

TOWNSHIP OF BRICK FLOODPLAIN MANAGEMENT PLAN ANNUAL PROGRESS REPORT

August 27, 2018

Prepared for:
Township of Brick, New Jersey

Prepared by:



TETRA TECH

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TOWNSHIP OF BRICK FLOODPLAIN MANAGEMENT PLAN ANNUAL PROGRESS REPORT

BACKGROUND

The Township of Brick developed a floodplain management plan to enhance floodplain management and mitigate flood impacts in the community by identifying resources, information, and strategies for flood risk reduction. To prepare the plan, the Township of Brick organized resources, assessed risks from flooding, developed planning goals and objectives, reviewed mitigation alternatives, and developed an action plan to address probable impacts from floods. The plan can be viewed on-line at:

<http://bricktownship.net/index.php/floodplain-maps-information/floodplain-management-plan/>

The Floodplain Management Plan was prepared in accordance with the National Flood Insurance Program (NFIP) Community Rating System (CRS) floodplain management planning requirements. As part of the plan development process and as required by CRS, the Township of Brick developed a plan maintenance procedure that describes how the plan will be monitored, evaluated, and updated.

The Township has recently been accepted into the CRS program with a Class 6 rating. CRS is a voluntary program that encourages floodplain management activities that exceed the minimum requirements of the NFIP in exchange for flood insurance premium discounts for policy holders within the participating communities. The Township's Class 6 rating means that flood insurance policy holders within special flood hazard areas receive a 20 percent discount on premiums.

Purpose

The purpose of this report is to provide an update on the implementation of the mitigation initiatives identified in the Floodplain Management Plan. The objective is to ensure that there is a continuing planning process that will keep the Floodplain Management Plan dynamic and responsive to the needs and capabilities of the Township of Brick and stakeholders and to meet a portion of the annual certification requirements for CRS. This report includes the following:

- Summary of any flood hazard events that occurred during the reporting period and the impact these events had on the planning area
- Changes in risk exposure in the planning area
- Review of mitigation success stories
- Review of continuing public involvement
- Brief discussion about why targeted strategies were not completed
- Re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term one because of new funding)
- Recommendations for new projects
- Changes in or potential for new funding options (grant opportunities)
- Impact of any other planning programs or initiatives that involve flood-related hazard mitigation.

Reporting Period

The reporting period for this progress report is August 2017 through August 2018.



Planning Committee

It was determined that a Planning Committee, similar to the stakeholder committee that oversaw the plan development, should remain intact through the plan implementation period. The minimum task of the Planning Committee is the evaluation of the progress of the action plan. The membership of the Planning Committee is expected to change overtime and such changes in membership are to be documented in the progress report. For this reporting period, the Planning Committee membership is as indicated in Table 1.

Table 1. Flood Management Planning Committee

	Member	Title	Representing	Committee Title	Gov't	Non-Gov't Stakeholder	Non-voting
	John G. Ducey	Mayor	Township of Brick	Ex-Officio Member	-	-	x
	Jim Fozman	Councilman	Township of Brick	Council Representative	-	-	x
	Art Halloran	Councilman	Township of Brick	Council Rep. /Barrier Island Resident			x
	Joanne Bergin	Business Administrator	Township of Brick		-	-	x
1	Tara Paxton, AICP	Brick Township Planning	Township of Brick AICP/PP Planner	Chair/Resident	x		
2	Michael Fowler, AICP	Brick Township Planning	Township of Brick CRS Coordinator	Deputy Chair	x		
3	Elissa Commins (Alternate-Kurt Otto)	Brick Township Engineer	Township of Brick	Floodplain Administrator	x		
4	Ken Somers	Brick - DPW Director	Public Works Director/ Resident	Resident	x		
5	Joe Pawlowicz (Alt-Joe Gilsenin)	OEM Coordinator	Emergency Management Office/ Resident	Resident	x		
6	Dan Newman (Alt-Ken Kiseli)	Brick - Construction Code Official	Township of Brick/ Resident	Resident	x		
7	Paul Mummolo	Councilman	Township of Brick	Planning Board Representative/ Resident	x		
8	Lisa Auermueller	JCNRR	Stakeholder/ Academia	Non govt stakeholder		x	
9	L. Stanton Hales, Jr.	Barnegat Bay Partnership	Stakeholder/ Watershed Committee	Non-govt stakeholder		x	
10	Rob Karl (Steve Specht)	Brick Township MUA	Brick MUA	Stakeholder		x	



	Member	Title	Representing	Committee Title	Gov't	Non-Gov't Stakeholder	Non-voting
	(Alternate - Steven Specht)						
11	Thomas Kaczmarek	Public	Resident	Resident		x	
12	Ron Jampel	Public	Resident	Resident		x	
13	H.L Van Varick	Public	Resident	Resident		x	
14	Brian Martin	Public	Resident	Resident		x	

Progress Report Approval

The Floodplain Management Planning Committee reviewed and provided comments on a draft progress report at its meeting held on June 27, 2018. The final report was reviewed and approved at its semi-annual meeting held on August 16, 2018.

SUMMARY OVERVIEW OF THE PLAN'S PROGRESS

The performance period for the Floodplain Management Plan became effective on August 9, 2016, with adoption by the Township Council. The Plan had been previously adopted by the Planning Board on March 30, 2016. The initial performance period for this plan will be five years, with an anticipated update to the plan to occur before October 1, 2021. As of this reporting period, the performance progress for this plan is considered to be 39% complete. At the inception of this reporting period the Floodplain Management Plan identified 137 flood hazard mitigation initiatives. As of this reporting period, the overall progress since the plan inception is summarized below.

- 48 out of 137 initiatives (35%) reported ongoing action toward completion.
- 6 out of 137 initiatives (4%) reported no action taken.
- 53 out of 137 initiatives (39%) were completed
- Of the completed initiatives, 32 out of the 53 initiatives (23% of the total) were indicated as complete but part of ongoing programs.
- 23 out of 137 initiatives (17%) were removed since the inception of the plan due to elimination of a program.
- 9 out of 137 initiatives (7%) were added since the inception of the plan.

FLOOD EVENTS WITHIN THE PLANNING AREA

During the reporting period, there were three flood events in the planning area that had a measurable impact on people or property. A summary of these events is as follows:

- **September 19, 2017 (Nor'easter)** - Moderate coastal flooding affected Ocean County with the evening high tide on Tuesday, September 19. Widespread roadway flooding was reported in the communities along tidal waters and many roads were closed. The following tidal gauge reached the moderate flooding threshold: Atlantic City Inside Thorofare.
- **March 3-4, 2018 (Nor'easter)** - A cold front stalled across the region on March 1st. Meanwhile, a wave of low pressure developed along this front in the Ohio Valley and moved east, deepening just southeast of Long Island on March 2nd. This large and very deep area of low pressure moved slowly east over the open waters of the North Atlantic Ocean through Sunday March 4th. This



lead to a variety of weather hazards during this time frame. Strong Northwest winds with gusts up to around 60 mph occurred on March 2nd and 3rd. This led to widespread damage to trees and power lines, causing extensive power outages across the region. Minor coastal flooding over multiple tide cycles occurred along the New Jersey coast March 2nd through 4th. Moderate flooding occurred during the morning high tide of Saturday the 3rd in Monmouth County, most of the NJ oceanfront Saturday evening and again Sunday morning the 4th. Moderate coastal flooding led to a number of road closures in the coastal communities of Ocean County. The peak tide was 2.82 feet MLLW at Bayshore, 4.52 feet MLLW at Barnegat Light and 5.88 feet MLLW at Tuckerton. Heavy rainfall occurred in New Jersey and Eastern Pennsylvania on March 1st and 2nd, with widespread rainfall amounts of 1 to 2 inches. In addition, areal and minor small stream flooding also occurred. As the rain changed to snow on the 2nd, localized heavy snowfall occurred, particularly over the higher elevations. Southeast of the New Jersey Turnpike and Interstate 95, up to around 3 inches of snowfall was observed.

- **August 13, 2018 (Flash Flood)** – A stalled thunderstorm system dropped eight inches of rain in a three to four hour period resulting in significant flash flooding. The Greenbriar I community sustained heavy flooding with some homes sustaining floodwaters as deep as four to six feet. 100 people were evacuated. 100 homes were impacted primarily on Markum Road, Vaughn Court, and Kingsley Court. Sutton Village condominium complex also sustained flood damages. The flooding took place in an area that is not a regulated floodplain, meaning few residents had flood insurance.

