

Floodplain Management Plan Repetitive Loss Area Analysis

Downe Township, New Jersey



Nantuxent Creek – 1904, Money Island Marina

Prepared by Rutala Associates

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This Floodplain Management Plan was partially funded by a Federal Emergency Management Agency through a Flood Mitigation Assistance Grant. The purpose of the grant was to reduce the overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding for future disasters. The approved scope of work consists of participation of agencies, stakeholders, and the public; hazard identification and risk/vulnerability assessment; mitigation strategies; plan adoption; and plan maintenance.

1 INTRODUCTION

Downe Township is located in the southern portion of Cumberland County, New Jersey bordering the Delaware Bay. Downe Township, particularly Gandy's Beach, Money Island, and Fortescue are historic fishing villages providing the area with a rich cultural history and valuable ecological resources. Due to their landscape position and proximity to the Delaware Bay, these villages have been especially vulnerable to flooding and the impacts of severe weather events such as Nor'easters and Hurricanes. Fortescue has a state-owned marina and was named one of the top ten most endangered historic sites in New Jersey in 2014. See Figure 1 below for an area location map showing the three villages most vulnerable to flooding impacts.

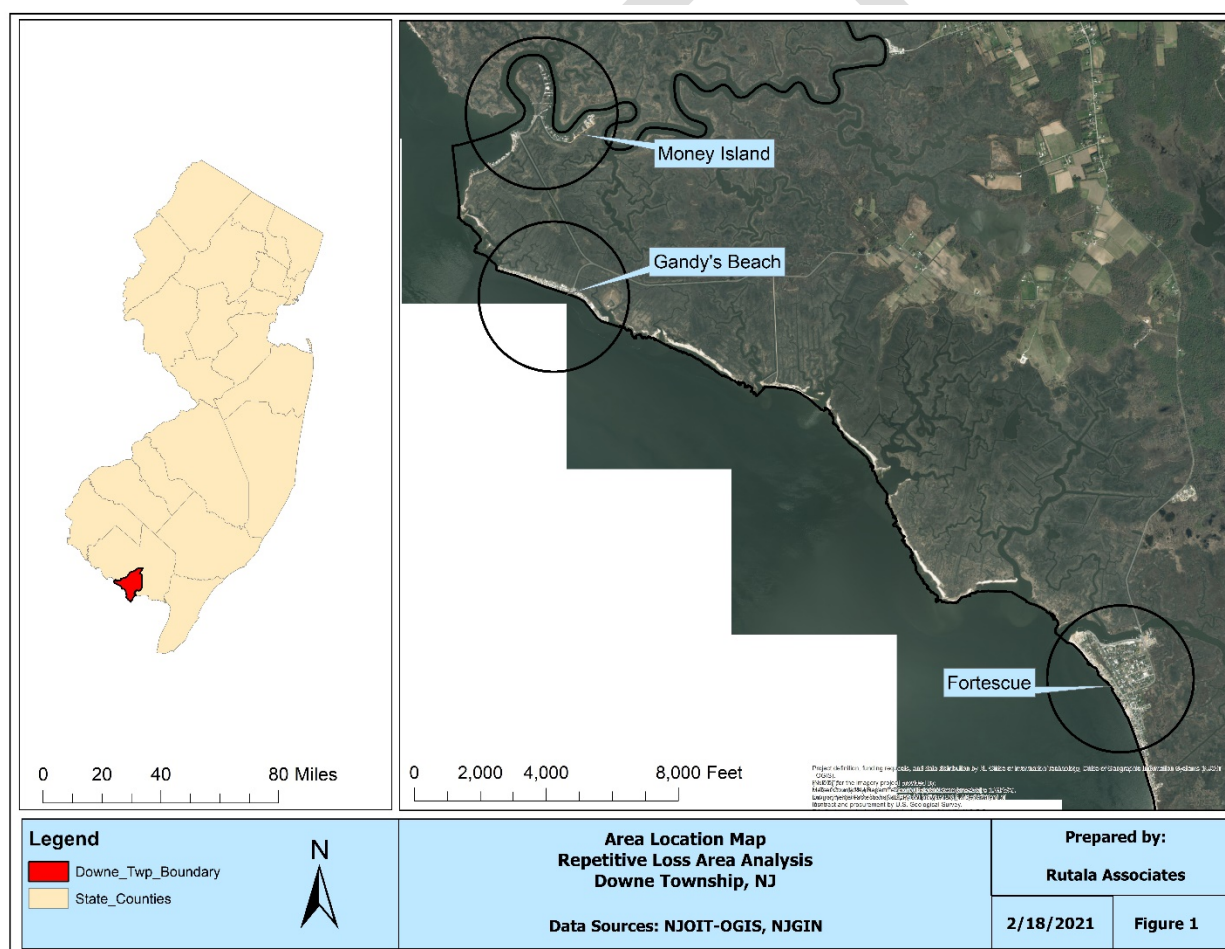


Figure 1: Area location map.

The Township of Downe has authorized the preparation of this Repetitive Loss Area Analysis (RLAA) to study the areas where repetitive loss properties are located and to develop a plan for future resiliency projects to protect these areas.

The Township received a detailed list of repetitive loss properties on January 14, 2021, from the Federal Emergency Management Agency (FEMA). This list included 67 properties, which after close evaluation only 28 are repetitive loss properties in Downe Township. The remaining properties were not located in the Township; purchased by the State of New Jersey or a non-profit organization (NPO); the addresses did not exist; or the property is vacant. The remaining 28 repetitive loss properties and surrounding areas were evaluated in this study. FEMA was notified via AW-501 submissions of the 39 properties that should be removed from the repetitive loss list.

This effort is being coordinated with the Cumberland County Multi-Jurisdictional Hazard Mitigation Plan which is being updated in 2021. This plan will take a regional approach and will identify all the major resiliency efforts planned for Downe Township. It is fortuitous that the County Plan and the Township Analysis is being completed simultaneously since they will be coordinated to ensure that all the Township's needs are identified. The primary difference between the Hazard Mitigation Plan and the RLAA is that the former is a County-wide, comprehensive plan completed in compliance with the FEMA hazard mitigation planning process. The latter follows an abbreviated hazard mitigation planning process, and covers discrete geographic areas defined by repetitive loss properties.

In addition to providing CRS points, the Hazard Management Plan and Repetitive Loss Area Analysis has several benefits. The planning process entails intensive public outreach and communication efforts to inform the public of flooding and the Township's efforts to address it. This maximizes public input and enables a useful perspective from which to address flooding. Furthermore, the planning process allows a more detailed understanding of flooding, including the identification of flooding hotspots and gaps in protection. The process uses a multi-front and multi-disciplinary approach to mitigating flooding in the community. Finally, the process will allow the Township to be more competitive for mitigation funding by identifying specific projects in a plan and advancing conceptual planning, engineering, and design work.

The scope of work contained herein includes all applicable requirements for planning documents creditable by CRS. The "Repetitive Loss Area Analysis" will be used in the Hazard Mitigation Assistance grant applications.

2 BACKGROUND

Downe Township was incorporated in 1798. The Township, which is more than three-quarters of permanently preserved open space, is home to several historic mixed-use villages such as Dividing Creek, Newport, Gandy's Beach, Money Island and Fortescue. Commercial and recreational fishing and boating are an important part of the way of life as is environmental recreation. The township is a sanctuary for horseshoe crabs. Public marinas, fishing and ecotourism are some of its key industries. Silica sand, the high-quality silica sand that is ideal for making clear glass, is mined in Downe Township.

The lucrative commercial fisheries industry contributed to the prosperity of the Bayshore communities in Cumberland County. For more than 300 years, New Jersey's commercial fishermen were catching, processing, and selling seafood to people around the world. Because of an abundance of weakfish in Delaware Bay and Fortescue in Downe Township, recreational fishing for weakfish was a major economic engine for the area. Beginning in the 1800s, scores of fishermen came to the Bayshore to seek weakfish, flounder, stripers, and bluefish. By the early 1900s, Fortescue had proclaimed itself the "Weakfish Capital of the World."

At the turn of the 20th century oysters were the nation's chief fishery product and the most popular of all shellfish. Whole towns grew up around the oyster industry: including the villages of Fortescue, Money Island, Gandy's Beach, and Dividing Creek in Downe Township. Cumberland County's oyster enterprise elevated New Jersey to one of the four leading oyster-producing states in the nation. By the second half of the 20th century, however, the oyster crop was nearly wiped out by disease. The decline was precipitated in the 1950s by a disease known as MSX and exacerbated in the 1990s by a parasite known as Dermo.

Table 1: Summary of NFIP flood claims in Fortescue, Gandy's Beach and Money Island

Annual Policy Claims		
Year	Number of Claims	Total Payout of Claims
2020	15	\$ 229,781.57
2018	2	\$ 26,457.26
2016	1	\$ 4,208.07
2013	1	\$ 5,696.48
2012	119	\$ 5,907,386.34
2011	17	\$ 300,425.05
2010	3	\$ 201,743.11
2008	1	\$ 1,312.78
2007	1	\$ 10,508.67
2006	1	\$ 5,631.64
2005	4	\$ 31,212.73
2003	1	\$ 2,066.65
2002	1	\$ 8,924.95
1998	1	\$ 986.06
1997	3	\$ 21,554.27
1996	2	\$ 15,819.05
1994	7	\$ 16,799.74
1993	4	\$ 18,966.21
1992	28	\$ 175,965.57
1985	24	\$ 260,962.25
Total		\$ 7,246,408.45

Downe is set amid pristine salt marshes, old-growth forests, waterways, and agricultural areas. Downe has three of the last remaining Delaware Bayshore villages: Fortescue, Gandy's Beach, and Money Island. The Delaware Bayshore has been historically under-invested and particularly subjected to volatile markets for natural resources. As noted above, throughout the 19th and 20th century, the Township was a hub for economic activity in the form of oyster farming and sand mining. With both industries in decline and much of the Township's land

purchased for open space, Downe has a very narrow window of opportunity for economic growth and rural development. Downe intends to capitalize on its accessible natural resources (mainly its beautiful ecosystem) to drive growth in the form of research, fisheries, and eco-tourism.

There are 24 repetitive loss properties and 4 severe repetitive loss properties. See Table 1 below for a list of National Flood Insurance Program (NFIP) flood claims in the past 35 years. Hurricane Sandy, which made landfall in New Jersey on October 29, 2012, resulted in nearly \$6 million in NFIP flood claims. Please note that this estimate only accounts for the National Flood Insurance Policy claims and does not include properties that were uninsured, items that were not covered by policies, and damages incurred that were not claimed.

According to the FEMA data base as of January 31, 2021, there were 111 NFIP policies holders in Downe Township, providing property coverage for \$24,625,000 and paying \$496,525 in annual premiums. Downe Township has the highest number of NFIP policies in Cumberland County.

3 STUDY METHODOLOGY, RESULTS, AND ANALYSIS

This analysis will examine areas defined by the Township that exhibit significant flood losses and areas of low elevation that flood repetitively. The RLAA is a detailed, small-scale mitigation plan for a repetitive loss area. It provides more narrow guidance on how to reduce damage from repetitive flooding than a community-wide floodplain management or hazard mitigation plan and focuses on more discrete geographical areas. Before beginning the RLAA process, the community reviewed its repetitive loss list to determine if any properties have been mitigated or incorrectly assigned to the community. Once the list is reviewed and the necessary updates approved, the remaining unmitigated repetitive loss properties will form the basis for the RLAA.

