

Nassau County Annex

This document presents the Nassau County annex to the *Nassau County Multi-Jurisdictional Hazard Mitigation Plan*.

Hazard Mitigation Plan Points of Contact

The individuals below have been identified as this jurisdiction’s points of contact for the hazard mitigation plan. These individuals are members of the Planning Committee that met regularly for the update of this plan and will continue to meet in the years ahead to implement it.

Primary Point of Contact	Alternate Point of Contact
Susan Park, Director of Recovery Nassau County Office of Emergency Management 510 Grumman Road W. Bethpage, NY 11714 spark@nassaucountyny.gov 516-573-9600	Nicole Marks, Director of Planning Nassau County Office of Emergency Management 510 Grumman Road W. Bethpage, NY 11714 nmarks@nassaucountyny.gov 516-573-9650

Profile

Nassau County covers approximately 286.69 square miles¹ and has a total population of 1,358,343 according to the American Community Survey 5-year 2018 Estimates. Some of the demographics of Nassau County are summarized in Table 1. This information supported the development of mitigation actions that account for the needs of the most vulnerable individuals in the community.

Table 1: Nassau County Demographic Information

Demographic	Demographic
Below 5 Years Old	5.5%
Above 65 Years Old	18.2%
Individuals with Disabilities	4.6%
Persons in Poverty	5.8%
Renters	19.9%
Without a High School Diploma	8.8%
Without Access to Broadband Internet	11.1%
Black or African American alone	13.1%
American Indian and Alaska Native alone	0.5%
Asian alone	10.9%
Native Hawaiian and other Pacific Islander alone	0.1%
Two or More Races	2.0%
White alone, not Hispanic or Latino, percent	58.5%
Hispanic or Latino	17.5%

¹ This is inclusive of land area only.

Nassau County is a largely suburban area and continues to see growth and development in various sectors. This includes new single family and multi-family residential construction, particularly in communities with proximity to mass transit. Development projects have also occurred in the retail, office, industrial and warehouse sectors, to meet the demands of various business industries. To support this growth in development, major investments in infrastructure have been and continue to be made. These include the expansion of the Long Island Rail Road's capacity through a new third track on the Main Line, and new access to Grand Central Terminal through the East Side Access Project. Significant investments have also been made to the County's sewer system, particularly through the hardening of the Bay Park Sewage Treatment Plant, and now, the Bay Park Conveyance Project. While growth continues in the County, "open space" continues to be prioritized with the County safeguarding green space and harbors where possible. Nassau County comprises large waterways and long shorelines; therefore, a vast amount of the ongoing construction falls within the 100-year floodplain. The majority of the County's 69 jurisdictions maintain zoning and planning officials. By understanding these development trends and how they intersect with hazard-prone areas, this allows for current and future vulnerabilities to be mitigated.

Refer to the **County Profile** section of this plan (pages 25 - 32) for additional information related to current and future conditions of the County's vulnerable population and the natural environment. This information provides important context for understanding hazard mitigation planning.

Hazard Vulnerability

Refer to the Risk Assessment section of the base plan (pages 33 - 98) for a complete hazard identification and risk assessment for Nassau County. The Risk Assessment and accompanying Appendix B also contain hazard event history information.

Capability Assessment

This section summarizes the capabilities that Nassau County has in place that can support hazard mitigation. These capabilities include plans, ordinances, staff, financial resources, and program participation. This Capability Assessment was used to help drive the identification and development of the projects presented in the Mitigation Strategy to make sure that they are appropriate in scope and achievable to implement.

Legal and Regulatory Capability Assessment

Table 3 lists the assessment of existing legal and regulatory tools for Nassau County. Nassau County maintains several key administrative and technical capabilities to support mitigation, including building codes, capital improvement plans, community development plans, comprehensive plans/master plans, site plan review requirements, and zoning ordinances. These capabilities are critical to consider as tools in developing and implementing mitigation strategies. To further enhance their mitigation capabilities, the County can consider the capabilities in the table below that the County currently does not have. These additional capabilities would either support creating a legal framework or strategy for implementing a diversity of mitigation actions.

Table 3: Nassau County Existing Legal and Regulatory Capabilities

Regulatory Tool	Yes / No	Citation (if applicable)
Access and Functional Needs Plan	No	
Building Code	N/A	
Capital Improvement Plan	No	
Climate Action Plan	Yes	In Development: Nassau County Shared Mobility Management Study
Community Development Plan	Yes	HUD 5-Year Consolidated Plan (2014 – 2019)
Comprehensive Plan / Master Plan	Yes	2017 CEMP
Economic Development Plan(s)	No	
Emergency Response Plan(s)	Yes	Continuity of Operations Plans
Floodplain Management Plan(s)	No	
Growth Management Plan(s)	Yes	The Master Plan
NFIP Flood Damage Prevention Ordinance(s)	No	
Open Space Plan(s)	No	
Post Disaster Recovery Ordinance(s)	No	
Post Disaster Recovery Plan(s)	No	
Real Estate Disclosure Requirements	No	
Resilience Plan(s)	Yes	Baldwin Downtown Corridor & Commercial Resiliency Study; Barnum Island/Harbor Isle Drainage Improvement Study; Bay Park & Village of East Rockaway Drainage Infrastructure Plan; Five Towns Drainage Study; Lido Beach/Point Lookout Comprehensive Drainage Study; Silver Lake Park Drainage & Flood Prevention Study
Site Plan Review Requirement(s)	No	
Small Area Development Plan(s)	No	
Special Purpose Ordinance(s)	No	
Stormwater Management Plan(s)	Yes	NCDPW Stormwater Regulations/Plan
Subdivision Ordinance(s)	Yes	NCPC Subdivision Regulations
Transportation Plan(s)	Yes	NICE Bus Plan; 2005-2030 Regional Transportation Plan
Zoning Ordinance(s)	No	

Administrative and Technical Capability Assessment

Table 4 lists the assessment of existing administrative and technical tools for Nassau County. Nassau County's primary administrative and technical capabilities include an emergency

manager, building and infrastructure engineers, grant writers, and construction practices personnel. These capabilities provide the County with a wide range of technical capabilities . The County can bolster their capabilities in this category by identifying individuals with expertise in land use and natural hazards planning.

Table 4: Nassau County Existing Staff / Personnel Resource

Staff / Personnel Resource	Yes / No	Details
Emergency Manager(s)	Yes	Nassau County (NC) Office of Emergency Management (OEM)
Engineer(s) trained in construction practices related to buildings/infrastructure	Yes	NC Department of Public Works (NCDPW)
Engineer(s) with an understanding of natural and/or human caused hazards	Yes	NCDPW
Engineer(s) with knowledge of land development and land management practices	Yes	NCDPW, NC Office of Community Development (NCOCD)
Grant Writers	Yes	NC Office of Community Development (NCOCD)
Personnel skilled or trained in Geographic Information Systems	Yes	Nassau County Information Technology
Personnel trained in construction practices related to buildings/infrastructure	Yes	NCDPW
Planner(s) with an understanding of natural hazards	Yes	NCDPW, NC Office of Community Development (NCOCD)
Planner(s) with knowledge of land development and land management practices	Yes	NCDPW, NC Office of Community Development (NCOCD)
Scientist(s) familiar with natural hazards	Yes	NCDPW
Surveyors	Yes	NCDPW

Fiscal Capability Assessment

Table 5 lists the assessment of existing fiscal tools for Nassau County. Funding is often the biggest barrier when implementing mitigation programs. The County is primarily able to fund mitigation programs by incurring debt through general obligation bonds and special tax bonds, levying taxes for specific purposes, withholding public expenditures in hazard prone areas, capital improvements project funding, CDBG programs, impact fees for home buyers and/or developers,

and state mitigation grant programs. Nassau County should consider exploring additional fiscal capabilities in order to gain access to additional funding for mitigation.

