Draft Environmental Assessment: Floating Energy Storage System

Department of Energy Loan Programs Office –
Title XVII Program

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Acronyms and Abbreviations

ABS	American Bureau of Shipping
APE	Area of Potential Effects
Applicant	Empower Brooklyn, LLC
BFE	base flood elevation
BMPs	best management practices
BMS	Battery Management System
BNY Master Plan	Brooklyn Navy Yard Master Development Plan
BNYDC	Brooklyn Navy Yard Development Corporation
CAA	Clean Air Act
CFR	Code of Federal Regulations
CMP	Coastal Management Plan
CO	carbon monoxide
CO_2	Carbon Dioxide
CO_2e	carbon dioxide equivalent
Con Edison	Consolidated Edison Company of New York, Inc.
CRIS	Cultural Resource Information System
CWA	Clean Water Act
dBA	decibels
DDT	dichlorodiphenyltrichloroethane
DEP	Department of Environmental Protection
DOE	U.S. Department of Energy
EA	environmental assessment
EFH	Essential Fish Habitat
EMS	Energy Management System
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act of 2005
FDNY	Fire Department of New York City
FEMA	Federal Emergency Management Administration
FESS	floating energy storage system
FIRM	Flood Insurance Rate Map
GHGs	greenhouse gases
GIS	gas-insulated switchgear
IPaC	Information for Planning and Consultation
kV	kilovolt
L_{dn}	day-night average sound level that represents cumulative 24-hour exposure to equivalent sound level (L_{eq})
L_{eq}	equivalent sound level, representing constant sound level in a given situation and time period
LPO	Loan Programs Office
LTSA	Long-Term Service Agreement
mg/L	milligrams per liter
MLW	mean low water
MW	megawatt
MWh	megawatt hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAVD88	North American Vertical Datum of 1988

NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NYCRR	New York Codes, Rules, and Regulations
NYISO	New York Independent System Operator
NYS Transmission System	New York State Transmission System
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
NYSHPO	New York State Historic Preservation Office
PAH	polycyclic aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PM	particulate matter
$PM_{2.5}$	particulate matter with a diameter of 2.5 microns or less
PM_{10}	particulate matter with a diameter of 10 microns or less
Project	floating energy storage system in Brooklyn, Kings County, New York
psu	practical salinity unit
sf	square foot
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SLR	sea-level rise
SMP	Site Management Plan
SO_2	sulfur dioxide
State	State of New York
TCLP	toxic characteristic leaching procedure
U.S.	United States
UDP	Unanticipated Discovery Plan
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VCP	Voluntary Cleanup Program
WRP	Waterfront Revitalization Program

1. PURPOSE AND NEED

1.1 Introduction

NYC Energy, LLC (NYC Energy), is developing a floating energy storage system (FESS) and associated onshore infrastructure in Brooklyn, Kings County, New York (Project). The Project consists of the FESS (three modified barges designed to house integrated stacked energy storage containers) that will provide a total of approximately 300 megawatts (MW)/1,200 megawatt hours (MWh) of energy storage (approximately 100 MW/400 MWh per barge), and associated onshore infrastructure (interconnection equipment and a new underground transmission line). The three barges that make up the FESS will be moored in Wallabout Channel within the Brooklyn Navy Yard and interconnect via the new underground transmission line to the grid for a period of at least 30 years.

Empower Brooklyn, LLC (the Applicant), on behalf of NYC Energy, LLC, has applied for a loan guarantee pursuant to the U.S. Department of Energy's (DOE) Title XVII Clean Energy Financing Program, authorized by the Energy Policy Act of 2005 (EPAct), as amended. Under Title XVII, the Secretary of Energy is authorized to provide loan guarantees for projects that support clean energy deployment and energy infrastructure reinvestment in the United States.

The Title XVII program is administered by DOE's Loan Programs Office (LPO). LPO originates, underwrites, and services loans and loan guarantees to eligible applicants for projects that accelerate the commercial deployment of innovative energy technology. LPO has reviewed Empower Brooklyn's application and determined that it is eligible for a potential loan guarantee (10 Code of Federal Regulations [CFR] Parts 609.3 and 609.5).

