 17)	PP, NB	Medium
112	Maintain Mallard Park to avoid coastal geotech erosion and mitigate flood related hazards	Township DPW	Y HMGP PDM FMA	Ongoing	4 (13, 16, 17, 23)	NB, SP	Medium
113	Redesign pond in Cherry Quay to provide increased flood retention	Township Engineering	Y HMGP PDM FMA	Short	4 (10, 13, 16, 17)	NB, SP	Low
114	Redesign the islands in Beaver Dam Creek for Princeton Midstreams to provide increased flood retention	Township Engineering	Y HMGP PDM FMA	Short	4 (10, 13, 16, 17)	NB, SP	Low
115	Strategize responsible land protection methods to maintain/restore natural floodplain functions	Township Engineering/Planning	N	Ongoing	4 (2, 6, 7, 8)	NB, SP	High
116	Manage sediment and debris removal and provide regional retention, detention, infiltration and constructed wetland areas.	Township Engineering	Y HMGP PDM FMA	Ongoing	4 (10, 13, 16, 17)	NB, SP	High
117	Participate in regional watershed management	BTMUA, BT Engineering, BT Planning	N	Ongoing	3	NB	Low
118	Promote open space or flood-compatible land uses in identified high hazard areas via techniques such as: planned unit development, easements, setbacks, greenways, sensitive area tracts, community education, natural resource inventory; comprehensive planning; zoning provisions; floodplain protection ordinance; and the environmental review process.	BT Planning, BTMUA	Y HMGP PDM FMA	Ongoing	2 (6, 8)	NB, SP, RS, PI	High



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
119	Provide dredging, levee and bulkhead construction, revetments or channelization where appropriate	Township Engineering	Y HMGP PDM FMA	Ongoing	1 (13)	SP	Medium
120	Maintain vegetated riparian buffer zones. Prioritize implementation by using parcels identified as protection priority from the Trust for Public Land.	BT Planning, BTMUA	Y HMGP PDM FMA	Ongoing	4 (16, 17, 23, 24)	NB	High
121	Restore upland and riparian forests to capture rainfall, protect soil from erosion, maximize infiltration, and sequester nutrients.	BT Planning, BTMUA	Y HMGP PDM FMA	Long	4 (16, 17, 23, 24)	NB	Medium
122	Construct stormwater wetlands to maximize removal of pollutants from stormwater runoff.	BT Planning, BTMUA	Y HMGP PDM FMA	Short	4 (16, 17, 23, 24)	NB	Low
123	Install a bio retention system in lawns, median strips, parking lot islands, unused lot areas, certain easements, or other areas that would benefit from stormwater mitigation.	BT Planning, BTMUA	Y HMGP PDM FMA	Short	4 (16, 17, 23, 24)	NB	Medium
124	Retrofit existing stormwater basins to extend detention or bio retention areas.	BT Planning, BTMUA	Y HMGP PDM FMA	Short	5 (16, 17, 18, 23, 24)	SP, NB	Medium
125	Remove un-utilized or under-utilized impervious surfaces, such as extra parking, with native or maintained vegetation. Where possible redirect runoff to these new pervious surfaces.	BT Planning, BTMUA	Y HMGP PDM FMA	Short	2 (23, 24)	SP, NB	Low
126	Restore fluvial systems and streams to approach pre-development conditions where a sinuous channel is reconnected to an expansive floodplain, ideally integrated with riparian wetlands.	BT Planning, BTMUA	Y HMGP PDM FMA	Short	5 (16, 17, 18, 23, 24)	NB	Low



Initiative Number	Initiative	Lead Dept.	Possible Funding Sources or Resources	Timeline	# of Objectives met	Project category	Priority (High, Med., Low)
Green Energies and Sustainable Improvements							
127	Support the use and installation of green energies and sustainable technologies, where appropriate and affordable. Green improvements can include: i. Green roofs ii. Bioswales iii. Planter boxes iv. Vegetated filter strips v. Permeable/pervious paving vi. Rain gardens vii. Overall increased vegetation viii. Rain barrels or cisterns ix. Soil amendment x. Bulkhead/vertical walls xi. Vegetated filter strip	BT Planning, BTMUA	Y HMGP PDM FMA	Ongoing	2 (23, 24)	SP, NB	High

Notes:

HMPG-Hazard Mitigation Grant Program

PDM-Pre-Disaster Mitigation Program

FMA-Flood Mitigation Assistance Program

*"Yes" indicates the strategy is likely to fall within the objectives of the Township budget or grant program. Does not indicate a project will automatically be funded.