Table 5: Nassau County Existing Fiscal Capabilities

Resources	Yes / No	Additional Details
Ability to incur debt through general obligation bonds	No	
Ability to incur debt through private activity bonds	No	
Ability to incur debt through special tax bonds	No	
Authority to levy taxes for specific purposes	No	
Authority to utilize user fees for utility services	No	
Authority to withhold public expenditures in hazard prone areas	No	
Capital improvements project funding	No	
Community Development Block Grants (CDBG)	Yes	The Nassau Urban County Consortium is an entitlement community under the CDBG program. The CDBG program provides housing to support housing and community development in low-income and vulnerable communities.
Impact fees for home buyers and/or developers	No	
State mitigation grant programs	Yes	HMGP; FMA; PDM

Community Classification Assessment

Table 6 lists the assessment of existing community classifications for Nassau County. Exploring the gaining one or more community classifications will guide the County’s mitigation programs and support capacity building.

Table 6: Nassau County Community Classifications

Classification	Yes/No (or Status)
Building Code Effectiveness Grading Schedule (BCEGS)	No
Public Protection Classification Program	No
Community Rating System (CRS)	No
Other Classifications	Yes – Climate Smart Community and StormReady Community

National Flood Insurance Program Summary

The National Flood Insurance Program is administered at the municipal level in Nassau County. Refer to page 105 in the Capabilities Assessment of the base plan for a summary of municipal participation in the National Flood Insurance Program. Each jurisdictional annex also contains further description of that municipality's floodplain management program for continued compliance with the National Flood Insurance Program.

Mitigation Strategy

The following section provides an overview of the mitigation strategy for Nassau County. It provides an overview of the jurisdiction's previous mitigation actions, proposed actions, and the NYS mitigation worksheets.

Previous Mitigation Actions

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Lawrence Water Pollution Control Plant (WPCP): Plant Hardening: A pile-supported reinforced concrete floodwall and associated landscaping renovations has been selected as the proposed project. The intention of the flood protection structure is to specifically protect the Main Building and Pump and Grit Building, which are the Plant buildings that are critical. In addition to the wall, a stormwater collection system will be installed at the facility for the purpose of collecting precipitation from the storm event that would not be able to run off of the facility once the flood gates are closed. The stormwater will be collected via gravity and fed to the Plant's existing wet well.	Flooding	Nassau County Department of Public Works	Completed	The Lawrence WPCP was decommissioned and demolished; the remaining building became the Lawrence Pump Station. This pump station was hardened under the S3P311-10G Sandy Repair and Mitigation Contract. Flood proof.	No	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
<p>Housing Elevation Program: One alternative would be to fund the relocation of the structures or their reconstruction at other sites outside of the floodplain. Physical relocation and/or reconstruction would entail acquiring the new site and paying to build or move the structure to that site. Although the benefit would be greater in that the flood risk would be minimized, a program set-up to physically relocate homes would be cost prohibitive and not logistically feasible. Nassau County is a densely populated area, large portions of which lie in the 100 year flood plain. The program would incur very high costs for planning and administration in light of the Uniform Relocation Act and NEPA requirements which would apply to the activities and the front-end legal and real estate hurdles which would need to be overcome in order to identify and acquire available and appropriate new sites. Another alternative would be to acquire and demolish the structure and pay for the homeowners/occupants to relocate elsewhere. This alternative would significantly reduce the risk of flooding since the properties would be removed completely, however, the prospect of acquiring and demolishing the structures along with the cost of paying for residents' relocation costs would far surpass the cost of elevating the property and allowing homeowners to remain.</p>	<p>Flooding</p>	<p>Nassau County Department of Public Works</p>	<p>Not started</p>	<p>This program has not been undertaken. Not feasible for County implementation. Funding is challenging. There is also a lack of political support for this program.</p>	<p>No</p>	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
<p>Hardening of NCPD Marine Bureau Facilities: During Sandy water reached the generator's belly tank and was within inches of inundating the generator. This proposal is to raise the generator 46 inches off the ground using a platform—12 inches over the maximum recorded flood level in the facility. The estimated mitigation cost is \$75,200. The second proposed mitigation effort is to relocate the automatic transfer switch into a newly constructed building attached to the present structure. The building would be raised to a floor elevation of 46". During Sandy the water flooded the transfer switch housing resulting in damaging the ground and neutral bus bar, along with the terminal lugs. The water reached an elevation of 30" at this location and was within inches of inundating the transfer switch. Flooding of the transfer switch would cause the Marine Bureau to lose power until the transfer switch is repaired or replaced.</p>	Flooding	Nassau County Department of Public Works	Not started	<p>The only hardening that was completed at the NCPD Marine Bureau facility was for the fueling facility. Plans were advanced for both the generator hardening and transfer switch upgrade but were not bid due to budget constraints. Plans were also in the works for a boiler replacement and hardening but were not pursued for the same reason. If these projects were to come back into the plans, DPW would have to review all the documents and revise them as necessary for current Code compliance.</p>	Yes	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Glen Cove WPCP Plant Hardening: A pile-supported reinforced concrete floodwall and associated landscaping renovations would be a feasible alternative project. This floodwall will extend around the perimeter of the key structures at the Plant. This alternative project's principal benefit is that it will allow the Glen Cove WPCP to continue providing critical services to the community during a storm or flooding event; however, it is cost prohibitive.	Flooding of wastewater	Nassau County Department of Public Works	Not started	No storm hardening projects have proceeded. The design phase for Glen Cove WWTP Preliminary Treatment (Project No. S35114-13G) will be bid during the summer of 2020. The Glen Cove WWTP was not flooded during Superstorm Sandy. However, electrical power was lost, and wastewater treatment was not maintained during the storm. A manual transfer switch is being installed as part of capital project S35114-13G, which will enable a generator to power the facility and maintain wastewater treatment during a similar event. All capital improvement projects moving forward will be designed with consideration for protection from the 500 year flood.	No	Action column should change to something like, "Each Capital Improvement Project moving forward shall be designed to protect each the wastewater treatment plant against the 500-year flood". Funding shall include County as well as New York State EFC grant and/or loan.

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Cedarhurst WPCP Plant Hardening: The proposed project protects the facility with two pile-supported reinforced concrete flood walls with removable aluminum stop logs to protect the buildings open entrance. A preliminary design of elevation of 15.5' was determined after accounting for freeboard and sea level rising using NAVD88 datum. Based on estimated existing ground elevations, the first concrete flood wall stands approximately 10.0' tall runs approximately 135.0 around the perimeter of the Screenings and Comminutor Chamber Building. The second concrete flood wall stands approximately 7.0' and runs approximately 205.0' around the Pump Building, Meter Pit, and Grit Chamber. The piles are conceptually designed at 6.0' on-center with low displacement steel H-piles. For seepage, a steel sheet pile cut-off system will be installed using Z-shaped interlocking sheets driven approximately 30' deep. As previously mentioned, aluminum stop logs will be installed to allow access to and from the facility during dry times and still provide protection from flood events.	Flooding	Nassau County Department of Public Works	Not started	The Cedarhurst WPCP was decommissioned and demolished and no longer exists.	No	
Cedar Creek WPCP: Plant Hardening and Perimeter Protection: The scope of work for the facilities, especially the southern section of the plant, consists mainly of hardening all potential water infiltration points. Most of the facilities are inter-connected, and therefore must all be mitigated so that water does not pass from facility to facility. Mitigation measures include: <ul style="list-style-type: none"> • Implementing door dams or providing flood proof doors; • Raising or providing flood proof louvers; • Sealing or raising connections on the outside of the facilities, and; • Sealing and waterproofing all vulnerable conduits on the exterior of the facilities 	Flooding	Nassau County Department of Public Works	Not started	No storm hardening projects have proceeded. No action necessary because the Cedar Creek WPCP was not flooded during Superstorm Sandy. However, all capital improvement projects moving forward will be designed with consideration for protection from the 500 year flood.	No	Action column should change to something like, "Each Capital Improvement Project moving forward shall be designed to protect the water pollution control plant against the 500-year flood". Funding shall include County as well as New York State EFC grant and/or loan.