In addition to these events, a number of other flood occurrences were noted by the Planning Committee:

- In Normandy, there were four recorded instances of water flooding over the bulkhead.
- Intrusion from saltwater regularly corrodes Township infrastructure.
- A number of areas in the Township continue to regularly experience nuisance flooding, including Shore Acres, Cherry Quay, Normandy Beach, Beaver Dam Creek Islands and Seaward Harbor. Specific streets documented with minor flood events for which the Township public works crew needed to ‘respond’ to flooding events as documented by the Township include:

- | | |
|---------------------|--------------------|
| ○ Vanard Drive | ○ Fieldcrest Drive |
| ○ Shoreline Drive | ○ Spruce Court |
| ○ Broad Avenue | ○ Cedarhurst Drive |
| ○ Arrowhead Drive | ○ Northrup Drive |
| ○ Gale Road | ○ Vannote Drive |
| ○ Rochester Drive | ○ Cumberland Drive |
| ○ Hamilton Drive | ○ Island Drive |
| ○ Brower Drive | ○ North Drive |
| ○ Holly Court | ○ South Drive |
| ○ Canis Drive | ○ Mandalay Road |
| ○ Tilford Boulevard | ○ Liverpool Drive |
| ○ Godfrey Lake | ○ 19th Avenue |

CHANGES IN RISK EXPOSURE IN THE PLANNING AREA

The following changes in the Township were noted by the Planning Committee as being relevant to flood risk exposure in the planning area:

- After weather and mechanical delays, the beach replenishment project is nearing completion along the oceanfront, covering the steel revetment wall that was previously installed. The



replenishment has resulted in wider beaches and the re-establishment of the dune system lost in Superstorm Sandy. Replenishment is expected to be completed in September.

- Outfalls in the Township continue to back up at high tide and during storms. Winds continue to push up the Bay exacerbating these issues in fall, winter and spring months. To combat this issue, check valves have been installed on outfall pipes in Shore Acres and Vannote Drive to prevent backflow during coastal flooding events. Additional installation of check valves are planned dependent on funding.
- In Brick Plaza, retention cells have been constructed for stormwater as a form of green infrastructure. These retention cells are designed with rain gardens to reduce dependence on stormwater pipes and recharge groundwater.
- The Normandy Beach redevelopment on the barrier island has begun. The redevelopment will result in 21 houses on a lot that was formerly a church. It is anticipated that the redevelopment will result in a reduction of impervious surface area on the lot.
- The proposed Camp Osborne redevelopment will involve redevelopment of the bayside and 6-7 houses in the median area. Although redevelopment of the oceanside has been discussed, firm plans have not been put in place.
- Township professionals are working with other property owners to ensure compliant structures replace those that were destroyed by Sandy.
- Upcoming map revisions may result in unforeseen changes in regulatory flood elevations.

FLOOD MITIGATION SUCCESS STORIES

The Planning Committee would like to highlight the following flood mitigation success stories that occurred during the reporting period:

- Several Township parks have been enhanced with stormwater basins and green infrastructure.
- The Rutgers New Jersey Agricultural Experiment Station Cooperative Extension has a Section 319 Nonpoint Source Management Program grant for work to reduce nonpoint source pollution in Township Parks.
- Stevens Institute of Technology and the New Jersey Institute of Technology also have a 319 Nonpoint Source Management Program grant for the reduction of nitrogen and phosphorus in stormwater runoff.
- Generator projects at the municipal building and Department of Public Works building are preparing to go to bid.
- The Lakewood Gardens development has had four rain gardens installed.
- 539 trees have been planted from a combination of “no net loss” and park landscaping efforts.
- Rowan University is developing a flood event model for Brick Township that will offer more fine-tuned flooding information. Data developed from this model will be shared with FEMA.
- \$102,000 has been awarded from FEMA for the funding of two major flood stations at locations that will be on the mainland.
- The Ocean County Hazard Mitigation Plan is undergoing an update which will involve the identification of Brick Township mitigation actions and the profiling of flood related hazards.
- The Barnegat Bay Partnership Comprehensive Management Plan is nearing completion and incorporates discussion of flooding.

CONTINUING PUBLIC INVOLVEMENT

No public meetings, other than the Planning Committee progress report meetings, were held specifically on the Floodplain Management Plan during the reporting period; however, the Township conducted a number of outreach activities related to CRS participation and flood education and awareness. Limited



comments were received on the Floodplain Management Plan, focused on suggestions for mitigation projects. The Planning Committee discussed these suggestions when updating planning actions for this planning period.

REVIEW OF THE ACTION PLAN

Table 2 reviews the action plan, reporting the status of each initiative. Reviewers of this report should refer to the Floodplain Management Plan for more detailed descriptions of each initiative and the prioritization process.



Table 2. Action Plan Matrix

Lead Agency	Timeline	Priority	Comment (Describe progress or changed priority)	Status
Brick Township (BK)				
Initiative BK-001—Generators at the high schools were determined to not be a priority for the municipality. A scope change was approved to install generators at the municipal building to power the police department for essential services and the department of public works.				
BT Police	Short Term (<5yrs.)	High	The Scope of Work for the HMGP Grant was approved and a new generator will be installed at the Municipal Building and the Department of Public Works will have an existing generator that was left from the National Guard retrofit and installed by the end of 2018. A smaller generator was purchased and installed at the barrier island command center.	In Progress
Initiative BK-002—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				
BT Engineering	Short Term (<5yrs.)	High	This initiative is redundant with other initiatives. Installation of generator at Municipal Complex is addressed in BK-001 and Department of Public Works will be added to the list of locations needing generators. The Police Sub-Station/ Pioneer Hose Fire Company Barrier Island Forward Command Post has had a generator installed as addressed in BK-052.	Discontinue
Initiative BK-003—Develop an alternate fuel supply for the emergency generators at the William Miller Water Treatment Plant				
BT MUA	Short Term (<5yrs.)	High	BTMUA staff assessed the issue and determined that it was preferable to continue with diesel fuel based on specifications of generators. Three generators were installed (with one for redundancy) and storage for fuel for 72 hours was included in project design in 2/2017.	Complete
Initiative BK-004—Upgrade sewer system generators				
BT MUA	Short Term (<5yrs.)	High	Natural gas generators were installed for all Sandy Impacted Wastewater Pump Stations (WWPS) that underwent hazard mitigation improvements including Breton Road, Fifth Street, Eastern Lane, Vanada Woods, Mantoloking Road and Laurelton WWPS. The work was completed in 2017. Natural gas generators were also installed for Lanes Mill, Sloping Hill, Riviera Drive and Pine Meadows WWPS. This work was also completed in 2017. Natural gas generators will also be installed for the Laurel Brook, Green Briar II and Burnt Tavern Manor WWPS. The project design is 95% complete and funding is being pursued through the New Jersey Infrastructure Bank (NJIB). Upgrades to the generators at Brick Utilities’ three (3) largest pump stations, Riverside Drive, Drum Point Road and Bay Harbor Blvd. are included in the 5 year capital plan.	In Progress



Initiative BK-005—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				
BT Board of Education	Short Term (<5yrs.)	Medium	Funding was received for generators at some of the transition centers; however, the Township has submitted a request for this funding to be reallocated (see BK-001).	In Progress
Initiative BK-007—Develop a FEMA 361 Shelter for New Police Department Station				
BT OEM	Short Term (<5yrs.)	Medium	Discussions are continuing with the architect regarding inclusion of a FEMA 361 shelter in the construction of the barrier island police, fire and EMS station.	In Progress
Initiative BK-008—Enhance emergency evacuation route signage, especially in Cherry Quay. However, all routes will be reviewed.				
BT OEM	Short Term (<5yrs.)	Medium	OEM will go out and map evacuation routes to see what changes have been made. Coordination with County needs to occur as they are responsible for many of the roads.	In Progress
Initiative BK-009—Elevate evacuation routes, including South Drive in Princeton Midstreams, Snake Road, 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.				
BT Engineering	Short Term (<5yrs.)	High	Roadway Construction Complete	Complete
Initiative BK-010—Barnegat Bay currently being studied by Army Corp of Engineers to evaluate control of bay elevation. Any roadway elevation projects should be held until Corp findings are released.				
BT Engineering	Long Term (5+yrs.)	Medium	There are many obstacles to implementing initiative including logistics, funding, and environmental regulations. Due to the scale and complexity, this would be better suited as an Army Corps of Engineers project. Initiative is removed pending Army Corps of Engineers cooperation.	In Progress
Initiative BK-011—Maintain current drainage systems at appropriate care level to keep storm drains clear from debris to prevent flooding.				
BT DPW	Ongoing	High	This initiative is an ongoing initiative that is considered complete for the reporting period. There are approximately 8,600 storm drains in the Township. After Sandy, all critical storm drains in the floodplain were cleaned by a contractor. Subsequent to this maintenance activity, a new jet/vac, which can be used 12 months per year was purchased. As of June 2017, 333 basins have been cleaned. As of July 2018, the jet vac continues to be used to clean storm basins. Approximately 400 more basins have been cleaned.	Complete



