There are over 140 drainage outfalls along the coast of Seaford and Wantagh that discharge directly into the Estuary. These outfalls discharge storm water that has been collected upland from roofs and streets. Open or damaged outfalls allow a path for floodwaters to back up into the drainage system and flood roadways upstream of the outfall. This project proposes to inspect the outfalls along the coastline of Seaford and Wantagh and determine the condition and appropriateness of installation of tidal check valves. Tidal check valves of either inline pipe type or slip on duck bill type will be installed on prioritized, critical and appropriate outfalls.

**Key Facts**

- **Project Type:** Utilities
- **Recovery Function:** Infrastructure
- **Project Location/Municipality:** Seaford and Wantagh
- **Primary Target Area Affected:** Seaford and Wantagh
- **Consistency with NYRCR:** Address short, medium, and long-term risks
- **Potential Beneficiaries:** Seaford and Wantagh residents

**Project Information**

A check valve allows stormwater to flow out, but prevents tide water from flowing into storm sewers.

High tides can cause flooding in low-lying streets when seawater backs up into storm sewers.

Cost Estimate: $2,000,000
Bulkhead Upgrades

Inspect, replace and raise existing bulkheads at street and canal ends owned by Town of Hempstead

Cost Estimate: $2,000,000

Key Facts

- Project Type: Protective Measures
- Recovery Function: Infrastructure
- Project Location/Municipality: Seaford and Wantagh
- Primary Target Area Affected: Seaford and Wantagh
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Seaford and Wantagh residents

Project Information

This project will inspect and identify the bulkheads at street ends and canal ends that fall under the Town of Hempstead ownership that require replacement and raising.

Potential street/canal ends that appear to be under TOH jurisdiction include: Riverside Dr (Islip Ct, Seaord Ct), Shore Rd (Shore Pl, Island Channel Rd), Ocean Ave (Brant Pl, Plover Pl, Anglers Pl), Almo Pl (Somserset Dr), Somerset Dr, Bayview St (Island Channel, Ocean Ave, Peconic Ave, Neptune Ave, Seminole Ave), Beacon Rd (Seamans Neck Rd), and Ellsworth St (Atlantic View Ave).

The following ends have been excluded due to TOH proposed road raising projects: Narragansett Ave, Niami St, Anchor Pl, Plover Pl, Widgeon Pl, and Anglers Pl.
There were areas that were inaccessible by road during and after Sandy due to flooding. The flooding also caused significant debris buildup in drainage systems as a result of Sandy.

This project will supplement efforts by the Town of Hempstead and Nassau County to clean out stormwater along priority local roads within Seaford and Wantagh. In addition to the clean outs, this project will collect and reconfirm the condition and types of stormwater infrastructure that exist in order to understand any other immediate needs as well as feed into the overall capital and asset management of the stormwater infrastructure.

The priority local roads within Seaford and Wantagh selected are key roads that allow evacuation from areas that are prone to flooding and access to areas on higher ground with critical help facilities. The priority local roads within Seaford and Wantagh are assumed to be Sunrise Highway, Merrick Road, Bayview Avenue, Wantagh Avenue, Seaford Avenue, Willoughby Ave, Neptune Ave, Seamans Neck Road, Washington Ave.

**Key Facts**

- **Project Type:** Debris Removal
- **Recovery Function:** Infrastructure
- **Project Location/Municipality:** Seaford and Wantagh
- **Primary Target Area Affected:** Seaford and Wantagh
- **Consistency with NYRCR:** Increase resiliency of key assets
- **Potential Beneficiaries:** Seaford and Wantagh residents

**Cost Estimate:** $1,900,000
There was significant debris buildup in drainage systems as a result of Sandy, particularly in areas south of Merrick Road.