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Bayville Bridge and Long Beach Bridge Electrical Relocation: Design and construction of a project to relocate the motor control center (MCC) and electrical generator for the building to the southern right of way and elevate them above the 500-yr flood level. The project will consist of erecting the structural elements to allow the MCC and generator to be placed at a higher elevation. Studies are underway to determine the updated elevation of the 500-yr flood plain. Elevating the equipment above the 500-yr flood plain will protect the equipment and ensure the operation of the bridge allowing the residents of Long Beach to evacuate the barrier island in the event of an emergency.	Loss of Electrical Power	Nassau County Department of Public Works	In progress	The generator and MCC were placed at least 3-feet above the 100-year floodplain.	Yes	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
<p>Bay Park STP Electrical Distribution System: There are four buildings and two unit substations at Bay Park STP which are vulnerable to the 500-yr flood event, but which sustained only minor damage during Hurricane Sandy. These facilities will be mitigated under this proposal and are:</p> <ol style="list-style-type: none"> 1. Building 02: Power Generation Facility 2. Building 21: Scavenger Waste/Septage Receiving Facility 3. Building 22: Main Building - Central Heating Facility 4. Building 23: Main Building - Personnel Area 5. Building 03: Unit Substation 4 6. Building 45: Unit Substation 5 <p>The first four (4) buildings (excluding the substations) being mitigated are internally connected, and therefore must all be mitigated so that water does not pass from facility to facility during a flood event. The first floor elevation of the lowest facility is 10.83ft (NAVD88) whilst all other facilities are at an elevation of 13.0ft (NAVD88). The scope of work for these facilities consists of hardening all potential water infiltration points and protecting low lying electrical equipment. Mitigation measures include:</p> <ol style="list-style-type: none"> a. Implementing stop log door dams or providing flood proof doors; b. Raising or providing flood proof louvers; c. Sealing or raising connections on the outside of the facilities, and; d. Sealing and waterproofing all vulnerable conduits on the exterior of facilities. 	Flooding	Nassau County Department of Public Works	In progress	<p>Building 02: PSEG feeders under E-4 (E-4 refers to contract). Building 02 will be mitigated when PSEG power is made available. Not started.</p> <p>Building Nos. 21 through 23: Too many entrances, too much effort to ensure sealed up, expensive, serious egress issues once sealed. The decision was made then to add as much tunnel entrance mitigation as we could manage and put in the secondary flood contract. Not feasible.</p> <p>Building No 22: Main Building - Central Heating Facility - See above</p> <p>Building No 23: Main Building - Personnel Area See above</p> <p>Building No 03: Complete Under E-1. (E-1 refers to contract)</p> <p>Building No 45: Complete Under E-1. (E-1 refers to contract)</p>	<p>Building 02, 21, 22, and 23: Yes</p> <p>Building 03: No</p> <p>Building 45: No</p>	<p>Building 03: No changes in description.</p> <p>Building 45: No changes in description. May want to consider revising other descriptions for feasibility.</p>
<p>Barnes Avenue Interceptor: Until a more detailed engineering analysis can be performed, an additional 48" interceptor in parallel to the existing 48" interceptor is being proposed. It is estimated that this will provide enough additional capacity to handle flooding from a 500-year event.</p>	Flooding	Nassau County Department of Public Works	Completed		No	No changes in description.

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Redundant emergency power generation required at main plant.	Frequent power outages	Greater Atlantic Beach Water Reclamation District	In progress	The Greater Atlantic Beach Water Reclamation District is currently finalizing specifications to rehabilitate a building in which the generator will be installed. The phase of installation is expected to start in the coming months.	Yes	This project is being funded through GOSR. Initially, GOSR intended to fund a natural gas generator, but the GABWRD Superintendent explained to them that after Sandy, it was not possible to get natural gas on Long Island for weeks. GOSR then allowed for the project to move forward with a diesel generator.
Install new life and safety generator	Power Failure	Parker Jewish Institute for Health Care & Rehabilitation	Completed	Project completed. The building wide generator is fully operational.	No	No
Install Permanent Generator: A permanent generator will be installed at Adelphi University. It will have sufficient capacity to allow the University to provide response services to its faculty and staff as well as the larger community if necessary	Frequent power outages	Adelphi University	Completed	The project has been completed and will allow the university to stand alone and isolate the campus from the PSEG circuits in the event that electrical power utilities are disrupted.	No	The University Center (currently under construction) is scheduled to open in Fall '20. The building will also have the ability to draw power from this system.
Permanently install a rooftop generator at the Leo F. Giblyn School	Loss of Electrical Power	Freeport School District	Completed		No	No
A permanent generator will be installed at the group home in East Meadow with sufficient capacity to operate critical medical equipment and household appliances necessary for the health and safety of the residents	Frequent power outages	EPIC Long Island	Not started	No funding. Transfer switch installed for quick portable generator hookup.	No	No.

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
A permanent generator will be installed at the group home in Freeport with sufficient capacity to operate critical medical equipment and household appliances necessary for the health and safety of the residents	Frequent power outages	EPIC Long Island	Not started	No funding. Transfer switch installed for quick portable generator hookup.	No	No.
A permanent generator will be installed at the group home in Hicksville with sufficient capacity to operate critical medical equipment and household appliances necessary for the health and safety of the residents	Frequent power outages	EPIC Long Island	Not started	No funding. Transfer switch installed for quick portable generator hookup.	No	No.
Install Permanent Generators at Long Beach & Oceanside community centers	Frequent power outages	Friedberg JCC	Not started	Due to limited excess cash, we have not been able to have a project this size. We would still like to try to find a way to financially pay for this.	Yes	Not at this time.
George Farber Center Back Up Generator	Frequent power outages	Nassau BOCES Facilities Services Department	Not started	The Farber generator was approved by SED on 5/8/19. We are awaiting final pricing utilizing a Suffolk County electrical contract. A project schedule is being developed. We expect this project to be completed in FY 2020/21.	Yes	
Rosemary Kennedy Center Back Up Generator	Frequent power outages	Nassau BOCES Facilities Services Department	Not started	There are no active projects to install a generator at Barry Tech. Currently we do not have the funds to complete the project.	No	
Barry Tech Back Up Generator	Frequent power outages	Nassau BOCES Facilities Services Department	Not started	There are no active projects to replace the small generator at RKC. Currently, we do not have the funds to complete the project.	No	
Install Permanent Emergency Generator at Public Safety Building: A permanent generator will be installed at the NCC Public Safety. It will have sufficient capacity to allow the Public Safety building to remain operational and quickly respond to the campus needs and support shelters on campus.	Loss of Electrical Power	Nassau Community College	Not started	This was to be funded by the State as part of a grant post-Sandy, however it was never funded.	Yes	We are establishing a project for a new Public Safety Building which will include a backup generator.