The five steps for an area analysis will evaluate each building in the repetitive loss area(s).

Step 1: Project Notification

Advise all the properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommended actions. The notice (or any public document) cannot identify which properties are on FEMA's repetitive loss list. There are no restrictions on publicizing what properties are in repetitive loss AREAS that have more than one property and there are no restrictions on publishing aggregate data, such as how many properties received claims or the average value of those claims. Community planning staff may share insurance claims information with the owner of the property, but may not make it available to anyone else

- The notice can be sent to owners OR residents at the community's discretion, as long as a representative of each property is notified.

- The notice cannot be done via a newspaper or newsletter notice or article.
- The notice will advise the recipients when and how copies of the draft report can be obtained and ask for their comments on the draft.

Step 2: Planning Coordination and Review

Contact agencies or organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies or organizations will be identified in the analysis report.

Step 3: Site Inspection

Visit each building in the repetitive loss area and collect basic data.

- The site visit will collect data sufficient to do a preliminary determination of the cause of the repetitive flooding and of the mitigation measures that would be appropriate. This usually includes a review of drainage patterns around the building, the condition of the structure, and the condition and type of foundation.
- The person conducting the visit should not have to enter the property— adequate information should be collected from observations from the street.
- Floor elevations or historical flood levels are not required but can be helpful where available.
- The date for each building's insurance claim can help identify the cause of flooding (e.g., rainfall or overbank flooding) and the amount of the claim can help determine the amount of damage. Note that, every year, each repetitive loss community is provided with a list of its historic insurance claims. This includes single-claim properties.

Step 4: Review Alternative Approaches

Review alternative approaches and determine whether any property protection measures, or drainage improvements are feasible. The review will look at all of the property protection measures that are appropriate for the types of buildings affected. A review that looks only at drainage or structural flood control project alternatives is not sufficient.

Step 5: Document Findings

A separate analysis will be conducted for each area. In general, separate reports are preferred for each area, but in cases in which several areas have similar building and flooding characteristics and similar mitigation measures are appropriate, the analyses can be assembled into a single report. Each report will include:

- A summary of the process that was followed, including how the property owners were involved:
 - The problem statement with a map of the area affected. The statement and map may show individual properties or parcels, but cannot show which ones

- are on FEMA's repetitive loss list;
- A list or table showing basic information for each building, such as address, foundation type, condition, and appropriate mitigation measures. This list cannot include insurance data, such as how many claims have been paid for that property. If the property owners responded to a survey, the survey responses may be included (unless the community promised confidentiality);
- The alternative approaches that were reviewed; and
- Action items that include
 - Who is responsible for implementing the action?
 - When it will be done, and
 - How it will be funded.

"When it will be done" can be expressed in terms of a date, a set period of time after another action is complete, after the next flood, etc. "How it will be funded" could state that funding will be dependent upon receiving a grant, provided that one or more suitable grant programs are specified to which application(s) for funding will be made. The RLAA will be submitted to the community's governing body and made available to the media and the public. If private or sensitive information (such as names or street addresses) is included in the report, then a summary report(s) will be prepared for the governing body, committees, media, and the public. The complete RLAA will be adopted by the community's governing body.

The following deliverables will be provided for the project:

- a. A copy of the RLAA (see Step 5).
- b. Documentation showing how the owners or residents of the areas were notified (see Step 1).
- c. Documentation showing how the analysis was made available to the media and the public.
- d. A copy of the resolution or other formal action by the governing body that adopts the area analysis or accepts changes in subsequent updates.

4 COMMUNITY RATING SYSTEM (CRS)

In the United States, the National Flood Insurance Program (NFIP), which is managed by the Federal Emergency Management Agency (FEMA), is the primary source of residential flood insurance coverage. Established in 1968, the purpose of the NFIP is both to offer primary flood insurance to properties with a high risk of incurring flood impacts and to reduce flood risk by adopting floodplain management standards. The long-term goal of the NFIP is to reduce the federal expenditure on disaster assistance following flood events. Insured properties incurring repetitive flood losses, referred to as Repetitive Loss Areas, are the

largest threat to the future viability of the NFIP where approximately 2 percent of policies qualify for about 16 percent of the total claims over the life of the program (Horn, 2019). A property is considered a repetitive loss area if an insured property incurs over \$1,000 in flood damages within a 10-year period. A property is considered a severe repetitive loss property if it incurs four or more claims of more than \$5,000 or at least two claims that are greater than the property's value. A property where the cost to repair the flood impacts are greater than 50 percent of the value of the property is considered to be substantially damaged. Once a property is classified as substantially damaged, it must be brought to the same level of flood protection as a newly constructed property. The villages of Fortescue, Gandy's Beach, and Money Island currently have 146 active NFIP policies, 24 repetitive loss properties, and four severe repetitive loss properties.

In an effort to try to protect the residents and businesses in Fortescue, Gandy's Beach, and Money Island, Downe Township is seeking to participate in the FEMA Community Rating System (CRS). The CRS is a voluntary program from FEMA that benefits municipalities for taking actions to reduce future flood damages. CRS communities are rated on a scale of 1-10 with communities rated Class 1 being the highest. Each additional class receive receives an additional 5 percent reduction in NFIP flood insurance premiums. Communities can improve their CRS rating by reducing flood impacts to existing structures, protecting new construction above the minimum NFIP protection level, restoring natural floodplain functions, helping gather flood data for an area, or helping residents obtain flood insurance (FEMA, 2017).

This Repetitive Loss Area Analysis is being conducted as part of Activity 510 of the CRS program to earn points toward a better CRS rating and contribute to an eventual Floodplain Management Plan. In addition, the goal of this analysis is to identify areas of concern and develop a plan to mitigate them to avoid future damages.

5 REPETITIVE LOSS AREA ANALYSIS

The CRS categorizes its communities with NFIP policies into three groups based on the communities' repetitive loss list.

Category A: A community with no repetitive loss properties or whose repetitive loss properties have been mitigated.

Category B: A community with at least one, but less than 50 repetitive loss properties that have not been mitigated.

- a. Prepare a map of the repetitive loss area(s) (see Section 503),
- b. Review and describe its repetitive loss problem,
- c. Prepare a list of the addresses of all properties with insurable buildings in those areas, and

- d. Undertake an annual outreach project to those addresses (see Section 504). A copy of the outreach project is submitted with each year's recertification.

Category C: A community with 50 or more repetitive loss properties that have not been mitigated. A Category C community must

- a. Do the same things as a Category B community, and
- b. Prepare and adopt a repetitive loss area analysis for all repetitive loss areas or prepare and adopt a floodplain management plan that includes full credit for planning Step 5(c). Repetitive loss area analyses and floodplain management plans are described under Activity 510 (Floodplain Management Planning).

The latest repetitive loss data for Downe Township indicates that there are currently 28 unmitigated repetitive loss properties located in the villages of Fortescue, Gandy's Beach, and Money Island. Therefore, Downe Township is considered a Category B Repetitive loss community.

Repetitive Loss Areas in Downe Township were mapped using the FEMA CRS resource entitled "Mapping Repetitive Loss Areas for CRS" published in October 2015. Using this guidance, 28 repetitive loss areas were identified. These repetitive loss areas included all 28 repetitive loss properties, non-repetitive loss properties with historical flood claims, and properties that share the same landscape positions or flood risk as the repetitive loss properties. See Appendix A for a map of the Repetitive Loss Areas in Downe Township.

Section 510 of the 2017 CRS Coordinator's Manual outlines the recommended process for conducting a successful repetitive loss area analysis. The manual outlines the process in five steps summarized below:

- a. Advise all the properties in the repetitive loss area that an analysis of their area will be conducted and request their input and recommendations.
- b. Contact agencies and organizations that may have plans, studies, or projects that may affect or be affected by the flooding in the area.
- c. Visit each property identified in the repetitive loss area and collect basic data
- d. Review alternatives approaches and determine whether any property protection measures, or drainage improvements are feasible. This review shall consider all types of property protection measures that are applicable to the area of interest.
- e. Document the findings in a report summarizing the process that was followed, a problem statement, a list of the basic information about each building, alternatives that were considered, and a list of action items that illustrating how the project will be executed.

In addition to the five basic planning steps outlines in the CRS Coordinator's Manual, Downe Township is responsible for fulfilling the following additional criteria to qualify for CRS credit:

- a. Downe Township must have at least one repetitive loss area delineated and mapped in accordance with Section 503 of the CRS Coordinator's Manual.

- b. A final Repetitive Loss Area Analysis Report must be submitted and adopted by Downe Township and made available to the public.
- c. Downe Township shall prepare an annual RLAA evaluation report and an updated RLAA shall be completed in time for each CRS verification field visit.

5.1 STEP 1: PROJECT NOTIFICATION

Prior to the commencement of site visits, letters were mailed to all private landowners within the repetitive loss areas to notify them of the upcoming study. In addition to the letter, property owners were sent a survey asking for general information related to their property. See Appendix B for an example of the letter and survey sent to property owners. A total of 108 letters were mailed to property owners on January 26, 2021. Copies of the letters are on file at the Downe Township Municipal Complex located at 288 Main Street, Newport NJ 08345. Individual letters will not be shared with the public in accordance with the Privacy Act of 1974.

5.2 STEP 2: PLANNING COORDINATION AND REVIEW

Downe Township reached out to 34 public and non-profit agencies that may have studies or plans that may have an impact on flooding in the villages of Fortescue, Gandy's Beach and/or Money Island or may impact the areas identified in the repetitive loss area analysis. The following studies, plans, and resiliency projects were identified and considered in this analysis:

Table 2: List of agencies that may have studies or projects in the communities of Fortescue, Gandy's Beach, or Money Island

Agency	Contact Name/#	Notes	Email
American Red Cross	Madhuri Rodriguez, Regional Director;	No response	Madhuri.rodriguez@redcross.org
American Littoral Society	Shane Godshall, Habitat Restoration Coordinator; 215-622-3705	Received significant information regarding the Fortescue Beach Restoration Project.	Shane@littoralsociety.org
Atlantic City Electric Company	Burt Lopez	Received information regarding three phase power to Gandy's Beach for sewer system.	Bert.lopez@atlanticcityelectric.com
Cumberland County Planning	Matthew E. Pisarski, Planning Director; (856) 453-2175	No response	mattpi@co.cumberland.nj.us
Cumberland County Engineer	John Knoop, County Engineer 856.453.2192	Working jointly on many resiliency projects including the elevation of the road to Money Island	johnkn@co.cumberland.nj.us
Cumberland County-OEM	Jim Manski, Deputy EM Director (609) 455-8770 ext. 363	Received the County All Hazards Mitigation Plan	jamesma@co.cumberland.nj.us
Delaware Bay Shellfish Council	Warren Hollinger, Chairman	No response	
FEMA-Region 2	Michael Moriarty, Director, Region II Mitigation; (347) 838-0427	No response	michael.moriarty@dhs.gov

