Final Environmental Assessment
Bay Park Sewage Treatment Plant
Hazard Mitigation - Floodwall and Berm Construction
East Rockaway, Nassau County, New York

4085-DR-NY

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U.S. Department of Homeland Security
Federal Emergency Management Agency Region II
26 Federal Plaza, NY, NY 10278

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LIST OF ACRONYMS

AAQS - Ambient Air Quality Standards

AOC - Areas of Concern

APE - Area of Potential Effect

BACT - Best Available Control Technology

BAD - Best Available Data

BMP - Best Management Practices

COC - Community of Concern

CBS - Chemical Bulk Storage

CDBG – Community Development Block Grant

CEHA - Coastal Erosion Hazard Area

CEQ - Council of Environmental Quality

CLOMR - Conditional Letter of Map Revision

CMU - Concrete Masonry Units

CSO - Combined Sewer Overflow

CZM - Coastal Zone Management

CWA - Clean Water Act

CZMA - Coastal Zone Management Act

CZMP - Coastal Zone Management Plan

DLN - Dry Low Nitrogen Oxides

EA - Environmental Assessment

EFH - Essential Fish Habitat

DPW - Department of Public Works

EFH - Essential Fish Habitat

EIS - Environmental Impact Statement

EJ - Environmental Justice

EO - Executive Order

EPA - Environmental Protection Agency

ESA - Endangered Species Act

ESRI- Environmental Systems Research Institute

FEMA - Federal Emergency Management Agency

FHA - Flood Hazard Area

FEA – Final Environmental Assessment

FIRM - Flood Insurance Rate Map

FONSI - Finding of No Significant Impact

HABS/HAER – Historic American Building Survey/Historic American Engineering Record

HAP - Hazardous Air Pollutant

HMP - Hazard Mitigation Proposal

HUD – U.S. Department of Housing and Urban Development

IPaC - Information, Planning, and Conservation system

IPCC - Intergovernmental Panel on Climate Change

IR - Incremental Risk

kW - Kilowatt

LAER - Lowest Achievable Emission Rate

LEED – Leadership in Energy and Environmental Design

LIPA - Long Island Power Authority

LOI - Letter of Interpretation

MACT - Maximum Achievable Control Technology

NAAQS - National Ambient Air Quality Standards

NEPA - National Environmental Policy Act

MBTA - Migratory Bird Treaty Act

MGD - Million Gallons a Day

NFA - No Further Action

NFIP - National Flood Insurance Program

NHPA - National Historic Preservation Act

NMFS - National Marine Fisheries Service

NOAA - National Oceanic and Atmospheric Administration

NOx - Nitrous Oxides

NPDES - National Pollution Discharge Elimination System

NRCS - Natural Resources Conservation Service

NRHP - National Register of Historic Places

NSCR - Nonselective Catalytic Reduction

NSPS - New Source Performance Standards

NYSDEC - New York State Department of Environmental Conservation

OSHA - Occupational Safety and Health Administration

Pb - Lead

PCBs - Polychlorinated Biphenyls

PM - Particulate Matter

PSD - Prevention of Significant Deterioration

PSEG - Public Service Enterprise Group Incorporated

PTE - Potential to Emit

SCR - Selective Catalytic Reduction SIP - State Implementation Plan SOTA - State of the Art

SHPO - State Historic Preservation Office

SO_2 - Sulfur Dioxide

SPDES - State Pollution Discharge Elimination System

SRIA - Sandy Recovery Improvement Act

SRIA - Sandy Recovery Improvement Act

SRP - Site Remediation Program

STP - Sewer Treatment Plant

SWMP - Storm Water Management Program

SWPPP- Stormwater Pollution Prevention Plan

THC – Total Hydrocarbon

THPO-Tribal Historic Preservation

TOG - Technical and Operational Guidance

USACE - United States Army Corps of Engineers

USDA - United States Department of Agriculture

USEPA - United States Environmental Protection Agency

USFWS - United States Fish and Wildlife Service

UST - Underground Storage Tank

VOCs - Volatile Organic Compounds

1.0 Introduction

On October 29, 2012 Hurricane Sandy caused storm damage to several areas of Long Island, New York including the Bay Park Sewage Treatment Plant (STP) in East Rockaway, Nassau County, New York. President Barack Obama declared Hurricane Sandy a major disaster on October 30, 2012. The declaration authorized federal public assistance to affected communities and certain non-profit organizations per Federal Emergency Management Agency (FEMA) 4085-DR-NY and in accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (Section 406, 42 U.S.C. 5172) as amended; the Sandy Recovery Improvement Act (SRIA) of 2013 and the accompanying Disaster Relief Appropriations Act, 2013. In addition, on December 7, 2012, the President signed an Executive Order – Establishing the Hurricane Sandy Rebuilding Task Force. The Task Force released a Hurricane Sandy Rebuilding Strategy in August 2013 that provides 69 recommendations for long-term recovery of the Sandy affected region. Recommendation 6 is dedicated to ongoing regional coordination of critical infrastructure projects in a manner that accounts for current vulnerabilities to extreme weather events and increases community and regional resilience to future impacts. Implementation of Recommendation 6 takes place through the Sandy Regional Infrastructure Resilience Coordination Group, which includes federal, state, tribal, and local government officials, and technical teams focused on priority areas.

The Nassau County Department of Public Works (Subgrantee) has applied to FEMA for financial assistance with the construction of a berm and floodwall to serve as perimeter flood protection for the Bay Park Sewage Treatment Plant (STP). The Nassau County Department of Public Works owns, manages, finances, promotes, improves and expands the wastewater system of Nassau County. The New York State Division of Homeland Security and Emergency Services (NYSDHSES) is the Grantee partner for the proposed action. NYSDHSES, in cooperation with the New York State Governor's Office of Storm Recovery, may be applying U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) funding to the non-federal cost-share of the FEMA Public Assistance Grant Program proposed action.

As a result of Hurricane Sandy approximately 50 structures, numerous mechanical and electrical systems, and operating equipment were damaged at the STP. The most significant impact of the flood damage resulted in raw sewage backing up into the neighboring residential community and the release of untreated and partially treated sewage into Hempstead Bay. The facility has not fully recovered its operations since the storm incident and has been utilizing temporary facilities to provide critical services to the community. The proposed action includes repair of the 50 damaged structures and equipment. The proposed berm and floodwall are part of a plant-wide design to not only restore plant facilities but also incorporate storm damage risk reduction features to enhance the resiliency of the structure for the future. The hazard mitigation features

proposed are cost eligible through FEMA's Section 406 hazard mitigation funding. The berm and floodwall would be constructed around the perimeter of the plant and together with floodgates and local stormwater pumping stations would protect critical plant infrastructure in the event of a future flooding event. This would greatly reduce the risk of plant loss of services and would protect the surrounding community wastewater overflows during these events. The Subgrantee plans to start construction of the proposed project in summer 2014.

This Final Environmental Assessment (FEA) is prepared in accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969, as amended; and the Regulations for Implementation of the National Environmental Policy Act (40 Code of Federal Regulations [CFR] Parts 1500 to 1508). The purpose of the FEA is to analyze the potential environmental impacts of the proposed project and alternatives, including a no action alternative, and to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). In accordance with above referenced regulations and FEMA's regulations for NEPA compliance found at 44 CFR Part 10, FEMA is required, during decision making, to fully evaluate and consider the environmental consequences of major federal actions it funds or undertakes.

2.0 Purpose and Need

FEMA's Public Assistance Program fosters the protection of health, safety and welfare of citizens, assists communities in recovering from damages caused by disasters and reduces future losses resulting from natural disasters. The purpose of this project is to fully restore the pre-storm condition of the facilities and operations of the Bay Park STP and implement a flood hazard risk reduction measure designed to a 500-year or greater level of protection to reduce the impact that natural disasters like Hurricane Sandy could have on the Bay Park STP in the future. The need for this project is due to the flood damages of Hurricane Sandy and to incorporate resiliency to minimize future treatment plant failures, service interruptions, and to minimize future damages to the critical facility's infrastructure due to storm incidents. Wastewater treatment is an essential service and its loss results in environmental damage and exposes citizens to health and safety risks when untreated sewage is released into the surrounding parks, residential areas and waterways. There is a significant financial cost to repair the damaged infrastructure. The proposals considered in this analysis would support safe and reliable wastewater treatment, enhance resiliency of the facility, reduce repetitive repair costs associated with flooding and help ensure operational efficiency for the foreseeable future.

3.0 Project Location and Background

The Bay Park Sewage Treatment Plant (STP) is in Nassau County on Long Island, New York. The facility is located at 2 Marjorie Lane, East Rockaway, New York, 11518 and is about 50 acres in size. It is bordered on the east and west by approximately 30 acres of Bay Park Public Park. Beyond the parkland is Marjorie lane and the East Rockaway Channel to the east and 1st Avenue to the west. The surrounding land use to the north of the plant consists of a residential neighborhood and to the south are Harbor Road and a public golf course (Appendix Figures A & B). Reynolds Channel, the location of the Plant's outflow pipe, is a tidal strait located adjacent to Hempstead Bay, which is located in the southern-most portion of the Western Hempstead Bay. The Long Beach Boulevard Bridge splits the strait into two portions: Reynolds Channel East and Reynolds Channel West. The Bay Park STP outfall is located in Reynolds Channel West. The Atlantic Ocean is the receiving water for Reynolds Channel and Hempstead Bay, as well as all of the Western Hempstead Bay.

The facility began operation in 1950 with a treatment capacity of 27 million gallons per day (MGD) of municipal sanitary waste. The plant has expanded twice since then for secondary treatment and capacity and today treats an average of 50 MGD. The sewage service area tributary to the plant is approximately 70 square miles in the western portion of the county. The service area, encompassing nearly half of the County's population, is the most heavily developed and most dense region of the county. The STP currently serves approximately 530,000 residents and nearly 86,800,000 sf of commercial development in the southwestern portion of Nassau County. The majority of sanitary flow is from residential developments and then commercial establishments, and relatively insignificant flow (1.5 percent) from industrial facilities. The facility discharges its treated effluent into Reynolds Channel via an 84-inch diameter outfall approximately 2.3 miles south of the plant and .25 miles north of Long Beach, NY.

The location of the Plant on Hewlett Bay and the East Rockaway Channel exposes the facility to damage from stormwater surges associated with hurricanes and severe storms. During Hurricane Sandy the plant lost total conveyance and treatment services for three days. This Plant failure resulted in an estimated 100 million gallons of untreated sewage overflowing into the streets, adjoining neighborhoods and Hewlett Bay. In addition, another 2.2 million gallons of partially treated effluent was released into the bay. At the time of the storm, the Subgrantee lost complete service of the dewatering facility and is still operating with temporary equipment. Failure of this critical piece of infrastructure due to future storm surge impact could be devastating to the entire 70 square mile service area.

Bay Park is currently working under temporary repair measures in order to meet the needs of the residents of the south shore of Nassau County. The plant currently consists of headworks with screening and grit removal, primary settling, aeration, final settling, effluent screening,

chlorination, dechlorination, anaerobic digestion, and dewatering. Nassau County conducted emergency repairs on these systems, with the exception of the sludge thickening dewatering facility. The emergency repairs are temporary in nature and may not function properly in the near future if permanent repairs are not conducted. The sludge thickening dewatering facility and ancillary systems, which are four 3,600 kW generators, necessary for power generation were completely wiped out during the storm surge and are currently replaced by a temporary sludge facility and 9 - 1,300 kW temporary generators. Two of the four 3,600 kW generators are estimated to come back online in August 2014. There are currently on site projects, including construction of dechlorination facility, repair and cleaning of digester tanks and heat exchanges, underway at the Bay Park STP facility that was contracted out before Hurricane Sandy made landfall.

4.0 Alternatives

Several alternative courses of action were evaluated for the Bay Park STP project. The alternatives were evaluated based upon engineering constraints, environmental impacts and available property. Budgetary constraints were also considered but were not the controlling factor in deciding on alternatives.

Guidance provided in 40 CFR 1502.14 regarding the NEPA provision of an alternative analysis states that an agency must rigorously explore and objectively evaluate all reasonable alternatives and for those that were eliminated from detailed study, briefly discuss the reasons for their elimination. Additionally, a No Action Alternative must be included. This section discusses the No Action Alternative or also known as the "Future without Federal Project Condition", the feasible alternatives that would provide the purpose and need and the alternative that was eliminated from full analysis.

4.1 Alternative 1: No Action Alternative

Under the No Action Alternative the Bay Park STP would not be relocated or repaired and would continue operations at its current location with temporary facilities. No hazard mitigation would be pursued to enhance the facilities resiliency under the No Action Alternative. The existing STP would continue to be at risk from future storm events with repetitive financial losses and effluent discharge violations. The surrounding community would experience service interruptions and threats to human health resulting from the overflow of untreated wastewater into city streets and the waters of Hewlett Bay. The discharge of untreated wastewater into waterways, including current outflow pipe in Reynolds Channel, would have negative impacts to water quality, aquatic resources and recreational activities.

4.2 Alternative 2: Proposed Alternative: Perimeter Flood Protection Berm and Floodwall

Alternative 2 would include the repair of the 50 flood-damaged structures and equipment to pre-storm condition or better to fully restore the function and operations of the facility. The alternative would include the construction of a combination earthen berm and concrete floodwall structure around the perimeter of the plant as a flood hazard mitigation component to serve as a primary defense against flooding. This project is coupled with other mitigation work on various facilities in Bay Park STP under a 428 capped grant utilizing Public Assistance Alternate Procedures. These include dewatering and electrical improvements, final settling tanks rehabilitation, grit removal facility improvements, and sludge thickening facility improvements. There is also a non-FEMA funded component of this alternative, in which CDBG funding would be used by the New York State Governor's Office of Storm Recovery (GOSR) to elevate one of the original generators as an additional mitigation measure.

The total length of the floodwall would be approximately 6,700 linear feet and the total length of the earthen berm would be approximately 1,800 linear feet. The concrete floodwall and earthen berm would have a top elevation of approximately +17 feet North American Vertical Datum of 1988 (NAVD88), an elevation above the 500-year floodplain elevation. The recommended design elevation is based on a combination of stillwater flood elevation, wave height and sea level rise. The design elevation also includes a safety factor (freeboard) of two (2) feet. The existing grade elevation at the facility ranges from a low of +6 feet to +16 feet NAVD88. The floodwall and berm on average would be approximately +10 feet in height above existing grade. The construction duration for the proposed project would take 12-24 months. Appendix Figure C contains a drawing showing the scope of work for the proposed alternative while Appendix Figures C1-C9 display the existing conditions and renderings of the same areas to illustrate what the floodwall and berm would look like if constructed.