Initiative BK-012—Increase conveyance through storm sewer and channels by dredging, culvert sizing, debris removal, de-snagging, and sewer flushing				
BT DPW	Short Term (<5yrs.)	High	Many of these activities are being conducted as part of the maintenance care discussed in BK-011 and are, therefore, redundant. In addition, the issues associated with flooding and the conveyance system in the Township are a result of tidal flooding, not a result of inadequately sized culverts.	Discontinue
Initiative BK-013—Clean all critical storm drains and keep drainage facilities free from debris - This action is duplicative with Action BK-011. We combined the action and will continue cleaning storm drains and reporting progress in Action BK-011.				
BT DPW	Ongoing	High	There are approximately 8,600 storm drains in the Township and it is not possible to clean all 8,600 in one year. Currently, DPW is operating in a response only mode, meaning drains are only cleaned as issues arise. With additional funding, man power, and another jet vac the Department would be able to develop a schedule that would result in less need for response and a more efficient use of resources. 973 storm drains were cleaned in 2016.	Discontinue
Initiative BK-014—Improve/repair failing septic systems.				
BT Code Enforcement	Short Term (<5yrs.)	Medium	Approximately 98% of the Township is on the public sewer system. The Township does not have jurisdiction over any septic tanks as they are regulated by the NJ State Department of Health.	Discontinue
Initiative BK-015—Promote I&I protection of sewer systems				
BT MUA	Ongoing	Medium	This initiative is an ongoing initiative that is considered complete for the reporting period.. Sewer mains are continuously monitored using Closed Circuit Television Inspection and sewer replacement/rehabilitation contracts are administered accordingly. This work will continue to occur with regularity given the Township’s high water table.	Complete
Initiative BK-016—Elevate the requirement from dry wells in tidal flood areas				
BT Engineering	Short Term (<5yrs.)	Medium	As a result of a policy change, the Township is no longer requiring a dry well system in high water table, tidally influenced areas. No additional action needed.	Complete
Initiative BK-017—Valve installation in areas identified completed				
BT Engineering	Short Term (<5yrs.)	Medium	Tideflex valves are installed as roads jobs are completed in tidal areas. Two were installed on Broad Ave, one on South Drive and one on Shore Drive in Shore Acres. Additionally, a valve was installed on Paul Jones drive, but it has been repeatedly knocked out.	Complete



<p>Initiative BK-018—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.</p>				
BT Engineering	Long Term (5+yrs.)	High	This initiative was completed in Fall of 2016. An easement was not required as the Township already owns 15 feet of property.	Complete
<p>Initiative BK-019—Perform a study to determine the feasibility of the installation of an outlet structure on Cherry Quay by Boom Lane. Such a structure should be constructed to maintain a consistent water surface elevation range. Overflow could 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 could be provided for when the pond elevation reaches a flood stage that cannot be conveyed hydraulically through the existing drainage system.</p>				
BT Engineering	Short Term (<5yrs.)	High	Lack of funding. Initiative wording revised.	No Progress
<p>Initiative BK-020—Upgrade and improve infrastructure and capacity to allow for uninterrupted service during hazard events: i. Flood proof the raw water pump station (RWPS) located on the Metedeconk River; ii. Flood proof the wastewater stations located on Drum Point Road and Riverside Drive; iii. Install emergency generators at three major water booster pump stations; iv. Enhance local communications; v. Convert pump stations to submersible pumps.</p>				
BT MUA	Long Term (5+yrs.)	High	This initiative was divided into two initiatives to be reported on separately (see Also BK-131). i. The raw water pump station (RWPS) was flood proofed on the Metedeconk River using HMGP funds. The floodproofing slide plate equipment has been installed at the doors and windows at the RWPS; impacted electrical/instrumentation equipment has been raised. The sump pump installation for the electrical manhole adjacent to the RWPS should be completed in 2018. ii. For the Riverside Drive and Drum Point Road wastewater stations, procurement of the floodproofing equipment should be completed by the 3rd quarter of 2018 and the installation should be completed by the 4th quarter of 2018. iii. Emergency generators were installed at three major water booster pump stations using HMGP Energy funds. iv. During an emergency event, Brick Utilities has the capability of utilizing walkie-talkies and truck radios as a back-up to cellular telephone communication. v. The design for the conversion to submersible wastewater pump stations for Laurel Brook, Burnt Tavern Manor, Cape Breton, Sea View Village, Lanes Mill, Sloping Hill, Riviera Drive and Pine Meadows is 95% complete and funding is being pursued through the New Jersey Infrastructure Bank (NJIB). It should be noted that Sea View and Laurel Brook are also being raised to one foot above the base flood elevation.	In Progress



Initiative BK-021—Snake Road Partially Elevated. Portions of Broad Avenue Elevated. Roads in need of additional elevation include Vanard Dr., Mathis Drive, 6th Avenue and Channel Drive				
BT Engineering	Short Term (<5yrs.)	Low	Elevation was conducted solely for vehicular access as during flooding resulting from lunar tide events. The Township is pursuing a grant to elevate the road a full two feet. Additional elevation is addressed by BK-009.	In Progress
Initiative BK-022—Road partially Elevated for elimination of regular nuisance flooding; however, design for fully elevated road given to CME associates to have "shovel ready" project when and if federal funding becomes available.				
BT Engineering	Short Term (<5yrs.)	Medium	Elevation was conducted solely for vehicular access as during flooding resulting from lunar tide events in August of 2016. The Township is pursuing a grant to elevate the road a full two feet. Additional elevation is addressed by BK-009.	In Progress
Initiative BK-023—Consider raised roads with side protection, which can dual function as levees, near Barnegat Bay				
BT Engineering	Short Term (<5yrs.)	Low	No progress. The Township is considering this action on roads such as Channel Drive. Implementation is dependent on additional funding/grants.	No Progress
Initiative BK-024—Harden existing infrastructure				
BT Engineering	Ongoing	High	Some improvements have been made as addressed in other initiatives, such as improvements to the police sub-station, road elevations, and pump stations.	Discontinue
Initiative BK-025—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.				
State of NJ	Ongoing	High	The Jordan Road White Bridge is undergoing replacement. Anticipated completion is spring 2019. Route 88 is scheduled to be widened, but may not be elevated.	In Progress
Initiative BK-026—Improve street sweeping methods and frequencies to reduce pollutants entrained in runoff from impervious streets and parking lots.				
BT DPW	Ongoing	Low	The Township has purchased a new vacuum based sweeper that allows year-round street sweeping.	In Progress



Initiative BK-027—Retrofit structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation and inform candidates/public as appropriate. 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. 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.				
BT Planning	Long Term (5+yrs.)	High	Acquisition is not currently a priority for the Township and will be split off as a separate, new action (see BK-132). The current priority is retrofitting and ensuring that residents' homes are in compliance with floodplain regulations. A number of properties, including repetitive loss properties have been elevated. Some elevations occurred as part of the RREM program.	In Progress
Initiative BK-028—Support funding for acquisition or elevation of three Severe Repetitive Loss properties. Assistance will be provided to homeowners who are seeking grant or insurance funding to become compliant.				
BT Planning	Long Term (5+yrs.)	High	Two severe repetitive loss properties have been elevated.	In Progress
Initiative BK-029—Support funding for acquisition or elevation of 20 Repetitive Loss properties. Township will continue to assist residents who are applying for grant or insurance funding to elevate their structures to be compliant.				
BT Planning	Long Term (5+yrs.)	High	The Township applied for a Hazard Mitigation Assistance grant for 10 properties about 4 years ago. The application was not chosen for funding. The Township will consider reapplying after reviewing the funding priorities for the next grant cycle.	In Progress
Initiative BK-030—Support and promote the retrofit of buildings to meet hurricane-force wind needs				
BT Code Enforcement	Long Term (5+yrs.)	High	This is addressed through uniform construction code as per Bulletin # 13-1A.	In Progress
Initiative BK-031—Support the building of new critical facilities outside of the floodplain and retrofit existing critical facilities that are located within the floodplain to be flood proofed, where possible.				
BT Planning	Long Term (5+yrs.)	High	The only critical facilities located within the floodplain are the police and fire substations, which are located on the same property and are auxiliary facilities. Other initiatives are looking at reconstruction of these facilities to more resilient standards.	In Progress
Initiative BK-032—Increase the height of the bulkheads along Barnegat Bay (with or without movable panels) as appropriate				
BT Engineering	Short Term (<5yrs.)	Low	Currently, the State limits bulkheads to 18 inches. Moveable panels may not be technically feasible.	Discontinue