Jacques Cousteau NERR	Lisa Auermuller, Assistant Reserve Manager, 848-932-3474	No response	auermull@marine.rutgers.edu
National Fish & Wildlife Foundation	Claire Flynn, Grant Administrator	No response	Claire.flynn@nfwf.org
National Oceanic Atmospheric Administration	Betsy Nicholson, Mid-Atlantic Sub-Region, Office for Coastal Management, 617-869-9148	Received information regarding USGS gauges in the area.	betsy.nicholson@noaa.gov
National Weather Service	Jason Franklin, Meteorologist-in-Charge, 609-261-6600	No response	jason.franklin@noaa.gov
NJ Governor's Office	Dan Kelly, Governor's Office of Rebuilding and Recovery 609.292.2584	No response	Daniel.kelly@nj.gov
NJDCA – Sandy Recovery	Samuel Viavattine, Director 609.984.2148	No response	Samuel.viavattine@dca.nj.gov
NJDEP Climate and Flood Resilience	Dave Rosenblatt, Chief Resilience Officer, 609.292.9236	NJDEP partially funded bulkhead improvements in Gandy's Beach.	Dave.Rosenblatt@dep.nj.gov
NJDEP- Coastal Management Program	Kimberly Springer, Office of Policy and Coastal Management; 609-292-2178	Received information regarding mapping.	Kim.Springer@dep.nj.gov
NJDEP- Natural and Historical Resources	Raymond Bukowski, Assistant Commissioner; 609-292-3541	Discussed the transfer of the Fortescue marina to the Township.	Ray.Bukowski@dep.nj.gov
NJDEP – Blue Acres Program	Fawn McGee, Director, Blue Acres Program	Received a listing of Blue Acres purchased properties.	Fawn.mcgee@dep.nj.us
NJDEP – Bureau of Shellfish	Andrew Hassall, Fisheries Biologist 856-785-0730	Received information regarding the Nantuxent Creek dredging project.	Andrew.J.Hassall@dep.nj.gov
NJDEP-NFIP Coordinator	John H. Moyle, PE, State NFIP Coordinator; (609) 292-2296	No response	John.Moyle@dep.nj.gov
NJDOT – Planning and Grants Adm	Michael Russo, Assistant Commissioner; 609-530-3640	Applied for funding to elevate the road to Money Island.	Michael.Russo@dot.nj.gov
NJDOT – Office of Maritime Resources	Scott Douglas, 609.963.2104	Received information regarding the Nantuxent Creek and possible Fortescue Creek dredging projects.	scott.douglas@dot.nj.gov
NJOEM	Chris Testa, Mitigation Unit Manager; 609-508-6557	Received NFIP and repetitive loss data	lpptestc@gw.njsp.org
Partnership for the Delaware Estuary	Kathy Klein, Executive Director 302.655.4990 ext. 102	Received information regarding the living shoreline project along Nantuxent Creek	kklein@delawareestuary.org
South Jersey Gas	Lauren Hurtt, Supervisor, Public Affairs; (609) 561-9000 ext. 4181	Discussed gas service to Fortescue.	lhurtt@sjindustries.com
SJTPO	Jennifer Marandino, Executive Director, 856-794-1941	Received information regarding 2050 Regional Transportation Plan	jmarandino@sjtpo.org
Stevens Institute	Jon Miller; 201.216.8591	No response	jmiller@stevens.edu

Stockton Coastal Research Center	Steve Hafner	Received information regarding Nantuxent Creek and Fortescue Beach projects.	steven.hafner@stockton.edu
The Nature Conservancy	Patty Doerr; 609.861.0600	Received information regarding the Nantuxent Creek project.	Patricia.doerr@TNC.org
US Army Corps – Philadelphia District	Peter Blum; 215.656.6585	Discuss the upcoming beach replenishment project in Gandy’s Beach and Fortescue.	Peter.r.blum@usace.army.mil
US Fish and Wildlife Service	Steve Mars/Eric Schradling, Senior Fish and Wildlife Biologist 609-646-9310x5267	Received information regarding two shoreline project at Gandy’s Beach and Nantuxent Creek.	Eric_schradling@fws.gov
USDA- Natural Resources Conservation Service	Hilary Trotman, Civil Engineer (856) 205-1225, ext. 3	Received information regarding easement restoration.	hilary.trotman@nj.usda.gov
Stockton University	Peter Straub, Dean, School of Natural Sciences and Math	No response	Peter.straub@stockton.edu

5.2.1 Resiliency Planning Documents

5.2.1.1 *Cumberland County Delaware Bayshore Recovery Plan, 2013*

This *Cumberland County Delaware Bayshore Recovery Plan* is the result of a partnership between the Cumberland County’s Bayshore communities and FEMA’s Community Recovery Assistance team. This plan is a guide for the Cumberland Bayshore elected officials, municipal staff, non-governmental organizations, local stakeholders, and the community at large to use in their longterm recovery efforts. The process included gathering many projects already scoped out by the county and municipalities, non-profit collaborative initiatives, Rising Tides Forum, and other relevant resiliency efforts. These projects were then inventoried, gaps were analyzed, and new projects were written where important issues were not yet addressed. This *Cumberland County Delaware Bayshore Recovery Plan* includes 26 recovery projects, developed, and prioritized by the New Jersey Delaware Bayshore Long-Term Recovery Committee. It serves as a critical tool demonstrating to potential resource providers the communities’ commitment to recovery and organizational capacity. The *Cumberland County Bayshore Recovery Plan* was released in December 2013 in the wake of the massive damage caused by Hurricane Sandy. This document served as the culmination of a four-month planning effort from federal, state, local, non-profit partners, and stakeholders to develop a unified community vision. The plan outlines the vision, recovery goals, and a list of prioritized projects to ensure future resiliency of the area.

Vision

- Sustain and stabilize the environment and economy by supporting existing businesses and promoting tourism;
- Empower families who live and work in the Bayshore communities to have a balanced approach to developing and protecting the Delaware Estuary system;
- Develop new business and tourism ventures; and

- Protect important and often vulnerable natural habitats.

Project Summaries and Task Forces:

Intergovernmental Relations

- *Formation of a Bayshore Council:* This council would inform elected officials about the continuing needs of the Bayshore region.
- *Bayshore Resiliency and Outreach Education:* The goal of this project is to educate the public about issues of sea level rise, sustainable development, coastal erosion, and resiliency.

Tourism and Economic Development

- *Business Retention and Recruitment Plan:* The goal of this project is to create a focused economic recovery plan for Cumberland County's Delaware Bayshore to make the region a desirable place for future generations of Bayshore families to commit to planting roots and raising their families here.
- *Eco-Tourism Task Force:* A group formed to continue the focus of the region on eco-tourism and help build infrastructure to support it such as revitalizing businesses, restaurants, and shops in the area to continue to attract a tourist population.
- *Bayshore Marketing and Destination Plan:* This plan will provide a road map for developing Cumberland County's Bayshore community as a nationally recognized destination.
- *Historic Bayshore Oyster Industry Revitalization:* This project will expand the shell planting program by \$500,000 to \$1 million annually for a limited period.

Infrastructure Project Summaries

- *Emergency Generators:* This project will provide a safe and sustaining emergency shelter to accommodate people evacuated from areas impacted by a storm.
- *Public Water Supply Feasibility Study:* This project will assure that each resident, business, and visitor have access to a safe and secure water supply, and it will support the sustainability of homes and businesses in the area.
- *Road Elevations and Improvements:* This project will improve coastal evacuation and public safety by elevating certain local, county and state roads to prevent flooding during high tides and storm events. The Plan specifically identifies Gandy's Beach Road, Fortescue Road, and County Route 553 in Downe Township for elevation.
- *Wastewater Management Feasibility Study:* The Plan recommended the provision of wastewater infrastructure necessary to revitalize the economy of the Delaware Bayshore area in Cumberland County. A feasibility study has been completed for Fortescue and Gandy's Beach as a result of this recommendation that has led to the planned construction of a community sewer system.

Shoreline Protection and Coastal Management Projects

- *Beach and Dune Restoration:* This project seeks technical assistance and financial resources to plan, design and implement a beach and dune restoration project for the entire Delaware Bayshore area in Cumberland County. Specially, the Plan recommends restoring beaches and dunes along the developed Bayshore

communities in Downe Township (Fortescue, Gandy's Beach and Money Island) as a first step in reconstructing vibrant, resilient coastal communities in Cumberland County.

- *Construct/Repair Bulkheads and other Structures:* The goal of this project is to protect residential and commercial property. In addition, it will prevent erosion of river and creek banks where commercial and recreational activities are present. It will also stabilize other water access points and hard structures damaged by Sandy. The Plan included the following list of structures Downe Township in need of repair or construction:
 - Money Island - Provide bulkhead replacement at the end of Gandy's Beach Road (\$530,000)
 - Fortescue - Provide bulkhead at Myers Marina and New Jersey Avenue (\$125,000)
 - Fortescue - Replace Bulkhead at Frank Carpino Delaware Bay Campground, Secure Public Access (\$750,000)
 - Fortescue - Bulkhead Replacement at Fortescue Captain's Association Marina (New Jersey State Marina) (\$2.8 M)
 - Dividing Creek Improvements (Backfill; Bulkhead - New one needed) (Maple Avenue) (\$6.15 M)
 - Fortescue Improvements (Bulkhead at Marina Inlet; Rock Jetty [800 feet]; Beach Replenishment coming from other projects) (\$3.93 M)
 - Gandy's Beach Improvements (Bulkhead; Rock Jetty [200 feet]; Beach Replenishment coming from other projects)
 - Money Island Improvements (Bulkhead; Rock Jetty [300 feet]; Beach Replenishment coming from other projects) (\$2.4 M.)

5.2.1.2 Downe Township Today & Tomorrow, 2014

This report was incorporated into the *Four County Multi-Jurisdictional Hazard Mitigation Plan* to identify resiliency projects in Downe Township. The report identifies a wide variety of projects including:

- Maple Street, Dividing Creek Improvement Plans – storm damage has compromised the safety of road shoulders, paving, and guard rails.
- Gandy's Beach Improvement Plans
 - Water & Sewage Treatment Facility
 - Jetty to Protect Marina & Cove
 - Bulkhead Repair
 - Fishing Area
 - Bay Access for Boating & Fishing
 - Parking
 - Public Restrooms
- Nantuxent Creek Improvement Plans
 - Parking
 - Elevated Boardwalk Wildlife Viewing Areas
 - Bulkhead Repair

- Fishing Area
- Public Restrooms
- Scenic Overlook
- Money Island Improvement Plans
 - Water & Sewage Treatment Facility
 - Jetty to Protect Marina & Cove
 - Bulkhead Repair
 - Bulkhead Promenade & Fishing Area
 - Bay Access for Boating & Fishing
 - Parking
 - Public Restrooms
- Fortescue Improvement Plans
 - Water and sewage treatment facility
 - Jetty to protect marina and cove
 - Bulkhead repair
 - Bulkhead promenade and fishing area
 - Bay access for boating and fishing
 - Bay kayak access
 - Parking
 - Public restrooms

5.2.1.3 Downe Township Master Plan Reexamination Report, 2016

The Downe Township Master Plan Reexamination Report states stresses the need for infrastructure and investment to meet the demands of the coastal environment. It notes the pressing demands for coastal protection, wastewater treatment, and dredging.