The decision whether to provide a loan guarantee (Federal financial assistance) constitutes a major Federal action, which requires DOE to conduct an environmental review under the National Environmental Policy Act (NEPA). LPO has prepared this Environmental Assessment in accordance with NEPA (42 U.S.C. 4321 et seq.), the Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR Parts 1500-1508), and the DOE NEPA implementing regulations (10 CFR Part 1021). LPO is using the NEPA process to inform its decision whether to issue a loan guarantee to the Applicant to support the Project.

1.2 Purpose and Need for Agency Action

The purpose and need for DOE's proposed action, issuance of a federal loan guarantee, is to implement DOE's authority under Title XVII of the EPAct, which is to finance projects and facilities in the U.S. that employ new or significantly improved technologies to avoid, reduce, or sequester air pollutants or anthropogenic emissions of GHGs (42 U.S.C. 16513, as amended). In addition, the U.S. Army Corps of Engineers (USACE), New York District, anticipates a permit action will be undertaken through authority delegated to the District Engineer by 33 CFR 325.8, under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). USACE considers issuance of a permit under these two delegated authorities a major federal action connected to DOE's Proposed Action.

NYC Energy's stated purpose and need for the Project is to integrate clean, renewable energy into New York's electric grid to further the State of New York's (State's) climate goals under the 2019 Leadership and Community Protection Act, which established a target of 6,000 MW of battery energy storage capacity in the state by 2030. The basic Project purpose, as determined by USACE for the Section 404(b)(1) guidelines evaluation, is battery energy storage. The overall Project purpose for the Section 404(b)(1) guidelines evaluation, as determined by USACE, is construction and operation of a FESS for renewable energy storage in New York City. USACE intends to adopt DOE's EA to support its decision on any permits requested under Section 10 of the Rivers and Harbors Act and/or Section 404 of the CWA.

1.3 Background

The Applicant is proposing to develop a utility-scale FESS with up to 300 MW/1,200 MWh of energy storage in Wallabout Channel within the Brooklyn Navy Yard (see Figure 1, Site Location Map). The Applicant evaluated several site and design alternatives for the Project, based on spatial requirements and other constraints for a battery energy storage facility in New York City, as well as the system's ability to be used as a mobile emergency unit (See Appendix A, Supplemental Alternatives Analysis). The analysis considered potential upland sites as well as barge designs that were found not practicable compared to the Project design that is the subject of the proposed loan guarantee under review by LPO.

Energy storage will play a crucial role in meeting the State's aggressive clean energy goals and objectives. The Project is intended to integrate clean, renewable energy alternatives, primarily wind and solar generation, into New York's electric transmission grid and allow the State to meet peak power needs without relying on its older peaker plants. This will reduce dependency on fossil-fuel generation, which will reduce local harmful air emissions and greenhouse gas emissions, and prepare New York's electric grid for energy generated by new renewable energy facilities on- and off-shore. Successful deployment of the FESS, which represents a scalable modular design solution for utility-scale battery energy storage systems that can be adapted to a variety of locations, will facilitate the development of alternative renewable energy systems. Furthermore, the FESS concept could be replicated throughout the country, such as at the piers of soon-to-be retired or retired fossil fuel-fired generation facilities that are located on rivers and bays, at closed shipyards, or at vacant piers in areas where upland alternatives are not available.

The Title XVII Clean Energy Financing Program is central to LPO's mission to serve as a "bridge to bankability" for clean energy projects that are critical to achieving decarbonization of the energy sector and enhancing the domestic clean energy supply chain. Commercial use of these technologies would help sustain and promote economic growth, produce a more stable and secure energy supply and economy for the U.S., and improve the environment. DOE published an Interim Final Rule that establishes the policies, procedures, and requirements for the loan guarantee program (10 CFR Part 609).