Initiative BK-033—Construct new metal sheet bulkheads (with or without movable panels) and incorporate check valves inside the bulkheads as appropriate				
BT Engineering	Short Term (<5yrs.)	Low	This initiative is redundant with BK-017.	Discontinue
Initiative BK-034—Construct new concrete flood walls and flood gates (with or without movable flood panels) and incorporate check valves inside the walls as appropriate				
BT Engineering	Short Term (<5yrs.)	Low	This initiative is not a Township priority and is not likely to be feasible given topographic conditions, amount of private property impacted, and logistical feasibility.	Discontinue
Initiative BK-035—Construct new levee/dike including culvert or pipe with flap gate/check valve as appropriate				
BT Engineering	Short Term (<5yrs.)	Low	This initiative is not a Township priority and is not likely to be feasible given topographic conditions, amount of private property impacted, and logistical feasibility.	Discontinue
Initiative BK-036—Construct sluice gates or in-water barriers for dredged lagoons as appropriate				
BT Engineering	Short Term (<5yrs.)	Low	This initiative is beyond the capabilities of the Township and is more appropriately considered as an Army Corps of Engineers project. Removed pending an Army Corps study or recommendations	Discontinue
Initiative BK-038—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				
BT Engineering	Short Term (<5yrs.)	High	This initiative is redundant with BK-067.	Discontinue
Initiative BK-039—Construct stormwater gravel wetlands, which rely on a dense root mat, crushed stone, and an anaerobic and microbe-rich subsurface.				
NJ DOT	Short Term (<5yrs.)	High	Detention basins on Route 70 were converted to gravel wetlands with HMGP funds. Technique will be considered in future projects as basins are redone or fail.	In Progress
Initiative BK-040—Township officials provide technical information and guidance, when needed				
BT Engineering	Ongoing	Medium	This is a daily, ongoing activity. This initiative is an ongoing initiative that is considered complete for the reporting period. The availability of this service has been widely publicized.	Complete



Initiative BK-041—Provide information on residential, business, and natural resource grant programs to residents				
BT Planning	Ongoing	Medium	This is an ongoing activity as information is provided through various means, such as enforcement letters, Summerfest, and long term recovery meetings. This initiative is an ongoing initiative that is considered complete for the reporting period.	Complete
Initiative BK-042—Develop an app to link to public website for pre-, during- and post-disaster information.				
BT Planning	Short Term (<5yrs.)	Medium	The Township has started use of Nixle, which limits the need for the development of an app. Residents are encouraged to sign up for Nixle alerts. This action will be considered an ongoing capability of the Township.	Complete
Initiative BK-043—Create website for pre-storm information dissemination, including shelter locations				
BT Planning	Short Term (<5yrs.)	Medium	This information is provided on the Township website.	Complete
Initiative BK-044—Acquire computers for senior communities so that residents have access to information on disaster mitigation, preparedness, response and recovery				
BT Administrator	Short Term (<5yrs.)	Medium	The need for this initiative is unclear and there is a lack of funding to support implementation.	Discontinue
Initiative BK-045—Continue outreach programs in schools to include children in outreach and to improve families’ disaster response capabilities. Provide materials.				
BT Police	Ongoing	High	The next step for implementation will be to research available lesson plans and then incorporate them as appropriate into existing programs, such as the fire department's school-based programming. Developed coloring book to be distributed to the schools in concert with fire prevention education.	In Progress
Initiative BK-046—Acquire critical warehouse infrastructure components				
BT OEM	Ongoing	Medium	The Township has purchased a canopy to protect critical equipment that has been exposed to the elements at DPW. Canopy design will be able to hold solar panels in the future if so desired. A storage building is also slated for completion at Drum Point Sports Complex for the Parks Department in 2017-delayed - not completed in June 2018.. There is also a plan in progress to build a storage facility behind the municipal building, obtained CAFRA permit. Awaiting award of construction contracts. Est. 2019.	In Progress



Initiative BK-047—Develop field-deployed electronic mapping system				
BT GIS/Planning	Short Term (<5yrs.)	Medium	The Township is using field deployed tracking methods. The work flow software is tied to GIS mapping.	Complete
Initiative BK-048—Obtain additional high wheeled vehicles for rescue operations.				
BT OEM	Short Term (<5yrs.)	Low	The Township has obtained one mine-resistant ambush protected (MRAP) vehicles and four high-wheeled military box trucks, for a total of five vehicles. Vehicles were obtained as of August 2016.	Complete
Initiative BK-049—Upgrade and automate the EOC to ensure state-of-the-art audio/visual equipment, sufficient space and security, and stand-alone ability. Capital funds have been allocated for the design of facilities re-development.				
BT OEM	Long Term (5+yrs.)	Medium	There is a plan to move the current Detective's Bureau and build a new EOC, which will be state of the art.	In Progress
Initiative BK-050—Develop reverse 911 system to assist in communication for all hazards				
BT OEM	Short Term (<5yrs.)	High	The Nixle notification system has been deployed in the Township as of August 2016.	Complete
Initiative BK-051—Support continuous operations of Emergency Support Services for the Barrier Island				
BT OEM	Ongoing	High	The Barrier Island is now a permanent district, so police officers are always assigned to the area 24/7.	Complete
Initiative BK-052—Mitigate Barrier Island Police Substation and Pioneer Fire Station to protect from flood related hazards				
BT Police	Short Term (<5yrs.)	High	A generator was purchased and it is elevated to at least one foot above the base flood elevation. There is an architect coming in July to begin discussion of a police, fire, and EMS station - this is up and running. Township staff will research grants that may be used to supplement local funding for construction/equipment for the new station.	In Progress
Initiative BK-053—Create system to document FEMA reimbursable expenses. - Pam O'Neill is continually working on FEMA reimbursements for every declared storm event.				
BT Planning	Ongoing	High	An Access database has been developed and there is a dedicated staff person assigned to the task.	Complete
Initiative BK-054—Capture/survey high water marks after flood events.				
BT Engineering	Ongoing	High	This initiative is an ongoing initiative that is considered complete for the reporting period. The Township routinely captures high water marks after flood events.	Complete



Initiative BK-055—Utilize post-disaster assistance				
BT Administrator	Ongoing	High	Funded eight post-disaster plans and received generators through post-Sandy assistance. The plan development is complete as of July 2016. The generator acquisition is ongoing, but is addressed by BK-001.	Complete
Initiative BK-056—Obtain electric grid maps to assist in recovery after disruption of power - This is completed - OEM has all current paper and gis mapping.				
BT OEM	Short Term (<5yrs.)	High	A portion of the paper maps have been secured during the reporting period.	Complete
Initiative BK-057—Implement/participate in regional precipitation monitoring networks and other programs that enhance flood threat recognition capability				
BT OEM	Ongoing	Medium	The Township continues to work with MUA and Barnegat Bay Partnership on grants that they receive for such activities and is currently working with DEP on modifications to infiltration requirements regulations	In Progress
Initiative BK-058—Identify critical facilities/infrastructure that require early notification during flood responses				
BT OEM	Ongoing	Medium	Facilities that require early notification have been identified.	Complete
Initiative BK-059—Maintain existing data and gather new data needed to define risks and vulnerability				
BT MUA	Ongoing	High	This initiative is an ongoing initiative that is considered complete for the reporting period. BTMUA maintains continuous tide/salinity monitoring stations in the vicinity of Forge Pond and all data are archived in a database to support risk and vulnerability evaluations. The monitoring network currently consists of four stations, and will be expanded as data gaps are identified. A new station is likely to be installed near Route 70.	Complete
Initiative BK-060—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 covers				
BT MUA	Short Term (<5yrs.)	High	The highest priority of the Metedeconk River Watershed Management Plan was to develop a model stormwater ordinance that included more emphasis on low impact development and green stormwater infrastructure. The ordinance has been crafted to prioritize the use of progressive green infrastructure techniques and is pending approval by NJDEP. The Township of Brick may pilot adoption of the ordinance.	In Progress
Initiative BK-061—Assess the stormwater management BMPs in other parts of the country for potential benefit to the Township				
BT MUA	Ongoing	High	Stormwater BMPs have been assessed as part of the model ordinance development. Advances in Stormwater BMP/Green Infrastructure designs are being monitored and opportunities to incorporate these advances locally are continually being explored (e.g., constructed stormwater wetland, blue roof, etc.).	In Progress