5.2.1.4 Four County Multi-Jurisdictional Hazard Mitigation Plan, 2016

The Mitigation Plan for Four New Jersey Counties incorporates input from approximately ninety (90) participating counties and municipalities in Camden, Cumberland, Gloucester, and Salem Counties. The Plan is an update and expansion of the South Delaware Valley Region Multi-Jurisdictional Hazard Mitigation Plans that were adopted by all four counties and approved by the Federal Emergency Management Agency in 2010 and 2011.

The Regional Hazard Mitigation Plan includes Annexes that contain detailed background information for these three focus areas and additional reference materials for the implementation of the NJ4 HMP. The County and Municipal Appendices include specific information for these same three main focus areas for each of the participating counties and municipalities. Detailed tabulations are included in these Appendices for critical facilities, status of past mitigation activities, and proposed mitigation measures.

During the Municipal Working Group Work Sessions, the Municipal Working Groups identified some SDVR HMP mitigation measures as well as new areas of concern as mitigation measures where implementation requires participation or leadership from other

levels of government, including county, state, and federal agencies. These multi-jurisdictional mitigation measures are included in the Table below. Many of these projects refer to the *Downe Township Today & Tomorrow* report for details.

Downe Township	MJ-1	Fortescue Area Improvement Plans ^{8, 9} .	Coastal Erosion and Sea Level Rise / Flood (Storm Surge & Tidal)	Goal #4	Both	Municipal OEM, Downe Township Initiative Partners
Downe Township	MJ-2	Dividing Creek / Maple Avenue Improvement Plans ^{10, 11} .	Coastal Erosion and Sea Level Rise / Flood (Storm Surge & Tidal)	Goal #4	Both	Municipal OEM, Downe Township Initiative Partners
Downe Township	MJ-3	Money Island Improvement Plans ¹² .	Coastal Erosion and Sea Level Rise / Flood (Storm Surge & Tidal)	Goal #4	Both	Municipal OEM, Downe Township Initiative Partners
Downe Township	MJ-4	Gandy's Beach Improvement Plans ¹³	Coastal Erosion and Sea Level Rise / Flood (Storm Surge & Tidal)	Goal #4	Both	Municipal OEM, Downe Township Initiative Partners
Downe Township	MJ-5	Nantuxent Creek Improvement Plans ¹⁴	Coastal Erosion and Sea Level Rise / Flood (Storm Surge & Tidal)	Goal #4	Both	Municipal OEM, Downe Township Initiative Partners
Downe Township	MJ-6	Newport Neck Road	Coastal Erosion and Sea Level Rise / Flood	Goal #4	Both	Municipal OEM, Cumberland

			(Storm Surge & Tidal)			County DPW
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8 See Downe Initiative - Page 110.

9 Mitigation Measures MJ-1 and MJ-2 part of HMGP Grant Application Project #315 under DR 4086, Hurricane Sandy. Total grant application for \$8,000,000.

10 See Downe Initiative - Page 114.

11 Mitigation Measure MJ-4 part of HMGP Grant Application Project #1557 under DR 4086, Hurricane Sandy. Total grant application for \$1,300,000.

12 See Downe Initiative - Page 123.

13 See Downe Initiative - Page 128.

14 See Downe Initiative - Page 132.

5.2.1.5 Gandy's Beach Beachfront Sustainability Project, 2017

The purpose of the *Gandy's Beach Beachfront Sustainability Project*, funded by the National Fish & Wildlife Foundation, was to develop a plan to: (1) protect and enhance the beachfront to increase the community's resiliency to coastal storms and sea level rise; (2) enhance the habitat for horseshoe crabs and red knots; and (3) increase the project life of a proposed U.S. Army Corps of Engineers (USACE) beach fill. The project involved the evaluation of structural and nonstructural options that would help increase the sustainability of the Gandy's Beach beachfront. Significant participation from stakeholders, such as Downe Township, USACE, NFWF, and the NJDEP, was facilitated during each project task. As part of the project scope of work, Mott MacDonald performed:

- bathymetric and topographic surveys;
- analysis of sediment samples and soil borings;
- investigation of existing coastal and environmental conditions with numerical modeling of nearshore waves, sediment transport, and shoreline change;
- a two-phase alternative analysis;
- initial and final design; and
- development of a "5-year" engineered beach design with a maintenance and monitoring plan.

The breakwater structures have been designed to be stable under normal conditions and withstand a 50-yr storm with minor damage. The design also accounts for the projected 50-yr. SLR increment. The structures were designed with a project life of 50 years.

It is anticipated that the structures will require periodic maintenance due to normal wear and tear, as well as repair to any damage caused by a storm event. The structures were designed based on topographic and hydrographic surveys performed in November 2015. Topographic and bathymetric conditions vary with time; thus, it is recommended that additional topographic and hydrographic surveys are performed prior to constructing the headland breakwater structures or beach fill. Any variation in topography or bathymetry may result in different footprint sizes and material quantities than those shown in the construction drawings. Similarly, it is recommended that proper overfill calculations be performed prior to implementing the beach fill to determine the required fill volume.

Vibracore borings were performed in April 2017, and the results were used to determine the stability of the bay bottom and the required foundation for the headland breakwater structures. If there is a significant lag time between the date the boring tests were performed and when the structures are to be constructed, or if the location of the structures change, or if any events occur that could alter the composition of the bay bottom within this period, it is recommended that updated boring tests are performed to ensure the current design is appropriate for the new conditions.

As per the project goals, the breakwater system was designed to work with the USACE beach fill template. The structures will also work with the “5-year” engineered beach fill, in the event that option is available for implementation prior to the USACE beach fill. If a beach fill of any other size/dimensions is implemented with the structures, their performance will vary and/or may not meet the expectations described within this report. If it is the case that a beach fill of a different size is to be implemented, a design review of the headland breakwater system is recommended.

5.2.2 Ongoing Resiliency Projects

5.2.2.1 Nantuxent Creek Dredging and Living Shoreline

The NJ Division of Fish & Wildlife is permitting the maintenance dredging of the Nantuxent Creek entrance channel to Delaware Bay, and a commercial vessel dockage area upstream from Nantuxent Creek. The Nantuxent Creek entrance channel to Delaware Bay, although historically utilized by transiting marine vessels, is being proposed as a new State Channel (#212), to be included in the State of New Jersey's maintenance dredging program managed by the NJDOT's Office of Maritime Resources. All resultant dredged material will be beneficially re-used within the Delaware Bay system to restore the eroded Money Island shoreline, enhance habitat, and improve ecological and community resilience.

The Partnership for the Delaware Estuary (PDE) installed a living shoreline in Nantuxent Creek as part of their Delaware Estuary Living Shoreline Initiative (DELSI). The photos in Figure 1 show a before and after image of their living shoreline project.

Contact: Josh Moody, jmoody@DelawareEstuary.org

5.2.2.2 Gandy's Beach Preserve Living Shoreline

The Nature Conservancy (TNC) installed a living shoreline between the communities of Money Island and Gandy's Beach that is now referred to as the Gandy's Beach Preserve. The goal of this project was to increase the resiliency of tidal marsh, beach, and oyster reef habitats to the impacts of sea level rise and more frequent severe storm events. See the map in Figure 3 for a more detailed view of the projects

Contact: Patricia Doerr - pdoerr@TNC.org



Figure 1: Photo of Nantuxent Creek before and after living shoreline

5.2.2.3 NJDEP Blue Acres Land Acquisition Program

The NJDEP Blue Acres Program was created after Hurricane Sandy in an attempt to buyout properties that are located within flood prone areas. NJDEP has \$300 million in federal funding to purchase nearly 100 homes at their pre storm market prices. Once purchased, the structures are removed from the property and the area becomes preserved open space. As of February 8, 2021, a total of 34 properties in Downe Township were purchased through the NJDEP Blue Acres Program. See Table 1 below for a list of properties that were purchased through the Blue Acres Program.

Table 3: List of properties purchased by NJDEP through its Blue Acres Program as of February 8, 2021

Town	Offer Number	Address	Closing Date
Downe	0604-0011	150 & 152 Bayview Road	07/22/16
Downe	0604-0002	177 Bayview Road	08/01/16
Downe	0604-0027	148 Bayview Road	08/01/16
Downe	0604-0013	142 Bayview Road	08/31/16
Downe	0604-0029	134-136 Bayview Road	09/09/16
Downe	0604-0018	102 Bayview Road	09/12/16

Downe	0604-0030	179 Bayview Road	09/22/16
Downe	0604-0032	246 E. Nantuxent Drive	09/27/16
Downe	0604-0022	162 Bayview Road	10/12/16
Downe	0604-0026	124 Bayview Road	10/17/16
Downe	0604-0016	144 Bayview Road	12/15/16
Downe	0604-0006	118 & 120 Bayview Road	12/28/16
Downe	0604-0036	154 & 156 Bayview Road	12/22/16
Downe	0604-0031	138 Bayview Road	01/10/17
Downe	0604-0007	164 Bayview Road	03/22/17
Downe	0604-0034	158 Bayview Road	03/30/17
Downe	0604-0021	122 Bayview Road	06/07/17
Downe	0604-0041	250 E Nantuxent Drive	10/24/17
Downe	0604-0037	160 Bayview Road	03/29/18
Downe	0604-0043	181 Bayview Road	03/29/18
Downe	0604-0023	218 Nantuxent Drive	06/27/18
Downe	0604-0019	146 Bayview Road	09/06/18
Downe	0604-0020	216 Nantuxent Drive	09/05/18
Downe	0604-0008	116 Bayview Road	10/12/18
Downe	0604-0009	114 Bayview Road	10/12/18
Downe	0604-0028	248 E Nantuxent Drive	12/05/18
Downe	0604-0001	180-182 Bayview Road	06/04/20
Downe	27		
Downe #2 FEMA	0604-0099	284 Nantuxent Dr	03/16/20
Downe #2 FEMA	0604-0064	292 Nantuxent Drive	05/28/20
Downe #2 FEMA	0604-0094	280 Nantuxent Drive	07/17/20
Downe #2 FEMA	0604-0078	282 Nantuxent Drive	09/09/20
Downe #2 FEMA	0604-0072	316 Nantuxent Drive	10/06/20
Downe #2 FEMA	0604-0068	300 Nantuxent Drive	12/28/20

Downe #2 FEMA	6		
Downe #2 (Blue Acres Fund)	0604-0066	346 Nantuxent Drive	06/30/20
Downe #2 (Blue Acres Fund)	1		
TOTAL CLOSINGS	34		

5.2.2.4 Nantuxent Creek Channel Dredging and Living Shoreline Project

The NJ Bureau of Shellfisheries, Stockton University, NJDEP Blue Acres Program, and Delaware Bay Section of the NJ Shellfisheries Council have applied for dredging permits for New Jersey Department of Transportation, Bureau of Maritime Resources (NJDOT) to dredge the Nantuxent Creek Channel to improve navigation for the oyster dredge fishery and other boat traffic. This dredging project is being planned in conjunction with another proposed Blue Acres beach nourishment project on Nantuxent Beach that will help build up the eroded shoreline. The sediments dredged from Nantuxent Channel are proposed to be placed on Nantuxent Beach, which includes several properties within the placement site.

Once the sand is placed along the Bayview Road shoreline the Blue Acres project will add some additional features to enhance habitat, ecological and community resilience as part of their post Sandy FEMA acquisition, demolition, and restoration project for flood prone and storm damaged properties along Bayview Road at Money Island. The additional restoration as part of the Blue Acres program is under development.