This project will supplement efforts by the Town of Hempstead and Nassau County to clean out stormwater along roads south of Merrick Road within Seaford and Wantagh. In addition to the clean outs, this project will collect and reconfirm the condition and types of stormwater infrastructure that exist in order to understand any other immediate needs as well as feed into the overall capital and asset management of the stormwater infrastructure.
Several major and critical roads have been identified to have flooded during Sandy and/or Irene. These areas have been identified as Sunrise Highway at Wantagh State Parkway, Merrick Road at Mill Pond Park, Merrick Rd at Wantagh State Parkway, Merrick Rd at Seaford Oyster Bay Expressway, and Park Avenue by the Fire Station.

This project will study and design the improvements that are necessary to improve stormwater management and drainage at these particular locations.

The areas along Sunrise Highway and Merrick Road coincide with locations of several ponds that likely contribute to the flooding. The study will analyze condition of all local ponds (Mill Pond, Wantagh Pond, Seaman Pond, and Tackapausha Pond) and the potential to improve storage capabilities. In order to drain the ponds north of Sunrise Highway, Nassau County has indicated that siphons are used to move water under the 72 inch conduit that runs underneath Sunrise Highway. A siphon study will be part of the study to analyze the storage potential of the ponds.

Once the likely improvements have been identified, the project will proceed into the design of the drainage improvements. The design will consider and incorporate green infrastructure solutions to address drainage issues where possible.

Key Facts
- Project Type: Roads and Bridges
- Recovery Function: Infrastructure
- Project Location/Municipality: Sunrise Highway at Wantagh State Parkway, Merrick Road at Mill Pond Park, Merrick Rd at Wantagh State Parkway, Merrick Rd at Seaford Oyster Bay Expressway, and Park Avenue by the Fire Station.
- Primary Target Area Affected: Seaford and Wantagh
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Seaford and Wantagh

Cost Estimate: $1,200,000
The selected priority local roads within Seaford and Wantagh are key roads that allow evacuation from areas that are prone to flooding and access to areas on higher ground with critical help facilities. The priority local roads within Seaford and Wantagh are assumed to be Sunrise Highway, Merrick Road, Bayview Avenue, Wantagh Avenue, Seaford Avenue, Willoughby Ave, Neptune Ave, Seamans Neck Road, Washington Ave.

As a follow on project to the stormwater drainage clean out, survey and verification of these priority local roads, this project will identify and design the necessary infrastructure improvements along these roads with the exception of Merrick Road and Sunrise Highway which will be the focus of a different project. This project will focus mainly on the north-south running local priority roads.

**Key Facts**

- Project Type: Roads and Bridges
- Recovery Function: Infrastructure, Health and Social Services
- Project Location/Municipality: Seaford and Wantagh
- Primary Target Area Affected: Seaford and Wantagh
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Seaford and Wantagh residents

**Project Information**

Potential infrastructure upgrades may identify the need for green infrastructure structures and bioswales.

Potential infrastructure upgrades may include burying existing overhead power lines.

Cost Estimate: $1,000,000

Design of infrastructure improvements along critical access roads.
Following Sandy, with the loss of power, neighborhoods were difficult to navigate at night and limited the amount of recovery work and movement to daylight hours.

This project involves the installation of LED street lights powered by solar panels with battery backup on existing utility poles along the north-south running local priority roads: Bayview Ave, Wantagh Ave, Seaford Ave, Willoughby Ave, Neptune Ave, Seamans Neck Rd, and Washington Ave.

Having these priority local roads lighted with independently powered more efficient lights will provide a lighted pathway of evacuation and increase the safety of these streets for access after a power outage.

If future undergrounding of utility lines occurs and new separate street lights are installed, the LED/PV street lights could be reused in other parts of the community.

**Key Facts**

- Project Type: Roads and Bridges
- Recovery Function: Infrastructure, Health and Social Services
- Project Location/Municipality: Seaford and Wantagh
- Primary Target Area Affected: Seaford and Wantagh
- Consistency with NYCR: Increase resiliency of key assets
- Potential Beneficiaries: Seaford and Wantagh residents

**Project Information**

LED street lights use less energy, and require less maintenance than traditional lamps.

Solar PV street lights incorporate batteries to store power generated during the day for use at night.

Cost Estimate: $2,800,000
Community Resource Centers are places for residents to find emergency information and recovery resources.