Initiative BK-062—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. This is an ongoing project.				
BT DPW	Ongoing	High	This is an ongoing action that is considered complete for this reporting period. Information will be provided on progress taken when stormwater report is received.	Complete
Initiative BK-063—Encourage compliance with NJ Department of Transportation legislation on state highway stormwater management issues for Routes 9, 35, 37, 70, 72, 88 and 166				
BT Engineering	Ongoing	High	NJ DOT was the lead for the basin conversions discussed in BK-039.	Complete
Initiative BK-064—Coordinate County, State, and Federal funding to maximize the effectiveness of stormwater protection and rehabilitation efforts				
BT MUA	Ongoing	High	A rain barrel and rain garden program was supplemented with federal funding from the Barnegat Bay Partnership. Funding for stormwater improvements is continually being sought for Metedeconk Watershed Plan implementation and related local initiatives. Recent funding opportunities related to stormwater management include Barnegat Bay restoration/nonpoint source reduction and living shoreline projects.	In Progress
Initiative BK-065—Identify and restore impaired stormwater management facilities to improve infiltration and reduce runoff throughout the watershed.				
BT MUA	Short Term (<5yrs.)	High	Many project sites are listed in the Metedeconk Watershed Plan and additional sites are continuously being identified through field evaluations. These projects will reduce runoff and improve water quality. Projects completed or partially completed include BTMUA campus stormwater improvements (Brick Twp), Moses Milch Drive stormwater improvements (Howell Twp), Ocean County Park stormwater improvements (Lakewood Twp), and Brick Plaza stormwater BMP demonstrations (Brick Twp). Ongoing/pending projects include Lake Carasaljo Park stormwater improvements (Lakewood Twp), Shonny Drive basin retrofit (Lakewood Twp), and Jackson stormwater retrofits (Jackson Twp).	In Progress
Initiative BK-066—Construct additional facilities to collect and provide temporary storage of stormwater runoff to promote infiltration through highly permeable soils.				
BT MUA	Short Term (<5yrs.)	Low	This work encompasses some of the projects noted in BK-065, including BTMUA campus stormwater improvements (Brick Twp), Brick Plaza stormwater BMP demonstrations (Brick Twp), Carasaljo Park stormwater improvements (Lakewood Twp), and Ocean County Park stormwater improvements (Lakewood Twp).	In Progress



Initiative BK-067—Investigate the benefits of bypass force main, tide barriers, stormwater pump systems, surge barriers, and mobile flood barriers.				
BT Engineering	Short Term (<5yrs.)	Medium	No formal study has been conducted or is currently in progress. Some private property owners have installed mobile flood barriers.	No Progress
Initiative BK-068—Identify BMPs that individual property owners can implement.				
BT MUA	Ongoing	High	This initiative is an ongoing initiative that is considered complete for the reporting period. This initiative is conducted as part of outreach. Numerous “build your own” rain barrel workshops have been offered to local residents with the finished rain barrels provided either free of charge or at a discounted cost, and these workshops have been very popular. Planning is underway for a similar workshop for rain gardens which will take place in Fall 2018.	Complete
Initiative BK-069—Enforce minimum National Flood Insurance Program requirements and proactively support floodplain management property protection and outreach requirements				
BT Code Enforcement	Ongoing	High	This is an ongoing initiative conducted within the normal work flow process.	In Progress
Initiative BK-071—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.				
BT Code Enforcement	Short Term (<5yrs.)	High	A draft ordinance addressing these issues has been developed	No Progress
Initiative BK-072—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				
BT Engineering	Short Term (<5yrs.)	High	Occupied structures are prohibited per state regulations. Intent of this initiative is unclear.	Discontinue
Initiative BK-073—Update existing regulations to account for the impacts of climate change.				
Land Use Committee	Long Term (5+yrs.)	High	Revisions to Dune Ordinance expected this fall.	In Progress



Initiative BK-074—Continue to implement a “no-adverse impact” floodplain management policy.				
BT Code Enforcement	Short Term (<5yrs.)	High	Township stormwater regulations support this policy.	Complete
Initiative BK-075—Implement as-built regulatory requirements				
BT Code Enforcement	Ongoing	High	This is an ongoing initiative. Changes to requirements are made at the state level.	Discontinue
Initiative BK-076—Use Re-sale Certification of Occupancy to catch up with substantially damaged structures and regulate safe re-building practices				
BT Code Enforcement	Long Term (5+yrs.)	High	No progress while administration reviews other alternatives..	No Progress
Initiative BK-077—Utilize the most recent FEMA FIRMs to assist property owners in rebuilding to or above regulatory standards				
BT Code Enforcement	Ongoing	High	The Township is utilizing the most recent FIRMs and will continue to do so.	Complete
Initiative BK-078—Join CRS program to complete pro-active floodplain management and assist residents with flood insurance costs				
BT Code Enforcement	Short Term (<5yrs.)	High	The Township applied and was accepted to CRS, obtaining a Class 6 rating on May 1, 2017.	Complete
Initiative BK-079—Implement site review ordinances/requirements				
BT Code Enforcement	Ongoing	High	Brick Township has a plot plan review process and inspection procedures in place.	Complete
Initiative BK-080—Integrate climate change considerations into planning guidelines and standards.				
BT Planning	Short Term (<5yrs.)	High	Initial guidelines were developed as part of Neighborhood Plans.	Complete



Initiative BK-081—Develop design standards to address the visual impact of mitigation measures such as elevating bulkheads, elevating buildings on foundations or pilings				
BT Code Enforcement	Short Term (<5yrs.)	Low	Some standards have been developed for plantings and lattice for elevated homes.	Complete
Initiative BK-082—Continue to enforce building codes to require building, renovations, and re-building so that all buildings meet the Uniform Construction Code				
BT Code Enforcement	Ongoing	High	This is an ongoing initiative that is part of standard operating procedures.	In Progress
Initiative BK-083—Develop low-impact development guidelines for new development and redevelopment.				
BT Code Enforcement	Short Term (<5yrs.)	High	BTMUA is working with a consultant to develop guidelines for low impact development /green infrastructure through a model ordinance. Low impact development (LID) is a common theme throughout the watershed plan and numerous LID strategies are included in Appendix C of the ordinance. BTMUA is also relying on the NJDEP’s Stormwater BMP Manual for LID strategies. In addition, BTMUA supported development of a recently-released New Jersey Developers’ Green Infrastructure Guide with NJ Future and NJBA, (http://www.njfuture.org/wp-content/uploads/2017/03/NJ-Developers-Green-Infrastructure-Guide_FINAL_web.pdf).	In Progress
Initiative BK-084—Develop a Fertilizer Application Ordinance to control reduce the amount of damaging non-point source pollution during storm events				
BT Code Enforcement	Short Term (<5yrs.)	High	Resolution 475-14, supporting the fertilizer restrictions established by state law, was adopted. Therefore no further action is required by the Township.	Discontinue
Initiative BK-085—Ensure post-disaster code enforcement and inspection to protect properties in the process of being re-built and built. This action is ongoing as structures are elevated or newly constructed.				
BT Code Enforcement	Ongoing	High	The State has an emergency inspection program in place. This initiative is ongoing.	In Progress