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
A permanent generator will be installed at 1030 Denton Avenue, Garden City Park, NY. The generator will have sufficient capacity to allow the Fire Station to quickly respond to the community's needs.	Frequent power outages	Garden City Park Water and Fire District	Completed	While HMGP funding was not utilized, the organization was able to purchase a new generator.	No	
Install Permanent generator at 30 Brinkerhoff Lane, Manhasset. A permanent natural gas generator will be installed with sufficient capacity to allow the facility to maintain all necessary patient needs.	High wind events and winter storms have caused loss of electrical power, including power to all alarm systems and critical utilities in facility	Catholic Charities – (Diocese of Rockville Centre) OPWDD Neumann Facility	Not started	Catholic Charities current team did not know about this mitigation action, but it is still a relevant project that will be considered when funding becomes available.	Yes	In case HMGP opens up in 2020 and the applicant cost share is reduced, Catholic Charities would like to move this action into 2020.
Install new life and safety generator	Power Failure	Parker Jewish Institute for Health Care & Rehabilitation	Completed	Project completed. The building wide generator is fully operational.	No	No
A permanent generator will be installed at Plant No.8. It will have sufficient capacity to allow the site to provide potable water to quickly respond to the community's needs.	Frequent power outages	Roslyn Water District	Completed	The installation of the generator became part of a larger project to build a treatment facility at the location.	No	The project was not funded through FEMA HMPG. As a treatment facility was built at that location, the Water District utilized a bond for this initiative and the generator was part of this project.
Two existing generators will be replaced to strengthen the reliability of the emergency distribution system to help ensure the hospital will have adequate emergency power during events when local utility power is not available for several days.	Loss of electrical power	Catholic Health Services - St. Francis Hospital	Completed	St. Francis Hospital replaced generators 1 and 2 in 2015.	No	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Install permanent generator - A permanent generator will be installed at Hatzalah of The Rockaways & Nassau County located in Woodmere, NY. It will have sufficient capacity to allow the EMS Station to quickly respond to the community's needs	Loss of electrical power	Hatzalah of the Rockaways	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Install Permanent Generator - A permanent generator will be installed at Woodmere Community Residence, 145 Irving Place, Woodmere, NY 11598. It will have sufficient capacity to allow the Community Residence to quickly respond to the client's needs.	Loss of Electrical Power	South Shore Association for Independent Living	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Data Center Relocation Project - The hospital proposes to relocate the data center from its current, at-grade elevation to a higher floor within the existing footprint of the hospital, so that it will be less susceptible to flooding. A phased implementation will allow the data center to remain operational throughout the relocation process.	Flooding	South Nassau Communities Hospital	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Generator Relocation Project - address the potential for loss of function during a power outage by installing a new 1500 KW generator with hardening around it to protect against wind-born debris and flooding that could result from extreme weather or coastal storm surge.	Loss of Electrical Power	South Nassau Communities Hospital	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
A permanent generator will be installed at the Fire House. It will be elevated to prevent future flooding. It will also be powered by natural gas to ensure an uninterrupted fuel supply in the event of a power outage. The diesel fuel supply will then be dedicated for exclusive use by the firefighting/rescue equipment so the Department will have sufficient capacity to quickly respond to the community's needs.	Frequent power outages	Seaford Fire Department	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
A permanent generator will be installed at MacArthur High School and Division Ave High School. and It will have sufficient capacity to allow the School District to assist the community in a time of need.	Loss of Electrical Power	Levittown Public Schools	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
A permanent generator will be installed at 188 Doughty Blvd, Inwood, NY 11906. The generator will have sufficient capacity to allow the Fire Station to quickly respond to the community's needs.	Loss of Electrical Power	Inwood Fire District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
A permanent, natural-gas-fed generator will be installed and maintained at Regina Residence in order to provide a reliable power source adequate to provide drainage, keep residents in the facility, and power any necessary medical equipment.	Loss of Electrical Power	Regina Maternity Services (Merrick)	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
A permanent generator will be installed at the Bellmore, Garden City, Inwood and Plainview Fire Stations. It will have sufficient capacity to allow the Fire Stations to quickly response to the community's needs.	Frequent power outages	Terry Farrell Fund	Not Started		Yes	This project is associated with individual fire stations - shouldn't be associated with the Terry Fund.
Two existing generators and transfer switches will be replaced to strengthen the reliability of the emergency distribution system to help ensure the hospital will have adequate emergency power during events when local utility power is not available for several days.	Loss of electrical power	Catholic Health Services - St. Joseph's Hospital	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Install Permanent Generator- It will have sufficient capacity to allow the individuals living in the group home to continue their daily living routines without interruption and without causing them any confusion	High wind events, Hurricanes, Tropical Storms, and winter storms have caused the widespread loss of electrical power.	Family Residences & Essential Enterprises, Inc	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Install Permanent 350KW Roof Mounted Generator: A permanent generator will be installed at the Administration Building that will have sufficient capacity to allow the District to operate all of its communications, sufficient security and data operated systems.	Loss of Electrical Power	Massapequa School District	In Progress	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	N/A
Relocate the existing control system to the second floor of the same building and upgrade from analog to SCADA controls. This will result in the controls located within the 500-year flood zone and the ability to more quickly respond to the community's needs.	Frequent flooding	Oyster Bay Water District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Remove access floor to Pump Station dry well and provide new concrete curb with access door; install flow prevention inserts under manhole covers.	Frequent flooding	Oyster Bay Sewer District	In progress	In lieu of flow prevention cover, plugs have been installed in manhole cover vent holes. The District will be issuing a Request for cost proposal for the work to install a new access door.	Yes	Update Action to read: Remove access floor door to Steamboat Landing Road Pump Station dry well and provide new concrete curb with access door; install flow prevention inserts under manhole covers.
Reconstruct existing maintenance garage at a three foot higher elevation.	Frequent flooding	Oyster Bay Sewer District	Not started	Limitation is the need for funding to conduct the action. Escalate cost estimate to \$325,000	Yes	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
Install flood doors at doors to screening and grit chamber building, doors to MCC room in Administration Building, doors to Blower/Thickener/Control Building and raise access doors to influent Pump Station wet well.	Frequent flooding	Oyster Bay Sewer District	Not started	Project is in District capital budget plan. Escalate cost estimate to \$85,000.	Yes	
Increase height of transformer pad by two feet. Provide backup standby power during work.	Frequent flooding, power outages	Oyster Bay Sewer District	Completed	In lieu of raising height of existing pad by two feet, a new pad and transformer were installed at a higher elevation.	No	Construction cost for the work paid for under an Oyster Bay Sewer District capital project at a construction cost of \$90,393.
A permanent generator will be installed at 188 South Street, Oyster Bay, NY 11771. The generator will have sufficient capacity to allow the Fire Station to quickly respond to the community's needs.	Frequent power outages	Oyster Bay Fire Co #1	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Install 40 kw natural gas electrical generator with automatic transfer switch for primary circuits in office and garage facility.	Frequent power outages	Locust Valley Water District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Installation of Underground Primary Electrical Cables @ Well Sites 3 & 12	Frequent power outages	Jericho Water District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
Backup, standby generators will be installed at ten of the District's critical sites. These generators will power wells, filtration equipment and other infrastructure used to provide potable water to 58,000 District residents, two hospitals, several nursing homes and many other businesses and government institutions.	Frequent power outages	Jericho Water District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	

Action	Risk Category	Primary Agency Responsible	Project Status	Project Status Description	Carried Forward to 2020 Plan	Required Changes
A permanent generator will be installed at the NW wellfield site. It will have sufficient capacity to allow the site to provide potable water to quickly respond to the community's needs.	Frequent power outages	Massapequa Water District	Completed	Project implemented using internal funding.	No	
A permanent generator will be installed at the NY Avenue wellfield site. It will have sufficient capacity to allow the site to provide potable water to quickly respond to the community's needs.	Frequent power outages	Massapequa Water District	Completed	Project implemented using internal funding.	No	
HSMS Natural Gas Generator Installation	Frequent power outages	Locust Valley Central School District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
A permanent generator will be installed at Well No. 3. It will have sufficient capacity to allow the site to provide potable water to quickly respond to the community's needs.	Frequent power outages	Old Westbury Water District	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	
A permanent generator will be installed at 885 Old Country Road, Plainview NY 11803. It will have sufficient capacity to allow the Fire Station to quickly respond to the community's needs.	Loss of electrical power	Plainview Fire Department	Unresponsive	Multiple attempts were made to contact this entity during the Plan update. No response was received; therefore, the implementation status of this mitigation action is unknown at this time.	No	