Cost Estimate: $2,800,000

Key Facts

- Project Type: Emergency Readiness
- Recovery Function: Health and Social Services, Community Planning and Capacity Building
- Project Location/Municipality: Seaford and Wantagh
- Primary Target Area Affected: Seaford and Wantagh
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Seaford and Wantagh residents

Project Information

Community Resource Centers are places for residents to find emergency preparedness information during normal conditions. During and after a storm, these centers would become a place to gather, collect and distribute resources (emergency supplies, deployable showers, non-perishable food, potable water/iodine tablets, blankets and tarps, emergency evacuation instructions, bicycles, toiletries, winter clothing, OTC medications, first aid, and hand tools), charge cell phones, and access the internet.

A Local Disaster Recovery Manager will provide preparedness training sessions and ensure all information is accessible and understandable to all residents.

The installation of permanent natural gas generators at the Community Resource Centers would ensure power supply to critical resources such as heating, cooling, charging and internet access.

Possible locations include Seaford and Wantagh Libraries and the Seaford High School.
County Shelter Resilience

Retrofit and install permanent generators at Wantagh High School, a designated emergency shelter

Cost Estimate: $1,200,000

Key Facts

- Project Type: Emergency Readiness
- Recovery Function: Health and Social Services, Community Planning and Capacity Building
- Project Location/Municipality: Wantagh High School
  3301 Beltagh Avenue
  Wantagh, NY 11793
- Primary Target Area Affected: Nassau County
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Nassau County Residents

Project Information

Wantagh High School is a designated emergency shelter for Nassau County. An assessment of the utilization of Wantagh HS during Sandy will inform any additional fortifications or amenities that are necessary to ensure that Wantagh High School is accessible and able to accommodate the needs of community members during a future event. This assessment will also include a study to determine the wind resistant design level of the school and then seek funding for any mitigation required.

This project also includes the installation of air conditioning and heating to the cafeteria or whatever other room is used as the main shelter location. A permanent natural gas powered generator will be installed to provide backup power to the heating, cooling, lighting and other critical facilities in the event of a local power failure.

Placing generators on rooftops or upper floors protects the backup power supply from flood damage
A microgrid is a small-scale version of the centralized electricity system which includes all the necessary components to operate in isolation of the centralized grid. Microgrids can operate independently of the grid and can also be connected to the grid allowing the import or export of electricity. The New York State Energy Research and Development Authority (NYSERDA) is currently conducting a feasibility study of a microgrid at the Cedar Creek WPCP to serve critical facilities near the WPCP. Based on the results of the feasibility study, this project would fund the detailed design of the microgrid.

**Project Information**

Design of a microgrid to provide power to critical facilities near the Cedar Creek WPCP

**Cost Estimate:** $500,000

**Key Facts**

- **Project Type:** Utilities
- **Recovery Function:** Infrastructure
- **Project Location/Municipality:** Cedar Creek Park (Wantagh)
- **Primary Target Area Affected:** Critical facilities around Cedar Creek Park
- **Consistency with NYRCR:** Address short, medium, and long-term risks
- **Potential Beneficiaries:** Seaford and Wantagh residents
The Cedar Creek WPCP remained in operation throughout the storm, but the storm surge overwhelmed the facility causing damages to internal and external equipment and materials, as well as clogging up systems with debris which required extensive cleaning. The Nassau County DPW Sandy Damage Assessment Report of the Cedar Creek WPCP recommended the development of a hazard mitigation strategy to provide a level of protection against future storm events. Strategic planning and redesigning for flood protection will safeguard the assets and will allow the plant to continue servicing the community.