1.4 Scope of Environmental Assessment

LPO is preparing this EA to evaluate the potential environmental impacts of providing a loan to NYC Energy. This EA covers construction and operation of the FESS and associated onshore infrastructure (interconnection equipment and a new underground transmission line) in Brooklyn, New York. If no significant impacts are identified during preparation of this EA, DOE will issue a Finding of No Significant Impact. If potentially significant impacts are identified, DOE will prepare an environmental impact statement. As presented below, natural, physical, and socioeconomic resources that may be subject to potentially significant environmental issues are identified, as are resources that would not be subject to potentially significant environmental issues, thereby narrowing the scope of the review to those environmental issues deserving of study.

NYC Energy proposes to procure three modified barges, built at an American Bureau of Shipping (ABS) accredited shipyard and designed to house 327 integrated stacked energy storage containers, which are anticipated to be obtained from Contemporary Amperex Technology Co. The FESS will be positioned at Berth 20 on Pier K in Wallabout Channel, which is within the Brooklyn Navy Yard in New York City (see

Figure 1) and the project will require the installation of associated onshore infrastructure. The Project will be constructed in one phase that includes dredging, installation of mooring piles, placement of three modified barges that make up the FESS, the onshore installation of interconnection equipment on Pier K and the underground transmission line to the Hudson Avenue East Substation, as described in detail in Section 2, Proposed Action. The Applicant is in the process of obtaining the required permits and authorizations, listed in Appendix C, including discretionary approvals from USACE and New York State Department of Environmental Conservation (NYSDEC).

This EA describes the Project and its potential impacts on multiple resource areas due to the construction and operation of the FESS. The resource areas assessed in this EA include:

- Land use
- Socioeconomics and environmental justice
- Coastal resources
- Floodplains
- Water resources, including surface waters and wetlands
- Soils and geology
- Cultural resources, including Native American interests
- Aesthetic and visual resources
- Biological resources, including threatened and endangered species
- Waste management
- Noise
- Transportation
- Health and safety

These resource areas were identified as potentially being affected by the Project; therefore, each was assessed to determine the nature, extent, and significance of those impacts (see Section 3). The assessment combined desktop research and analysis of existing available information with select field studies, including site assessments related to sediment chemistry and site history.

Resources not included in this EA are air quality, recreation and open space, groundwater, and prime farmlands. The Project would not add any new emission sources or any other on-site source of emissions that would impact air quality, and the remaining resources either do not occur at the site or would not be affected by the Project; therefore, they are not included in the scope of this EA.

2. DESCRIPTION OF THE PROPOSED ACTION

NYC Energy will procure three modified barges, built at an American Bureau of Shipping (ABS) accredited shipyard and designed to house 327 integrated stacked energy storage containers, which are anticipated to be obtained from Contemporary Amperex Technology Co., The FESS will be positioned within a 26,000-square-foot leased area at Berth 20 on Pier K in Wallabout Channel within the Brooklyn Navy Yard, and the project will require installation of associated onshore infrastructure (interconnection equipment and a new underground transmission line) in Brooklyn, New York(see Figures 1 - 3). The Project will be constructed in one phase that includes dredging, the installation of mooring piles, placement of three modified barges that make up the FESS, the installation of the onshore interconnection equipment on Pier K and the underground transmission line to the Hudson Avenue East Substation. The Project will interconnect to the New York Independent System Operator (NYISO) controlled New York State Transmission System (NYS Transmission System).

Modified Barges and Energy Storage Containers

Each of the three modified barges measure approximately 146 feet long by 130 feet wide (56,940 square feet total), and would each be modified to securely house up to 109 energy storage containers that would be installed and secured to the barge decks. The containers are designed with C5-grade corrosion resistant coating, which is used for highly corrosive environments where the material is exposed to high levels of humidity, saltwater spray, and other corrosive substances. The proposed containers have IP55 rated protection at the exterior and IP66 rated protection at the battery module,[1] and they passed the saltwater spray test for 2,000 hours without any abnormalities. The energy storage containers are equipped with a built-in chiller unit, which circulates biodegradable liquid coolant to maintain appropriate internal temperatures. Each energy storage container will have an energy storage capacity of 5.6 MWh based on one full charge. Each barge will have an energy storage capacity of approximately 100 MW/400MWh, for a total of 300 MW/1,200MWh for the FESS.