Andrew Hassall, Fisheries Biologist
Bureau of Shellfisheries, Delaware Bay Office
1672 E. Buckshutem Road, Millville, NJ 08332
Phone: (856) 785 – 0730

5.2.2.5 Fortescue Beach Restoration - American Littoral Society Project

ALS has proposed a project at Fortescue that included a series of rock breakwaters and oyster reefs at the south end of Fortescue, just outside the limits of the Army Corps beach replenishment project. The beach template is similar with a dune. Offshore reef structures will be installed to attenuate wave energy and enhance horseshoe crab spawning and Red Knot foraging on the beach. Continued public access is presumed. This project has been funded and currently permits are being pursued.

Fortescue beach was heavily impacted by Superstorm Sandy, removing sand and scattering rubble along the beach destroying horseshoe crab spawning habitat and leaving the subsequent marshes and communities exposed. In 2014, the ALS restored the southern portion of Fortescue beach by removing the rubble and replacing the lost sand. In January 2016, Delaware Bay beaches were hit with another crippling storm, nor'easter Jonas, leaving Fortescue beach in desperate need of sand replenishment and further protection and restoration.

With this project, the ALS team proposes to build protective oyster reef breakwaters based on previous work and to construct newly designed hybrid breakwaters that will add additional habitat while avoiding any danger of horseshoe crab impingement, a common fault of similar structures. Hybrid breakwaters will be placed closer to the portion of the beach with the greatest wave energy and the area of greatest sand loss. The breakwaters will be 100 ft. in length, 32 ft. wide and 9 ft. tall and 100 ft. from the high tide line. These breakwaters will be designed to withstand strong winds and waves from storm events providing the most protection to this beach and the community.

The hybrid breakwaters will add more spawning habitat with the accumulation of sand. This project will modify the littoral transport in a predictable way to ensure beach restoration and coastal protection function according to design. These sheltered waters will provide optimal breeding habitat for horseshoe crabs because beaches will be protected from breaking waves in nearly all-weather events. The sheltered water will also prevent crabs from overturning in breaking waves, a source of considerable mortality for crabs.

Oyster reef breakwaters will also improve the ecological profile at the site, extending down the beach in two rows of 30 blocks each measuring 5 x 10 ft. and 50 ft. apart. These smaller breakwaters will encourage shoal formations behind the structures. The ALS project team's work in previous years has proved that shoals may be as important to crabs as beaches, allowing them to lay eggs at great density on shoals. Shoals tend to produce greater surface egg availability because they are washed by the tide more frequently making them important foraging habitat for shorebirds allowing them to feed throughout the tide cycle. This is essential to fast weight gain for red knots needing to gain sufficient weight to make the final leg of their migration to their breeding grounds.

Breakwaters will be constructed to allow natural easy movement of horseshoe crabs up the beach for spawning and back to the water with the tide. The construction of the breakwaters, oyster reef breakwaters, and the gaps between them will be adjusted to optimize the protection afforded to the beach and encourage sand accumulation according to our most recent adaptive management monitoring.

The outer surface of the hybrid breakwaters is comprised of single-sized stone designed for a given level of wave action. Smaller, quarry-run, stones comprise a core. All materials used for oyster reef breakwaters will be a suitable substrate for oyster colonization and, based on our teams' previous experience constructing and monitoring oyster reefs and in consultation with members of the local oyster industry, we expect set of natural oysters and adequate survival for the breakwater to have a permanent oyster population.

The hybrid breakwaters will be underlaid with Tensar mats. Tensar fabric prevents fine materials from migrating up through the stone and prevents settling. This will provide a solid foundation for the breakwaters to ensure longevity. Mat dimensions will be specified based on breakwater designs.

Contact:
Shane Godshall, Habitat Restoration Coordinator
American Littoral Society
Cell: 215-622-3705
www.littoralsociety.org

5.2.2.6 Fortescue & Gandy's Beach Wastewater Treatment System

To reduce the threat of the discharge of untreated sewage effluent into surrounding areas a community-based sewer service project is being constructed. The proposed sanitary sewer infrastructure that will serve the existing homes and vacant developable properties in the sewer service area comprising the villages of Fortescue (including Raybin's Beach), Gandy's Beach, and the Fortescue Park/Heritage Hill Estates mobile home park. The project will remove approximately 423 developed properties from using individual onsite wastewater treatment and disposal systems (septic systems) and eliminate the risks of indirect and direct discharge of un-treated wastewater into the surrounding wetlands and waters of the State while providing for economic development. Funding from NJDEP, US Department of Agriculture, New Jersey Environmental Trust, and NJ Department of Transportation is being used to leverage this project. The Cumberland County Board of Commissioners has committed to back the financing of this project. The project is designed to serve 333 properties in Fortescue and 90 properties in Gandy's Beach. The project is currently in the permitting phase and construction is planned to start in 2022.

This project is a once-in-a-generation opportunity to provide critical infrastructure to one of the last Delaware Bayshore communities in New Jersey and has resulted from an unprecedented effort and collaborative partnership between local, county, state, and federal agencies as well as vociferous advocacy on the part of the Township and its people.

The plant will have a capacity of 130,000 gpd. The proposed method of treatment to achieve the required effluent discharge limits is a filtration system provided by Alfa Laval. The treatment plant will include a 30,000-gallon influent chamber, 81,250-gallon aeration chamber, 24-ft diameter mechanical clarifier, a 20,000-gallon sludge chamber with 17 days of sludge storage, and a tertiary cloth filter.

In 2021, the Township plans to apply for a FEMA BRIC Grant for the installation of two permanent emergency generators for the Fortescue-Gandy's Beach Wastewater Collection and Treatment Project. One generator will be located at the treatment plant in Fortescue and the other will be located at the pump station in Gandy's Beach. The Gandy's Beach generator will be powered by diesel fuel and the Fortescue generator will be powered by natural gas; they are sized to only support the sewer operation. The generators will be designed and constructed in accordance with ASCE-24-14 or latest version, if applicable. The design and construction will be complete in full compliance with all applicable federal, state, and local floodplain and land use laws and regulations including 44 CFR 60.3 (floodplain management criteria). Both generators will be elevated above the 500-year flood level.

5.2.2.7 Home Elevations - FEMA

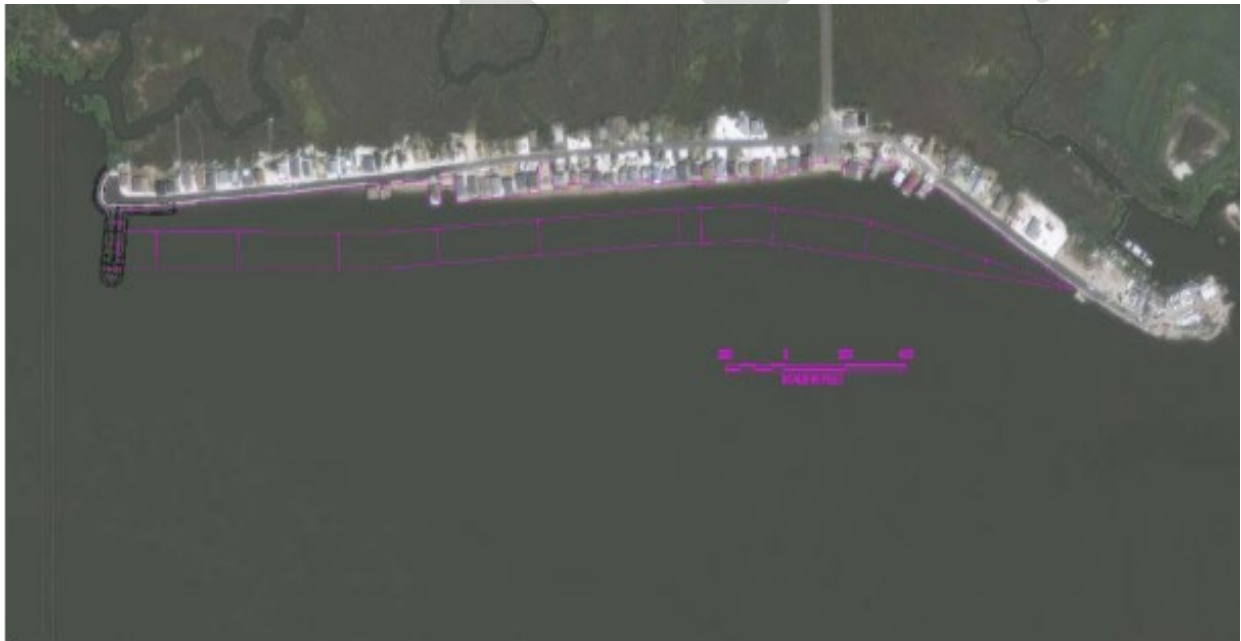
Downe Township applies for FEMA Flood Mitigation Assistance Grants each year on behalf of its property owners to secure funding for home elevations. FEMA provides 75 percent grants for any property that has NFIP flood insurance. FEMA funds is increase to 90 percent for repetitive loss properties and 100 percent for sever repetitive loss properties. FEMA funding is limited to eligible cost which is strictly limited to the basic cost to elevation the home.

5.2.2.8 South Cove Road Seawall Embankment – FEMA funded \$1.3M

A 1,200 lf embankment repair is planned. The project includes a concrete rubble berm, and a 12-inch-thick concrete slurry cap on top of the concrete rubble.

5.2.2.9 New Jersey Avenue Seawall Cap Walkway in Fortescue – FEMA funded \$803,000

Concept plans call for a 9-foot public walkway, with railings and path lighting. Access to the walkway will be provided in proximity to a future restroom adjacent to the seawall on the opposite side of New Jersey Avenue. Two access points will be stairs and one access point will need ADA requirements. Access points to the soon to be restored beach is not included in this scope.



Gandys Beach

5.2.2.10 Delaware River Dredging Material Utilization (DMU) Project - \$288 Million

The USACE Philadelphia District conducted the Delaware River Dredged Material Utilization and Beneficial Use Opportunities Study. Approximately 3,000,000 cubic yards of sediment are dredged from the Delaware River. Essentially all the sediment is removed from the estuary system and placed in upland Confined Disposal Facilities. This study explored

innovative methods for management and reuse of dredged material in order to improve flood risk management. A Feasibility Cost Sharing Agreement was signed by the NJDEP on February 27, 2014. USACE held its Alternative Milestone meeting on March 31, 2015 to finalize the various study alternatives evaluated in the study to utilize dredge material for flood risk management. The findings of the study indicated that there is Federal interest in further investigations of multiple-purpose beneficial sediment reuse opportunities through a feasibility study within Delaware including Gandy's Beach and Fortescue. At Gandy's Beach, the recommended plan calls for a berm only beachfill. The design will tie into a terminal groin at the northwest end of Gandy's Beach.

For Fortescue, the recommended plan calls for a berm only beachfill with the parameters shown on the map below. The full width of the design extends in from of all developed structures bay ward of Delaware and Jersey Avenue. The proposed groin will a rubble mound which is parallel to the existing groin and will extend 270 feet bayward.



Fortescue

This project was authorized by Congress as part of the Water Resources Development Act (WRDA) in 2020. The next step is to allocate funding for this project. Typically cost share is 65 percent Federal and 35 percent Local. Congress can approve supplemental funding which could make the project 100 percent federally funded. This historically has only occurred after disasters.