The barrier alignment would include two closure gates, on the north and south sides, which would be closed and sealed during flooding events. The floodwall would be constructed with 18 inch and 24 inch diameter auger cast piles, a vibratory slurry wall and footings. The depths for the auger cast piles and footings can be found in Appendix Document M. The vibratory slurry wall would be a minimum of 4” thick and the depth of the structure would be -25 feet (NAVD 88). The slurry wall would be composed of material that would set similar to stiff clay. The vertical slurry wall would be installed per the Vibrated Beam Method. The Vibrated Beam Method utilizes a crane with a specially fabricated wide flange beam connected to a large vibratory hammer. The vibratory hammer enables the vibrated beam to penetrate the subsoils. Slurry is injected at the base of the vibrated beam. Installation of the slurry wall would occur as per Specification Section 13001_Vibratory Beam Slurry Wall Specification which can be found in Appendix Document N. Beneath utilities, jet grouting would be used in lieu of slurry wall as

per Specification Section 13005_Jet Grouting Specification which can be found in Appendix Document P. The fill estimated for construction of the berm would be approximately 10,000 cubic yards and the berm would have a clay core.

Two new pumping stations would be installed to ensure stormwater would continue to flow off-site during storm events. Stormwater drainage would be improved by routing through sub-surface infiltration chambers and then to detention ponds, allowing for sediment removal and groundwater recharge that does not exist under current conditions (Appendix Document D). The proposed adjustments to the existing stormwater system within the plant would match existing flow capacity or increase it in some instances. In the proposed design, hydraulic efficiency would be increased by the re-sizing or enlarging of some pipe runs and splitting of systems with added catch basins. Under a 1% flood condition or other high water event causing a tidal surge, backflow into the plant would be prevented by way of automatic rubber duckbill valves with secondary redundant sluice gates upstream of those valves. Outflow in the extreme high water scenario would be achieved by use of the two new pumping stations.

The guardhouse would be moved to within the berm protection and renovated (Appendix figures C5-C7). Construction of the perimeter flood protection structure included in this proposed alternative would impact the adjacent county-owned park to the east and west of the Bay Park STP, which is utilized by the public for recreation. As such, improvements to the park have been included in the scope of work for this alternative. The park improvements include the elevation of the park in its entirety to provide self-drained fields. The park grades would be raised by two (2) feet with 45,000 CY of fill. Construction of the perimeter flood protection structure would also impact nearby Marjorie Lane, as a result, the relocation of this road has been included in the scope of work for this alternative. The roadway would be relocated further inland from the waterway, and realigned from its present location along the eastern bulkhead to the west along the foot of the perimeter floodwall and berm. This will allow for the addition of an esplanade along East Rockaway Channel.

4.3 Alternative 3: Mitigate All Systems and Equipment Individually

Alternative 3 would include repair of the 50 flood-damaged structures and equipment to pre-storm condition or better to fully restore the function and operations of the facility. This alternative would also consist of protecting the critical systems and structures within the plant individually by either constructing a floodwall up to the 500-year flood elevation (plus freeboard and sea level rise) around each structure or elevating critical equipment (e.g. electrical equipment) to an elevation greater than the 500-year floodplain elevation. All systems and equipment at the Bay Park STP are tiered in order of criticality to plant operations. For this alternative, all systems and equipment given a Subgrantee-defined tier of 1 (most critical) to 4 (least critical) would be protected to the 500-year flood elevation plus freeboard and sea level

rise. This would allow conveyance and critical treatment operations to continue in the event of a flood. The scope of work for this alternative is described below:

Influent Screening (Tier 1): Construct a floodwall extending around the building. Install removable bulkheads at the building entrance.

Raw Sewage Pumps (Tier 1): Provide new dry pit submersible pumps.

Grit Removal (Tier 2): Construct a floodwall extending around the building. Install removable bulkheads at the building entrance.

Primary Settling Tanks (Tier 2): Elevate the primary sludge tank collector drives, scum pumps, motors, drives, electrical equipment, and control panels above the design flood elevation. Provide dry pit submersible primary sludge pumps and grinder or chopper type pumps.

Secondary Treatment Facilities (Tier 1): Construct a floodwall around the process tanks, including aeration and final settling tanks. Install removable bulkheads at entrances. Install dry pit submersible return activated sludge pumps and waste activated sludge pumps. Include watertight doors at tunnel access points to prevent floodwaters from entering the basements.

Effluent Screening and Disinfection (Tier 1): Elevate hypo-feed pumps and spray water booster pumps for effluent screens above the design flood elevation. Install dry pit submersible effluent service water pumps, seal water booster pumps, and submersible sump pumps.

Effluent Pumping Station (Tier 1): Elevate equipment (particularly motor control centers and electrical equipment) above the design flood elevation. Install submersible effluent pumps and motors.

Sludge Thickening and Digestion (Tier 2): Construct a floodwall around the motor control center building, sludge pump station control building, and tunnel access structure. Install watertight doors at access points.

Sludge Dewatering Facilities (Tier 2): Construct a floodwall extending around the building.

Electrical Distribution System E1 (Tier 1): Secure the conduit system against flooding. Replace unit substations 3, 4, 5, and 6 with three new unit substations above the design flood elevation.

Electrical Distribution System E2 (Tier 1): Replace main substation and unit substations 1 and 2 with new structures above the design flood elevation. Increase the capacity of Public Service

Enterprise Group (PSEG) feeder. Provide an interconnection for the mobile generator at the existing PSEG substation. Replace the existing duct bank system.

Central and Distributed Heating, Ventilation, and Air Conditioning (HVAC) Systems (Tier 4): Install ventilating units and fans at elevations above the design flood elevation. Install the boiler system above the design flood elevation. Clean and reinsulate dismantled ductwork. Replace damper filters, re-lubricate, and determine functionality. Replace existing ductwork with new where necessary.

Odor Control Systems (Tier 4): Elevate odor control units above the design flood elevation.

General Plant Site Facilities (Tier 1 for Fire Protection, Tier 2-4 Otherwise): Construct a floodwall around the fire protection building. Install removable bulkheads around the fire pump and engine control skids. Elevate motor control centers and HVAC equipment above the design flood elevation. Elevate containment walls around fuel tanks above the design flood elevation. Install submersible equipment and connections for auxiliary power. Isolate the plant drain connections. Construct a plant stormwater system and safe house.

Appendix Figure D contains a figure that shows the scope of work of this alternative. This alternative would not protect the facility complex in its entirety because flood proofing would be focused on protection of STP-defined Tier 1 – 4 critical facilities. This alternative would not involve modifications to Marjorie Road or enhancements of the surrounding park areas. This alternative would also not include stormwater management improvements, such as the sub-surface infiltration chambers or detention ponds described in the Proposed Action alternative.

4.4 Alternatives Considered and Dismissed

One additional hazard mitigation alternative was preliminarily considered by the Subgrantee to relocate the entire facility to a new location outside of the 500-year floodplain. In addition to meeting the mitigation objectives, this alternative would present the benefit of allowing the existing plant to continue its operations uninterrupted while the new plant is constructed. The land adjacent to the plant, considered as a potential location for this option, is currently occupied by a golf course. The new plant would be able to implement state-of-the-art technologies and processes to enhance efficiency, effluent quality, and maintenance requirements. The existing golf course is at a higher elevation than the existing plant, but the land is still susceptible to flood impacts during a 500-year flood event. The new buildings housing critical assets would be designed so that critical assets would be above the 500-year flood elevation, thus maintaining the plant's functionality during a flood event.

According to the U.S. Census, the population density in Nassau County in 2010 was 4,704.8 persons per square mile, compared with 411.2 persons per square mile in all of New York State. This high population density would make it difficult to find another feasible alternative location to build a 40+ acre facility. Additionally, an alternate location besides the existing golf course would be significantly more expensive, as this would require the design and construction of a potentially very long stretch of pipe to transport the treated sewage to the outfall. Lastly the redirection of all collection and interceptor infrastructure as well as the construction of new pumping and metering stations would be required.

The County owned golf course occupies more land than the existing STP and suggests the area of the golf course would be sufficient for a new plant provided all else (e.g. hydraulic capacity and degree of treatment) remains equal. The new plant would have a larger footprint (67 acres) than the existing plant (50 acres) and would impact the areas around the plant. During construction, disturbance would occur in the immediate surrounding area, but would be contained within Bay Park STP. The relocation of the STP to the golf course would impact the visual character of the area as it would be within line of sight from surrounding residents along the immediate coast and would significantly alter views of the shoreline from adjacent bays and waterways. Once the construction was completed, the site would be restored to near original conditions. Roadways, sidewalks, curbs, and plant life would be restored where possible to meet or exceed existing conditions.

The relocation of the plant to the land currently occupied by the golf course would result in a temporary loss of park land for the community until the construction of the new plant has been completed, the existing plant demolished, and the existing plant land converted to park land. This alternative mitigation option was dismissed from full analysis for a number of reasons including anticipated difficulty in finding a new location, regulatory compliance concerns and significantly higher cost as compared to other alternatives to retrofit the existing facility complex.

4.5 Summary of Alternatives

Four alternatives were considered by the Subgrantee for implementation at Bay Park STP. Of these four, Relocation of the Facility was dismissed early for several reasons as discussed in the previous subsection. The three remaining alternatives are:

1) No Action Alternative
2) Perimeter Flood Protection Berm and Floodwall (Proposed Action)
3) Mitigate All Systems and Equipment Individually

"The Perimeter Flood Berm and Floodwall" is the proposed alternative, determined by the Subgrantee, that it is the best suited alternative to achieve restoration of the facilities structures and equipment and to meet the defined mitigation goals. This proposed alternative meets the mitigation objectives for the project and is the most cost-beneficial and is expected to have minimal adverse environmental impacts. Appendix Table A provides a summary of the three alternatives, their impacts, economic aspects and legal constraints. The following section focuses impact analysis on the proposed hazard mitigation component of the alternatives.

5.0 Affected Environment and Potential Impacts

5.1 Geology, Topography, and Soils

5.1.1 Existing Conditions

The proposed project site is in Long Island which consists of glaciation deposited layers of glacial sediment above Cretaceous coastal plains soils. Mueser Rutledge Consulting Engineers conducted a subsurface investigation in 2013 which consisted of 17 borings and 40 piezocone soundings (Appendix Document A). General descriptions of the materials encountered in the borings are summarized below in order of increasing depth. Site topography is fairly flat, gradually sloping down toward the waterways. Plant grades vary from approximately El. +4 to El. +12. The plant is bordered by an embankment, primarily along the east and west portions of the perimeter, rising to as high as El. +13. All elevations reported in this report are in reference to North American Vertical Datum of 1988 (NAVD88). The soils are not classified by the U.S. Department of Agriculture as prime or protected farmland soils and the site is located in an urban area; therefore, no analysis or specific impact assessment is required in accordance with the Farmland Protection Policy Act.

Stratum – Fill: The uppermost stratum encountered in the borings is fill, ranging in thickness from 4 to 13.5 feet, averaging 8.2 feet. The fill consists of very loose to very compact brown and tan fine to course sand, trace to some silt and gravel, occasionally silty, gravelly, with trace organic silty clay layers, wood, vegetation or glass.

Stratum – Organic Silty Clay with Peat: In 11 of 17 borings (along the eastern and southern edges of the site) the fill is underlain by a layer of recent organic marine deposits ranging 0.3 to 15 feet thick, averaging 7.4 feet. The organic layer consists of soft to medium gray organic silty clay, with peat, trace shells and fine sands. It occasionally contains layers of sand or grades into the sand stratum below.

Stratum – Sand: The above-described materials are underlain by a sand stratum in which all of the borings were terminated after penetrations of 3.1 to 48 feet. The Sand Stratum consists of medium compact to very compact tan, brown, orange, gray or green brown fine to coarse sand, with trace to some gravel, trace to some silt, and occasionally gravelly. Some samples contain trace amounts of organic silt or vegetation at the contact with the overlying Organic Stratum. This stratum contains silt, clay, or trace layers of gray silty clay or silt that is in contact with, or near the elevation of the Clay Stratum, inter-bedded within the sand stratum and described below.

Clay Lense: In two of the borings in the NW corner of the site, a thin, but distinctive layer of gray silty clay is present within the Sand Stratum between elevations -23 and -25.

5.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action alternative would have no consequences on Geology, Topography and Soil resources.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The Proposed Alternative would have negligible short-term and long-term impacts on soil resources. There would be incidental soil disturbance necessary to construct the floodwall, storm water management structures (pipes and pump stations within the existing footprint of the STP), improve the adjacent county park, and relocate Marjorie Lane. Construction activities disturbing soils will include excavation for foundation elements, grading, installing piles and slurry walls, and other associated earthwork. These excavation activities would disturb 37 acres of soil and generate minimal or no impact to topographical features of the project site. Any potential soil erosion impacts from construction activities would be reduced with implementation of localized Best Management Practices (BMPs), which will be included in the Stormwater Pollution Prevention Plan (SWPPP). The Proposed Alternative will consist of 18 inch and 24 inch diameter auger cast piles, a vibratory slurry wall and footings. The depths for the auger cast piles and footings can be found in Appendix Document M and slurry wall specifications can be found in Appendix Document N. Beneath utilities, jet grouting will be used in lieu of slurry wall as per Specification Section 13005_Jet Grouting Specification which can be found in Appendix Document P.

Alternative 3: Mitigate All Systems and Equipment Individually

Elevating facilities and constructing floodwalls around specific buildings would disturb soils during excavation for foundation elements, grading, and other associated earthwork. This alternative would disturb approximately two (2) acres of soil. The soil disturbance due to the

floodproofing of individual facilities would have consequences similar to the proposed alternative and impacts would be minimized by construction BMPs.

5.2 Air Quality

The Environmental Protection Agency (EPA) and New York State Ambient Air Quality Standards (AAQS) have been adopted in accordance with requirements of the federal Clean Air Act for specific air pollutants, to protect "public health" with an adequate margin of safety, and to protect "public welfare", from the adverse effects associated with pollutants in the ambient air. The current National and New York State AAQS applicable to the project site are presented in Appendix Table 5-1. Areas meeting the National AAQS for a criteria pollutant are designated as within attainment of the standards. Areas where a criteria pollutant level exceeds the applicable National AAQS are designated as being in non-attainment of the standards. A non-attainment area may be re-designated to attainment, based on monitoring data demonstrating attainment of the applicable standards. In these cases the state must implement a maintenance plan to assure continuing attainment.