Timeframe

Short 1-5 years

Long 5 years or greater

Ongoing Ongoing

Priority

High A project that meets multiple plan objectives, benefits exceeds cost, has funding secured under existing programs or authorizations, or is grant eligible, and can be completed in 1 to 5 years (i.e., short term project) once project is funded.

Medium A project that meets at least 1 plan objective, benefits exceeds costs, funding has not been secured and would require a special funding authorization under existing programs, grant eligibility is questionable, and can be completed in 1 to 5 years once project is funded.

Low Any project that will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is considered long term (5 to 10 years).

Project Category

Regulatory standards - RS

Property Protection - PP

Natural and beneficial floodplain functions - NB

Emergency Services - ES

Structural Projects - SP

Public Information/Outreach - PI





Table 6-14. Prioritization of Mitigation Initiatives

Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
1	3 (11, 19, 22)	High	High	Y	Y HMGP PDM	N	High
2	2 (11, 22)	High	High	Y	Y HMGP PDM	N	High
3	2 (11, 22)	High	Medium	Y	Y HMGP PDM	Y	High
4	2 (11, 22)	High	High	Y	Y HMGP PDM	N	High
5	3 (11, 19, 22)	Medium	High	N	Y HMGP PDM	N	Medium
6	4 (11, 12, 19, 22)	High	Medium	Y	Y HMGP PDM FMA	Y	High
7	2 (11, 19)	Medium	High	N	Y HMGP PDM	N	Medium
8	4 (10, 15, 20, 21)	Medium	Low	Y	N	Y	Medium
9	5 (1, 2, 10, 13, 20)	High	High	Y	Y HMGP PDM FMA	N	High
10	5 (2, 9, 10, 13, 23)	Medium	High	N	Y HMGP PDM FMA	N	Medium
11	5 (2, 9, 10, 13, 23)	Low	Low	Y	N	Y	High
12	4 (9, 10, 13, 23)	Medium	Medium	Y	Y HMGP PDM FMA	N	High
13	6 (9, 10, 11, 12, 13, 23)	High	Medium	Y	Y HMGP	Y	High
14	4 (9, 11, 13, 23)	High	Medium	Y	Y HMGP PDM FMA	N	Medium
15	4 (9, 11, 13, 23)	High	Low	Y	Y HMGP PDM FMA	Y	Medium



Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
16	4 (10, 11, 13, 22)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
17	4 (10, 12, 13, 23)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
18	6 (2, 10, 11, 12, 13, 23)	High	High	Y	Y HMGP PDM FMA	N	High
19	6 (2, 10, 11, 12, 13, 23)	High	High	Y	Y HMGP PDM FMA	N	High
20	8 (2, 8, 9, 10, 11, 13, 22, 23)	Medium	Medium	Y	Y HMGP PDM FMA	Y	High
21	5 (1, 2, 10, 13, 20)	Medium	High	N	Y HMGP PDM FMA	N	Low
22	5 (1, 2, 10, 13, 20)	High	High	Y	Y HMGP PDM FMA	N	Medium
23	7 (1, 2, 8, 10, 12, 13, 20)	Medium	High	N	Y HMGP PDM FMA	N	Low
24	3 (10, 11, 13)	Medium	Medium	Y	Y HMGP PDM FMA	Y	High
25	4 (10, 11, 13, 20)	High	High	Y	Y HMGP PDM FMA	N	High
26	4 (10, 13, 23, 24)	Low	Medium	N	N	Y	Low
27	5 (3, 9, 12, 14, 15)	High	High	Y	Y HMGP PDM FMA	N	High
28	Placeholder						
29	Placeholder						
30	4 (2, 8, 9, 12)	High	High	Y	Y HMGP	N	High



Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
					PDM		
31	6 (2, 3, 9, 11, 12, 14)	High	High	Y	Y HMGP PDM FMA	N	High
32	2 (16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
33	2 (16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
34	2 (16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
35	2 (16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
36	2 (16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
37	Place holder						
38	4 (16, 17, 23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	N	High
39	4 (16, 17, 23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	N	High
40	2 (15, 21)	Medium	Low	Y	N	Y	Medium
41	1 (15)	Medium	Low	Y	N	Y	Medium
42	2 (15, 21)	Medium	Low	Y	N	N	Medium
43	2 (15, 21)	Medium	Low	Y	N	Y	Medium
44	2 (15, 21)	Medium	Medium	Y	Y HMGP PDM	N	Medium
45	2 (15, 21)	Medium	Low	Y	N	Y	High
46	2 (8, 11)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
47	2 (3, 8)	Medium	Medium	Y	Y HMGP	N	Medium



Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
					PDM FMA		
48	1 (2)	High	Medium	Y	Y HMGP PDM FMA	N	Low
49	3 (2, 19, 21)	High	High	Y	Y HMGP PDM	N	Medium
50	2 (19, 21)	High	High	Y	Y HMGP PDM	N	High
51	2 (19, 21)	High	Medium	Y	N	Y	High
52	3 (11, 19, 21)	High	High	Y	Y HMGP PDM FMA	N	High
53	2 (7, 8)	Medium	Low	Y	N	Y	High
54	3 (3, 7, 8)	Medium	Low	Y	N	Y	High
55	3 (7, 8, 9)	Medium	Low	Y	Y HMGP	Y	High
56	3 (7, 8, 9)	Medium	Low	Y	N	Y	High
57	3 (1, 3, 8)	High	Low	Y	N	Y	Medium
58	3 (7, 11, 19)	High	Low	Y	N	Y	Medium
59	1 (3)	Medium	Low	Y	N	Y	High
60	4 (2, 6, 23, 24)	Medium	Low	Y	N	Y	High
61	2 (2, 3)	Medium	Low	Y	N	Y	High
62	3 (2, 3, 23)	Medium	Low	Y	N	Y	High
63	3 (2, 7, 8)	Medium	Low	Y	N	Y	High
64	3 (3, 7, 8)	Medium	Low	Y	N	Y	High
65	3 (10, 23, 24)	High	Medium	Y	Y HMGP PDM FMA	N	High
66	2 (10, 23)	Medium	High	N	Y HMGP PDM FMA	N	Low
67	3 (3, 10, 23)	Medium	Low	Y	N	Y	Medium
68	3 (8, 14, 15)	Medium	Low	Y	N	Y	High
69	7 (3, 4, 5, 6, 7, 8, 15)	High	Low	Y	N	Y	High
70	4 (3, 4, 5, 7)	Medium	Low	Y	N	Y	High
71	3 (4, 5, 7)	Medium	Low	Y	N	Y	High
72	3 (4, 5, 7)	Medium	Low	Y	N	Y	High
73	4 (1, 4, 5, 7)	Medium	Low	Y	N	Y	High
74	5 (1, 4, 5, 7, 8)	Medium	Low	Y	N	Y	High
75	3 (4, 5, 7)	Medium	Low	Y	N	Y	High



Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
76	6 (2, 3, 5, 6, 7, 9)	Medium	Low	Y	N	Y	High
77	3 (3, 4, 9)	High	Low	Y	N	Y	High
78	2 (3, 4)	High	Low	Y	N	Y	High
79	3 (5, 6, 7)	Medium	Low	Y	N	Y	High
80	6 (1, 2, 3, 5, 6, 7)	Medium	Low	Y	Y HMGP	Y	High
81	1 (5)	Medium	Low	Y	N	Y	Low
82	3 (5, 7, 8)	Medium	Low	Y	N	Y	High
83	4 (3, 5, 7, 8)	Medium	Low	Y	N	Y	High
84	4 (5, 6, 7, 24)	Medium	Low	Y	N	Y	High
85	5 (2, 6, 7, 8, 9)	Medium	Low	Y	Y HMGP	Y	High
86	3 (7, 8, 24)	Medium	Low	Y	N	Y	High
87	3 (7, 8, 24)	Medium	Low	Y	N	Y	High
88	6 (1, 2, 3, 5, 6, 8)	Medium	Low	Y	N	Y	High
89	6 (2, 3, 5, 6, 7, 8)	Medium	Low	Y	N	Y	High
90	6 (2, 3, 5, 6, 7, 8)	Medium	Low	Y	N	Y	High
91	2 (4, 7)	Medium	Medium	Y	Y HMGP PDM	Y	High
92	2 (4, 7)	High	Low	Y	N	Y	High
93	3 (4, 7, 19)	High	Low	Y	Y HMGP PDM	Y	High
94	4 (4, 5, 7, 8)	Medium	Low	Y	Y HMGP PDM FMA	Y	High
95	4 (4, 5, 7, 8)	Medium	Low	Y	Y HMGP PDM FMA	Y	High
96	3 (2, 7, 11)	Medium	Low	Y	Y HMGP PDM	Y	High
97	2 (3, 8)	Low	Low	Y	N	Y	High
98	3 (2, 3, 8)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
99	3 (2, 3, 8)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
100	2 (7, 8)	Medium	Low	Y	Y HMGP PDM	Y	High
101	3 (6, 7, 24)	Medium	Low	Y	N	Y	High



Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
102	3 (6, 7, 24)	Medium	Low	Y	N	Y	High
103	4 (8, 9, 16, 17)	High	Low	Y	Y HMGP PDM FMA	Y	High
104	4 (8, 9, 16, 17)	High	High	Y	Y HMGP PDM FMA	Y	High
105	4 (8, 9, 16, 17)	High	High	Y	Y HMGP PDM FMA	N	High
106	4 (8, 9, 16, 17)	High	High	Y	Y HMGP PDM FMA	N	Medium
107	4 (8, 9, 16, 17)	High	High	Y	Y HMGP PDM FMA	N	Medium
108	4 (8, 9, 16, 17)	High	Low	Y	Y HMGP PDM FMA	Y	High
109	5 (8, 9, 16, 17, 18)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
110	3 (16, 17, 18)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
111	3 (13, 16, 17)	High	High	Y	Y HMGP PDM	N	Medium
112	4 (13, 16, 17, 23)	Medium	Low	Y	Y HMGP PDM FMA	N	Medium
113	4 (10, 13, 16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
114	4 (10, 13, 16, 17)	Medium	High	N	Y HMGP PDM FMA	N	Low
115	4 (2, 6, 7, 8)	Medium	Low	Y	N	Y	High



Initiative Number	# of Objectives met (Specific Objective Numbers in Parentheses)	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
116	4 (10, 13, 16, 17)	Medium	Medium	Y	Y HMGP PDM FMA	Y	High
117	3	Medium	Low	Y	N	Y	Low
118	2 (6, 8)	Medium	Low	Y	Y HMGP PDM FMA	Y	High
119	1 (13)	Medium	Medium	Y	Y HMGP PDM FMA	Y	Medium
120	4 (16, 17, 23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	Y	High
121	4 (16, 17, 23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
122	4 (16, 17, 23, 24)	Medium	High	N	Y HMGP PDM FMA	N	Low
123	4 (16, 17, 23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
124	5 (16, 17, 18, 23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	N	Medium
125	2 (23, 24)	Medium	High	N	Y HMGP PDM FMA	N	Low
126	5 (16, 17, 18, 23, 24)	Medium	High	N	Y HMGP PDM FMA	N	Low
127	2 (23, 24)	Medium	Medium	Y	Y HMGP PDM FMA	Y	High



HMPG-Hazard Mitigation Grant Program

PDM-Pre-Disaster Mitigation Program

FMA-Flood Mitigation Assistance Program

*"Yes" indicates the strategy is likely to fall within the objectives of the Township budget or grant program. Does not indicate a project will automatically be funded.

Benefits

- High *Project will have an immediate impact on the reduction of risk exposure to life and property.*
- Medium *Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.*
- Low *Long term benefits of the project are difficult to quantify in the short term.*

Cost

- High *Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.*
- Medium *Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.*
- Low *Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.*

Timeframe

- Short *1-5 years*
- Long *5 years or greater*
- Ongoing *Ongoing*

Priority

- High *A project that meets multiple plan objectives, benefits exceeds cost, has funding secured under existing programs or authorizations, or is grant eligible, and can be completed in 1 to 5 years (i.e., short term project) once project is funded.*
- Medium *A project that meets at least 1 plan objective, benefits exceeds costs, funding has not been secured and would require a special funding authorization under existing programs, grant eligibility is questionable, and can be completed in 1 to 5 years once project is funded.*
- Low *Any project that will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is considered long term (5 to 10 years).*