Initiative BK-086—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.				
Ocean County Soil Conservation District	Ongoing	High	This initiative is ongoing and is considered complete for this reporting period. There has been a rule proposal regarding new standards.	In Progress
Initiative BK-087—Encourage and support compliance with the NJ Fertilizer Law.				
NJ DEP	Ongoing	High	Resolution 475-14, supporting the fertilizer restrictions established by state law, was adopted.	Complete
Initiative BK-088—Enact tools to help manage development in hazard areas.				
BT Planning	Ongoing	High	The Township has adopted minimum NJ standards plus 1 foot of freeboard. Initiative is considered complete as of 2013.	Complete
Initiative BK-089—Adopt additional appropriate land use development criteria, such as planned unit developments, density transfers clustering				
BT Planning	Short Term (<5yrs.)	High	The Township is working on a Master Plan Reexamination Report where recommendations are being proposed to rezone properties to allow for a mix of commercial and residential where the character of the land uses support such densities and uses. This will look to provide new development in areas that are developed and have infrastructure, rather than allowing for development in environmentally sensitive areas.	In Progress
Initiative BK-090—Consider the residual risk associated with structural flood control in land use and land development plans. Recent planning and zoning board approvals have been imposing nonstructural flood control measures.				
BT Planning	Ongoing	High	This initiative is ongoing and is considered complete for this reporting period. There are no regulations or adopted ordinances pertaining to residual risk; however, there are plans for response in place.	Complete
Initiative BK-091—Develop and adopt a continuity of operations plan (COOP)				
BT OEM	Short Term (<5yrs.)	High	The Township has internally begun development of a COOP.	In Progress
Initiative BK-092—Maintain the all-hazards Emergency Operations Plan (EOP) - Will be reevaluated and updated for state and county review for approval in 2021.				
BT OEM	Ongoing	High	The EOP was most recently approved by the State on May 31st of 2017, It must be reviewed every four years.	Complete



Initiative BK-093—Develop and implement Shelter Management Plans - There has been no progress to date, however, the Township remains prepared to participate when the State and County take the lead needed.				
BT OEM	Ongoing	High	Shelter Management Plans are a state-wide issue. Schools are not supported by generators.	In Progress
Initiative BK-094—Integrate hazard mitigation into the Master Plan				
BT Planning	Short Term (<5yrs.)	High	Adopted a hazard mitigation element to the master plan in March of 2016	Complete
Initiative BK-095—Integrate flood management policies into other Township planning mechanisms				
BT Planning	Ongoing	High	Flood management policies have been integrated as specified by many other initiatives identified in this progress report.	Complete
Initiative BK-096—Incorporate retrofitting/replacement of critical system elements in capital improvement planning.				
BT Planning	Ongoing	High	This initiative is ongoing and is considered complete for this reporting period.	Complete
Initiative BK-097—Continue to work with the Barnegat Bay Partnership to target research and assessment efforts.				
BT Planning	Ongoing	High	This initiative is ongoing and is considered complete for this reporting period. The Barnegat Bay Partnership serves as a member of the plan committee. Brick Township will include any appropriate initiatives in the Comprehensive Conservation Management Plan (CCMP).	Complete
Initiative BK-098—Develop a building and elevation inventory of structures in the floodplain				
BT Engineering	Ongoing	Medium	Aerial imaging does not capture finished floor elevations. The Township is developing a database based on documentation provided as part of permitting process. The database is progressing quickly due to the amount of reconstruction that has occurred within the Township.	In Progress
Initiative BK-099—Improve the Township’s mapping capability to increase access to information and adding additional AutoCAD software, as necessary to support mapping capabilities				
BT Engineering	Ongoing	Medium	The Township has purchased CAD and Land Desktop and has obtained “read only” access to MUA infrastructure information so that field crews can review information while out in the field. The Township is scheduled for aerial imaging in Winter of 2018.	Complete



Initiative BK-100—Conduct Local Emergency Planning Committee (LEPC) meetings every month and perform drills to prevent hazardous materials accidents - This is an ongoing project that is considered complete for the current progress review.				
BT OEM	Ongoing	High	This initiative is ongoing but is considered complete for the current progress report performance period. The LEPC meets quarterly and conducts two drills per year.	Complete
Initiative BK-101—Identify agricultural BMPs to control runoff from crops and livestock.				
BT MUA	Short Term (<5yrs.)	High	This issue is upstream of Brick Township and is addressed in the watershed management plan. Some preliminary work has gone into identifying target areas and property owners for outreach and implementation.	In Progress
Initiative BK-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.				
BT MUA	Ongoing	High	The Township has an ordinance addressing these issues. BTMUA is conducting pathogen source trackdown studies in the watershed. Brick Township purchased pooper scooper stations for all municipal parks and at the reservoir.	In Progress
Initiative BK-103—Support the USACE beach repair, restoration, and replenishment project				
BT Engineering	Short Term (<5yrs.)	High	In progress. The construction timeline is two years. Construction in Brick Township is currently scheduled for March, 2018 through July, 2018. Construction is slightly behind schedule, but should be complete by September, with vegetation to be planted in fall or spring	In Progress
Initiative BK-104—Provide beach fill as necessary				
BT Engineering	Ongoing	High	ACOE Beach Nourishment and Dune Reconstruction project nearing completion.	In Progress
Initiative BK-105—Maintain and improve dunes and maintain natural beach habitat and bay habitat				
BT Engineering	Ongoing	High	Some natural beach habitats were severely impacted by Superstorm Sandy. The Township is working to assist in their recovery through planting events with donated plants and beach cleanups.	In Progress
Initiative BK-106—Repair bulkheads and install revetments to protect from coastal erosion.				
BT Engineering	Short Term (<5yrs.)	Medium	This process shall be on-going.	In Progress



Initiative BK-107—Construct beach revetment					
NJ DEP	Short Term (<5yrs.)	Medium	Wall has been completely covered by ACOE beachfill		Complete
Initiative BK-108—Support easements for the ACOE beach replenishment project on the Barrier Island					
BT Engineering	Ongoing	High	The Township has provided support through exhibits and condemnation paperwork and will continue to support through litigation, if needed. This initiative is considered completed as of December 2016.		Complete
Initiative BK-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.					
BT Engineering	Short Term (<5yrs.)	Medium	This initiative was determined to not be viable.		Discontinue
Initiative BK-110—Complete soil stabilization project at Bay Harbor Beach.					
BT Engineering	Short Term (<5yrs.)	Medium	Bay Harbor Beach stabilization project was completed Spring 2016. The project was an overwhelming success. The Township will duplicate the project at Cedar Bridge Manor Park and Mallard Point Park. Windward Beach project was included on original wording of initiative, but is not related to flood or erosion control and was removed.		Complete
Initiative BK-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.					
BT Engineering	Short Term (<5yrs.)	Medium	This initiative was completed in 2015. The Township will continue to maintain the fire break.		Complete
Initiative BK-112—Maintain Mallard Park to avoid coastal geotech erosion and mitigate flood related hazards.					
BT DPW	Ongoing	Medium	A berm was built to address the problem. This initiative is complete as of April 2016.		Complete
Initiative BK-113—Redesign pond in Cherry Quay to provide increased flood retention					
BT Engineering	Short Term (<5yrs.)	Low	This initiative is redundant with BK-019.		Discontinue



Initiative BK-114—Redesign the islands in Beaver Dam Creek for Princeton Midstreams to provide increased flood retention				
Private	Short Term (<5yrs.)	Low	No physical activity has been initiated, but NJ DEP has altered regulations to allow for such activities provided an alternatives analysis is conducted. Some of the islands are privately owned although the Township will be taking ownership of one island. Generally speaking, the Township will assist with obtaining a permit and then transfer the permit to the private property owner.	No Progress
Initiative BK-115—Strategize responsible land protection methods to maintain/restore natural floodplain functions				
BT Planning	Ongoing	High	The Township has taken ownership of several properties significant for natural floodplain functions through foreclosure of 29 properties (approximately 38 acres of which approximately 34 of which are within the floodplain) and one donation (Block 1025, Lot 56, approximately 5 acres and 80% in floodplain). The Mayor has committed to preserving these areas as open space thus protecting the natural floodplain functions.. In addition, Bay Harbor Beach Park was restored to a more natural state.	In Progress
Initiative BK-116—Manage sediment and debris removal and provide regional retention, detention, infiltration and constructed wetland areas.				
BT Engineering	Ongoing	High	All basins were inspected in Summer of 2017 with punch-lists for township owned basins sent to parks and DPW	In Progress
Initiative BK-117—Participate in regional watershed management				
BT MUA	Ongoing	Low	This is an ongoing initiative that is considered complete for this reporting period. BTMUA facilitates regional watershed management planning. Brick Township is actively working with BTMUA and the other watershed stakeholders on the Metedeconk Watershed Management Plan. There is discussion about the development of additional watershed plans in the Barnegat Bay region for which Brick Township may be a stakeholder.	Complete
Initiative BK-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	Short Term (<5yrs.)	High	The Township is updating it NJDEP Recreation and Open Space Inventory to incorporate more than 400 acres located in the Special Flood Hazard Area that are owned by the Township. These parcels will now be protected from any development into perpetuity.	Complete