Federally funded actions in nonattainment and maintenance areas are subject to United States Environmental Protection Agency (EPA) conformity regulations, 40 CFR Part 51 and 93. The air conformity analysis process ensures that emissions of air pollutants from planned federally funded activities would not affect the state's ability to achieve the Clean Air Act goal of meeting the National Ambient Air Quality Standards (NAAQS). Section 176(c) of the Clean Air Act requires that federally funded projects conform to the purpose of the State Implementation Plan (SIP), meaning that federally funded activities would not cause any violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of the NAAQS or any interim milestone.

Federally funded actions are subject to General Conformity under Subpart B of 40 CFR Part 93, unless otherwise exempted or related to highway or transit projects regulated under Subpart A. Other types of federally funded actions are subject to General Conformity under Subpart B, unless exempted. Certain actions and activities are exempted from General Conformity review, including the following:

- Stationary source emissions regulated under major or minor New Source Review (air permitting) programs;
- Alternation and additions of existing structures as specifically required by new or existing applicable environmental legislations are not reasonably foreseeable;
- Actions where the emissions are not reasonably foreseeable;
- Actions that have been defined by the federal agency or by the state as "presumed to conform";

- Activities with total direct or indirect emissions (not including stationary source emissions regulated under New Source Review programs) below de minimis levels. For the New York area, the applicable de minimis levels are as follows:
  NO_x < 100 tons per year
  VOC < 50 tons per year
  CO < 100 tons per year
  $PM_{2.5}$ < 100 tons per year
  SO_2 ($PM_{2.5}$ precursor) < 100 tons per year

The de minimis levels for NOx and VOC are applicable to moderate and marginal ozone nonattainment areas inside the ozone transport region. The de minimis levels for $PM_{2.5}$ and SO_2 are applicable to $PM_{2.5}$ nonattainment and maintenance areas, and the de minimis levels for CO are applicable to CO nonattainment and maintenance areas. Ozone is a photochemical oxidant that is formed in the atmosphere from volatile organic compounds (VOCs) and nitrogen oxides (NOx), called ozone precursors when in the presence of sunlight.

The emissions from construction activities are subject to air conformity review, unless they are shown to be below the applicable de minimis levels.

5.2.1 Existing Conditions

The existing background ambient air quality of the project site is based on the air quality monitoring data collected by the New York State Department of Environmental Compliance (NYSDEC) in Region 1 at the Holtsville and Babylon monitoring stations. The summary of the ambient air collected in the vicinity of the project site during the 2010, 2011 and 2012 is presented in Appendix Table 5-2. The concentrations of the air contaminants measured at these locations were all below the applicable National and New York AAQS except for ozone.

The project site is classified as in attainment for sulfur dioxide (SO_2), particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2) and lead (Pb). Maintenance plan requirements apply to CO and $PM_{2.5}$. The project site is currently classified as moderate non-attainment for ozone.

The existing facility is a Title V major facility. Existing equipment emitting air contaminants includes boilers, emergency and backup generators, sewage processing, and odor control systems. Currently the plant is operating under the 2006 Title V Air Permit which expired on October 25th, 2011 (Appendix Document I). As part of the Title V permitting process, the NYSDEC regulations requires that a Title V Air Permit renewal be submitted at least 180 days but not more than 18 months prior to the permit expiration date. The Bay Park STP submitted the Title V Air Permit application renewal on May 6th, 2011 and NYSDEC issued a notice of receipt of application on May 9th, 2011 (Appendix Document J).

To date, the NYSDEC has not issued a renewed Title V Air Permit. Under 201-6.7(a)(5), all the terms and conditions of a permit shall be automatically continued pending the final determination by the NYSDEC on a request for renewal application for a permit provided a permittee has made a timely and complete application and paid the required fees. Since the facility submitted the Title V Air Permit renewal on a timely basis, the facility is required to comply with all the conditions of the existing Title V Air Permit until a new permit is issued. The Title V Air Permit limits the facility's emissions for nitrogen oxides (NOx) to 244.1 tons/year, carbon monoxide (CO) to 183.9 tons/year and volatile organic compounds (VOCs) to 69.5 tons/yr.

Due to the damages to pre-existing equipment, several listed Title V equipment items are not in service or have been replaced by temporary units. The four (4) - 3,600 kW (each) generators have been replaced by nine (9) - 1,300 kW temporary emergency generators. Two of the four 3,600 kW generators are estimated to come back online in August of 2014. The nine (9) temporary generators will then be used as back-up only. For emission rates for the 1,300 kW generators engines Appendix Document H. Generator replacement is not part of current scope of work for FEMA funded work and is already in place.

5.2.2 Potential Impacts and proposed Mitigation

Alternative 1: No Action

The No Action alternative will not result in any additional emissions from construction activity and therefore would not have a potential negative impact on the air quality. Generator use will stay at current use which is still applicable under the 2006 Title V permit.

Alternative 2: Perimeter Flood Protection Berm and Floodwall

As described previously, the Proposed Action would take approximately 12 to 24 months to complete. Construction activities would require use of backhoes, loaders, cranes, concrete trucks, delivery trucks, etc. The needed electric power for facility and work would be supplied by the nine 1,300 kW generators until the two main 3,600 kW generators come back online. Pile driving would be required for the construction of the floodwalls and for the foundations of the stormwater pumping stations.

Emissions of fugitive dust during construction would be controlled by BMPs. Construction vehicles and non-road construction equipment would comply with applicable standards and would use ultra-low sulfur diesel (ULSD) fuel, as required by EPA regulations.

The emissions from the proposed activities, including the truck traffic are summarized in the Appendix Table 5-3, Table 5-4, and Table 5-5. The emissions from the truck trips to and from the project site are based on the truck operating hours for construction activities (7:30AM to 2:30PM). The emissions from the temporary generators are covered under the Title V permit

modification and they are not considered added contributors during the construction phase. The manufacturer's specification sheet for the generators is included in Appendix Document H. The manufacturer's guaranteed emissions for NOx and CO are also listed.

Based on the maximum emissions calculated for the onsite activities and the daily traffic activities, the emissions for the proposed action would be below the de minimis levels. By implementing the BMPs, the construction emissions are expected to be lower than the calculated maximum emissions, in tons per year as follows: 2 tons per year VOC, 21 tons per year, CO, 22 tons per year, NOx, 0.11 tons per year SO_2, and 1 ton per year $PM_{2.5}$ (Appendix Table 5-6).): Lastly, the potential elevation of one of the original generators through CDBG funding will not create any additional emissions, as that generator is already a part of the complex, and there are no potentially significant impacts from the elevation work.

Alternative 3: Mitigate All Systems and Equipment Individually

The potential emissions are expected to be similar to the proposed alternative 2. This alternative would not have a significant impact on air quality.

5.3 Water Quality

Congress enacted the Federal Water Pollution Control Act in 1948 which was later reorganized and expanded in 1972 and became known as the Clean Water Act (CWA) in 1977. The CWA regulates discharge of pollutants into water with sections falling under the jurisdiction of the U.S Army Corps of Engineers (USACE) and the EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into Waters of the United States and traditional navigable waterways. USACE regulation of activities within navigable waters is also authorized under the 1899 Rivers and Harbors Act. Under the National Pollution Discharge Elimination System (NPDES), the EPA regulates both point and non-point pollutant sources, including stormwater and stormwater runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit, called a State Pollution Discharge Elimination System (SPDES) through the New York Department of Environmental Conservation (NYDEC) as authorized by the EPA.

5.3.1 Existing Conditions

The Bay Park Waste Water Treatment Plant is located in the Southern Long Island Watershed (HUC02030202). The facility is buffered by a golf course to the south and a park to the east with Hewlett Bay and East Rockaway Channel adjacent to those respectively. Treated effluent from the Bay Park STP discharges directly to Reynolds Channel through an outfall pipe a quarter mile north of Long Beach, NY (Appendix Figure O). The facility also has an emergency overflow

outfall, which discharges to the East Rockaway Channel but can only be used with prior notification to the New York State Department of Environmental Conservation (NYSDEC).

The NYSDEC has classified Reynolds Channel as a saline surface water designated for primary and secondary contact recreation and fishing. Both Hempstead Bay and the Atlantic Ocean are classified by the NYSDEC as saline surface waters primarily used for commercial shell fishing and primary and secondary contact recreation and fishing. The document entitled "Technical and Operational Guidance (TOG) 1.1.6, Interpretation Guidance for Marine Dissolved Oxygen (DO) Standard" released by the NYSDEC in 2008 provides water quality standards for the classifications assigned to these bodies of water. This standard (4.8 mg/L) is the same for Reynolds Channel, Hempstead Bay, and the Atlantic Ocean. The document further describes allowable excursions down to 3.0 mg/L for certain periods of time.

Hempstead Bay is listed on the 2012 New York State Section 303(d) List of Impaired Waters. Since 1998, Hempstead Bay has been listed for pathogens from urban/stormwater sources and for nitrogen impairments resulting from municipal and urban/stormwater sources since 2006. The extent to which the Bay Park STP caused water quality standard violations in the Reynolds Channel and the Western Bays is the subject of a June 11, 2011, administrative order on consent between NYSDEC and Nassau County. As of March 2014, the Bay Park STP discharge has an average effluent level of 20.5 mg/l of ammonia (a component of total nitrogen), which exceeds the permit limit for the facility of 8.9 mg/l (Appendix Correspondence C). NYSDEC is evaluating the Western Bays' water quality conditions and appropriate nitrogen treatment requirements under the Clean Water Act process known as Total Maximum Daily Load. The conclusion of this NYSDEC evaluation will result in a setting of a numerical limit for nitrogen being discharged from the Bay Park STP.

The most recent 303(d) List of Impaired Waters includes the Atlantic Coastline in the Atlantic Ocean/Long Island Sound Drainage Basin as impaired with pathogens from urban/stormwater sources. As the receiving body for the waters receiving discharge from the Bay Park STP and its adjacent areas, this impaired and at-risk body of water must be considered. The New York State Department of Environmental Conservation (NYSDEC) "*2011 Atlantic Ocean/Long Island Sound Basin Waterbody Inventory/Priority Waterbodies List Report*" categorizes the Western Bay Waters as impaired due to pathogens and urban stormwater runoff.

NYSDEC recently communicated a series of concerns regarding the excessive nitrogen in the Western Bays and Reynolds Channel. According to NYSDEC, excessive nitrogen may have resulted in substantial and degrading algal growth that covers surface waters and washes up onto shores in mats that then decay and cause foul odors. Also according to NYSDEC, the nitrogen loadings may contribute to lower dissolved oxygen in Hempstead and Western Bays. These levels have reasonable potential to have negative impacts on juvenile aquatic organisms. Recent

research has suggested that nutrient enrichment can also be a major factor is salt marsh loss (Appendix Correspondence D).

During Hurricane Sandy, when the plant was unable to convey and provide adequate treatment of influent wastewater, some of this untreated influent was discharged into East Rockaway Channel. Currently, this poses a threat to water quality in the event of another significant flood event. Stormwater runoff from Marjorie Lane poses an additional stressor to water quality since the road is currently located directly next to the water body. Bay Park is further regulated by NPDES because it is a Municipal Separate Storm Sewer System (MS4) individual permit (permit #NY0026450), MS4 permits require development and maintenance of a Stormwater Management Program (SWMP) to reduce contamination of stormwater and limit contamination discharges.

5.3.2 Potential Impacts and proposed Mitigation

Alternative 1: No Action

The No Action alternative would have no direct consequences on water quantity or quality. The No Action alternative would not minimize the risk of future discharge of untreated wastewater to the surrounding bodies of water in the event of another storm's impact on treatment operations. Discharge of untreated sewage would have a negative impact on water quality.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Disturbance of approximately thirty-seven (37) acres of land during construction could potentially lead to sedimentation and erosion into adjacent waterways. The potential impact to stormwater runoff would be managed by construction BMPs as previously described in Section 5.1.2. The Subgrantee's contractor(s) would compile and submit the necessary forms and documents to comply with the requirements of the General Permit for Stormwater Discharges from Construction Activity – GP-0-10-001 prior to the start of construction and prepare a Stormwater Pollution Prevention Plan (SWPPP) which would include the necessary Erosion and Sediment Controls to mitigate this potential risk. A stormwater drainage system would also be implemented as mentioned in section 4.2 and appendix Document D.

The proposed flood hazard risk reduction measures would minimize the risk of partial or full suspension of facility operations during future flooding events. This would minimize risk of release of untreated sewage from entering surrounding water systems. Included in the design are vegetated swales and underground stormwater retention that would help manage stormwater. The relocation of Marjorie Lane, away from the water, would also reduce the amount of stormwater runoff from the road reaching this body of water, thus improving the quality of this water body in the vicinity of the project site.

Alternative 3: Mitigate All Systems and Equipment Individually

This alternative would disturb approximately two (2) acres of land. Impact minimization measures would be the same as described in Alternative 2 above. Flood risk reduction measures would greatly reduce the threat of a partial or full suspension of facilities during future flooding events. This alternative would not include the stormwater runoff benefits associated with vegetated swales, underground stormwater retention or road relocation, as these features are not included in this alternative.

5.4 Wetlands

Executive Order (EO) 11990 Wetlands Management requires Federal agencies to avoid funding activities that directly or indirectly support occupancy, modification, or development of wetlands, whenever there are practicable alternatives. Federal actions within wetlands require the Federal agency to conduct an Eight-Step Review Decision Making Process. The Eight-Step Review for wetlands was included as part of the Floodplain Eight-Step Review Process (Appendix Document K). Each alternative was analyzed for effects on both floodplain and wetlands.

5.4.1 Existing Conditions

FEMA uses the National Wetlands Inventory, state-specific mapping tools and on-site surveys to identify wetlands. The U.S. Fish & Wildlife Service's (USFWS) National Wetland Inventory (NWI) map for the project area is located in Appendix Figure F. Both the NWI map and the NYSDEC Enviromapper program showed no wetlands located on the facility property. The facility is located adjacent to Hewlett Bay and East Rockaway Channel, 200 ft away from each at the closest points. Hewlett Bay is an Estuarine and Marine wetland with a designation of E1UBL (Estuarine, Subtidal, Unconsolidated Bottom, Subtidal). Reynolds Channel is also an Estuarine and Marine wetland with a designation of E1UBL. The U.S. Fish & Wildlife Service's (USFWS) National Wetland Inventory (NWI) is located in Appendix Figure F. The NYSDEC Enviromapper program showed no freshwater wetlands in or around plant and outflow pipe.