The three specially designed barges that make up the FESS will be manufactured at an existing shipyard in the Gulf of Mexico and transported via existing waterways and ship channels to the Project site. The battery energy storage containers and associated equipment on each barge will extend approximately 60 feet above the main deck. Assembly of the battery storage system will take place when the barges arrive at the Project site. The battery storage units will be delivered to the Project site by truck and installed on the barges using a crane.

FESS Site Development

The development of the FESS site requires dredging of a portion of Wallabout Channel to USACE's authorized depth of 20 feet at mean low water (MLW) for the modified barges with the energy storage containers that make up the FESS and the installation of up to twelve 30-inch-diameter steel piles that will anchor the barges in place but allow for vertical movement with the tide.

Onshore Development

The Project will interconnect to the New York Independent System Operator (NYISO) controlled New York State Transmission System (NYS Transmission System) via two new 138-kilovolt (kV) underground interconnection cables that will run beneath public and private rights of way to the existing Hudson Avenue East Substation in Brooklyn. The substation is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison). The barges will remain moored (tied to the mooring piles) at

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[1] IP55 rating identifies protection from water jets (test duration of one minute per square meter for at least three minutes, 12.5 liters/minute at 4.4 psi). IP66 rating identifies protection from powerful water jets (test duration of one minute per square meter for at least three minutes, 100 liters/minute at 15 psi).

Pier K and connected to the grid for the duration of NYC Energy’s 30-year lease term with the Brooklyn Navy Yard Development Corporation.

Project-related modifications within the leased area of Pier K include demolition of a small structure on the pier that formerly housed a substation, followed by the installation of transformer equipment on elevated pads above the pier surface, establishment of electrical connections to the barges and transformer equipment on the pier, and construction of an emergency access road and security fencing around the site (see Figure 4). The electrical conduit that connects the energy storage containers on the barges to the transformer equipment on the pier would be long enough to rise and fall with the tide and would accommodate storm surge of up to 20 feet. The barges will be installed with quick disconnects to allow easy separation from the mooring piles and interconnecting utilities so they can be moved out of the channel in a matter of hours, if required. The interconnection cables will run approximately 9,250 feet, extending from the Project site to the Hudson Avenue East Substation in a trench measuring approximately 2 feet wide and 5 feet deep. Manholes will be installed at regular intervals and be up to 6 feet wide and 10 feet deep. Modifications to the Hudson Avenue East Substation will include the removal of older equipment (e.g., an air-type bus breakers) and replacement with newer equipment (a gas-insulated switchgear [GIS] breakers).

General Operation

The barges will remain moored (tied to the mooring piles) at Pier K and connected to the grid for the duration of NYC Energy’s 30-year lease term with the Brooklyn Navy Yard Development Corporation. The FESS will charge directly from the NYISO-controlled NYS Transmission System during peak renewable energy generation periods (e.g nighttime offshore wind generating hours). The stored energy will be available for discharge to the NYS Transmission System during peak energy demand periods. The FESS can also serve as a mobile emergency power system that can be deployed anywhere along the New York City inner coastal waterway as needed after a catastrophic event or when notified by Con Edison, the New York City Office of Emergency Management, or other agencies. The barges will be able to quickly disconnect from the mooring piles and the interconnecting utilities, and can easily connect to a mobile transformer or mobile substation trailer to convert the stored energy for distribution at 138 kV, the level of the existing underground transmission system in the city.