Initiative BK-119—Provide dredging, levee and bulkhead construction, revetments or channelization where appropriate				
BT Engineering	Ongoing	Medium	This initiative is redundant with BK-106.	Discontinue
Initiative BK-120—Maintain vegetated riparian buffer zones. Prioritize implementation by using parcels identified as protection priority from the Trust for Public Land.				
BT Planning	Ongoing	High	This initiative is ongoing and is considered complete for this reporting period. An ordinance addressing this issue was adopted in 2007. Most of the areas are under other jurisdictional regulation.	Complete
Initiative BK-121—Restore upland and riparian forests to capture rainfall, protect soil from erosion, maximize infiltration, and sequester nutrients.				
BT Planning	Long Term (5+yrs.)	Medium	The Township does not have upland riparian forests.	Discontinue
Initiative BK-122—Construct stormwater wetlands to maximize removal of pollutants from stormwater runoff. Not Applicable.				
BT Planning	Short Term (<5yrs.)	Low	This initiative is not needed as there are natural stormwater wetlands.	Discontinue
Initiative BK-123—Require upon site plan approvals, installation of 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	Short Term (<5yrs.)	Medium	This initiative is complementary with previously identified initiatives assigned to MUA.	Discontinue
Initiative BK-124—Retrofit existing stormwater basins to extend detention or bio retention areas.				
BT Planning	Ongoing	Medium	This initiative is ongoing, but considered complete for this reporting period. Such retrofits are recommended by Township staff as redevelopment occurs.	Complete
Initiative BK-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	Ongoing	Low	This initiative is ongoing, but considered complete for this reporting period. Township staff suggest such measures as redevelopment occurs. There is no formalized ordinance.	Complete
Initiative BK-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. Not an achievable goal.				
BT Planning	Short Term (<5yrs.)	Low	This initiative is not applicable as most stream systems are already preserved. Those that are not are developed.	Discontinue



Initiative BK-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	Ongoing	High	Progress on this initiative is achieved in a limited way through the Township’s mixed use and street-scaping ordinances. There is a municipally owned solar farm on a landfill and MUA is working on rain barrel and rain garden projects. As redevelopment projects are brought in for review, Township staff such measures as green roofs, rain gardens, permeable and pervious paving, etc. Generally, developers and others seeking permits comply with suggestions.	In Progress
Initiative BK-128—Continue tree vegetation maintenance for hazardous tree removal by parks crew is ongoing and tree planting to replace damaged trees and supplement has also been an ongoing project through the No Net Loss Program. Over 550 trees have been planted between 2017 and 2018.				
BT DPW	Ongoing	High	This initiative is an ongoing initiative that is considered complete for the reporting period. Tree and vegetation maintenance as municipal facilities.	Complete
Initiative BK-129—Develop and prepare disaster response information packets to distribute post-disaster regarding retro-fit information and funding.				
BT Planning	Short Term (<5yrs.)	High	Disaster Preparedness Packets	In Progress
Initiative BK-130—Conduct watershed conservation education and outreach.				
BT MUA	Ongoing	High	This initiative is an ongoing initiative that is considered complete for the reporting period. Extensive public education and outreach is being conducted. These outreach activities include exhibits, presentations and educational materials targeting a variety of age groups and interests, with particular focus on water conservation, and nonpoint source pollution/stormwater management awareness.	Complete
Initiative BK-131—Evaluate and build resiliency for the long-term implications of sea-level rise for water supply operations.				
BT MUA	Short Term (<5yrs.)	High	BTMUA has nearly completed a water supply master plan with a planning horizon of 20 years. As part of the planning effort, projections of sea-level rise and expected impacts on the water supply were evaluated through statistical modeling. These constraints, along with other water supply stressors such as demand patterns and climate change, have been translated into a series of recommendations and actions that will result in greater resilience. The plan is expected to be finalized by Fall 2018.	In Progress



Initiative BK-132—Purchase structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.

BT Planning	Ongoing	High	This initiative was previously part of BK-027. Acquisition is not currently a priority for the Township. The only instance where we would acquire property would be if it was adjacent to township owned preserved lands.	Discontinue
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Initiative BK-137—Exercise the Township CRS Activity 610 Plan annually. The Township will submit this activity for CRS FWRP Points in the 2018 review cycle.

BT OEM	Short Term (<5yrs.)	High	The Township exercised a flood activity called "Wet Weekend" during the summer of 2017. This activity is complete for this reporting period.	In Progress
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RECOMMENDATIONS FOR CHANGES OR ENHANCEMENTS

Based on the review of this report by the Planning Committee, the following initiatives (Table 3) have been added to the action plan. In addition, the Planning Committee has noted the following recommendations for future updates or revisions to the plan:

- Review, update and rework the Natural and Beneficial Functions elements of the Floodplain Management Plan so that it is creditable under CRS Activity 510. This may be undertaken by the Environmental Commission or Sustainable Brick.
- Add an observed versus projected sea level rise chart into the climate change discussion.
- Enhance the discussion of economic impacts of sea level rise.
- Contemplate developing post-disaster policies and ordinances.
- Insert information on recent studies showing that a dollar spent in mitigation saves ten dollars in future damages.
- Start outline for a long term infrastructure plan for sea level rise and climate change. The plan could focus on infrastructure improvements such as raising roadways, the removal of stormwater pipes and outfalls that are submerged and cause backflow flooding issues, the increased use of natural systems for flooding attenuation, etc.
- Consider the concept of creating wetlands out of upland areas in the open space areas of the Sawmill Tract to capture stormwater upstream of residential development to reduce flood risks.

Public review notice: *The contents of this report are considered to be public knowledge and have been prepared for total public disclosure. Minutes of meetings and sign-ins are provided as Appendix A.*

Copies of the report have been provided to the Township Council, the report is posted on the Township of Brick Floodplain Management Plan website and notice of its completion have been provided to local media outlets. Any questions or comments regarding the contents of this report should be directed to:

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ATTACHMENT

Meeting Documentation

(Sign-in Sheets, Minutes of Meetings)



AGENDA

**Township of Brick Floodplain Management Plan
Floodplain Management Planning Committee
Progress Report Meeting**

Wednesday, June 27, 2018 | 5:00 p.m.

- 1. Introduction**
- 2. Flood Management Plan Purpose/Background**
- 3. Review of Progress Report**
 - a. Flood Event History
 - b. Change in Risk Exposure
 - c. Flood Mitigation Success Stories
 - d. Review of Action Plan and Action Progress
 - e. Recommended Changes or Enhancements
 - f. Impact of Other Planning Programs/Initiatives Involving Flood Hazard Mitigation
 - g. Public/Stakeholder Comments and Input
- 4. Conclusion**





FLOODPLAIN MANAGEMENT PLANNING COMMITTEE MEETING
SIGN-IN SHEET

Wednesday, June 27, 2018 5:00 PM



Name	Representing	Email Address
STEPHEN T. SPEAK	BRICK MUA	SPEAKT@BRICKMUA.COM
Paul Mummolo	Township	council@mummolo@gmail.com
Eusea Communs	Brick Twp	ecomms@twp.brick.nj.us
Rob Karl	BDMUA	rkarl@brickmua.com
Dan Newman	Brick	dnewman@twp.brick.nj.us
Dana Paxton	Brick Planning	dpaxton@twp.brick.nj.us
Ken Somers	Brick Twp	ksomers@twp.brick.nj.us
Mike Fowler	Brick Planning	mfowler@twp.brick.nj.us
ART HALLORAN	Brick Council MUA	ART.HALLORAN@GMAIL.COM



Brick Township Flood Management Planning Committee

Minutes

Brick Township Flood Management Committee Meeting

June 27, 2018

Attendance:

Tara Paxton (Brick co-chair)
Michael P. Fowler (Brick co-chair)
Art Hulloran (Brick councilman/MAW)
Dan Newman (Brick)
Paul Murmmolo (Brick)
Rob Karl (Brick MUA)
Ken Somers (Brick)
Stephen T Speak (Brick MUA)
Elissa Commins (Brick Engineering)
Chris Huch (Tetra Tech)

The meeting was called to order by Co-Chairman Michael Fowler at 5:05 PM.

The purpose of the meeting was to review and accept the content of the Floodplain Management Plan progress report.