5.4.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action alternative would have no direct consequences on wetland resources during day to day operation of the plan. This alternative would not minimize the risk of discharge of untreated wastewater into the wetlands surrounding the outflow pipe at Reynolds Channel and potentially the emergency overflow in the East Rockaway Channel. Discharge of untreated sewage would have a negative impact on the natural wetland system damaging habitat and causing adverse conditions for local plant and wildlife that depend on this habitat. Pollution of

wetlands could potentially create adverse conditions for the health, safety and welfare of humans.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The "Perimeter Flood Protection Berm and Floodwall" alternative would disturb approximately 37 acres of land which could potentially cause sedimentation and erosion runoff into surrounding wetlands via stormwater that could flow into Hewlett Bay and East Rockaway Channel. The Contractor would prepare a Storm Water Pollution Prevention Plan (SWPPP) which would include the necessary Erosion and Sediment Controls to prevent contamination of wetlands. This alternative would minimize risk of future release of untreated sewage into wetlands in the event of a future flooding event.

Alternative 3: Mitigate All Systems and Equipment Individually

This alternative would disturb approximately two (2) acres of land which could potentially cause sedimentation and erosion into surrounding wetlands and waterways via stormwater runoff during construction. The Contractor shall prepare a SWPPP which would include the necessary erosion and sediment controls to prevent contamination of wetlands. This alternative would prevent the release of untreated sewage into wetlands in the event of a future flooding event.

5.5 Floodplain

EO 11988 (Floodplain Management) requires that a Federal agency avoid direct or indirect support of development within the floodplain whenever there is a practicable alternative. FEMA uses Flood Insurance Rate Maps (FIRM) to identify the floodplains for the National Flood Insurance Program (NFIP). Federal actions within the 100-year floodplain, or in the case of Bay Park STP (a critical action facility), the 500-year floodplain, require the Federal agency to conduct an Eight-Step process (Appendix Document K). This process, like NEPA, requires the evaluation of alternatives prior to finding the action. FEMA's regulations on conducting the Eight Step process are contained in 44 CFR Part 9.

5.5.1 Existing Conditions

The site is located predominantly within the 100-year floodplain (AE Zone 9-10 feet (NAVD88)) as shown on Flood Insurance Rate Map panel # 36053C0218G. The 500-year flood level at the site ranges 13-15 feet. The Flood Insurance Rate Map for this site can be found in Appendix Figure G and the Eight-Step review process can be found in Appendix Document K.

5.5.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action alternative would promote continued floodplain occupancy. This alternative would perpetuate a facility at risk of future flood damage and of future service disruptions that could cause release of untreated sewage that would be damaging to floodplain habitat.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The Proposed Action would provide flood damage risk reduction at or above the 500-year flood elevation for the facility complex. Flood mitigating the facility would minimize potential for disruption of this critical utility service during a flood event. The project's public benefits to human health, safety and welfare outweigh the minor or negligible adverse effects of the risk to the proposed federal investment into a facility located in the floodplain. Early in the review process, it was determined that relocation of the facility outside of the 500-year floodplain was not a practicable alternative due to cost factor and other considerations. A full Eight-Step Review Process was applied and the Proposed Action was determined to be a practicable alternative.

A Hydraulic study was conducted to show the impacts this alternative, inclusive of the fill associated with the berm and park grade increase, would have on the floodplain (Appendix Document B). The hydraulic study used the FEMA Region II Simulating Waves Nearshore and The Advanced Circulation computer models. The models were run using four locations near Bay Park with proposed project and current conditions imputed in for comparison. The project was determined to have negligible impact on water surface elevation and storm surge redistribution (Appendix Document B). The impact to flood storage capacity is minimal in the tidal flooding context of the facility. The proposed action would not increase the water surface elevation of the base flood more than one foot at any point within the community. Stormwater drainage swales will be installed at the toe of the earthern berm to avoid or minimize induced flooding onto neighboring residential properties.

A relatively small square footage of existing lawn and upland landscape areas would be converted to impervious cover; however, the project would not impact the overall floodplain function or value of the area. The Subgrantee would be responsible to coordinate the project with the local floodplain administrator and NYSDEC to obtain all applicable permits or authorizations related to floodplain management. All applicable permits would be obtained to comply with the Clean Water Act (P.L. 95-217) and SPDES as previously described.

The project will require importation of fill for the berm (10,000 CY) and park improvements (45,000 CY). The 45,000 CY of fill for park improvements would raise park by two (2) feet but it will not change the water surface elevation and would cause negligible change to storm surge redistribution (Appendix Document B).

Alternative 3: Mitigate All Systems and Equipment Individually

The structures of the facility would be floodproofed to at or above the 500-year floodplain elevation with walls or other flood proofing customizations to each structure. This alternative would reduce risk of future flood damage and would address the project's need to minimize disruption of this critical utility service during future flooding events. However, the facility complex and site accessibility would not be addressed as a whole. Compared to the Proposed Alternative, the potential to induce flooding off-site is lower as flood storage capacity would not be impacted by a perimeter wall.

5.6 Coastal Resources

The Coastal Zone Management Act (CZMA), administered by states with shorelines in coastal zones to have a Coastal Zone Management Plan (CZMP) to manage coastal development. Projects falling within designated coastal zones must be evaluated to ensure they are consistent with the CZMP. Projects receiving federal assistance must follow the procedures outlined in 15 CFR 930.90 – 930.101 for federal coastal zone consistency determinations. In order to guide development and resource management within the State's coastal area, substantive policies have been identified and promulgated by the New York State Department of State (NYSDOS) and NYSDEC. The Coastal Erosion Hazard Law (Environmental Conservation Law 34) empowers NYSDEC to identify and map coastal erosion hazard areas and to adopt regulations (6 NYCRR Part 505). The Coastal Erosion Hazard Area (CEHA) Permit Program manages regulated activities or land disturbance to properties within the coastal erosion hazard areas.

5.6.1 Existing Conditions

The project site is located within the regulated coastal zone (Appendix Figure H). Project is not located within a scenic area nor is it within a waterfront revitalization area (Appendix Correspondence A). Project is located adjacent to Significant Coastal Fish and Wildlife Habitat and is addressed more in biological resources, section 5.8.

5.6.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action alternative would have no direct consequence on coastal resources. The No Action alternative would not prevent the discharge of untreated wastewater to the coastal zone at Reynolds Channel outflow and East Rockaway Channel emergency outflow. The untreated wastewater could potential have a negative impact on the coastal resources including damaging habitats, wetlands, floodplains, and local communities in and around coastal zones of West Hempstead Bay.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The Proposed Alternative would provide additional protection to coastal resources. The project would have a positive impact on the coastal resources due to reduction of the uncontrolled release of wastewater from future flood events. Contractors would use BMPs and have a SWPP in place to prevent potential sedimentation and erosion into or pollution of coastal waterways. The project is already in a highly developed area and the proposed additional impervious cover would not significantly impact the function and value of vicinity coastal resources.

The project does not impair scenic resources of statewide significant because it is not located within a scenic area (Appendix Correspondence A). The project is predicted to enhance the natural and man-made resources which contribute to the overall scenic quality of the coastal area. This enhancement includes the addition of the berm with natural landscaping, native plant landscaping, parkland restoration, and the floodwall which screens view of the plant processes (Appendix Figure C1-9).

FEMA reviewed State Coastal Policies 1 through 44 with respect to their applicability to the work proposed. Based on this review, FEMA determined that the project would be consistent with the policies of the NYS Coastal Management Program (CMP). FEMA submitted a consultation letter to the New York State Department of State (NYSDOS) on May 23rd 2014 documenting the potential impacts the project may have on coastal resources including relocation of Marjorie Lane and park work. NYSDOS concurred with FEMA's finding in correspondence dated June 11, 2014 (Appendix Correspondence A).

Alternative 3: Mitigate All Systems and Equipment Individually

This alternative would be consistent with NYS CMP and have a positive impact on coastal resources due to the risk reduction of potential uncontrolled release of wastewater during future flood events. Contractors would use BMPs and have a SWPP in place to minimize potential sedimentation and erosion into waterways.

5.7 Vegetation

5.7.1 Existing Conditions

The wastewater treatment facility is dominated by impervious surfaces with a few trees scattered throughout the facility. The park is mostly landscaped with grass and shrubs. The western berm has been planted with ornamental trees and shrubs in an attempt to screen the treatment facility from the resident's homes in the area. The area around these plantings is covered with a mix of ornamental and/or invasive vines, shrubs, annual grasses and a mix of common weeds. The ornamentals are in good health except for some species that do not do well in harsh saltwater environments. Plants currently found at the facility location are listed in Appendix Document G.

5.7.2 Potential Impacts and Proposed Mitigation\

Alternative 1: No Action

The No Action alternative would have no direct impact on vegetation. Potential sewage overflow from the STP during a flood event could potentially damage vegetation.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Construction would result in removal of mature trees and other vegetation within the construction footprint. The Proposed Alternative would include landscaping to restore and improve upon the vegetation in the park and around the STP facility perimeter. Proposed vegetation would include native grasses, wildflowers, perennials, shrubs, multi-stemmed trees, deciduous trees, and evergreen trees. These may include but are not limited to American Holly (*Ilex opaca*), Black gum (*Nyssa sylvatica*), Switchgrass (*Panicum virgatum*), Sea lavender (*Limonium carolinianum*), Black huckleberry (I*gaylussacia baccata*), and White flowering dogwood (*Cornus florida alba*). The new design would provide a more diverse wildlife habitat and add to the aesthetic quality of the community. The conversion of 2.5 acres to impervious cover is within the recreational fields of the park; therefore, only grasses would be negatively affected.

The planting plan would take into account a preferred 15-foot buffer between the floodwall/berm toe and any woody species to maintain a vegetation free zone (w/exception to herbaceous grasses or other herbaceous plants to maintain the integrity of the flood barriers in accordance with U.S. Army Corps of Engineers (USACE) guidance.

Alternative 3: Mitigate All Systems and Equipment Individually

This alternative would have minimal impact on vegetation since the floodproofing would be done at or on buildings. The use of individual floodwalls would increase the amount of impervious surface within the wastewater treatment facility; predominantly displacing areas vegetated with grass and other plants.

5.8 Wildlife and Fish

The Endangered Species Act (ESA) of 1973 provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing ESA are the United States Fish and Wildlife Service (USFWS) and the U.S. National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such

species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife.

The Migratory Bird Treaty Act (MBTA) of 1918 provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency for implementing the MBTA is the United States Fish and Wildlife Service (USFWS). The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any migratory birds or result in the destruction or adverse modification of designated critical habitat of such species.

Federal agencies are required to assess the potential impacts that proposed actions and alternatives may have on Essential Fish Habitat (EFH), in accordance with the Magnuson-Stevens Fishery Conservation and Management Act.

5.8.1 Existing Conditions

Terrestrial

Nassau County has diverse habitat types that are utilized by a variety of wildlife species. NYSDEC Nature Explorer lists 189 definitive species within the county with several more unaccounted for within this survey. The maintained lawns, fields, and scattered trees and shrubs areas provides habitat for wildlife such as raccoons, skunks, chipmunks, squirrels, sparrows, wild turkey, whitetail deer, rabbits and passerine birds.

According to the USFWS Migratory Bird Program, the Bay Park STP site is located within the North America Atlantic Flyway for migratory birds. Several species of migratory birds, including the federally listed threatened species Piping Plover and the endangered Roseate Tern use lands within and around Western Hempstead Bay (wetlands and coastal habitats) and the Bay Park STP area for stop over feedings on their way to breeding grounds or as breeding grounds themselves.

Aquatic

The surrounding waterways support fish and shellfish habitat. There are EFHs for an assemblage of species and life stages for those species in West Hempstead Bay which includes Hewlett Bay, East Rockaway Channel, and Reynolds channel (Appendix Document L).

Threatened and Endangered Species

According to USFWS's Information, Planning, and Conservation (IPaC) system, several federally listed and proposed endangered or threatened wildlife and plant habitats (both terrestrial and aquatic) were identified to potentially occur in the project area. Federally listed threatened and endangered species include:

Piping Plover (*Charadrius melodus)* Threatened
Roseate Tern (*Sterna dougallii dougallii*) Endangered
Seabeach Amaranth (*Amaranthus pumilus*) Threatened

The Red Knot (*Calidris canutus*), a medium sized shorebird, is a candidate species for listing on the USFWS endangered species list. The Red Knot can be found on the shores of Long Beach and in the islands of Western Bay. The Northern Long Eared Bat (*Myotis septentrionalis*) is a proposed federal species identified by IPaC to be potentially found in the project area.

The following federally species may occur in vicinity waterways:

Loggerhead Sea Turtle (*Caretta caretta) Threatened*
Atlantic Ridley Sea Turtle (*Lepidochelys kempi*) Endangered

New York State listed threatened and endangered species that may be found in the project area include:

Least tern (*Sterna antillarum*) Endangered
Carolina Clubmoss (*Lycopodiella caroliniana*) Endangered
Barratt's sedge (*Carex barrattii*) Endangered
False China-root (*Smilax pseudochina*) Endangered
St. Andrew's cross (Hypericum hypericoides ssp. multicaule) Endangered
Northern Harrier (*Circus cyaneus*) Threatened
Osprey (*Pandion haliaetus*) Threatened
Common Tern (*Sterna hirundo*) Threatened
Button Sedge (*Carex bullata*) Threatened
Golden Dock (Rumex maritimus var. fueginus) Threatened

5.8.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would not directly affect wildlife and fish. The No Action alternative would also have no direct consequences on state and federally listed threatened and endangered species or migratory birds. As described previously, the risk of future release of untreated effluent would not be addressed. Impacts of untreated sewage release on fish and wildlife species could range from stress on species, degradation of food sources, destruction of breeding grounds, and physical harm.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Temporary disturbance to the site's wildlife habitat and migratory bird habitat would occur due to removal of large trees and other habitat with noise and activity during construction contributing to disturbance as well. The landscaping plan would restore habitat with native plant species providing enhanced habitat in the long-term. The contractor would use BMPs, including a SWPPP, to prevent impact to wildlife and EFH. No modifications to the nearby body of water or wild areas are included in the scope of work. This hazard mitigation would, in turn, minimize untreated effluent from entering the waterways during storm events and minimize potential pollution of aquatic and terrestrial habitat. An EFH assessment was conducted to analyze the impact the project. FEMA determined that the project would have no adverse effect on EFH (Appendix Document L). The flood berm and walls would reach a height of approximately +17 feet NGVD88 with sloping vegetation at most sections. New York City Audubon states, buildings and structures below 50' without reflective surfaces would not pose a potential threat to migratory birds. FEMA has determined the impact to migratory birds and migratory bird habitat would not be significant and primarily be a temporary impact. Based on site assessments and assessments of resources present there is no habitat for above mentioned endangered and threaten species. Therefore FEMA has determined that the proposed project would have no effect on federally listed threatened and endangered species. Although there is no potential for optimal habitat associated with project site minimizing effluent effects from future flooding events will prevent possible damage to endangered and threatened species habitat. As a voluntary conservation recommendation for both migratory birds and the proposed Northern long-eared bat, the Subgrantee would be encouraged to schedule to the extent possible the removal of woody vegetation, especially trees greater than 3" diameter-at-breast-height during the following window when the species would be less likely to occur in the project area: October 1st – March 31st.