Proposed Mitigation Actions

Project Number	NCO_1	NCO_2	NCO_3	NCO_4	NCO_5
Project Name	Bay Park/East Rockaway Drainage Improvements	Beech Street/Park Street Complete Streets and Drainage Improvements	Five Towns Drainage Improvements- Cedarhurst Pump Station	Five Towns Drainage Improvements-Lawrence Pipe Improvements	Island Park Destination Revitalization and Transit-Oriented Development (TOD)
Goal being met	3	3	3	3	1
Hazards to be mitigated	Coastal Flooding	Coastal Flooding	Coastal Flooding	Coastal Flooding	Coastal Flooding
Priority Ranking	High	High	High	High	High
Description of the Problem	<p>During high tide events, tidal water backing up into the drainage system and flows out of the existing grates at the low points flooding Lawson Avenue and the adjacent streets. The existing drainage system on Lawson Avenue does not have the capacity to store the road runoff from any rain event, especially when there is a high tide. The existing drainage system is back pitched and does not function properly. Therefore, several drainage grates have filter bag inserts that collect debris in order to clean the system, However, these bags fill quickly and because they cannot be cleaned quickly during times of swift events, they do not allow stormwater to enter the system, thus causing flooding on Lawson Avenue and adjacent streets. The system becomes filled with debris preventing the stormwater from flowing through the system properly.</p>	<p>Park Street/Beech Street is the primary transportation corridor that links the barrier island from the Atlantic Beach Bridge through the City of Long Beach and it also serves as a coastal evacuation route. Park Street/Beech Street and associated intersections along the route were severely impacted by flooding during Superstorm Sandy. This evacuation route was impassable during and following Superstorm Sandy. Compounded by no working lighting, unsafe conditions were created for first responders, residents, and local businesses.</p>	<p>Significant flood threats face the Five Towns area due to its location on the south shore of Long Island. The resultant flooding and standing water during coastal storm events create public health and safety hazards and significantly affect the quality of life for the surrounding residents.</p>	<p>The study determined that installing check valves to prevent tidal water from entering storm sewers and increasing the diameter of pipes along Meadow Lane, Marbridge Road, Causeway Road, North Road, and Barrett Road would reduce flooding. Installation of pipes of greater diameter will increase system capacity and eliminate flow restrictions such that flooding from storms with up to a 1 year storm event. In addition, new inlet structures will be installed, providing treatment of runoff prior to discharge to surface waters.</p>	<p>Significant damage was sustained due to the Superstorm Sandy's high winds and island-wide flooding. Improvements needed along Long Beach Rd. between Warwick and Sagamore Rd. in the Village of Island Park. Drainage improvements will also be required to ensure that runoff from within the roadway is adequately collected and conveyed to existing systems.</p>

Project Number	NCO_1	NCO_2	NCO_3	NCO_4	NCO_5
Description of the Solution	Installation of various check valves and stormwater treatment devices and drainage improvements to Lawson Avenue in Bay Park and the Village of East Rockaway. The existing drainage system on Lawson Avenue will be replaced with larger pipe and more drainage structures to increase the capacity of the system and remove the pipes that are back pitched and the installation of an in-line check valve to prevent tidal surcharge and a stormwater treatment structure to remove debris, improve the quality of the stormwater, and prevent debris from reaching the in-line check valve thus preserving the life of the in-line check valve	To increase flood resiliency and provide a pedestrian/motorist safety and traffic calming along Park Street (Village of Atlantic Beach) and continuing along Beech Street up to the border of Long Beach. Park Street /Beech Street is the primary transportation corridor that links the barrier island from the Atlantic Beach Bridge through the City of Long Beach and it also serves as a coastal evacuation route.	Installation of a 50 CFS stormwater pump station and check valve. This proposed pump station is derived from the Five towns Drainage Improvement Study and is intended to mitigate flooding along Peninsula Blvd. and the surrounding areas.	Installation of check valves & installation of large diameter pipes along Meadow Ln, Marbridge Rd. Causeway Rd. North Rd. and Barrett Rd. New Inlet structures.	Streetscape improvements may include restriping, tree planting, bulbous with bioswales, and midblock crossings with bio-swales. Drainage improvements will take place along Long Beach Rd. in the Village of Island Park.
Critical Facility	No	No	No	No	No
EHP Issues	No	Yes	No	Yes	Yes
Estimated Timeline	15 Months	21 Months	11 Months	15 Months	13 Months
Lead Agency	Nassau County	Nassau County	Nassau County	Nassau County	Nassau County
Estimated Costs	\$5,671,589	\$18,495,506	\$3,237,000	\$8,776,000	\$1,350,000
Estimated Benefits	This project will correct major drainage problems that continue to flood the streets of East Rockaway and Bay Park.	This project will address major drainage problems throughout the corridor as well as implement traffic safety mitigations and a multi-use trail.	To mitigate flooding along Peninsula Blvd during intense rain storm events, clearing a major storm evacuation route.	This project will correct major drainage problems that continue to flood the streets	Developing a placemaking streetscape, to provide for a more economically resilient downtown
Potential Funding Sources	GOSR/CDBG-DR	GOSR/CDBG-DR, Nassau County Capital Plan, Empire State Development Grant	GOSR/CDBG-DR	GOSR/CDBG-DR	GOSR/CDBG-DR

Project Number	NCO_6	NCO_7	NCO_8	NCO_9
Project Name	Lido Beach/Point Lookout Comprehensive Drainage Study and Improvement	Silver Lake Drainage Improvements	Shoreline Protection at Various County Parks	Seawall Rehabilitation at Sands Point Preserve
Goal being met	3	3	3	3
Hazards to be mitigated	Flooding, Severe storms	Flooding	Coastal Flooding	Property Erosion; Landslides
Priority Ranking	High	High	High	High
Description of the Problem	Roadway flooding occurs within the Lido Boulevard area in Lido Beach and Point Lookout. There is a need for stormwater management improvements along local roadways and replaced drainage systems, between Greenway Road and Regent Drive on Lido Blvd. Additionally there is a need for improved access to the Nassau County drainage easement off Regent Drive.	Flooding of Silver Lake Park in Baldwin spills over into local roadways.	Various waterfront County parks properties experience shoreline erosion and flooding. These include North Woodmere Park in Valley Stream, Inwood Park in Inwood, and Cow Meadow Park in Freeport. Certain areas with existing bulkheading may need to have bulkheading replaced, while other areas may need additional types of erosion control measures implemented.	During storms such as mild Nor'easters, the Sands Point Preserve's shoreline frequently loses cliffside and large areas are lost. The most urgent shoreline repairs needed are for the area directly below and adjacent to the Falaise mansion (eastern edge of the property). The remaining areas of the coastline are unprotected at this time and face erosion concerns. Many years ago, when the Hempstead House (western part of property) was a private residence, there was a seawall-type structure in place. The wall has since fully collapsed, with many portions missing, buried in the beach, or underwater at high tide. It is estimated that 5,000 to 6,000 feet of shoreline is currently in need of protection.
Description of the Solution	Installation of check valves the removal and replacement of curb inlets on local roadways, the replacements of drainage piping between Greenway Road and Regent Drive on Lido Blvd.	Installation of a tide gate, construction of higher bulkhead around pond perimeter, and the installation of a fish passage for promoting ecological sustainability	Study, design, and construct shoreline protection measures including living shorelines and/or hard structures such as bulkheads at the following County properties: North Woodmere Park, Inwood Park, and Cow Meadow Park.	Study, design, and construct shoreline protection measures along the Sands Point Preserve's approximately 5,000 foot shoreline. Measures would include living and/or hard shoreline structures.
Critical Facility	No	No	No	No
EHP Issues	Yes	Yes	No	No
Estimated Timeline	14 Months	12 Months	TBD	TBD
Lead Agency	Nassau County	Nassau County	Nassau County	Nassau County
Estimated Costs	\$2,420,000	\$2,500,000	To be determined	To be determined
Estimated Benefits	Will assist in protecting from tidal flooding through outfalls in Lido Beach and mitigate flooding on Lido Boulevard	Will assist in protecting from tidal flooding in the areas surrounding Silver Lake in Baldwin	Park properties will be better protected from erosion and flooding.	Park property will be better protected from erosion and flooding.