Key Facts

- Project Type: Emergency Readiness
- Recovery Function: Infrastructure
- Project Location/Municipality: Cedar Creek Park (Wantagh)
- Primary Target Area Affected: Nassau County
- Consistency with NYRCR: Address short, medium, and long-term risks
- Potential Beneficiaries: Nassau County residents

Cost Estimate: $100,000

Project Information

The Cedar Creek WPCP is vulnerable to future storm damage. A hazard mitigation strategy would help prevent outages and damage from flooding or sustained power loss.
Integrated Communication Network

A regionally-coordinated, one stop shop for disaster and emergency information, communication and training

**Project Information**

Create a single source for comprehensive information and emergency assistance and establish a communication network that more effectively links the local government with emergency management agencies, faith-based groups, and non-profit organizations to direct aid and recovery efforts to the community's socially vulnerable populations.

Benefits: Phase 1 of this project would evaluate existing emergency communication systems and determine additional needs, with an emphasis on coordination across multiple jurisdictions. Phase 2 would establish a centralized location (such as a website) with consistent "branding" to make disaster information identifiable, and regular updates to keep information current. Phase 3 would include the creation of an educational component, using the website to promote educational seminars on disaster planning. Both Phase 2 and 3 have the potential for private and nonprofit sponsorships and partnerships.

Relationship to Disasters: During and after Superstorm Sandy many residents did not know where to look for emergency information. Some community members did not understand the severity of the storm and were unable to evacuate after conditions became unsafe, putting themselves and emergency responders at risk. Following the storm, power outages and lack of cellphone service left residents unable to communicate with friends and family members, and without a means to find emergency resource information.

**Key Facts**

- **Project Type:** Emergency Readiness
- **Recovery Function:** Community Planning and Capacity Building
- **Project Location/Municipality:** Nassau County
- **Primary Target Area Affected:** Nassau County
- **Consistency with NYRCR:** Coordinate with regional initiatives
- **Potential Beneficiaries:** All Nassau County residents impacted by future disasters

Cost Estimate: (Phase 1) $20,000 - $100,000 per CR Area

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**Business Continuity Program**

Establish a business continuity program to ensure that businesses can maintain essential functions during and after emergency events

**Project Information**

Business continuity planning ensures that businesses have the capability to maintain essential functions during a range of potential emergencies. The assistance provided by a Business Continuity Program would include planning assistance, access to alternative spaces or facilities, communications provisions, and provisions for vital records backup and management.

Benefits: The Business Continuity Program would help small businesses to create their own plans for continuing operations under adverse conditions, such as a major storm. The program would work with Adelphi University and the Business Continuity Institute to lead training sessions for local business owners. Training sessions will include assisting business owners to create a database to store, update and/or view temporary emergency power requirements for their establishments. This data will help owners procure emergency power generation supplies before a disaster, and prioritize temporary power requirements.

Relationship to Disasters: After Superstorm Sandy some 95 Seaford and Wantagh businesses, representing 288 employees, applied for disaster management assistance. These applications verified a total of $3.4 million in real property damage, $1.5 million of machinery damage, an inventory loss of $1.2 million and a leaseholder improvement loss of $952,077. Of these applications, only 25 (26.3%) were approved for an amount totaling slightly less than $1.5 million, roughly one fifth of the $7.1 million in verified damage assistance applied for.

**Key Facts**

- **Project Type:** Emergency Readiness
- **Recovery Function:** Economic, Community Planning and Capacity Building
- **Project Location/Municipality:** Nassau County
- **Primary Target Area Affected:** Nassau County
- **Consistency with NYRCR:** Drive economic growth
- **Potential Beneficiaries:** Nassau County businesses impacted by future disasters

Cost Estimate: $35,000 - $40,000 per CR Area
South Shore Stormwater System Modeling and Analysis
Evaluate condition and ownership of stormwater drainage systems and identify solutions for stormwater management

Cost Estimate: $500,000 - 600,000 per CR Area

Project Information
This project would document the condition and ownership of stormwater drainage systems in the region, and use hydraulic and hydrologic modeling to study surface and subsurface stormwater drainage patterns. A study of the Sunrise Highway Conduit would also be performed to address drainage issues in upland areas.

Benefits: Modeling and analysis is necessary to help identify and prioritize solutions for stormwater management. This includes capital projects, updated maintenance requirements, regulatory improvements, public awareness programs, and other property owner assistance measures. These initiatives would increase the capacity of the stormwater system and reduce flooding issues in the region.