Figure 1: Project Site Location Map

Figure 2: Project Aerial

10.25.23

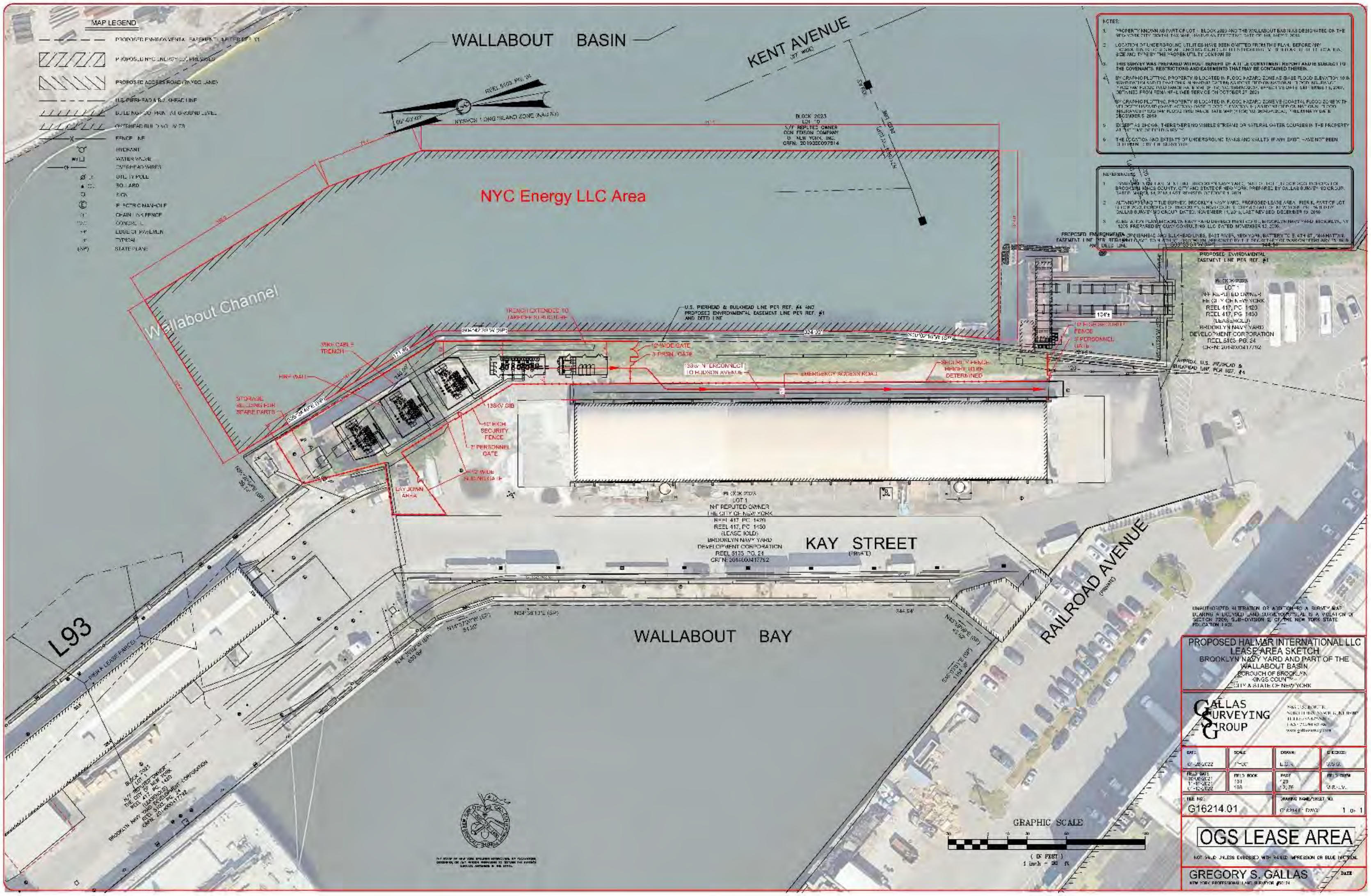
Data source: Orthoimagery via NYS State, http://gis.ny.gov/gateway/mg/index.html

2.1 Construction

The Project will begin construction in early 2025; it is anticipated that it will be completed in June 2027. Construction will include the removal of existing structures and appurtenances from the Project site, excavation/trenching on the surface at Pier K and along the interconnection path to prepare for cable installation, dredging, installation of mooring piles, placement of the FESS and associated pier improvements, installation of electrical equipment/cables, and street restoration/backfilling.