Alternative 3: Mitigate All Systems and Equipment Individually

Alternative 3 would have the same potential impacts and proposed mitigation as described above for Alternative 2. This alternative would have no long term direct consequences on state and federally listed threatened and endangered species. The individual floodwalls around tier 1-4 sites would be a minimal threat to Migratory Birds due to the low elevation and lack of reflective surfaces.

5.9 Cultural Resources

As a Federal agency, FEMA must consider the potential effects of any of its funded actions upon cultural resources prior to engaging in any undertaking. This obligation is defined in Section 106 of the National Historic Preservation Act (NHPA), as amended and implemented by 36 CFR Part 800. The NHPA of 1966 defines a historic property as "any prehistoric or historic district, site,

building, structure, or object included in, or eligible for inclusion on the National Register." Eligibility criteria for listing a property on the National Register of Historic Places (NRHP) are found at 36 C.F.R. Part 60.

The New York State Historic Preservation Officer (NYSHPO) maintains a list of New York's historic properties which is regularly updated, in part on the basis of reports prepared by cultural resources consultants in advance of construction projects that are subject to NYSHPO and federal agency review. Requirements for review include the identification of significant cultural resources that may be impacted by the undertaking. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

Only those cultural resources determined to be potentially significant under NHPA are subject to protection from adverse impacts resulting from an undertaking. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). The term "eligible for inclusion in the NRHP" includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Sites not yet evaluated may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties.

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. Within the APE, impacts to cultural resources are evaluated for both Standing Structures (above ground resources) and Archaeology (below ground resources).

The APE for this undertaking, as it pertains to Standing Structures, is the entire treatment plant campus and the adjacent county park. Proposed work to Standing Structures within the APE includes repair to existing campus buildings, construction of three (3) new unit substations located adjacent to existing structures within the campus, the demolition of a park comfort station and subsequent construction of a new comfort station at a new location within the facility. The APE includes the viewsheds from the surrounding communities, the park and the adjacent waterway. (Appendix Figures C and C10)

The APE for potential Archaeological resources has been determined to include the area of ground disturbance at the location of the perimeter flood protection structure (berm and floodwall), and the area of ground disturbance at the adjacent county park where sports facilities would be reconfigured. (Appendix Figures C and C10)

5.9.1 Historic (Standing) Structures

5.9.1.1 Existing Conditions – Historic Standing Structures

The Bay Park STP was originally constructed in 1949 and was first opened in 1950. Two major expansion and upgrade campaigns occurred in the 1960's and the 1980's respectively. The facility is composed of approximately 50 structures with associated systems and equipment. The structures at the Bay Park STP facility are one to four stories in height and are predominately constructed of concrete masonry units (CMU) blocks clad with a veneer of light beige brick and metal windows. The architecture of the facility is utilitarian in character and overall, is an unremarkable public works facility. It does not exhibit significant architectural design and/or detail.

The adjacent county park has one structure (comfort station) that is proposed for demolition as part of the perimeter flood protection mitigation project. This comfort station is a simple brick building (built circa 1970) consisting of two interconnected structures with shed roofs, one housing bathrooms, and the other offering open-air covered shelter to park-goers.

FEMA conducted a search for known historic standing structures within the APE using the NYSHPO Sphinx database to determine if any buildings in the project area are listed on the National Register of Historic Places (NRHP) or the New York State Register of Historic Places (SRHP), either individually, or collectively, as part of a National Register Historic District. Furthermore, from early 2013 to 2014, multiple site visits were conducted by FEMA to evaluate the existing building stock at the facility. Based on the results of FEMA's historic property identification efforts, it was determined that the structures at the Bay Park STP and at the adjacent county park are not listed nor are they eligible for inclusion in the National Register of Historic Places or the State Register of Historic Places.

5.9.1.2 Potential Impacts and Proposed Mitigation to Standing Historic Structures

Alternative 1: No Action

The No Action alternative would not reduce the risk to cultural resources from storm surge and flooding and would have no effect on historic properties.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

FEMA found that the Proposed Action would have No Effect on Historic Properties. A consultation letter with the NYSHPO was submitted on May 22, 2014 for all standing structures impacted by the proposed project. NYSHPO concurred with FEMA's finding of No Effect via correspondence dated June 11, 2014.

Consultation with the NYSHPO was conducted by Nassau County's consulting firm in 2013 and 2014 (Appendix Correspondence B, Figure 2) and by FEMA in 2014 (Appendix Correspondence B, Figure 1). Below is a summary of the Section 106 consultation record for standing structures.

- November 25, 2013 – Consultation by Nassau County Consulting Firm with NYSHPO for the following project: Electrical Distribution System Flood Repair and Mitigation, Contract Cl-5146-33-00.
- November 25, 2013 – Consultation by Nassau County Consulting Firm with NYSHPO for the following project: Perimeter Flood Protection, Contract Cl-5146-35-00
- March 28, 2014 - Consultation by Nassau County Consulting Firm with NYSHPO for the following project: Final Settling Tank rehabilitation, Contract S35121-01
- April 7, 2014 – NYSHPO Concurrence for following four (4) projects: Electrical Distribution System Flood Repair and Mitigation, Perimeter Flood Protection, Sludge Dewatering Facility Repair and Mitigation and Hardening of Critical Tier I Facilities.
- April 25, 2014– NYSHPO Concurrence for following three (3) projects: Final Settling Tank Rehabilitation, Effluent Pumping Facility Improvements, Barnes Avenue SSO Correction.
- May 22, 2014 – FEMA's Consultation with NYSHPO for Standing Structures (above ground resources) for the following three (3) projects: Three (3) unit substations, Removal and Replacement of equipment at the Grit Removal Facility and Demolition of existing comfort station and construction of new comfort station.
- May 11, 2014 – NYSHPO Concurrence (determination of No Effect) for the consultation initiated by FEMA on May 22, 2014.

Alternative 3: Mitigate All Systems and Equipment Individually

Similarly to the Proposed Action, this alternative would be expected to have no effect on historic properties.

5.9.2 Archaeological Resources

5.9.2.1 Existing Conditions

FEMA archaeologists used NYSHPO maps to determine that the APE is located in an area of archaeological sensitivity. In order to evaluate the archaeological sensitivity of the area for which improvements are proposed, FEMA conducted field inspection of the project site, evaluation of geological data and documentary research.

Prehistoric Archaeological Resources

Research was conducted using records, maps, and literature from the NYSHPO to determine that the project area is located in an area of archaeological sensitivity (Appendix Figure J). No previously recorded archaeological sites have been identified within the project site and it is not contiguous to a property listed or eligible for listing on the National Register of Historic Places. Based on historic maps of the site, dating to the late-1800s, the area was once marshland connecting waterways leading to the Atlantic Ocean. The marshlands were filled to allow development of the area including the construction of the Bay Park STP. The absence of recorded sites in the area may be attributable to the presence of dense urban and industrial development of the area. The absence of sites at or below the facility's elevation is likely due to inhospitable or submerged conditions in such areas prior to the early 20th century and the area's history of filling and development.

The only evidence of Native American activity that might be located within the APE would be random, sparsely distributed artifacts left by brief forays into the wetlands during prehistoric times. While it is conceivable that some small, ephemeral deposits might exist below the fill in sediments related to the former wetlands, the likelihood of detecting and recovering any significant archaeological materials given existing conditions is low.

Any such deposits would be limited to known deposits of sand located beneath the organic silty peat layer which is in turn beneath the fill. The lower more compact layer of the sand stratum is representative of the older Ronkonkoma glacial advance, while the upper sand stratum is representative of the Harbor Hill glacial advance that had retreated from Long Island approximately 13,000 years ago. Previous research has identified prehistoric archaeological deposits within these latter Holocene glacial outwash sands in areas with similar deposits.

Historic Archaeological Resources

Prior to construction of the facility the land was undeveloped marsh land. Historic archaeological sites pre-dating construction of the facility are considered unlikely due to lack of documented development.

5.9.2.2 Potential Impacts and Proposed Mitigation, Archaeological Resources

Alternative 1: No Action

The No Action alternative would have no effect on archaeological properties.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Although, no previously recorded prehistoric or historic archaeological sites have been identified within the project site, the project would exceed the depth of fill and extend into the Holocene glacial outwash sand deposits. The proposed floodwall construction would have minimal impact

to potential archaeologically sensitive soils. Project plans call for ground disturbance for the flood barrier to elevation -25-feet which would penetrate below the depth of the fill and into intact native soils. The slurry would be installed using a combination of the vibration beam method and jet grouting. Piles would be used to support the T-wall construction and would also require some limited ground disturbance. The flood barrier protection work would displace soils underneath the ground surface with only small amounts of spoils returned to the surface. The returned spoils would not be sufficient to allow for observation and detection of subsurface archaeological resources. If archaeological deposits were encountered during pile driving, slurry wall construction, or jet grouting these materials would likely be compacted down or moved laterally within the same deposit. Based on these factors the possibility exists that subsurface archaeological deposits could be disturbed by improvements within the APE but this potential disturbance would be undetectable.

To mitigate for potential and unknown impacts to archaeological resources, an archaeological study synthesizing previous archaeological research and data on the intertidal estuarine marshes of the region would be conducted to better understand the potential for archaeological resources within the project APE. Consultation with the NYSHPO was conducted by FEMA to address potential impacts on archaeological resources: (Appendix Correspondence B, Figure 1).

- May 27, 2014– Consultation with NYSHPO by FEMA for: Archaeology (below ground resources) for Perimeter floodwall and Bay Park disturbance
- June 4, 2014 – Clarification with NYSHPO by FEMA for: Archaeology
- June 11, 2014 – NYSHPO Concurrence (determination of No Adverse Effect) for the consultations initiated by FEMA on May 27, 2014 and June 4, 2014. A condition of this determination is as follows: An archaeological study synthesizing previous archaeological research and data on the intertidal estuarine marshes of the region would be conducted to better understand the potential for archaeological resources within the project area of potential effects (APE).

FEMA notified the Delaware Tribe and Shinnecock Tribe of the proposed ground disturbing work on the following dates, Delaware tribe concurred on July 12th 2014:

- May 28, 2014 – Notification to Delaware Tribe by FEMA for: Archaeology
- May 28, 2014– Notification to Shinnecock Tribe by FEMA for: Archaeology
- June 5, 2014 – Clarification with Delaware Tribe by FEMA for: Archaeology
- June 5, 2014 – Clarification with Shinnecock Tribe by FEMA for: Archaeology

Alternative 3: Mitigate All Systems and Equipment Individually

The ground disturbance associated with this alternative would occur mostly in fill and in the organic gray peats soils immediately below with little to no disturbance in the potentially archaeologically sensitive sand stratum. Therefore, improvements within the APE for this

alternative have little to no potential to affect either prehistoric or historic archaeological resources.

5.10 Aesthetic Resources

A viewshed is an area of land, water, or other environmental element that is visible to the human eye from a fixed vantage point. Viewsheds are areas of particular scenic or historic value that have been deemed worthy of preservation against development or other change. They are spaces that are readily visible from public areas and thoroughfares, such as from public roadways, public parks or high-rise buildings. If the viewshed is integral to the setting of a landmark building or part of the NHPA Evaluation Criterion for a buildings' eligibility, the viewshed must be considered for any new development proposal.

5.10.1 Existing Conditions

Currently there are single-family residences fronting on the southern end of 3rd Avenue and 4th Avenue, as well as on the west side of 1st Avenue across from the County Park, have an unobstructed view of the chain-link and barbed-wire perimeter fence and facility structures (Appendix Figures C1- C4). Users of the park have views to the adjacent waterways; however, the Marjorie Lane road alignment limits direct access to the waterfront.

5.10.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action alternative would have no effects on aesthetic resources.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Views to the plant from Bay Park and East Rockaway Chanel would be improved, as the more robust berm system would obscure the treatment facility. Views to the plant from the residential community from the western and northern boundaries would also be improved, as the berm and new floodwalls and gates would create a landscaped view towards the treatment facility. The proposed landscaping plan would enhance the visual character of the project site. The Subgrantee would also incorporate aesthetic treatments to the floodwall such as concrete stamping, coloration or signage to minimize the visual impact of the structure. (Appendix Figures C and C1- C9)

Relocating this road would provide a benefit to the community in that the park and recreation facilities would be tied directly to the waterfront, allowing the public to enjoy uninterrupted views across the channel.

Alternative 3: Mitigate All Systems and Equipment Individually

This alternative would have limited effect on aesthetic resources, as the individualized floodproofing measures would not significantly impact the overall viewshed of the area.

5.11 Socioeconomic Resources - Environmental Justice

5.11.1 Existing Conditions

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires agencies to identify and address disproportionately high and adverse human health or environmental effects its activities may have on minority or low income populations. In order to provide context for this report a demographic analysis was undertaken. The first step was to define a relevant Community of Concern (COC). In the context of the Proposed Alternatives the Service District was used as the COC.

Per EPA Region 2's Guidelines for Conducting Environmental Justice Analyses for New York, a community would be considered an Environmental Justice (EJ) community if the minority population was 51.51% or higher or if 23.59% or more of the population was below the poverty line. Examination of Nassau County's 2010 Census data indicates the facility's service population does not meet the criteria for "Minority Populations" and does not cross the Poverty Threshold. The percentage of Minority Population in the project area is approximately 18% based on US Census 2010 blockgroup data and the percentage of households below poverty is less than 5% based on US Census 2010 Tract Data. Based on Nassau County 2010 Census Data, the median household income for the area surrounding Bay Park STP, zip code 11518, is $95,991.