In order to maintain the integrity of the design beachfill, periodic renourishment must be included in the project design. Discussions continue with the Corps to include breakwaters in the beach renourishment design. The Corps has agreed to pursue this by:

- Post Project Monitoring – to measure the rate of erosion
- Post Authorization Design Changes (ensure that NJDEP supports this option) – to include breakwaters in the initial design if cost effective.

The project cost for the Army Corps is:

Terminal Groins (2022) – Gandy’s Beach \$8,226,000; Fortescue \$6,405,000
 Beach Nourishment (2023) – Gandy’s Beach & Fortescue \$58,091,000
 Breakwaters - \$22,000,000

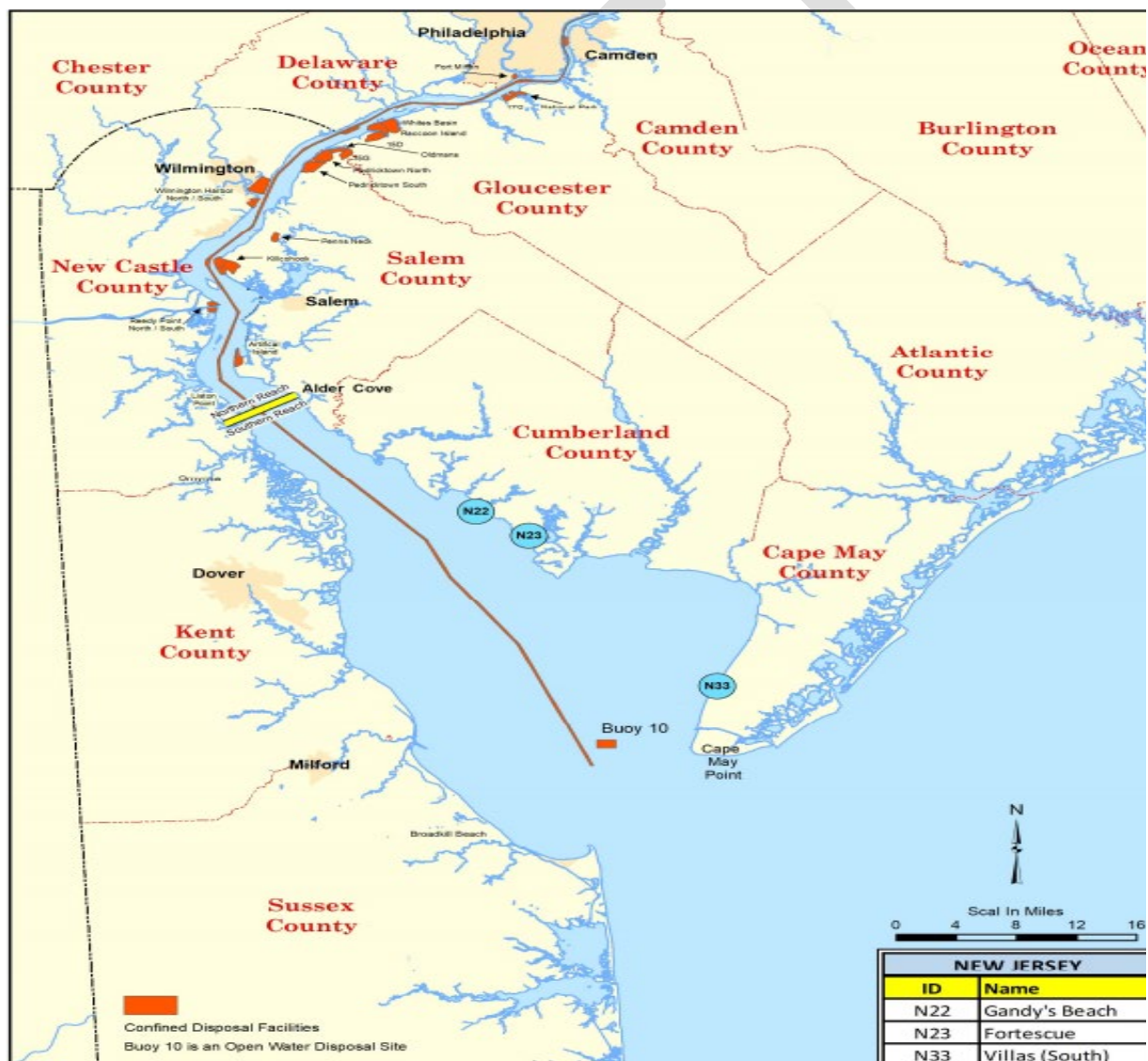
Assuming a 65/35 funding for this project, cost would be allocated in the following manner:

Fed: \$43M

State: \$17M

Downe Township: \$7M + \$3.7M in real estate costs = \$10.7M (per State Aid stipulations real estate acquisition shall be funded 100% by municipality)

Figure 2: Recommended Plan Dredged Material Placement Sites



5.2.3 Proposed Projects

5.2.3.1 Delaware Bayshore Science & Research Center

The Delaware Bayshore Science & Research Center is planned for a site at the intersection of Money Island Road and Nantuxent Drive. The proposed project will include a multi-use science and research center that includes a hatchery, laboratory, recreational facilities, classrooms, a restaurant, and marina. The project will serve as an anchor to Downe's Bayshore villages, which have long suffered disinvestment due to declining natural resources and lack of infrastructure. The Township has secured a grant from the United States Department of Agriculture to prepare a feasibility study that will examine the infrastructure needed for such a facility, the potential market for the facility, and logistical and infrastructural issues associated with designing and constructing a facility, including both financing and attracting potential partners. The Delaware Bayshore Center will not directly benefit a specific business, but rather serve as an incubator and accelerator for existing enterprises, particularly the existing shellfish industry. The research component section of the facility will provide benefits to the shell fishing industry as well as educate students and professionals of the aquatic sciences. As an anchor institution on the Bayshore, the facility will also provide a comprehensive array of recreational facilities, including new docks, a boat ramp, and appurtenant facilities. The Center is anticipated to generate approximately 10-20 full time new jobs and an addition 10 to 20 seasonal employment opportunities. In addition, approximately 100 construction jobs will be created on a part time basis. Due to the multifarious nature of the proposed facility, it is anticipated that the Center will serve as a worksite for jobs currently sited elsewhere and result in additional jobs to be sited directly at the facility.

5.2.3.2 Money Island Road Elevation (\$3.1 M)

An NJDOT Local Freight Impact Fund Grant is being pursued to fund the elevation of the entrance road to Money Island to support the shellfish industry. The project limits are Money Island Road (CR 643) from Gandy's Avenue to Nantuxent Drive a distance of 4,530 ft; and Nantuxent Drive (a municipal road) from Money Island Road to the Oyster Port Road a distance of 1,420 ft; which connects to Oyster Port Road on Money Island. This project connects the Oyster Port in Money Island to the marketplace outside of Downe Township. These roads provide the only access to the Oyster Port. The Money Island oyster industry results in revenues of over \$50 million annually. The oysters are offloaded at the Oyster Port and transported to Port Norris where the seafood is processed for market.

5.2.3.3 South Fortescue Beach Bulkhead (\$2.1 M)

The project is located in Fortescue on the west side of New Jersey Avenue. The new bulkhead will tie into an existing bulkhead located at the southerly end of the public fishing beach. More specifically, the beginning point is on the westerly side of New Jersey Avenue approximately 500' south of Budney Avenue. The overall length of the project is roughly 2,500 lineal feet with its southerly terminus located at the Raybin's Beach bridge. The new bulkhead will be placed adjacent to and immediately in front of the existing/former bulkhead line and consist of steel sheets estimated at 15' long. No funding is in place for this project.

5.2.3.4 State Marina Resiliency Project (\$3.2 M)

In 2013, the Township submitted a Letter of Intent to the State for resiliency improvements to the State-owned marina in Fortescue. The improvements included bulkhead repair and replacement, installation of jetty rock, and silt and sand debris removal from the gas docks and channel. The Fortescue Captains & Boat Owners Association hold a 20-year lease on this property.

5.2.3.5 Oranoakin Creek Resiliency Project (\$450,000)

The Oranoakin Creek is a tidal, brackish waterway that feeds into the Delaware Bay. NJ Fish and Wildlife Service has noted that this area is one of the top producing creeks for crabbing in the State. Significant debris has been washed into the waterway, reducing access. Dredging of this area was requested by the Township via a Letter of Interest to the State in 2013.

5.2.3.6 Maple Avenue Resiliency Project (\$6.3 M)

The existing edge of Maple Avenue is severely eroded and continues to erode with each high tide. Maple Avenue which is the sole access point to natural park areas, is in risk of being destroyed. The shoulder of the road is being held in place by concrete planks that have been compromised and are leaning into the water. The existing shoulder width is approximately six feet wide and consists of gravel and stone fill, some of which is wrapped in filter fabric. The proposed mitigation consists of a new bulkhead to protect the road.

5.3 STEP 3: FIELD VISITS & DATA COMPILATION

A site visit to the Delaware Bayshore villages of Fortescue, Gandy's Beach, and Money Island were conducted on February 8, 2021. A photolog summarizing the information gathered on this site visit is attached in Appendix C. The following information was gathered during the site inspection.

- Existing mitigation alternatives
- Type and condition of foundation and/or whether the structures are elevated.
- Number of stories
- Relative height above grade
- Presence of utilities at risk of flood events

In addition to the site visit, additional desktop analysis of conditions such as observation of the digital elevation models and a review of FEMA flood insurance rate maps published June 16, 2016. According to the FEMA FIRM map, all of the properties that fall within the repetitive loss areas are within either the VE or AE zone. See Figure 4 for a map showing the repetitive loss areas and their respective flood zones. A summary of each of the repetitive loss areas is provided below.

5.3.1.1 Repetitive Loss Area 1

Area 1 is located in the Bayshore village of Money Island. Money Island is located along Nantuxent Creek where it lets out into the Delaware Bay. There are three properties within

the repetitive loss area. A site inspection of this area showed that all three properties within the repetitive area are located on slab foundations and are not elevated. The utilities that are visible do not appear to be elevated. This area is immediately adjacent to Nantuxent Creek. The area across the road from these properties consists of an unnamed tributary to Nantuxent Creek and a large coastal wetland complex dominated by *Spartina alterniflora*. The presence of this species indicates that this wetland is being flooded twice daily. The tributary that runs along the road appears to drain the wetland complex into Nantuxent Creek.