Project Number	NCO_6	NCO_7	NCO_8	NCO_9
Potential Funding Sources	GOSR/CDBG-DR	GOSR/CDBG-DR	Unknown	Unknown

Project Number	NCO_10	NCO_11	NCO_12	NCO_13	NCO_14
Project Name	Nassau County Master Plan Update	Bayville Bridge and Long Beach Bridge Electrical Relocation	NCPD Marine Bureau Facilities Hardening	Critical Facility Flood Risk Education	Bay Park STP Electrical Distribution System:
Goal being met	1	1, 2, 5	3	4	3
Hazards to be mitigated	All-Hazards	Power Outages Severe Storms	Flooding Severe Storms Flooding	Flooding	Flooding
Priority Ranking	High	High	High	High	High

Project Number	NCO_10	NCO_11	NCO_12	NCO_13	NCO_14
Description of the Problem	<p>The County is in the process of incorporating sustainability and resiliency into all facets of its planning and operations. Funding limitations have impacted the implementation of a comprehensive sustainability and resiliency approach across all areas.</p>	<p>The Bayville Bridge and Long Beach Bridge electrical generators need to be relocated the 500-Year flood level. Studies are underway to determine the updated elevation of the 500-Year flood plain. Elevating the equipment above the 500-Year flood plain will protect the equipment and ensure the operation of the bridge allowing the residents of Long Beach to evacuate the barrier island in the event of an emergency.</p>	<p>During Superstorm Sandy water reached the generator's belly tank and was within inches of inundating the generator. Additionally, the water flooded the transfer switch housing resulting in damaging the ground and neutral bus bar, along with the terminal lugs. The water reached an elevation of 30" at this location and was within inches of inundating the transfer switch. Flooding of the transfer switch would cause the Marine Bureau to lose power until the transfer switch is repaired or replaced.</p>	<p>Many critical facilities in Nassau County have the potential to be flooded if a 100 or 500 year flood were to occur. Many of these facilities fall outside of the jurisdiction of local municipalities and the County, making it difficult to fully account for their level of protection.</p>	<p>There are four buildings and two unit substations at Bay Park STP that are vulnerable to the 500-yr flood event but sustained only minor damage during Hurricane Sandy.</p>

Project Number	NCO_10	NCO_11	NCO_12	NCO_13	NCO_14
Description of the Solution	The County will update its Master Plan to address storm/climate resiliency and sustainability, along with other physical, social, environmental and transportation initiatives.	Design and construction of a project to relocate the MCC and electrical generator for the building to the southern right of way and elevate them above the 500-Year flood level. The project will consist of erecting the structural elements to allow the MCC and generator to be placed at a higher elevation.	This proposal is to raise the generator 46 inches off the ground using a platform—12 inches over the maximum recorded flood level in the facility. The second proposed mitigation effort is to relocate the automatic transfer switch into a newly constructed building attached to the present structure. The building would be raised to a floor elevation of 46".	The County will conduct targeted outreach to the facilities exposed to the 100 and 500 year flood events (see Appendix B for details) to educate about flood risk and provide some mitigation options to consider.	These facilities will be mitigated under this proposal and are: 1. Building 02: Power Generation Facility 2. Building 21: Scavenger Waste/Septage Receiving Facility 3. Building 22: Main Building - Central Heating Facility 4. Building 23: Main Building - Personnel The four buildings being mitigated are internally connected, and therefore must all be mitigated so that water does not pass from facility to facility during a flood event. The first floor elevation of the lowest facility is 10.83 ft (NAVD88) whilst all other facilities are at an elevation of 13.0 ft (NAVD88). The scope of work for these facilities consists of hardening all potential water infiltration points and protecting low lying electrical equipment.
Critical Facility	No	Yes	Yes	No	Yes
EHP Issues	No	No	No	No	No
Estimated Timeline	12 months	Previous Target Date: 2016 - 2017 (Approximately one year) Status: Not Started	Previous Target Date: 2014 - 2015 (Approximately one year) Status: Not Started	2 years	5 years
Lead Agency	Nassau County	Nassau County Department of Public Works	Nassau County Department of Public Works	Nassau County Office of Emergency Management	Nassau County Department of Public Works
Estimated Costs	\$1,000,000	\$345,750	\$260,748	< \$1000	To be determined

Project Number	NCO_10	NCO_11	NCO_12	NCO_13	NCO_14
Estimated Benefits	Improvements will have been identified and prioritized to address resiliency and sustainability issues that the County faces.	Continued operation of the bridges and protection against flooding.	Enhanced resiliency of Marine Bureau facilities and increased ability to continue operations in the event of power loss and the need to use generators	Protect critical facilities in the County through risk education and outreach.	Reduce risk of interruptions to electrical power generation and delivery due to flooding.
Potential Funding Sources	County Capital Plan	FEMA HMGP & FEMA Pre-Disaster Mitigation Program	To be determined	Nassau County operating budget	FEMA HMGP & FEMA Pre Disaster Mitigation Program

Mitigation Action Worksheets

The following pages contain mitigation action worksheets that provide additional detail some of the jurisdiction's proposed mitigation actions.

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: *Village of East Rockaway*

NYS DHSES Action Worksheet			
Project Name:	Bay Park/East Rockaway: Drainage Improvements		
Project Number:	NCO_1		
Risk / Vulnerability			
Hazard of Concern:	Coastal Flooding		
Description of the Problem:	During high tide events, tidal water backing up into the drainage system and flows out of the existing grates at the low points flooding Lawson Avenue and the adjacent streets; the existing drainage system on Lawson Avenue does not have the capacity to store the road runoff from any rain event especially when there is a high tide; the existing drainage system is back pitched and does not function properly; several drainage grates have filter bag inserts that collect debris in order to clean the system, however, these bags are filling quickly and not being cleaned thus not allowing stormwater to enter the system and flooding Lawson Avenue and adjacent streets; and the system becomes filled with debris preventing the stormwater to flow through the system properly.		
Action or Project Intended for Implementation			
Description of the Solution:	Installation of various check valves and stormwater treatment devices and drainage improvements to Lawson Avenue in Bay Park and the Village of East Rockaway. The existing drainage system on Lawson Avenue will be replaced with larger pipe and more drainage structures to increase the capacity of the system and remove the pipes that are back pitched and the installation of an in-line check valve to prevent tidal surcharge and a stormwater treatment structure to remove debris, improve the quality of the stormwater, and prevent debris from reaching the in-line check valve thus preserving the life of the in-line check valve.		
Is this project related to a Critical Facility?		Yes	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	1-Year storm	Estimated Benefits (losses avoided):	This project will correct major drainage problems that continue to flood the streets of East Rockaway and Bay Park.
Useful Life:	50 Years		
Estimated Cost:	\$5,671,589.05		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	February 28, 2020
Estimated Time Required for Project Implementation:	15 Months	Potential Funding Sources:	GOSR/CDBG-DR
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	0	
	Purchase additional filter bag inserts and establish a system for rapid-replacement of filters.	<\$100,000 + annual maintenance.	This might provide some flood reduction benefits, but would require significant staff time and availability without providing the same level of risk reduction.
Upgrade the system to accommodate a larger storm event	>\$6,000,000	While upgrading the drainage infrastructure to accommodate even larger storm events would be desirable, it is believed to be cost prohibitive.	
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020,		
Report of Progress:	Design phase almost complete, Construction phase set to begin by the end of the year.		