5.11.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

A consequence of the No Action alternative is that the facility remains susceptible to another extended loss of facility function as a result of a flood event and power outage. There would be

no disproportionate or adverse effect on minority or low income populations from the No Action Alternative.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Potential adverse impacts to the local community are temporarily increased due to noise levels and traffic during construction. There would be no disproportionate or adverse effect on minority or low income populations from construction and operation of the Proposed Alternative. The analyses performed as part of this EA demonstrates there are negligible or no impacts to studied resources. With respect to the Service District, a positive consequence of this alternative is that it would minimize loss of function during future storm events.

Alternative 3: Mitigate All Systems and Equipment Individually

Floodproofing individual facilities would result in similar consequences to the proposed alternative.

5.12 Land Use and Planning

5.12.1 Existing Conditions

Existing land uses in the vicinity of the Bay Park STP include residential (suburban) and the Bay Park County Park. The number of residences within 500 feet of Bay Park STP is approximately 50 and 10 of them are within 100 feet (Appendix Figure K). Rhame Avenue Elementary School (East Rockaway Union Free School District) is located at 100 Rhame Avenue in East Rockaway, which is within 1,500 feet of the project site (Appendix Figure L). Currently 50 acres of the project site consists of roads, buildings, and other paved or impervious surfaces, and 30 acres consists of lawn, meadows and upland shrub or tree cover areas.

5.12.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Since no modification to the project site would be made under the No Action Alternative, there are no associated potential impacts to land use.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The proposed flood mitigation alternative would not change the land use at the project site from its existing conditions as defined above. There would be no impacts to the nearby elementary school and improvements would be made to the Bay Park County Park.

Alternative 3: Mitigate All Systems and Equipment Individually

This flood mitigation alternative would not change the land use at the project site from its existing conditions as defined above.

5.13 Noise

The Noise Control Act of 1972 required the EPA to create a set of noise criteria. In response, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* in 1974 which explains the impact of noise on humans. The EPA report found that keeping the maximum 24-hour Ldn value below 70 dBA would protect the majority of people from hearing loss. The EPA recommends an outdoor Ldn of 55 dBA. According to published lists of noise sources, sound levels, and their effects, sound causes pain starting at approximately 120 to 125 dBA (depending on the individual) and can cause immediate irreparable damage at 140 dBA. OSHA has adopted a standard of 140 dBA for maximum impulse noise exposure.

Sound pressure level (SPL) is used to measure the magnitude of sound and is expressed in decibels (dB or dBA), with the threshold of human hearing defined as 0 dBA. The SPL increases logarithmically, so that when the intensity of a sound is increased by a factor of 10, its SPL rises by 10 dB, while a 100-fold increase in the intensity of a sound increases the SPL by 20 dB. Equivalent noise level (Leq) is the average of sound energy over time, so that one sound occurring for 2 minutes would have the same Leq of a sound twice as loud occurring for 1 minute. The day night noise level (Ldn) is based on the Leq, and is used to measure the average sound impacts for the purpose of guidance for compatible land use. It weighs the impact of sound as it is perceived at night against the impact of the same sound heard during the day. This is done by adding 10 dBA to all noise levels measured between 10:00 pm and 7:00 am. For instance, the sound of a car on a rural highway may have an SPL of 50 dBA when *measured* from the front porch of a house. If the measurement were taken at night, a value of 60 dBA would be recorded and incorporated into the 24-hour Ldn.

Leq and Ldn are useful measures when used to determine levels of constant or regular sounds (such as road traffic or noise from a ventilation system). However, neither represents the sound level as it is perceived during discrete events, such as fire sirens and other impulse noises. They are averages that express the equivalent SPL over a given period of time. Because the decibel scale is logarithmic, louder sounds (higher SPL) are weighted more heavily; however, loud infrequent noises (such as fire sirens) with short durations would not significantly increase Leq or Ldn over the course of a day.

5.13.1 Existing Conditions

The existing project site is located in a residential area with an elementary school nearby and is generally a low-noise area. Outside the neighborhood, most of the land is residential

development with pockets of small commercial properties. Currently, residents in the vicinity of the plant can expect to hear some of the wastewater treatment equipment as well as sludge trucks and ongoing construction activities at the plant. Most of the vehicle noise is generated by traffic along Atlantic Ave and Rockaway Ave. According to NYSDEC the Ldn is typically about 50 dBA for light traffic at 50 feet away.

5.13.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative does not include any construction or site preparation. Therefore, there would be no noise impacts under normal conditions. During a flood event, however, residents in the vicinity of the plant would likely be able to hear the emergency and/or temporary generators, pumps, and equipment necessary to run the plant while repairs are performed.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Noise levels would exceed ambient conditions during construction. Construction vehicles and activities, delivery trucks, and tools would contribute to this temporary rise in noise levels. Specification Section 02228 – Noise and Vibration Control is provided in Appendix Document C. This specification would be included in the contract documents for the proposed project and would be followed to minimize construction noise impacts to the extent possible. The peak of construction related to this proposed alternative is expected to take place during the summer of 2014 when the nearby elementary school would not be holding classes, so minimal impact on this nearby school is expected related to noise.

The finished berm and floodwall is expected to result in improved long-term noise attenuation, thus providing an additional benefit for the residents in the vicinity of the Bay Park STP. This result would be expected because the proposed alternative would result in additional height in the barrier around the plant's perimeter.

Alternative 3: Mitigate All Systems and Equipment Individually

Similarly to the proposed alternative, noise impacts would be anticipated during the construction phase of the project.

5.14 Transportation

5.14.1 Existing Conditions

Traffic on the local roads in the vicinity of the facility is mostly residential, with the exception of First Avenue to the west of the site. There are several stores and restaurants on First Avenue,

which typically sees heavier traffic than the other roads adjacent to the facility. There are two routes to get to the main entrance of the plant, which is on the north side: (1) First Avenue to Harbor Road to Marjorie Lane to Compton Street, and (2) First Avenue to Williamson Street to Compton Street. Appendix Figure M includes a map with streets in the vicinity of the project site labeled. There are no public/private transportation services or facilities available within ½ mile walk/drive of the project site.

5.14.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would have no impacts on traffic since there is no construction associated with this alternative and no modifications to the site would be made.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The anticipated traffic impacts associated with the proposed alternative would occur during construction. Large vehicle traffic within the general project area would increase due to the ingress and egress of construction equipment. There would also be an increase in traffic of passenger vehicles related to the construction work schedules. However, these traffic impacts would be limited to the duration of construction.

Throughout the construction, the contractor's employees would only be permitted to enter the project site through the southeast entrance on Harbor Road. This gate would be monitored by a third-party security company requiring each employee to scan his or her badge before entering the STP. At peak, it is anticipated that there would be between fifty and sixty workers entering and leaving the site daily. Working hours would begin at 7:30 AM and end at 2:30 PM with deliveries permitted at same time, so traffic congestion is anticipated on Harbor Road, Marjorie Lane, Compton Street/5th Avenue, and Williamston Street, and 1st Avenue around these times.

Peak heavy truck traffic generated during construction (68 trucks/day) would be anticipated for a duration of 1-3 months in approximately late fall/winter 2014 when the work for park improvements, relocation of the roadway, and the construction deadline of the park improvements and work in that area to be complete by March 2015. The 1-3 months would involve delivery of fill or use of heavy equipment needed for the park improvements.

The Contractor would be required to adhere to a sediment and erosion control plan consisting of silt fences, truck washing upon entering and exiting the site as required, street cleaning as required, and use of water trucks when transporting fill in order to reduce the dust exposure of facility employees, Contractor employees, residents, and others in the vicinity of the project site.

During the construction of the T-wall along Harbor Road on the south end of the STP, it is expected that traffic would be temporarily reduced to one lane and directed by the Contractor. Although it is not a particularly busy roadway, minor traffic congestion is expected on Harbor Road during this portion of the construction of this project.

As previously discussed, the proposed mitigation project includes the relocation of Marjorie Lane, which currently runs along the water on the east side of the project site. The existing roadway would remain in service and continue to be maintained until the proposed roadway is constructed and ready for use, at which point the existing roadway would be demolished. The total impervious surface is not expected to vary significantly as a result of this roadway relocation since the proposed road would be the same width as the existing road. Additionally, the proposed roadway would be situated further away from the water, reducing the risk of flood damage to the roadway facility.

Alternative 3: Mitigate All Systems and Equipment Individually

The transportation/traffic impacts associated with this flood mitigation alternative would occur during the construction period. Relative to the proposed alternative, the scope of work for this alternative would be less extensive; therefore, the duration and intensity of traffic impacts would be less. Notably, this alternative would not include the relocation of Marjorie Lane or the park improvements that are involved in the proposed alternative.

5.15 Public Services and Utilities

5.15.1 Existing Conditions

The Bay Park STP itself provides wastewater treatment services to population of approximately 530,000 people. The treatment facility has its own on-site power generation facility; however, limited emergency power is provided by Public Service Enterprise Group Incorporated (PSEG) Long Island (formerly provided by Long Island Power Authority (LIPA)). As a result of damages caused by Hurricane Sandy, the plant continues to receive power today from mobile generators, and back to two (2) of the 3,600 kW permanent generators with an estimated start up date of August of 2014. Underground utilities at the treatment plant and surrounding park include electric, natural gas (provided by National Grid), fire protection, and city water and sewer lines.

5.15.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The facility would remain susceptible to loss of function for treatment services as a result of a flood event, therefore interrupting the facility's ability to provide an essential public service. It

could also be more likely to need emergency power from PSEG Long Island during storm events. The No Action alternative would provide no improvements to the park.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

Construction and operation of the berm and floodwall would not adversely impact existing public services and utilities. Where the proposed floodwall alignment overlaps with existing underground utilities, measures would be taken to route the utilities through the line of protection. This would be done by crossing through the slurry cutoff wall beneath the structure for T-wall sections and berm sections or through gaps in sheet pile for I-wall sections that are backfilled with slurry or grout. The short-term period that these utilities may need to be out-of-service for relocation is anticipated to be minimal and would be coordinated with other users it may impact.

Implementation of this alternative would mitigate flood damage risk at the facility and minimize service interruptions during future flood events. The proposed alternative includes park improvements to the surrounding Bay Park County Park (excluding the public golf course). This would have a positive impact on the community by improving the visual aesthetics and amenities of the neighborhood. The new facilities would be well lit using energy-efficient fixtures to ensure a safe environment. The proposed relocation of Marjorie Lane would remove the existing barrier between the park and East Rockaway Channel and allow park users to connect more safely with the waterway.

Alternative 3: Mitigate All Systems and Equipment Individually

Construction and operation of individual mitigation measures would not adversely impact existing public services. Implementation of this alternative would mitigate flood damage risk at the facility and minimize service interruptions during future flood events. Like the Proposed Alternative, this alternative would require adjustments to the facility's stormwater management system in order to maintain or increase the existing flow capacity. Underground utilities that conflict with individual mitigation measures would be addressed in a similar manner to the Proposed Alternative. This alternative would not provide enhanced recreational services to the community.

5.16 Public Health and Safety

5.16.1 Existing Conditions

The project site is served by the Nassau County Police Department 4th Precinct, East Rockaway Auxiliary Police Department, Town of Hempstead Public Safety, and Village of East Rockaway Fire District.

5.16.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

If no action were taken, future damages during storm events could require significant assistance from public protection forces. This could impact the ability of first responders and emergency medical services to respond to needs elsewhere in the community. The facility would remain susceptible to loss of facility functions as a result of a flood event. If the facility's essential service were interrupted, it could once again result in the discharge of partially treated or untreated sewage into Hewlett Bay or East Rockaway Channel.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The Proposed Alternative protects public health and safety by minimizing the risk of loss of function as a result of a flood event. It would enhance the facility's ability to provide continuous operation and wastewater treatment services during severe weather. Maintaining critical operations would reduce the risk of sewage overflows into the community.

The proposed lighting plan for the park (Appendix Document E) would have a positive impact on public safety. The proposed guardhouse improvements would increase site security by requiring card access at the front gate and through the installation of modern video surveillance equipment.

Alternative 3: Mitigate All Systems and Equipment Individually

The Proposed Alternative protects public health and safety by minimizing the risk of loss of function as a result of a flood event. It would enhance the facility's ability to provide continuous operation and wastewater treatment services during severe weather. Maintaining critical operations would reduce the risk of sewage overflows into the community.

5.17 Hazardous Materials

5.17.1 Existing Conditions

The project site has never been used as a municipal, commercial, or industrial solid waste management facility, nor does it adjoin property which is now or was at one time used as a solid waste management facility. The facility is listed as active chemical bulk storage facility with the NYSDEC (Site Number 1-000236). The facility's current registration certificate has an expiration date of 07/25/2015. Figure N.

5.17.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action would not address the risk of potential future release of untreated sewage and the potential adverse impacts such a release would have on the human environment.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

The proposed alternative would not include the storage of any bulk petroleum products or other chemical products above 185 gallons in above-ground storage or underground storage tanks but would store petroleum and other chemical products that are less than 185 gallons in above ground tanks (Appendix Figure N). It does not include construction or modifications to a solid waste management facility. It is not anticipated that the proposed alternative would result in any negative environmental impacts related to hazardous materials. All Contractors involved in the construction of this proposed alternative would be required to have proper NYSDEC permits for any chemicals used and stored on site. Clean fill would be used for site grading proposed in park areas.

Alternative 3: Mitigate All Systems and Equipment Individually

This flood mitigation alternative would not include the storage of any bulk petroleum products or other chemical products 185 gallons in above-ground storage or underground storage tanks. It is not anticipated that this alternative would result in any negative environmental impacts related to hazardous materials. All Contractors involved in the construction of this alternative would be required to have proper NYSDEC permits for any chemicals used and stored on site.

5.18 Climate Change

Executive Order 13514 sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy and economic performance. Executive Order 13653 sets standards to prepare the United States for the impacts on climate change. FEMA is required, under these Executive Orders, to implement climate change adaptability and green infrastructure in FEMA funded projects when feasible.

5.18.1 Existing Conditions

Recent storm events have negatively affected Nassau County over the past few years. These include a blizzard in December 2010, Hurricane Irene in August 2011, the Nor'easter in October 2011, Hurricane Sandy in October 2012, the Nor'easter in November 2012, and several winter storms and high wind events during 2012, 2013, and 2014.

The effects of storm surge from Hurricane Sandy were exacerbated by sea level rise. According to NOAA, sea levels in the New York harbor area have risen approximately 12 inches over the past 100 years, with 3 to 4 inches of this sea level rise attributed to land subsidence and the remainder to climate change. NOAA predicts an additional 12 to 23 inches of sea level rise by the 2080s, using a similar approach used in the last Intergovernmental Panel on Climate Change (IPCC) report.