In-water construction activities will include dredging the Project site in Wallabout Channel and installing the mooring piles at Berth 20 on Pier K. Dredging is anticipated to be completed with use of a barge and two scows; pile installation will be conducted using barge-based equipment. The FESS itself will be maneuvered into position once the piles are installed. The Project activities that will be conducted on land include the installation of transformers and GIS breakers, trenching to lay a transmission line through a New York State Department of Transportation (NYSDOT) right-of-way, and construction of an emergency access road within the Brooklyn Navy Yard. All landside activities will be completed within previously disturbed areas.

Figure 3: Site Plan



2.1.1 Construction of Project Structures and Installation of Equipment

Dredging will be conducted within about 5.2 acres in Wallabout Channel to the USACE authorized depth of 20 feet at MLW. During dredging, it is anticipated that one deck barge and two scows will be used to support equipment, store dredged materials, and transport materials for upland disposal at a licensed facility. A crew vessel may also be used to transport personnel to and from the barges. According to the most recent USACE Controlling Depth Report from 2004, depths ranged from about 20 feet at MLW at the mouth of the channel to between 7 and 15 feet in the vicinity of the proposed mooring location. A hydrographic survey was conducted in August 2022 to provide updated bathymetry data for Wallabout Channel and refine the dredging area for the Project. The survey found depths to be close to 0 feet at MLW at the head of the channel to about 50 feet at its mouth. Within the presumed dredging area, depths currently range from about 8 to 20 feet at MLW, with shallower waters close to the bulkhead. To accommodate the barge’s 16- to 18-foot draft, approximately 81,500 cubic yards of sediment will be removed from the approximately 5.2-acre dredge area within the channel. Dredging will be conducted using an environmental bucket with no barge overflow. Any small debris encountered during dredging will be removed by the environmental bucket[2] and then separated by means of mechanical raking, which will be conducted on a deck barge (Wang et al. 2002). If larger debris is encountered, the dredging contractor can use a large-toothed bucket instead of the environmental bucket. All dredging activities will be surrounded by a full-length weighted turbidity curtain and conducted within seasonal work windows. Seasonal restrictions for in-water work include: no in-water work from January 15 through May 31 to protect spawning winter flounder, no sediment-disturbing activities from March 1 through June 30 to protect anadromous species, and no dredging from November 15 through May 20 to protect overwintering striped bass The turbidity curtain will likely be a Type III curtain, which is a full length and weighted turbidity curtain intended to control sediment and runoff in moving waters and moderate wind and wave conditions. It will be secured in a closed loop around the dredging area, preventing resuspended sediment from moving beyond the work zone. If required a second turbidity curtain could be used in a wider area to minimize sediment mobility. Dredging will most likely take about 4 to 6 weeks to complete. There will be no discharge of the dredged material into waters of the United States.

Sediment sampling was conducted in June and July 2023 to determine the proper treatment and disposal requirements for the material, in accordance with the April 7, 2023, NYSDEC Sediment Sampling Plan developed and approved for the Project. Sediments were mostly silt with some clay and pockets of sand. Total fines among the A layer (surface to -22 feet at MLW) and B layer (0 to 6 inches below proposed dredging depth) sediment samples averaged about 90.5 percent, and total sand averaged 9.4 percent. Results of the laboratory analyses were compared with the thresholds for Dredging, Riparian or In-water Placement in NYSDEC’s Technical and Operational Guidance Series (TOGS) 5.1.9. Individual samples were analyzed for VOCs, and composite samples were analyzed for SVOCs, pesticides, PCBs, metals, and dioxin. Sediments were Class B or Class C for metals and Class B for total PCBs. Although the lab was unable to reduce the reporting limits below all of the thresholds for pesticides, at worst, pesticides were detected at Class B levels for DDT+DDE+DDD and chlordane. All composites were Class A for dieldrin and Class C for Mirex. Sediments were largely Class A for PAHs and petroleum-related compounds (benzene, total BTEX, and total PAHs). When comparing the results between the A and B layers, sediments remaining after the proposed dredging will largely have similar levels of contamination to the sediments being removed. Copper, lead, and dioxin were found at higher levels in the deeper B layer for most sample composites. Cadmium and petroleum-related compounds were also higher in some of the B layers taken near the upstream limits of the dredging area towards the head of the channel.