Update Evaluation of
the Problem and/or
Solution:

N/A

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: *Lido Beach*

NYS DHSES Action Worksheet			
Project Name:	Beech Street/Park Street Complete Streets and Drainage Improvements		
Project Number:	NCO_2		
Risk / Vulnerability			
Hazard of Concern:	Coastal Flooding		
Description of the Problem:	Park Street/Beech Street is the primary transportation corridor that links the barrier island from the Atlantic Beach Bridge through the City of Long Beach and it also serves as a coastal evacuation route. Park Street/Beech Street and associated intersections along the route were severely impacted by flooding during Superstorm Sandy. This evacuation route was impassable during, following, Superstorm Sandy and, compounded by no working lighting, created unsafe conditions for first responders, residents, and local businesses.		
Action or Project Intended for Implementation			
Description of the Solution:	To increase flood resiliency and provide a pedestrian/motorist safety and traffic calming along Park Street (Village of Atlantic Beach) and continuing along Beech Street up to the border of Long Beach. Park Street/Beech Street is the primary transportation corridor that links the barrier island from the Atlantic Beach Bridge through the City of Long Beach and it also serves as a coastal evacuation route.		
Is this project related to a Critical Facility?		Yes	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	10-Year Storm	Estimated Benefits (losses avoided):	This project will address major drainage problems throughout the corridor as well as implement traffic safety mitigations and a multi-use trail.
Useful Life:	50 Years		
Estimated Cost:	\$18,495,506.61		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	February 28, 2022,
Estimated Time Required for Project Implementation:	21 Months	Potential Funding Sources:	GOSR/CDBG-DR, NC Capital Plan, Empire State Development Grant
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$0	
	Correct deficiencies in the existing drainage system, in addition to the other proposed improvements.	Over \$25,000,000	Not pursued because this area's drainage system is part of a larger network. Work would be much more cost and labor-intensive.
	Increase the sizes of pipes in the existing drainage system in addition to the other proposed improvements.	Unknown	Not pursued because most work would need to take place outside of the County's ROW.
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020		
Report of Progress:	Design phase almost complete, construction phase set to begin by the end of the year.		
Update Evaluation of the Problem and/or Solution:	n/a		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: *Village of Cedarhurst*

NYS DHSES Action Worksheet			
Project Name:	Five Towns Drainage Improvements-Cedarhurst Pump Station		
Project Number:	NCO_3		
Risk / Vulnerability			
Hazard of Concern:	Coastal Flooding		
Description of the Problem:	Significant flood threats face the Five Towns area due to its location on the south shore of Long Island. The resultant flooding and standing water during coastal storm events create public health and safety hazards and significantly affect the quality of life for the surrounding residents. 50 CFS pump station at Hanlon Dr, and Peninsula Blvd. in the Village of Cedarhurst.		
Action or Project Intended for Implementation			
Description of the Solution:	Installation of a 50 CFS stormwater pump station and check valve. This proposed pump station is derived from the Five Towns Drainage Improvement Study and is intended to mitigate flooding along Peninsula Blvd. and the surrounding areas.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Pump will operate to prevent 10-year storm flooding in the roadway.	Estimated Benefits (losses avoided):	To mitigate flooding along Peninsula Blvd during intense rain storm events, clearing a major storm evacuation route.
Useful Life:	50 Years		
Estimated Cost:	\$3,237,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	February 28, 2022,
Estimated Time Required for Project Implementation:	11 Months	Potential Funding Sources:	GOSR/CDBG-DR
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$0	
	Use an alternative type of pump for the pump station. Types considered are submersible pump with propeller in discharge tube, axial flow pump, screw pump.	Variable	Each pump has a different cost factor involved, flow rate and discharge head; none represent a superior cost/benefit ratio to the preferred solution.
Identify alternate evacuation routes that can be used during flood events.	\$25,000-\$50,000 for a study	Alternate route options are limited; reduction of flood along Peninsula Blvd and in surrounding areas is strongly preferred.	
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020		
Report of Progress:	Design phase nearing completion; commencing construction phase by the end of the year.		
Update Evaluation of the Problem and/or Solution:	N/A		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: *Village of Lawrence*

NYS DHSES Action Worksheet			
Project Name:	Five Towns Drainage Improvements: Lawrence Pipes		
Project Number:	NCO_4		
Risk / Vulnerability			
Hazard of Concern:	Coastal Flooding		
Description of the Problem:	The study determined that installing check valves to prevent tidal water from entering storm sewers and increasing the diameter of pipes along Meadow Lane, Marbridge Road, Causeway Road, North Road, and Barrett Road would reduce flooding. Installation of pipes of greater diameter will increase system capacity and eliminate flow restrictions such that flooding from storms with up to a 1-Year storm event. In addition, new inlet structures will be installed, providing treatment of runoff prior to discharge to surface waters.		
Action or Project Intended for Implementation			
Description of the Solution:	Installation of check valves & installation of large diameter pipes along Meadow Ln, Marbridge Rd. Causeway Rd. North Rd. and Barrett Rd. New Inlet structures.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Tidal: 1-year rainfall event occurring during the highest annual tide recorded in a 1-year time period. Rainwater: 5-year rainfall during low tide.	Estimated Benefits (losses avoided):	This project will correct major drainage problems that continue to flood the streets
Useful Life:	50 years		
Estimated Cost:	\$8,776,000.00		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	02/28/2022
Estimated Time Required for Project Implementation:	15 Months	Potential Funding Sources:	GOSR - CDBG-DR
Responsible Organization:		Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$0	
	Drainage improvements at Bay Berry Road south and Barrett Road.	TBD - the exact cost would be significantly below the estimated cost of the preferred alternative.	Considered an add on to base bid if costs allow - this would not be nearly as effective as preferred alternative.
	Drainage improvements at intersection of Barret Road and Washington Ave.	TBD - exact cost would be significantly below the estimated cost of the preferred alternative.	Again, this is would not be nearly as effective as preferred alternative. If implemented as an add on, it would improve the overall risk reduction.
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020		
Report of Progress:	Design phase almost complete, Construction phase set to begin by the end of the year		
Update Evaluation of the Problem and/or Solution:			

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: *Village of Island Park*

NYS DHSES Action Worksheet			
Project Name:	Island Park Destination Revitalization and Transit-Oriented Development (TOD)		
Project Number:	NCO_5		
Risk / Vulnerability			
Hazard of Concern:	Coastal Flooding		
Description of the Problem:	Significant damage was sustained due to the Superstorm Sandy's high winds and island-wide flooding. Improvements needed along Long Beach Rd. between Warwick and Sagamore Rd. in the Village of Island Park. Drainage improvements will also be required to ensure that runoff from within the roadway is adequately collected and conveyed to existing systems.		
Action or Project Intended for Implementation			
Description of the Solution:	Streetscape improvements may include restriping, tree planting, bulbouts with bioswales, and midblock crossings with bio-swales. Drainage improvements will take place along Long Beach Rd. in the Village of Island Park.		
Is this project related to a Critical Facility?	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Developing a placemaking streetscape, to provide for a more economically resilient downtown.
Useful Life:	50 Years		
Estimated Cost:	\$1,350,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	February 28, 2020,
Estimated Time Required for Project Implementation:	13 Months	Potential Funding Sources:	GOSR/CDBG-DR
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$0	
	Additional check valves near California Ave.	TBD, depending upon number of check valves	Outside of County jurisdiction.
Streetscape improvements without bioswales	Less than preferred alternative;	While less costly, the absence of bioswales would reduce the overall functionality of integrated stormwater, drainage, and streetscape improvements.	
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020,		
Report of Progress:	Design phase nearing completion; commencing construction phase by the end of the year.		
Update Evaluation of the Problem and/or Solution:	N/A		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: Lido Beach

NYS DHSES Action Worksheet			
Project Name:	Lido Beach/Point Lookout Comprehensive Drainage Study and Improvement		
Project Number:	NCO_6		
Risk / Vulnerability			
Hazard of Concern:	Flooding, Severe storms		
Description of the Problem:	Roadway flooding occurs within the Lido Boulevard area in Lido Beach and Point Lookout. There is a need for stormwater management improvements along local roadways and replaced drainage systems, between Greenway Road and Regent Drive on Lido Blvd. Additionally, there is a need for improved access to the Nassau County drainage easement off Regent Drive.		
Action or Project Intended for Implementation			
Description of the Solution:	Installation of check valves the removal and replacement of curb inlets on local roadways, the replacements of drainage piping between Greenway Road and Regent Drive on Lido Blvd.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	10-Year frequency or recurring storm event	Estimated Benefits (losses avoided):	Will assist in protecting from tidal flooding through outfalls in Lido Beach and mitigate flooding on Lido Boulevard
Useful Life:	50 Years		
Estimated Cost:	\$2,420,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	February 28, 2020,
Estimated Time Required for Project Implementation:	14 Months	Potential Funding Sources:	GOSR/CDBG-DR
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$0	
	Install additional check valves and drainage piping to cover a broader area.	Additional costs could exceed \$500,000 depending on the scale of additional check valves and drainage piping.	Higher cost, a greater area protected.
	Install fewer check valves and drainage piping to cover only the highest priority areas.	Cost reduction would depend upon the total number of check valves and drainage piping.	Lower cost, greater area unprotected.
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020,		
Report of Progress:	Design phase almost complete, construction phase set to begin by the end of the year.		
Update Evaluation of the Problem and/or Solution:	n/a		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County: Town of Hempstead