5.18.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action alternative does not provide for flood damage risk reduction and other hazard mitigation measures; therefore, the facility would be subject to greater risk of damage and operational disruption in the future. The risks would increase over time due to anticipated storm frequency increases and sea level rise associated with climate change.

Alternative 2: Proposed Alternative – Perimeter Flood Protection Berm and Floodwall

FEMA 543, Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings, recommends designing to the 500-year return period for critical facilities, including sewage treatment plants. The Proposed Alternative is designed to incorporate flood damage risk reduction and other hazard mitigation measures to at or above the 500-year floodplain elevation; therefore, increasing the ability of the facility to withstand future tidal surge damage. This would become more important over time, enhancing resiliency for the facility as the frequency of severe weather is expected to increase due to climate change. The proposed berm and floodwall would be built to a design elevation of approximately +17.0 feet (NAVD88). The recommended design elevation is based on a combination of stillwater flood elevation, wave height and sea level rise. The design elevation also includes a safety factor (freeboard) of two (2) feet. The existing grade elevation at the facility ranges from a low of 6 feet NAVD88 to 16 feet NAVD88.

The designs for the Proposed Alternative incorporate green infrastructure designs including vegetated bioswales and underground stormwater retention (Appendix Figure E). The proposed project is not anticipated to significantly exacerbate impacts of climate change on the project area. As discussed in the Air Quality section, the proposed construction and modifications to operations of the facility are not expected to result in emissions above de minimis levels. The potential for induced flooding was evaluated, and as would be described in more detail in the floodplain section, modeling showcased that the proposed floodwall and berm, as well as park fill material, would not elevate the water surface elevation more than one foot.

Alternative 3: Mitigate All Systems and Equipment Individually

Mitigating All Systems and Equipment individually would protect the site from future flood damage in a manner similar to the Proposed Action. Individual floodwalls would be designed to the recommended design elevation for the 500-year flood level of protection. Similar to Alternative 2, this alternative would not be expected to significantly exacerbate impacts of climate change in the project vicinity and the facility would be more resilient to the effects of climate change than current conditions.

5.19 Cumulative Impacts

In accordance with NEPA, this EA considers the overall cumulative impact of the Proposed Action and other actions that are related in terms of time or proximity. According to the Council of Environmental Quality (CEQ) regulations, cumulative impacts represent the "impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what federal agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

Cumulative impacts are those impacts "… which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions…" (40 CFR 1508.7) The statutory basis for considering cumulative impacts of federal actions is the NEPA of 1969, 42 U.S.C. 4321 et seq. In the context of evaluating the scope of a proposed action, direct, indirect and cumulative impacts must be considered.

In addition to NEPA, other statutes require federal agencies to consider cumulative impacts. These include the Clean Water Act section 404 (b) (1) guidelines; the regulations implementing the conformity provisions of the Clean Air Act; the regulations implementing Section 106 of the NHPA; and the regulations implementing section 7 of the ESA.

To address cumulative impacts, this section examines FEMA actions as well as non-FEMA actions occurring or proposed in the vicinity of the proposed project. The combined effects of these actions are evaluated to determine if they could result in any cumulative impacts. Appendix Table A summarizes the potential environmental impacts of the alternatives. It is expected that the implementation of the Proposed Alternative would have an overall positive impact on human health and the environment as compared with the No Action.

Several other on-site projects are underway at the facility including construction of dechlorination facility and repair and cleaning of digester tanks and heat exchanges. The other projects, in combination with the proposed action, would have a positive impact on facility function and the services it provides to the community. There are also substation improvements

throughout Nassau County under the FEMA Public Assistance 428 capped grant that have undergone previous environmental and historic preservation review by FEMA. The other 428 gapped grant projects which include the dewatering and electrical improvements, final settling tanks rehabilitation, grit removal facility improvements, sludge thickening facility improvements, and substation improvements throughout Nassau County will be worked on concurrently with the floodwall and berm. The potential elevation of one of the original generators using CDGB funding may occur concurrently with the other 428 projects. These additional utility system actions, in combination with the proposed action, would not have a significant adverse cumulative impact on the human environment. Nassau County has recently announced a public-private partnership with United Water to manage and operate the County's three wastewater facilities, which include Bay Park. It is expected that this partnership will have no effect on the project.

A future project under consideration is viable method to reduce nitrogen and other biological nutrients from the processed outflow. Hempstead Bay is listed as an impaired water body under NYSDEC 303(d). Initial studies suggest that a combination of biological nutrient removal treatment upgrades at the Bay Park STP with the construction of an Atlantic Ocean outfall may be the most technically feasible and economically viable alternative to achieve the required reductions in nitrogen and overall improvements in water quality in the Bay. This project was part of several discussions in the Sandy Regional Infrastructure Resilience Coordination Group and its Wastewater Treatment Technical Coordination Team, an interagency task force for Sandy recovery. The discussions included review of a feasibility study by Nassau County required by the NYSDEC consent order to address the options of Nitrogen limits and technological treatment alternatives and construction of an ocean outfall to replace the present outfall to Reynolds Channel. These alternatives are the subject of ongoing analyses by Nassau County and NYSDEC to address design, funding, and implementation challenges.

FEMA understands that the County potentially plans to use recently announced funding from the Community Development Block Grant (CDBG) from the U.S. Department of Housing and Urban Development to fund the necessary biological nutrient reduction treatment upgrades at the Bay Park STP. The State of New York identified possibly using CDBG funding in the New York Rising Action Program within Amendment 6 of the Action Plan for Community Development Block Grant Disaster Recovery (page 44) as follows:

> "*Currently, the State has committed to address storm-related recovery costs for the Bay Park Waste-water Treatment Facility in Nassau County once the assessment of damage is completed through the FEMA Public Assistance program. The State also intends to support the proposed ocean outfall pipe for this facility if engineering and other technical studies indicate that this project is warranted. The State continues to work with FEMA and other federal partners to assess the outstanding needs of other large infrastructure*

> *projects such as the Long Island Power Authority (LIPA), other water and waste-water facilities, transportation hubs and transit networks*."

There may be potential cumulative impacts on natural and cultural resources with future denitrification or other treatment project(s); however, at this time there are no specific details available to assess potential environmental impacts of those future separable potential actions. An environmental review would be conducted by project proponents in the future to determine the impacts of those potential projects. The Subgrantee considered alternatives for treatment in its "Nassau County Bay Park Sewage Treatment Plant Report for the Conceptual Study of Alternatives to Meet Future Nutrient Levels" engineering study. The Subgrantee took into consideration potential options for future treatment such as biological nitrate removal and membrane filtration/reverse osmosis in evaluating hazard mitigation risk reduction methods and deciding upon the proposed action's floodwall/berm alignment.

6.0 Permits and Project Conditions

The Subgrantee is responsible for obtaining all applicable Federal, State, and local permits and other authorizations for project implementation prior to construction and adherence to all permit conditions. Any substantive change to the approved scope of work will require re-evaluations by FEMA for compliance with NEPA and other laws and EOs. The Subgrantee must also adhere to the following conditions during project implementations and consider the below conservation recommendations. Failure to comply with grant conditions may jeopardize Federal funds:

1) The Best Available Data (BAD) must be used to determine the 500-year floodplain elevation for final engineering design in accordance with 44 CFR Part 9. At the time of this publication, the Flood Insurance Rate Map Community-Panel Number 36039C0158F dated May 16, 2008 is the BAD.
2) Any proposed construction in the floodplain must be coordinated with the local floodplain administrator and must comply with Federal, state and local floodplain laws and regulations.
3) Excavated soil and waste materials shall be managed and disposed of in accordance with applicable Federal, state, and local regulations. Solid waste haulers will be required to have a NYSDEC waste hauler permit and all waste will need to be disposed of or processed at a permitted facility.
4) The Subgrantee shall be responsible to comply with the NYSDEC State Pollutant Discharge Elimination System (SPDES) permit for Stormwater Discharge from Construction Activity or other applicable SPDES permit, in accordance with NYS Environmental Conservation Law. If the NYSDEC General Permit for Stormwater Discharges is determined to cover the proposed action, the Subgrantee shall provide NYSDHSES/FEMA a copy of the Stormwater Pollution Prevention Plan (SWPPP) and a copy of the Notice of Intent Form at grant project close-out or other time identified by NYSDHSES/FEMA Grant Programs Directorate per grant administrative documentation guidance requirements. If an individual SPDES permit is determined to be required, the Subgrantee shall provide a copy of the obtained permit, as

well as supporting SWPPP to NYSDHSES/FEMA at grant project close-out or other time identified by NYSDHSES/FEMA Grant Program per grant administrative documentation guidance requirements.

5) In the event that unmarked graves, burials, human remains, or archaeological deposits are uncovered, the Subgrantee and its contractors will immediately halt construction activities in the vicinity of the discovery, secure the site, and take reasonable measures to avoid or minimize harm to the finds. The Subgrantee will inform the Grantee, NYSHPO and FEMA immediately. The Subgrantee must secure all archaeological findings and shall restrict access to the area. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Subgrantee is notified by the Grantee to proceed.
6) The Grantee and Subgrantee must obtain all site fill from a permitted commercial supplier or locally municipally owned soil/gravel borrow area permitted for mining/excavation as fill material. If the Grantee and/or Subgrantee plan to obtain soil or gravel from a non-commercial source or site that is not permitted, the details of the proposed source location must be submitted to FEMA for approval as a scope of work change prior to construction implementation. FEMA would need to conduct a federal agency environmental and historic preservation compliance review of non-permitted/non-commercial sources prior to construction implementation. The environmental concerns would be potential impacts to cultural resources or habitat areas at an excavation site not previously reviewed, permitted and otherwise cleared for use as a borrow area.
7) The Subgrantee shall submit copies of all obtained permits to the Grantee/FEMA at or prior to final closeout of the public assistance grant.
8) Occupational Safety and Health Administration (OSHA) standards shall be followed during construction to avoid adverse impacts to worker health and safety.
9) The Subgrantee and its contractor are required to use best management practices for construction not limited to sedimentation and erosion control measures, dust control, noise abatement and restriction of work areas to limit vegetation removal and habitat impacts. This website provides useful tools for stormwater management during construction.
10) As mitigation for potential impacts to archaeological resources, an archaeological study synthesizing previous archaeological research and data on the intertidal estuarine marshes of the region will be conducted to better understand the potential for archaeological resources within the project area of potential effects (APE).
11) Subgrantee shall not initiate construction activities until fifteen (15) days after the date that the Finding of No Significant Impact (FONSI) has been signed as "APPROVED."
12) It is recommended that the Subgrantee restore disturbed construction areas of the site with native seed and/or plant species to minimize soil erosion and sedimentation, as well as enhance environmental habitat quality of project site. It is recommended that disturbed soil areas be planted with native plant material, as soon as practicable after exposure, to avoid or minimize growth of undesired and potentially invasive plant species that can potentially take hold without competition of native plant materials. Local landscape plant nurseries and soil conservation offices can assist with identification of suitable native plants for site location type. The USDA Plant Database, USDA Natural Resources Conservation Service, and Native

Plant Materials website may also be useful to identification of native plant material for the proposed project site.

13) The proposed project area serves as potential summer roosting habitat for the Northern long-eared bat (*Myotis septentrionalis*), a proposed species for the federal threatened and endangered s list. Pursuant to section 7(a)(4) of the Endangered Species Act (ESA) and implementing regulations at 50 CFR §402.02 and 50 CFR §402.10, FEMA has determined that the proposed action would not be likely to jeopardize the proposed species, or destroy or adversely modify proposed critical habitat. The Subgrantee is requested, as a conservation recommendation, to schedule the removal of trees that are greater than 3" diameter-at-breast-height during the following construction window: October 1st – March 31st. If the Northern long-eared bat is listed, and if project activities are expected to continue afterwards, this concurrence will serve to satisfy consultation requirements pursuant to Section 7 of the ESA, provided that: (1) the project scope and activities remain unchanged; (2) any proposed conservation recommendations are implemented as conservation measures; and (3) there are no other changes (e.g., to the landscape, habitat, etc.) that may affect the newly-listed species and that have not already been analyzed in this consultation. Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered. The most recent compilation of federally-listed and proposed endangered and threatened species in New York is available for your information. Until the proposed project is complete, the Grantee and Subgrantee are recommended to check the USFWS website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current. The U.S. Fish & Wildlife Service (USFWS) New York Field Office website provides general information about species. The Information, Planning and Conservation System IPaC website can be utilized for site specific information. The proposed species could be listed as endangered as early as April 2015, although it is to-be-determined. If the proposed construction action has not been initiated by April 2015 and the species is listed at that time, the Grantee/Subgrantee must contact FEMA to re-open project federal agency environmental compliance review and ESA consultation if the Grantee/Subgrantee cannot adhere to the tree removal window. If the tree window can be adhered to, the Grantee/Subgrantee will be in compliance with ESA. If the Grantee/Subgrantee has any questions concerning this conservation recommendation that is voluntary at this time but could become a conservation measure requirement, please feel free to contact FEMA Region 2 at 212.680.3600. Additional general information about the Northern long-eared bat is available at: www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf and http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0JE of the USFWS.

7.0 Agency Coordination and Public Involvement

A Full Environmental Assessment Form (FEAF) was submitted by the Subgrantee to NYSDOS, NYSDEC and NYS Environmental Facilities Corporation under the coordinated review procedure in accordance with the State Environmental Quality Review Act (SEQRA). Neither agency objected to the Nassau County Legislature acting as Lead Agency for purpose of implementing SEQRA. The Nassau County Legislature hosted a special meeting and public

hearing regarding the Hurricane Sandy Recovery Operations and Capital Projects Relating to the Bay Park Sewage Treatment Plant on Thursday, March 20, 2014 at 2:00 PM in at 1550 Franklin Avenue, Mineola, New York. Meeting minutes for this hearing are provided in Appendix Document F.