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[2] An environmental bucket is similar to a conventional clamshell dredge but with additional features. These typically include a combination of covers, exterior pulleys, and sealed joints to reduce the amount of sediment that can spill or flow out of the bucket during dredging.

Bottom sediments and debris will be transported by scow to a receiving and processing facility (e.g., Clean Earth Dredging Technologies in Jersey City, NJ, or other similar facility in New Jersey or New York). The receiving facility will then transfer the processed material for upland disposal at a licensed facility that meets the requirements. Roughly 4,528 truckloads would be required to transport the 81,500 cubic yards of material from the receiving site to upland disposal site. The dredging contractor will be responsible for disposal of the dredge material and any debris encountered during dredging. As identified in the NYSDEC-approved Sediment Sampling Plan, facilities that are authorized to handle this material in the New York City region include: Minerva Enterprises, Inc. (Ohio) and Doremus Avenue Recycling and Transfer Inc. (New Jersey) for debris; and Phase 3 Environmental (Pennsylvania), Hazleton Creek Properties LLC (Pennsylvania), and Clean Earth Dredging Technology, Inc. (New Jersey) for sediment.

The FESS will be moored in place with use of up to twelve 30-inch-diameter steel piles, which will be installed close to the Pier K shoreline. The piles will anchor the barges in place but allow vertical movement with the tide, which changes by about 4 feet between low and high tide, based on National Oceanic and Atmospheric Administration (NOAA) tidal data. The piles will contain 33.5 cubic yards of flowable concrete fill below the spring high-water mark and be topped with a concrete cap. Installation of the piles will be conducted using a vibratory hammer once dredging is complete. If necessary, limited use of an impact hammer to seat the piles will be conducted using a cushion block, a soft-start approach, and a bubble curtain. Overall, pile installation will be completed over approximately 2 to 3 weeks, occurring intermittently over the course of a workday. The piles will have a footprint of approximately 58.9 square feet on the bottom. Following pile installation, the three FESS barges (totaling 56,940 square feet, or 1.3 acres) will be maneuvered into place and moored at Berth 20 for the duration of NYC Energy's 30-year lease with the Brooklyn Navy Yard. During that time, the barges can be temporarily relocated to the GMD Shipyard in the Brooklyn Navy Yard or deployed for mobile use during emergency periods and then returned to the mooring location.

Landside modifications will be made at the Project site—specifically, to Pier K within the Brooklyn Navy Yard to accommodate the moored FESS and the Hudson Avenue East Substation in Vinegar Hill. Following pile installation and connection of the gangways to the shoreline, the pier surface will be graded and repaired using land-based equipment over a distance of approximately 475 linear feet. The transformers and breakers will be installed on an elevated steel grating over a concrete foundation pad supported by two to four piles. The transformer pads will be installed above the pier surface at an elevation of approximately +18 feet NAVD88 which is approximately 5 feet above the base flood elevation. Measures will be implemented during these modifications at Pier K to minimize any release of debris to Wallabout Channel. These include installation of a silt fence at the edge of the pier to minimize any release of construction materials. A silt curtain is typically used in soil, but it can be used on a concrete pier by drilling small holes for anchors that will hold the curtain in place. Construction fencing will also be installed around the work zone.