Changes in Risk Exposure were discussed:

- Beach replenishment is currently underway with an expected completion of September, based upon current scheduling trends
- The revetment wall is covered with sand
- Check valves have been installed at several new locations
- Retention cells, rain gardens, and other green infrastructure has been installed in Brick Plaza

Flood mitigation success stories were discussed:

- Several parks have been enhanced with stormwater basins and green infrastructure for stormwater control
- A proposal for generators at the municipal building and the DPW will soon be out to bid after extensive administrative efforts
- The Rutgers Extension has a 319 grant for work in the Township's parks
- 539 trees have been planted from a combination of "no net-loss" and park landscaping



Brick Township Flood Management Planning Committee

- Rowan University is setting up their virtual flood event modeling to cover the entire Township
 - The data being collected is highly specific (more than FEMA FIRMs) and will be used to analyze evacuation methods as well as provide outreach to citizens
 - Data collected will be submitted to FEMA as well
 - A preview of the virtual model will be brought to the upcoming July 17th flood information event
- Stevens Institute and NJIT have a 319 study for reduction in nitrogen and phosphorus in stormwater
- 2 stormwater pumps are being floodproofed (FEMA funded, \$102,000)

Review of Action Plan and Action Progress and recommended improvements were discussed.

- Ongoing actions can be listed for now as being complete in the BATool. Tetra Tech will work with software group to add an “ongoing complete” and “ongoing no progress” option.
- It was brought up that many of the actions include multiple projects at different locations (i.e. road elevation projects at roads X, Y, and Z). As many of these projects will be done location by location, it was requested that actions like this have a “location” tab that would allow for multiple progress reviews for each location. (i.e. Road X: Complete, Road Y: Incomplete, etc.). Tetra Tech will inquire with software group to see if this is possible.
- Several actions are assigned to non-municipal group. The Committee Co-Chairs will review these actions. Tetra Tech will send over the list of these actions.
- Opportunities to increase the detail of projects was discussed.

Impact of other Planning Mechanisms/Initiatives were discussed.

- The Ocean County Hazard Mitigation Plan is being updated.
- The Rowan Virtual Flood Model is being completed.
- The Barnegat Bay Comprehensive Management Plan should be wrapped up soon.
- The USACE Back Bay Flooding Study is in year 2 of a 3 year study.

Public/Stakeholder comments and input were discussed.

- Only one comment came in specific to the Floodplain Management Plan and was very positive.
- Public Outreach takes place at the Farmer’s Market
- An invite was extended to Tetra Tech to attend the July 17th event (5:30-8) to showcase the Floodplain Management Plan

The meeting adjourned at 6:00



AGENDA

**Township of Brick Floodplain Management Plan
Floodplain Management Planning Committee
Progress Report Meeting**

Thursday, August 16, 2018 | 5:00 p.m.

1. Introduction
2. Flood Management Plan Progress Report Timeline
3. Review of Progress Report
 - a. Planning Committee updates
 - b. Flood Event History
 - i. Incorporate Greenbriar flash flooding event?
 - c. Change in Risk Exposure
 - i. Consider leaving in some of the items referring to development from last plan?
 - ii. Camp Osborne development status?
 - d. Flood Mitigation Success Stories
 - i. Application for the Resilient NJ program?
 - e. Review of Action Plan and Action Progress
 - i. Ongoing and complete vs. ongoing and in progress
 - f. Recommended Changes or Enhancements
 - g. Impact of Other Planning Programs/Initiatives Involving Flood Hazard Mitigation
 - h. Public/Stakeholder Comments and Input
4. Conclusion





FLOODPLAIN MANAGEMENT PLANNING COMMITTEE MEETING
SIGN-IN SHEET

Thursday, August 16, 2018 5:00 PM



Name	Representing	Email Address
Chris Hoch	Tetra Tech	chris.hoch@tetratech.com
Ken Somers	DPW	K.Somers@Twp.Brick.NJ.NJ.us
Jada Paxton	Buck	jpaxton@twp.brick.nj.us
ART HALLORAN	Brick/BARRIER ISL	councilman.halloran@gnvied.com
Paul Mummolo	Council	councilman.mummolo@gmti.com
Mike Fowler	BRICK PLANNING / CRS	mfowler@twp-brick.nj.us
STALE SPECHT	BRICK MUA	SPECHT@BRICKMUA.COM
DAN NEWMAN	Brick CO	dnewman@Twp.Brick.NJ.US
Elissa Commins	Brick Township	ecommins@twp-brick.nj.us



Brick Township Flood Management Planning Committee

Minutes

Brick Township Flood Management Committee Meeting

August 16, 2018

Attendance:

Tara Paxton (Brick co-chair)
Michael P. Fowler (Brick co-chair)
Art Hulloran (Brick councilman/MAW)
Dan Newman (Brick)
Paul Murmmolo (Brick)
Stephen Specht (Brick MUA)
Elissa Commins (Brick Engineering)
Chris Huch (Tetra Tech)

The meeting was called to order by Co-Chairman Michael Fowler at 5:05 PM.

The purpose of the meeting was to review and accept the content of the Floodplain Management Plan progress report.

Timeline:

- Copies of the report will be provided to the Township Council, the report will be posted on the Township of Brick Floodplain Management Plan website and notice of its completion will be provided to local media outlets.
- The September Council meeting is September 12th.
- Tetra Tech has confirmed with ISO (CRS Specialists) that our timeline is acceptable.

Planning Committee review

- The Planning Committee reviewed the updated Committee table and confirmed their descriptions (resident, government, etc).

Flood Event History:

- The Flood Event History section of the report was reviewed.
- It was noted that Island Drive and South Drive have been elevated and therefore the report will be updated to remove both roadways from flood event history and be described in the "Changes in Risk Exposure in the Planning Area" section.



Brick Township Flood Management Planning Committee

- The flash flood event on 8/13 in the Greenbriar neighborhood and the Sutton Village condominium community took place outside of an established floodplain. The committee discussed this and decided to incorporate this flooding event into the draft report. 100 people were evacuated after 8 inches of rain fell over a 3-4 hour period, resulting in flood waters as deep as 6 feet in some residences. 100 homes were impacted primarily on Markum Road, Vaughn Court, and Kingsley Court. The committee noted that since this area is not part of a floodplain, residents did not have flood insurance. The flooding being focused in a retirement village where residents have limited income further enhances the economic impact of this flooding event. The committee discussed the possibility of identifying this area as prone to flooding despite not being in an established floodplain and the possible mitigation of similar flooding in this area. The Sawmill Tract is 175 Acres of open space owned by the town with a bike trail running through it. It was suggested that the Township could look into creating wetlands out of upland areas to capture stormwater upstream of residential development to reduce flood risks. The Township could use this flooding event as an opportunity to encourage residents outside of the established floodplain to purchase flood insurance

Change in risk exposure

- The committee discussed developments in the floodplain.
- Camp Osborne development was discussed: The bayside is redeveloping, the median area has an application for 6-7 homes, there are no concrete plans for the ocean side yet.
- Normandy Beach Development: 21 single family homes are under construction.
- It was confirmed that Island Drive and South Drive improvements should be identified in this section.

Flood Mitigation Success Stories

- The committee reviewed the list of mitigation success stories and did not recommend any changes.

Review of Action Plan and Action Progress

- The committee reviewed the actions for this reporting period. The committee reviewed actions that were listed as ongoing and complete versus ongoing and in progress. Several ongoing actions were shifted from in progress to complete (BK-011, BK-015, BK-040, BK-041, BK-059, BK-068, BK-128, BK-130).

Recommended Changes or Enhancements

- The committee reviewed the recommended changes or enhancement section and made the following suggestions and additions:
 - Insert the most recent studies that have found that a dollar invested in mitigation saves 10 dollars.



Brick Township Flood Management Planning Committee

- A recommendation should be made to create an outline for a long term adaptation plan for sea level rise and climate change. The plan could include raising roadways, removing stormwater pipes that are prone to backflow, increasing natural systems, etc.
- It was noted that the “Review, update and rework the Natural and Beneficial Functions elements of the Floodplain Management Plan so that it is creditable under CRS Activity 510” is a time intensive process for a fairly low number of points. A suggestion was made that responsibility for this section could be assigned to be completed by the Environmental Commission or Sustainable Brick.

Impact of Other Planning Programs/Initiatives Involving Flood Hazard Mitigation

- The committee reviewed the Impact of Other Planning Programs/Initiatives Involving Flood Hazard Mitigation section and had no changes.

Public/Stakeholder Comments and Input

- The committee reviewed the Public/Stakeholder Comments and Input section and had no changes.

The meeting adjourned at 5:55 p.m.