NYS DHSES Action Worksheet			
Project Name:	Silver Lake Drainage Improvements		
Project Number:	NCO_7		
Risk / Vulnerability			
Hazard of Concern:	Flooding		
Description of the Problem:	Flooding of Silver Lake Park in Baldwin, flooding will spill over into local roadways.		
Action or Project Intended for Implementation			
Description of the Solution:	Installation of a tide gate, construction of higher bulkhead around the pond perimeter, and the installation of fish passage for promoting ecological sustainability		
Is this project related to a Critical Facility?	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	10-Year rainfall with normal high tide; 1-Year tide event with 1-Year rainfall event.	Estimated Benefits (losses avoided):	Will assist in protecting from tidal flooding in the areas surrounding Silver Lake in Baldwin
Useful Life:	50 Years		
Estimated Cost:	\$2,500,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	February 28, 2022,
Estimated Time Required for Project Implementation:	12 Months	Potential Funding Sources:	GOSR/CDBG-DR
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$0	
	Don't raise perimeter walkway/bulkhead of Silver Lake to Elevation 5.0' but complete all other improvements.	Save approximately \$800,000	The pond is currently at 3.0' elevation and would continue flooding frequently during rainfalls and high tides.
	Don't install tidal gates on Silver Lake outfalls.	Save approximately \$700,000	Flooding during tidal surges would continue with the same frequency.
Progress Report (for plan maintenance)			
Date of Status Report:	August 14, 2020,		
Report of Progress:	Design phase almost complete, construction phase set to begin by the end of the year.		
Update Evaluation of the Problem and/or Solution:	n/a		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County

NYS DHSES Action Worksheet			
Project Name:	Shoreline Protection at Various County Parks		
Project Number:	NCO_8		
Risk / Vulnerability			
Hazard of Concern:	Coastal Flooding		
Description of the Problem:	Various waterfront County parks properties experience shoreline erosion and flooding. These include North Woodmere Park in Valley Stream, Inwood Park in Inwood, and Cow Meadow Park in Freeport. Certain areas with existing bulkheading may need to have bulkheading replaced, while other areas may need additional types of erosion control measures implemented.		
Action or Project Intended for Implementation			
Description of the Solution:	Study, design, and construct shoreline protection measures including living shorelines and/or hard structures such as bulkheads at the following County properties: North Woodmere Park, Inwood Park, and Cow Meadow Park.		
Is this project related to a Critical Facility?		Yes	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	TBD	Estimated Benefits (losses avoided):	Park properties will be better protected from erosion and flooding.
Useful Life:	TBD		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within the next 5-10 years.
Estimated Time Required for Project Implementation:	TBD	Potential Funding Sources:	Unknown
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$	Erosion will get worse and property loss may occur.
	Hard shoreline only.	TBD	Does not provide a natural shoreline edge which enhances local habitats. The cost may be higher per sq. ft. than a living shoreline.
	Living shoreline only.	TBD	Cost may be less per sq. ft. than bulkheading. May require more regular maintenance for County.
Progress Report (for plan maintenance)			
Date of Status Report:	August 13, 2020,		
Report of Progress:	This is the first request to add this project. Limited work is currently taking place at Inwood Park to address bulkheading, but the work is focusing near the boat launch ramp. There are a number of other areas at the park such as near the ball fields that have eroded and need protection. A comprehensive evaluation of all areas will need to be done.		
Update Evaluation of the Problem and/or Solution:	N/A		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County

NYS DHSES Action Worksheet			
Project Name:	Seawall Rehabilitation at Sands Point Preserve		
Project Number:	NCO_9		
Risk / Vulnerability			
Hazard of Concern:	Property Erosion; Landslides		
Description of the Problem:	During storms such as mild Nor'easters, the Sands Point Preserve's shoreline frequently loses cliffside and large areas are lost. The most urgent shoreline repairs needed are for the area directly below and adjacent to the Falaise mansion (eastern edge of the property). The remaining areas of the coastline are unprotected at this time and face erosion concerns. Many years ago, when the Hempstead House (western part of the property) was a private residence, there was a seawall-type structure in place. The wall has since fully collapsed, with many portions missing, buried in the beach, or underwater at high tide. It is estimated that 5,000 to 6,000 feet of shoreline is currently in need of protection.		
Action or Project Intended for Implementation			
Description of the Solution:	Study, design, and construct shoreline protection measures along the Sands Point Preserve's approximately 5,000-foot shoreline. Measures would include living and/or hard shoreline structures.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	TBD	Estimated Benefits (losses avoided):	Park property will be better protected from erosion and flooding.
Useful Life:	TBD		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within the next 5-10 years. (Excludes any emergency repairs needed in the short term.)
Estimated Time Required for Project Implementation:	TBD	Potential Funding Sources:	Unknown
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$	Erosion will get worse and property loss may occur.
	Hard shoreline only.	TBD	Does not provide a natural shoreline edge which enhances local habitats. The cost may be higher per sq. ft. than a living shoreline.
	Living shoreline only.	TBD	Cost may be less per sq. ft. than hard structures (e.g. bulkheading). May require more regular maintenance for County.
Progress Report (for plan maintenance)			
Date of Status Report:	August 13, 2020		
Report of Progress:	An NYSDEC permit has been secured for temporary repairs of the shoreline near the Falaise mansion. Temporary repairs near Falaise are expected to cost between \$500,000 and \$1,000,000. A cost for addressing the entire shoreline has not been determined.		
Update Evaluation of the Problem and/or Solution:	N/A		

Nassau County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction: Nassau County

NYS DHSES Action Worksheet			
Project Name:	Nassau County Master Plan Update		
Project Number:	NCO_10		
Risk / Vulnerability			
Hazard of Concern:	All-Hazards, Severe storms, Inclement Weather		
Description of the Problem:	The County is in the process of incorporating sustainability and resiliency into all facets of its planning and operations. Funding limitations have impacted the implementation of a comprehensive sustainability and resiliency approach across all areas.		
Action or Project Intended for Implementation			
Description of the Solution:	The County will update its Master Plan to address storm/climate resiliency and sustainability, along with other physical, social, environmental and transportation initiatives.		
Is this project related to a Critical Facility?	Yes	<input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	TBD	Estimated Benefits (losses avoided):	Improvements will have been identified and prioritized to address resiliency and sustainability issues that the County faces.
Useful Life:	TBD		
Estimated Cost:	\$1,000,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within the next 5-10 years.
Estimated Time Required for Project Implementation:	12 months	Potential Funding Sources:	County Capital Plan
Responsible Organization:	Nassau County	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<i>Action</i>	<i>Estimated Cost</i>	<i>Evaluation</i>
	No Action	\$	Certain County initiatives may not properly address sustainability and resiliency.
	Master plan update without sustainability or resiliency addressed.	\$1 million	Certain County initiatives may not properly address sustainability and resiliency.
Master plan update with just sustainability and resiliency addressed.	TBD	Certain County initiatives may have sustainability and resiliency addressed, but other areas of planning importance may not be properly addressed.	
Progress Report (for plan maintenance)			
Date of Status Report:	August 13, 2020		
Report of Progress:	A capital project (92038) has been included in the County Executive's proposed 2020 Capital Improvement Plan. The plan has not yet been approved by the County Legislature.		
Update Evaluation of the Problem and/or Solution:			