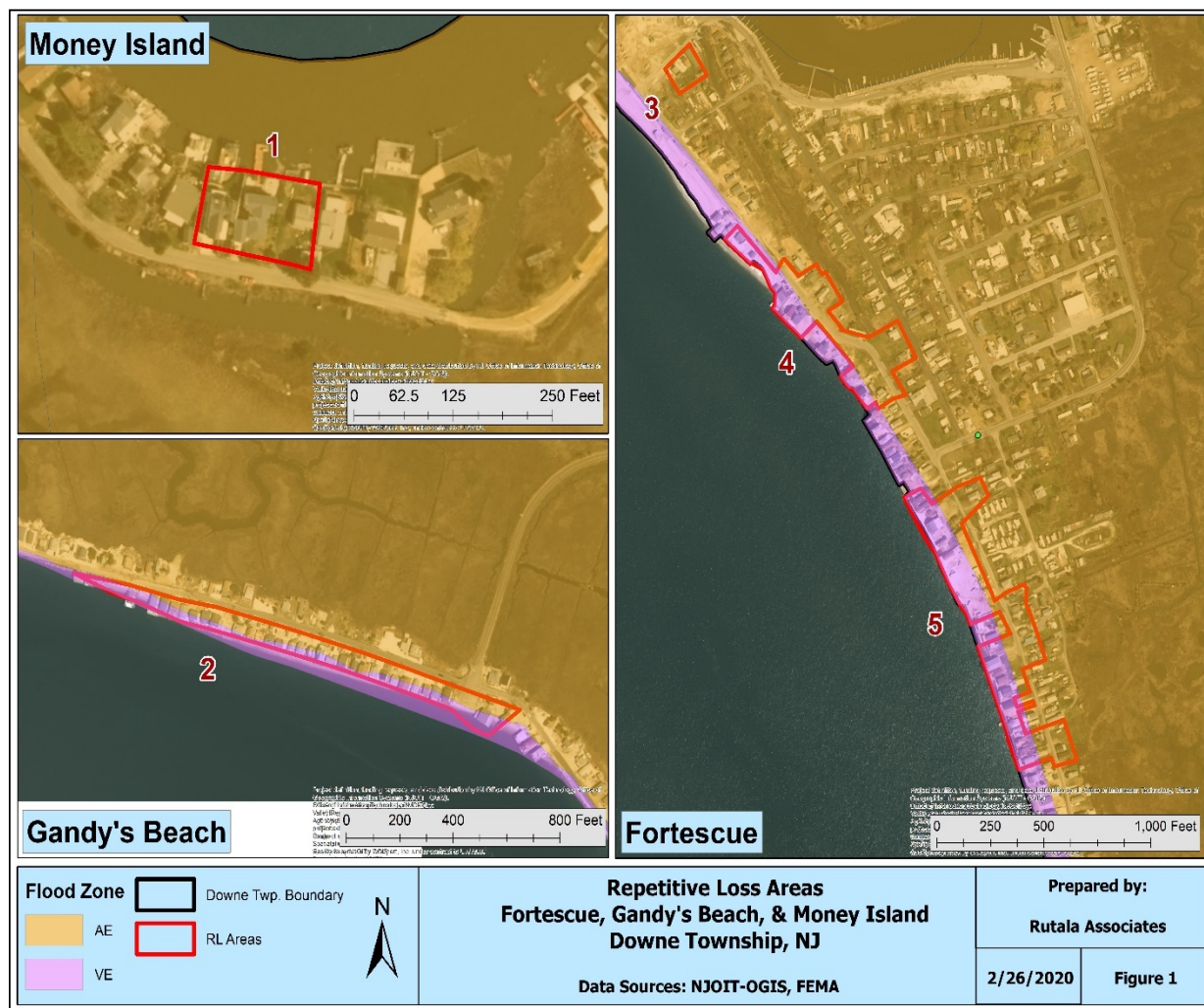


Figure 3: Repetitive Loss Areas Showing Respective Flood Zones

5.3.1.2 Repetitive Loss Area 2

Area 2 is located in the Bayshore village of Gandy's Beach along the western portion of Cove Road. Gandy's Beach is located directly along the Delaware Bayshore. This repetitive loss area is located on the bayside of Cove Road. These properties have direct exposure to the bay. There are 31 properties within Repetitive Loss Area two. Many of these properties are elevated above grade because they are exposed to wave action from the Delaware Bay. Two

properties within this area lack access to the property. Most of the utilities appear to be elevated. Some properties may require further elevation to be adequately protected from coastal flood damages.

5.3.1.3 Repetitive Loss Area 3

Area 3 is located in the northern portion of the Bayshore village of Fortescue directly across from Fortescue Creek. These properties have coastal wetlands behind them, and a small tributary and coastal wetland runs along the north side of the repetitive loss area. The houses in this area are located on slab foundations and it appears that the utilities may be elevated. There are coastal wetlands behind these properties dominated by *Phragmites australis*. The presence of this species indicates that the area behind the house consists of a high marsh and likely floods, but not daily.

5.3.1.4 Repetitive Loss Area 4

Area 4 is located in the northwestern portion of the village of Fortescue bordering the Delaware Bayshore. The repetitive loss areas consist of mostly the properties along the bay side of Delaware Avenue and a few houses on the landward side of the road. The properties in this repetitive loss area have several types of foundations including slab, crawl space, and pilings. The utilities are only elevated in the more updated properties. No specific drainage issues were observed. There is a coastal wetland complex behind the properties located on the landward side of Delaware Avenue.

5.3.1.5 Repetitive Loss Area 5

Area 5 is located in the southern portion of the village of Fortescue bordering the Delaware Bayshore. The repetitive loss areas consist mostly of the properties along the bay side of New Jersey Avenue and a few houses on the landward side of the road. There are two rows of properties on the bay side of the road. The properties in this repetitive loss area have several types of foundations including slab, crawl space, and pilings. The utilities are only elevated in the more updated properties. No specific drainage issues were observed. There is a *Spartina alterniflora* dominate coastal wetland complex bordering the southeastern portion of this area. The presence of this species indicates that that wetland complex is inundated at least twice daily.

5.4 STEP 4: ALTERNATIVES ANALYSIS

As part of the CRS program, FEMA issued guidance for mitigating flood prone structures. As recommended by the FEMA guidance, the following mitigation alternatives were considered for potential methods for protecting property in the villages of Fortescue, Gandy's Beach and Money Island. The mitigation alternatives that were analyzed are listed below: Drainage Improvements, Barriers, Wet Floodproofing, Dry Floodproofing, Elevation, Relocation, and Acquisition.

Advantages	Disadvantages
<ul style="list-style-type: none"> Can increase a stream's carrying capacity through overflow channels, channel straightening, restrictive crossing replacements, or rainfall/runoff storage. Minor projects may be fundable under FEMA mitigation grant programs. 	<ul style="list-style-type: none"> May help one area but create new problems upstream or downstream of the proposed improvements. Channel straightening increases the capacity to accumulate and carry sediment, thereby potentially adversely affecting the surrounding areas and the stream system's equilibrium. There can be difficulty in setting culverts of a sufficient size in a stream to convey the 100-year flood discharge, unless weir flow over the road surface is considered.

Drainage Improvements

Due to the low population of the villages of Fortescue, Gandy's Beach, and Money Island and their proximity to waterways, these areas do not have extensive drainage systems. In these areas' stormwater is conveyed directly into the adjacent waterways. Drainage improvements in the villages of Fortescue, Gandy's Beach, and Money Island consist of modifying the hydrology of the adjacent wetlands and installing a modern stormwater system. The per capita cost of installing a community wide drainage system would be significant.

Barriers

A flood protection barrier would consist of either a living shoreline, an earthen berm, or bulkhead/seawall. This would involve the construction of a barrier either around all of the communities or at specific sites to limit floodwaters from a specific point. Due to the highly dynamic conditions in this area, sheet piles or concrete barriers are likely the only option in these areas. However, the per capita benefit from installing widespread bulkheads/seawalls will be low due the limited population in these villages.

Advantages	Disadvantages
<ul style="list-style-type: none"> Floodwaters cannot reach the structure(s) in the protected area and therefore will not cause damage through inundation, hydrodynamic pressure, erosion, scour, or debris impact. The structure and the area around it will be protected from inundation, and no significant changes to the structure will be required. 	<ul style="list-style-type: none"> Barriers may not be used to bring a substantially damaged or substantially improved structure into compliance with the community's floodplain management ordinance or law. Cost may be prohibitive, as a large area may be required for construction. Periodic maintenance is required. Local drainage can be affected, possibly creating or worsening flood problems for others.

Wet Floodproofing

Wet floodproofing involves retrofitting uninhabited areas of a structure so that they are resistant to flood damages. This would allow water to penetrate and flow through these

areas during a flood event. Examples of wet floodproofing would include flood vents in a basement or crawl space.

Advantages	Disadvantages
<ul style="list-style-type: none"> Wet floodproofing measures are often less costly than other mitigation measures. Allows internal and external hydrostatic pressures to equalize, lessening the loads on walls and floors. 	<ul style="list-style-type: none"> May be used to bring a substantially damaged or substantially improved structure into compliance with the community's floodplain management ordinance or law <u>only</u> if the enclosed areas of the structure below the BFE are above grade on at least one side and used solely for parking, storage, or building access. (When in communities that allow buildings constructed on below grade crawlspaces, see FEMA Technical Bulletin 11-01, <i>Crawlspace Construction for Buildings Located in Special Flood Hazard Areas</i>.) Extensive cleanup may be necessary if the structure becomes wet inside and possibly contaminated by sewage, chemicals, and other materials borne by floodwaters. Pumping floodwaters out of a basement too soon after a flood may lead to structural damage. Periodic maintenance may be required. Does not minimize the potential damage from high-velocity flood flow and wave action.

Dry Floodproofing

This involves installing watertight shields and barriers over doors, windows, and spaces where water would penetrate. This involves extensive effort from the homeowner during severe precipitation events and anticipated flood events.

Advantages	Disadvantages
<ul style="list-style-type: none"> Dry floodproofing is less costly than other retrofitting methods. Does not require the additional land that may be needed for levees and floodwalls. May be fundable under FEMA mitigation grant programs. 	<ul style="list-style-type: none"> May <u>not</u> be used to bring a substantially damaged or substantially improved residential structure into compliance with the community's floodplain management ordinance or law. Dry floodproofing requires human intervention and adequate warning to install protective measures. Does <u>not</u> minimize the potential damage from high-velocity flood flow and wave action. Ongoing maintenance is required. Flood shields may not be aesthetically pleasing.

Elevation

Elevation consists of the elevation of individual properties in the communities of Fortescue, Gandy's Beach, and Money Island. This would involve the elevation of structures and utilities in flood prone areas to or above the flood level. The type of elevation depends on the original

method of construction, foundation, and flooding conditions. This is one of the most commonly used methods of flood protection and mitigation.

Advantages	Disadvantages
<ul style="list-style-type: none"> ▪ Elevating to or above the BFE allows a substantially damaged or substantially improved house to be brought into compliance with the community's floodplain management ordinance or law. ▪ Often reduces flood insurance premiums. ▪ Techniques are well-known, and qualified contractors are often readily available. ▪ May be fundable under FEMA mitigation grant programs. 	<ul style="list-style-type: none"> ▪ Cost may be prohibitive. Additional costs are likely if the structure must be brought into compliance with current code requirements for plumbing, electrical, and energy systems. ▪ The appearance of the structure and access to it may be adversely affected.

Relocation

Relocation involves the movement of a structure to a location outside of the 100-year floodplain. In the case of Fortescue, Gandy's Beach, and Money Island, relocation would involve leaving these communities and moving to an offshore location in Downe Township or elsewhere.

Advantages	Disadvantages
<ul style="list-style-type: none"> ▪ Removes flood problem since the structure is relocated out of the floodprone area. ▪ Allows a substantially damaged or substantially improved structure to be brought into compliance with a community's floodplain management ordinance. ▪ May be fundable under FEMA mitigation grant programs. 	<ul style="list-style-type: none"> ▪ Cost may be prohibitive. ▪ Additional costs are likely if the structure must be brought into compliance with current code requirements for plumbing, electrical, and energy systems.