Relationship to Disasters: Rain and storm surge during Sandy overwhelmed the stormwater drainage system and exacerbated flooding. Additionally, localized flooding is frequently observed during heavy rainfall or high tides.

Key Facts
- Project Type: Planning and Additional Study
- Recovery Function: Infrastructure
- Project Location/Municipality: Nassau County
- Primary Target Area Affected: Nassau County
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Nassau County residents and businesses

South Shore Shoreline Conditions Analysis and Restoration Program
Analyze shoreline conditions and incentivize coordinated improvements to reduce erosion and mitigate flooding

Cost Estimate: $100,000 - $200,000 per CR Area

Project Information
Develop a program to incentivize and provide support for coordinated and continuous shoreline improvements along private waterfront properties, including measures to reduce erosion and provide protection against tidal action and storm surge. This program would include the creation of a digital inventory to assess shoreline conditions, and analyze potential strategies to restore shorelines to pre-Irene and pre-Sandy conditions. Pilot projects should be implemented and monitored at a local level.

Benefits: Shoreline improvements such as hard or hybrid structures, living shorelines, wave attenuation measures such as oyster reefs, and other natural solutions can help mitigate shoreline erosion and protect coastal properties from flooding and degradation.

Relationship to Disasters: Irene and Sandy caused widespread damage to Long Island’s southern coastline. Many protective coastal features were affected, compromising their ability to control erosion and flooding.

Key Facts
- Project Type: Protective Measures
- Recovery Function: Natural and Cultural Resources, Infrastructure
- Project Location/Municipality: Nassau County
- Primary Target Area Affected: Nassau County
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Nassau County residents
## Lifeline Transportation Network

**Identify and establish a system of local roads that lead to evacuation routes and Community Resource Centers**

**Project Information**

Perform a study to identify a system of local roads that lead to Nassau County designated evacuation routes, Community Resource Centers, and evacuation centers. These “Lifeline Roads” should be prioritized for resilience and response measures such as debris cleaning, and clearly identified with uniform signage. Street lights and signals should be independently powered, and cell phone towers in proximity to the network should be required to maintain additional backup power resources.

Benefits: Establishing and publicizing a designated lifeline transportation network would ensure that residents and emergency responders can move throughout the community during and immediately after a major storm event.

Relationship to Disasters: Emergency responders had difficulty accessing heavily flooded areas during Sandy, and some residents who did not or were unable to evacuate before the storm made landfall were trapped in their homes. Even after the storm, debris on roadways made movement difficult.

**Key Facts**

- Project Type: Planning and Additional Study
- Recovery Function: Infrastructure
- Project Location/Municipality: Nassau County
- Primary Target Area Affected: Nassau County
- Consistency with NYRCR: Increase resiliency of key assets
- Potential Beneficiaries: Nassau County residents

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<th>Cost Estimate: $100,000 - 120,000 per CR Area</th>
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## Regional Energy Action Plan

**Evaluate options for distributed generation and microgrid implementation, and smart grid technology integration**

**Project Information**

Perform a study to identify opportunities for distributed generation and microgrid deployment, and smart grid integration into the existing electricity distribution system. Potential projects should incorporate community-driven planning and design, and leverage public-private partnerships for funding resources.

Benefits: Distributed generation resources can lower energy costs, and combined with a microgrid system can enhance grid reliability for all electricity customers. Smart grid technology can help utilities identify and service faults and outages faster, and allows for more efficient and reliable operation. These technologies also create new opportunities for jobs in clean energy industries, and contribute to a cleaner environment.

Relationship to Disasters: During Sandy, Irene, and many other minor storms damage to overhead utility lines resulted in power outages, which lasted for days in some parts of the region.

**Key Facts**

- Project Type: Utilities
- Recovery Function: Infrastructure
- Project Location/Municipality: Nassau County
- Primary Target Area Affected: Nassau County
- Consistency with NYRCR: Coordinate with regional initiatives
- Potential Beneficiaries: Nassau County residents and businesses

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