In accordance with NEPA, FEMA released an EA on June 20, 2014 to the public for a 15-day public review and comment period. The Notice of Availability was published in Newsday on June 20, 2014. During this initial public review and comment period, additional coordination with HUD and EPA occurred. The result of which, was to add supplemental language to the NEPA document for clarification of the proposed action, existing conditions and information on resiliency planning for the facility. This Final EA was prepared to incorporate information from the federal agency partners. Availability of the Final EA for comment will be advertised in Newsday. A 15-day public review and comment period will be held from the date of the newspaper notice to provide the public a second opportunity to comment on the proposed action prior to project implementation. A hard copy of the Final EA will be available for review at these locations:

Lynbrook Village Library
56 Eldert St
Lynbrook, NY 11563

East Rockaway Public Library
477 Atlantic Ave
East Rockaway, NY 11518

Hewlett-Woodmere Public Library
1125 Broadway
Hewlett, NY 11557

An electronic copy of the FEA may be requested by emailing FEMA at fema4058comment@fema.dhs.gov. The FEA will also be made available for download from the Nassau County Depart of Public Works website. This FEA reflects the evaluation and assessment of the federal government, the decision-maker for the federal action; however, FEMA will take into consideration any substantive comments received during the public review period to inform the final decision regarding grant approval and project implementation. The public is invited to submit written comments by mail to: FEMA NY Sandy Recovery Office, Attn: EHP-Bay Park EA Comments, 118-35 Queens Blvd., Forest Hills, NY 11375. If no substantive comments are received from the public and/or agency reviewers the Final EA will be adopted and a Finding of No Significant Impact will be issued by FEMA. If substantive

comments are received, FEMA will evaluate and address comments as part of the FONSI record documentation.

Copies of the FEA will be sent to:

Nassau County:
Attn: Maureen O'Connell, County Clerk
Nassau County
240 Old Country Road
Mineola, NY 11501

NYSDHSES
C/O Art Cleaves and John Kropog
1220 Washington Ave. Bldg. 22 Suite 101
Albany NY 12226

USFWS
Attn: Steven T. Papa
U.S. Fish and Wildlife Service
Long Island Field office
340 Smith Rd
Shirley, NY 11967

Notices of Availability of the FEA will be sent to the following parties:

Bay Park Civic and Property Owners Association, Community Organization

Citizens Campaign for the Environment, Non-Profit Advocacy

City of Long Beach, Government

City of Long Beach Environmental Advisory Board, Government

Clean Ocean Action, Non-Profit Advocacy

Coalition of Nassau Civic Associations, Non-Profit Association

Environmental Protection Agency Region II RA, Governmental

Environmental Protection Agency Region II Strategic Planning and Multi-Media Programs

Branch, Government

Freeport Tuna Club, Fishing Club

Great South Bay Audubon Society, Audubon Society

Great South Bay Society, Community Organization

Housing and Urban Development Regional Environmental Officer, Government

Island Park Community Group, Community Organization

American Littoral Society National, Non-Profit Agency

Long Beach Surfer's Association, Community Organization

Long Island Clean Water Partnership Public Education Campaign

Morris Kramer Atlantic Beach Civic and Environmental, Activist

Nassau County Department of Health, Government

Nassau County Department of Parks, Recreation and Museum, Government

Nassau County Legislative District 4 (Denise Ford), Elected Official

Nassau County Legislative District 7 (Howard Kopel) Elected Official

Nassau County Planning Commission, Government

New England Interstate Water Pollution Control Commission

New York State Historic Preservation Office, Government

National Marine Fisheries Service, Government

National Park Service, Government

Natural Resources Defense Council, Grassroots

Nature Conservancy, Non-Profit

New York League of Conservation Voters, Political Action Organization

NY Sports Fisherman's Association, Non-Profit

NYS Assembly District 20 (Harvey Weisenberg), Elected Official

NYS Congressional District 4 (Carolyn McCarthy), Elected Official

NYSDEC Floodplain Management, Governmental

NYS-Department of State Coastal Zone Management

NYS Senate District 9 (Dean Skelos), Elected Official

Operation SPLASH (Stop Polluting Littering & SaveHarbors), Non-Profit Advocacy

Peconic Bay keeper, Non-Profit

Point Lookout Civic Association, Non-Profit Community Organization

Reed Super, Attorney

Save the Great South Bay, Advocate

Seagrant, Government/University

Sierra Club, Grassroots

Sludge Stoppers Community Organization

South Shore Estuary Reserve Commission, Governmental Organization

Stony Brook SOMAS, State University

Surfriders Foundation, Grassroots

Sustainable Long Island, Non-Profit

Town of Hempstead, Government

Tribal Historic Preservation Officer, Government

US Army Corp of Engineers New York District Planning Division, Government

US Senators for NY (Gillibrand and Schumer), Elected Official

Shinnecock Nation, Tribal Goverment

Village of Atlantic Beach, Government

Village of East Rockaway, Government

Village of Hewlett Bay Park, Government

Village of Hewlett Harbor, Government

Village of Hewlett Neck, Government

Village of Island Park, Government

Vision Long Island, Non-Profit

Western Bays Coalition Environmentalists; civic groups, and elected officials

8.0 Conclusion

The Subgrantee identified that Alternative 2 Perimeter Flood Protection and Floodwall is the best-suited alternative to restore the facilities flood-damaged buildings and equipment and to meet the facility's flood hazard mitigation goals. The floodwall and berm would provide a primary means of defense against flooding, thus minimizing risk of future damage to the critical assets of the Bay Park STP and minimizing future disruption of function and service to the community. The continuous functionality of the Bay Park STP is critical to minimize deleterious economic, public health and environmental consequences that could arise as a result of a disruption in the plant's service. This EA concludes that the construction and operation of the perimeter flood protection berm and floodwall would have no significant adverse impact on the human environment and is expected to improve some aspects of the human environment in the vicinity of the project site, including park facilities and traffic patterns. Throughout the construction period, short-term impacts to soils, surface water, transportation, air quality and noise are anticipated. In cases where potential for an adverse impact has been identified, impacts will be mitigated through design, regulatory compliance and/or adherence to best management practices.

9.0 List of Preparers

Nassau County
Department of Public Works
1194 Prospect Avenue
Westbury, NY 11590

ARCADIS U.S., Inc.
27-10 Queens Plaza North, Suite 800
Long Island City, NY 11101

Hazen & Sawyer, P.C.
498 Seventh Avenue
New York, NY 10018

FEMA Region II
SRO NY
118-35 Forest Hills, NY 11375

10.0 References

ArcGIS

2010 Predominant Populations in the U.S.A. http://www.arcgis.com/home/item.html?id=602849530f5d4b6781ba37393144728c.

Army Corp of Engineers

2012 Process for Requesting a Variance From Vegetation Standards for Berms and Floodwalls; Additional Filings.

https://www.federalregister.gov/articles/2012/02/17/2012-3701/process-for-requesting-a-variance-from-vegetation-standards-for-berms-and-floodwalls-additional

Deegan, Johnson, Warren, Peterson Fleeger, Fagherazzi, and Wolheim

2012 "Coastal Eutrophication as a Driver of Salt Marsh Loss" Nature: doi:10.1038

CH2MHill

2013 "Nassau County Bay Park Sewage Treatment Plant Report for the Conceptual Study of Alternatives to Meet Future Nutrient Limits.

Environmental Protection Agency

2010 Guidelines for Conducting Environmental Justice Analyses. http://www.epa.gov/region2/ej/guidelines.htm#step2.

2014 Post-Construction Performance Standards and Water Quality-Based Requirements.

http://www.epa.gov/npdes/pubs/sw_ms4_compendium.pdf

Federal Emergency Management Agency

2007 FEMA 543, Design Guide for Improving Critical Facility Safety from Flooding and High

Winds: Providing Protection to People and Buildings

2009 Flood Insurance Rate Maps. http://www.fema.gov/floodplain-management/flood-insurance-rate-map-firm

Governor's Office of Storm Recovery

2014 "Action Plan Amendment Number 6 to the Action Plan for Community Development Block Grant Disaster Recovery."

Intergovernmental Panel on Climate Change

2013 "Fifth Assessment Report" Edited by Stocker, Thomas F; Qin, Dah; et al

Joseph L. Davenport

2014 Clear Waters, New York Water Environment Association, Inc. Spring 2014, Vol. 44, No. 1. "Overview of Long Island's Wastewater Infrastructure."

Kenward, Alyson PhD, Daniel Yawitz, and Urooj Raja (Climate Central)

2013 Sewage Overflows from Hurricane Sandy, April 2013

Mueser Rutledge Consulting Engineers

2013 Geotechnical Data Report: Bay Park Sewage Treatment Plant Perimeter Flood Protection. Written by Robert T. Wisniewski, PE, Francis J. Arland, PE, et al. Prepared for ARCADIS U.S., Inc.

Nassau County

2014 Department of Parks, Recreation, and Museums. http://www.nassaucountyny.gov/agencies/Parks/WhereToGo/active/bay.html

2014 Land Record Viewer, http://www.nassaucountyny.gov/mynassauproperty/main.jsp

National Oceanic and Atmospheric Administration

2014 Climate at a Glance, http://www.ncdc.noaa.gov/cag/

2014 Online Weather Data, http://www.nws.noaa.gov/climate/xmacis.php?wfo=okx

2012 Hurricane Sandy and Sea Level Rise. http://www.climate.gov/news-features/features/Hurricane-sandy-and-sea-level-rise

2014 Storm Events Database. http://www.ncdc.noaa.gov/stormevents/

New York State Department of Environmental Conservation

2014 Environmental Site Database Search, http://www.dec.ny.gov/chemical/8437.html

2014 Nature Explorer, http://www.dec.ny.gov/animals/57844.html

2014 Environmental Resource Mapper, http://www.dec.ny.gov/animals/38801.html

2014 Guidance, "How are coastal areas regulated by the CEHA Permit Program?"

http://www.dec.ny.gov/lands/86541.html

2014 Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, http://www.dec.ny.gov/regs/4590.html#16133

2012 Section 303(d) List of Impaired Waters, http://www.dec.ny.gov/docs/water_pdf/303dlistfinal12.pdf

2008 Technical and Operational Guidance (TOG) 1.1.6, Interpretation Guidance for Marine Dissolved Oxygen (D.O.) Standard.

2001 Assessing and Mitigating Noise Impacts. www.dec.ny.gov/docs/permits_ej_operations_pdf/noise2000.pdf

New York State Department of State

2014 Office of Communities and Waterfronts, NYS Coastal Boundary Map http://appext20.dos.ny.gov/coastal_map_public/map.aspx

New York State Office of Parks, Recreation & Historic Preservation

2013 The Geographic Information System for Archeology and National Register. http://nysparks.com/shpo/online-tools/disclaimer.aspx?pgm=gis

United States Census Bureau

2010 State and County QuickFacts: Nassau County QuickFacts. http://quickfacts.census.gov/qfd/states/36/36059.html

http://www.census.gov/2010census/popmap/

United States Fish and Wildlife Service

2014 Information, Planning, and Conservation System (IPaC). http://ecos.fws.gov/ipac

2012 Migratory Bird Flyways. http://fws.gov/migratorybirds/flyways.html

2014 Wetlands Mapper. http://www.fws.gov/wetlands/Data/Mapper.html

United States Government Printing Office

2014 Electronic Code of Federal Regulations. http://www.ecfr.gov/cgi-bin/ECFR?page=browse

2010 Census Data Tracts. http://www.usa.com/nassau-county-ny.htm

11.0 Comments Response

Following are the comments received from the public comment period for the draft EA and FEMA's response.

Agency	Comment	Response
US EPA	The Hurricane Sandy Rebuilding Task Force and their Hurricane Sandy Rebuilding Strategy should be mentioned in Introduction, specifically mention Recommendation 6.	Added in section 1.0.
US EPA	There needs to be a conversation about current operations, temporary facilities, what work has been done since Sandy, how has it been funded, etc. to understand the current state of affairs at the facility.	Added in section 4.2 and 5.19
US EPA	Discuss future nitrogen removal measures that were discussed by the Hurricane Sandy Rebuilding Task Force due to future NYSDEC nitrogen effluent limitations. These include denitrification measures and extension of outflow pipe to ocean.	Added in section 5.19
US EPA	Include that as of March 2014, the Bay Park STP discharge has an average effluent level of 20.5 mg/l of ammonia (a component of total nitrogen), which exceeds the permit limit for the facility of 8.9 mg/l.	Added section 5.3.1
US EPA	Recent NYSDEC communications regarding the excessive nitrogen levels in western bays and Reynolds Channel that contributes to excessive algae growth and removal of dissolved oxygen.	Added section 5.3.1
US EPA	All aspects of the project should be discussed in the project description and need.	FEMA funded projects occurring at Bay Park STP has been expanded in both section 4.2 and 5.19.
US EPA	Document should discuss whether floodwall and berm would inhibit the construction of any denitrification equipment or facilities.	Added section 5.19

Agency	Comment	Response
US EPA	EA should explain whether the proposed project would be protective against a storm surge similar to that which occurred during Hurricane Sandy.	The design elevation is based on the 500 year storm event and 2.0 feet of freeboard.
US EPA	EA should briefly describe what measures will be taken during construction period to minimize impacts of a flood event on the project.	Best management practices will be used but specifics are unknown and will be developed during contracting period. The Subgrantee will enforce best management practices during construction to prevent potential impacts to neighboring properties at all times.
US EPA	Appendix A should have been labeled as to its contents.	An appendix table of contents is on page iii of EA.
US EPA	It is not clear whether total hydrocarbons (THC) are being used as a surrogate for volatile organic compounds (VOC). If so then the calculated level exceeds the de minimis threshold for VOC and a full conformity determination would be required.	The conversion from THCs to VOCs will be based on factors provided in Conversion Factors for Hydrocarbon Emission Components (NR-002d, EPA-420-R-10-015). The original spreadsheet contained an error in the THC calculations and a revised spreadsheet with corrected emissions estimates will be provided. These revisions indicate that the VOC emissions are well below the de minimis value of 50 tons per year.

Agency	Comment	Response
US EPA	The THC emission results in table 5-3 appear to be incorrect. However, this could not be verified by EPA. All assumptions, calculations and data sources should be provided.	As noted above, there was a miscalculation in the THC emission factors in Table 5-3. [Note: the revised emissions demonstrate that VOC emissions are well below de minimis] A revised table with the corrected emissions, including VOC emissions, will be provided. Tables will be supplied with a list of assumptions, sample calculations, and references as appropriate.
US EPA	Include the source of the emission factors for calculating truck traffic emissions in Table 5-4.	The emission factors used in Table 5-4 were based on factors from AP-42 Paved Roads (Section 13.2.1.1, 2011). The information is included as a footnote in the revised document.
US EPA	It appears that the on-road vehicle emissions were limited to dust emissions. Exhaust emissions should also be included which can be estimated with EPA's MOVES model.	The revised emissions tables will include tailpipe emissions from construction-related materials transport and worker commuting as appropriate based on the MOVES model.