Acquisition

Acquisition involves an entity or organization purchasing properties and removing the structures. In this case, the property owners would move to another property located outside of the floodplain. Either a property meeting the current guidelines and rules can be built on the property or the property can be used as open space. NJDEP has been purchasing homes in Money Island as part of its Blue Acres program. This is an effort by the NJDEP Green Acres Program to purchase flood prone properties. This program gives residents in flood prone areas the opportunity to sell their homes to the state for its market value before Hurricane Sandy.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Permanently removes problem since the structure no longer exists. • Allows a substantially damaged or substantially improved structure to be brought into compliance with the community's floodplain management ordinance or law. • Expands open space and enhances natural and beneficial uses. • May be fundable under FEMA mitigation grant programs. 	<ul style="list-style-type: none"> • Cost may be prohibitive. • Resistance may be encountered by local communities due to loss of tax base, maintenance of empty lots, and liability for injuries on empty, community-owned lots.

5.5 STEP 5: RECOMMENDATIONS

While Downe Township encourages individual homeowners to employ flood protection measures to protect their property, Downe Township seeks to improve general flood preparedness by assisting individual homeowners in flood proofing their homes and helping them apply for funding to elevate their homes and utilities. Downe Township is actively working to improve infrastructure in the communities of Fortescue, Gandy's Beach, and Money Island so that these areas are safe for its residents and will attract tourists and additional residents for years to come.

Mitigation Action 1: Encourage Flood Insurance

Seventy-eight percent of the 2020 National Household Survey (NHS) respondents reported they had homeowner's (or renter's) insurance policies. However, only 21 percent of NHS respondents who lived in a flood-prone area said they had flood insurance. Flood insurance is important because most home insurance policies do not cover flooding. The reason why so few people have flood insurance may be because fewer than 2 percent of NHS respondents had read, seen, or heard about how to get it.

All properties in flood-prone areas should be insured with NFIP flood insurance. This activity should be done as soon as possible. NFIP flood insurance will not only fund damage as it occurs from flooding but will also allow the property owner to qualify for a FEMA reimbursement grant to elevate their home. The only prerequisite for this grant program is NFIP flood insurance.

To learn more about flood insurance and to find a flood insurance provider, visit the [National Flood Insurance Program \(NFIP\)](#) and [floodsmart.gov](#) websites. It takes about 30 days for flood insurance to go into effect after the purchase date.

Mitigation Action 2: Prepare for Flood Event, Live with Water

Property owners shall take measures to protect their individual homes. This will involve removing any items that could be damaged from basements, crawl spaces or other flood prone areas of the property. In addition, property owners should seek to invest in

floodproofing measures such as sandbags, flood vents in basements or consider dry floodproofing measures. The Downe Township public works department will provide technical assistance and advise on best management practice. This mitigation action shall occur as soon as possible and is at the cost of the property owner. Downe Township will explore funding opportunities for floodproofing measures.

Mitigation Action 3: Secure FEMA Home Elevation Grants for Homeowners

Elevate repetitive loss areas within areas with a high risk of flooding. Downe Township will continue to apply annually for FEMA grant for home elevations for property owners. Only municipalities can apply for these grants, individual homeowners do not qualify.

Mitigation Action 4: Elevate Utilities and HVAC Systems

Encourage and assist property owners with elevating their HVAC and other vulnerable utilities above the base flood elevation. Downe Township public works staff will work to identify structures whose utilities require elevation and will work with property owners to complete this action. While costs of the utilities and upgrades are the responsibility of the homeowner, Downe Township will continue to apply for FEMA home elevation grants on an annual basis to assist property owners.

Mitigation Action 5: Expand Emergency Management Services

Create an emergency management portal and contact list to keep property owners informed about upcoming flood events, information on how to better protect their homes, and for additional flood related information. Downe Township will be responsible for developing an emergency management portal and contact list.

General Recommendations:

The following briefly summarizes general recommendations that have been made to address the management of tidal flooding and stormwater runoff:

- Strengthen Floodplain Management Ordinance – to consider critical facilities standards, higher freeboard requirements, etc.
- Evaluate Standards for New Development – adjust bulkhead ordinance to increase heights in vulnerable areas, freeboard, and other regulations to account for climate change.
- Inspect all outlet structures and install tide-check valves on all outfalls.
- Raise all critical infrastructure to a minimum elevation required by FEMA.
- Continue to update the Repetitive Loss Area Analysis to account for new data.
- Home Elevations – accelerate remaining home elevations and develop gap financing to support homeowners who have received FEMA grants.

- Support floodproofing of non-residential buildings.
- Install and maintain inlet grates/debris collectors and identify debris hotspots.
- Install and maintain living shorelines in the Money Island area and other appropriate areas.
- Install Township wide warning system to alert homeowners of pending events.
- Elevate evacuations routes.
- Utilize temporary or permanent flood walls along the municipal borders to protect the Township from flood waters.
- Upsize outfall pipes as needed.
- Construct additional stormwater pump stations as needed.
- Implement runoff reducing practices and construction techniques.
- Pursue funding and fully implement all the Ongoing and Proposed Projects detailed above.

Implementation

The Township should continue to seek funding opportunities for adaptation planning and mitigation projects. Many federal, state, and nonprofit funding opportunities are available. Below is a list of potential grant programs:

National Flood Insurance Program – Increased Cost of Compliance Coverage

Increased Cost of Compliance Coverage (ICC) funding is not a loan and does not have to be repaid. It is managed by the National Flood Insurance Program (NFIP) and is available to property owners who carry new and renewed standard flood insurance policies. It helps homeowners meet the costs of repairing or rebuilding their property to comply with building requirements of their community and reduce future flood damage. The maximum amount a homeowner can receive is \$30,000 and is based on a proof of loss, a detailed repair estimate and a substantial damage declaration from the community. ICC funding can be used to pay for:

- The elevation of a home above the flood elevation level adopted by the community
- The relocation of a home out of harm's way
- The demolition and removal of a damaged home

Eligibility requirements include:

- Location in a flood plain
- Property has suffered substantial damage from a flood
- Property has had repeated damage by floods

New Jersey Blue Acres Buyout Program (BAB)

The New Jersey Department of Environmental Protection uses Community Development Block Grant Disaster Recovery (CDBG-DR) funds for the Superstorm Sandy Blue Acres Program to purchase properties from willing sellers at the pre-storm value in areas that repeatedly sustain significant flood loss. The goal of the Blue Acres Program, which has historically served as part of NJDEP's Green Acres Program that purchases flood-prone properties, is to dramatically reduce the risk of future catastrophic flood damage and to help families move out of harm's way. Once acquired by the State, these homes will be demolished and the land will be permanently preserved as open space, accessible to the public, for recreation or conservation. The preserved land will serve as natural buffers against future storms and floods.

NJEDA Neighborhood and Community Revitalization Program

Using Community Development Block Grant Disaster Recovery (CDBG-DR) loans, the New Jersey Economic Development Authority (NJEDA) administers the Neighborhood and Community Revitalization program, which supports the long-term recovery of municipalities by funding economic revitalization projects. The program will assist in public facilities improvements, provide loans, loan guarantees and technical assistance to small businesses; and help towards façade and code-related improvements. Eligible grantees include redevelopment agencies, municipalities, businesses, and non-profit organizations.

New Jersey Energy Resiliency Bank Program

Using Community Development Block Grant Disaster Recovery (CDBG-DR) funds, the New Jersey Economic Development Authority (NJEDA) administers the New Jersey Energy Resilience Bank Program, which builds energy resilience by providing technical and financial support, including grants and low-interest loans, to critical facilities for energy resilience projects or enhancements to existing energy infrastructure.

NJDEP Flood Risk Reduction Program (FHRRP)

Using Community Development Block Grant Disaster Recovery (CDBG-DR) funds, the New Jersey Department of Environmental Protection (NJDEP) will support Army Corps' efforts to implement flood risk reduction measures with an easement acquisition program. NJDEP will also use funds for competitive grants to local government entities for eligible flood hazard risk reduction and resiliency infrastructure measure improvements or projects.

NJDEP Shore Protection Grants & Loans

The NJDEP's Shore Protection Fund was established to protect public and private property and infrastructure from coastal storm damage, erosion and shoreline migration, and sea-level rise. Projects include beach replenishment and construction and maintenance of

bulkheads, jetties, and seawalls. Recent legislation has set the annual appropriation at \$45,000,000 for eligible municipalities & counties. Priority is given to funding necessary to match federal appropriations to the US Army Corps of Engineers (USACE) for congressionally supported shore protection projects. Eligible projects must be associated with the protection, stabilization, restoration, or maintenance of the shore, including monitoring studies and land acquisition, and must be consistent with the current New Jersey Shore Protection Master Plan and Coastal Zone Management Program. Project areas must be affected by normal tidal cycles and be located on public or private property which has legal, perpetual easements assigned to the state for public access and use. Projects are prioritized, based on: Need to maintain or repair an existing state shore protection feature or structure; Relative potential storm damage risk to public and private property and infrastructure; this priority consideration includes the direct exposure to coastal storms and the relative values of the at-risk property and infrastructure; Public access and use enhancements provided by the project.

FEMA Hazard Mitigation Grant Program (HMGP)

HMGP is only offered during a presidentially declared disaster. This reimbursement program provides up to \$30,000 to assist homeowners with the elevation of their primary single-family residences in line with the Flood Insurance Risk Maps in affected communities. The HMGP provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

FEMA Flood Mitigation Assistance (FMA) Program

The Flood Mitigation Assistance (FMA) program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to help states and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insured under NFIP. Eligible properties must maintain flood insurance for the life of the structure. To receive an increased federal cost share, properties must be a severe repetitive-loss property or a repetitive-loss property.

Cost-share availability under the FMA program depends on the type of properties included in the grant. For example, severe repetitive-loss properties may receive up to 100 percent federal funding and repetitive-loss properties may receive up to 90 percent.

- In the case of mitigation activities to severe repetitive-loss structures:
 - FEMA may contribute up to 100 percent federal funding of all eligible costs, if the activities are technically feasible and cost-effective; or
 - FEMA may contribute an amount equaling the expected savings to the NFIP from expected avoided damages through acquisition or relocation activities if the activities will eliminate future payments from the NFIP for severe repetitive-loss structures through an acquisition or relocation activity.

- In the case of mitigation activities to repetitive-loss structures, FEMA may contribute up to 90 percent federal funding of all eligible costs.
- In the case of all other mitigation activities, FEMA may contribute up to 75 percent federal funding of all eligible costs.

Structures with varying cost-share requirements can be submitted in one application. Applicants must provide documentation in the project application showing how the final cost share was derived. FEMA will identify applications for further review based on several criteria, including but not limited to: savings to the NFIP, applicant rank and property status (e.g., repetitive-loss property, severe repetitive-loss property). FEMA also may identify an application for further review out of rank order based on considerations such as program priorities, available funds, and other factors.

FEMA BRIC Grant Program

Building Resilient Infrastructure and Communities (BRIC) will support states and local communities as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

United States Army Corps of Engineers (USACE)

The USACE helps under the Continuing Authorities Program (CAP). The USACE will evaluate various projects to determine if there is a Federal Interest. If a Federal interest exists, the USACE will complete engineering and construction with a non-Federal sponsor who agrees to cost share the feasibility study and construction.

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