The interconnecting transmission line will constructed in accordance with all applicable NYCDOT street permits to be obtained by the contractor. The NYCDOT street permits will stipulate maintenance and protection of traffic requirements, hours of operations, as well as maximum trench length. The transmission line will contain 2- to 12-inch polyvinyl chloride conduits encased in concrete, running from the substation, through the Brooklyn Navy Yard, to city streets over a distance of approximately 9,250 linear feet, primarily adjacent to existing utilities within the street. The transmission line route has been sited to minimize impacts to the local community. Approximately 80 percent of the transmission line route is located within the Brooklyn Navy Yard, thereby minimizing impacts to local traffic, businesses, and the general public. The transmission line would be installed within an approximately 2 to 3 foot wide by approximately 5-foot-deep trench with use of a backhoe and dump trucks. Between 10 and 12 manholes will be added along the route for access, with 2 to 3 manholes anticipated to be located within NYC street rights-of-way.

The battery containers will be shipped and arrive at a local Port in New York or New Jersey. The containers will be unloaded at the port and transported to the project site by truck. The containers will be then unloaded at the Project site with a crane and placed directly onto the barges. The installation of the 109 containers will take approximately 1 month per barge. Wiring and systems installation on the barges is anticipated to take approximately 4 to 6 months per barge.

2.1.2 Project Schedule

Construction of the Project is currently scheduled to begin in early 2025 and end in June 2027. In-water construction will include dredging, installing piles, and mooring the barges, all of which will be completed over a period of approximately 12 months. Dredging is anticipated to occur over 4 to 6 weeks, pile driving over 2 to 3 weeks, and mooring the barges over 2 weeks. These in-water activities will be completed in accordance with all regulatory restrictions for in-water construction, including no in-water work from January 15 through May 31 to protect spawning winter flounder, no sediment-disturbing activities from March 1 through June 30 to protect anadromous species, and no dredging from November 15 through May 20 to protect overwintering striped bass. In summary, all in-water work will take place from July 1, 2025 to November 14, 2025.

The Project will have an average of 75 personnel during construction, with a peak of 100 personnel. The peak construction period includes installation of the upland substation and transmission line construction as well as barge electrical and systems installations.

2.2 Operation

Operation of the Project will not require the use any resources, apart from the electricity to charge the batteries and power accessory equipment and the spare parts used by maintenance crews. The FESS will be unmanned and monitored continuously from remote facilities, with regular maintenance performed three or four times per year by 18 to 20 personnel.

As part of the Long-Term Service Agreements (LTSAs) with the equipment manufacturers, the project equipment will be monitored remotely 24hrs/7days a week through the Battery Management System (BMS) and the Energy Management System (EMS). The LTSA providers will be contracted to perform both Preventive and Corrective Maintenance for their respective equipment. Corrective maintenance will follow the manufacturer’s guidelines and preventive maintenance is typically assessed annually.

The Brooklyn Navy Yard is a secured and monitored site. Additionally, the Project is fenced in and will be equipped with security cameras so that it can be monitored via tv screens at all times, with security response to the site as required. The containers will also be equipped with alert systems that identify any parts that require maintenance or replacement. FDNY will inspect the facility on an annual basis for fire safety. The Project will not consume water and will not result in on- or off-site effluent releases of air or water or discharges of other waste.

3. ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

In each of the following sections, a specific resource area is addressed with both qualitative and, where applicable, quantitative information to concisely describe the nature and characteristics of the resource that may be affected by the proposed Project as well as the potential direct and indirect impacts on that resource from the Project given proposed Project controls. A conclusion regarding the significance of impacts is provided for each resource area.

Section 3.17 provides a review of the present and reasonably foreseeable federal and nonfederal actions that may contribute to a cumulative impact when added to the impacts of the Proposed Action. The impacts of past actions were reviewed and are included as part of the affected environment to establish the current condition of the resource (the baseline condition) that may be affected by the Proposed Action.

3.2 Land Use

NEPA directs federal agencies to make sure that their actions are consistent with state and local plans. The Zoning Resolution contains the zoning regulations of New York City. Zoning regulations set limits on how a property owner may use land. Project plans have been reviewed to determine land use consistency for the Proposed Action.

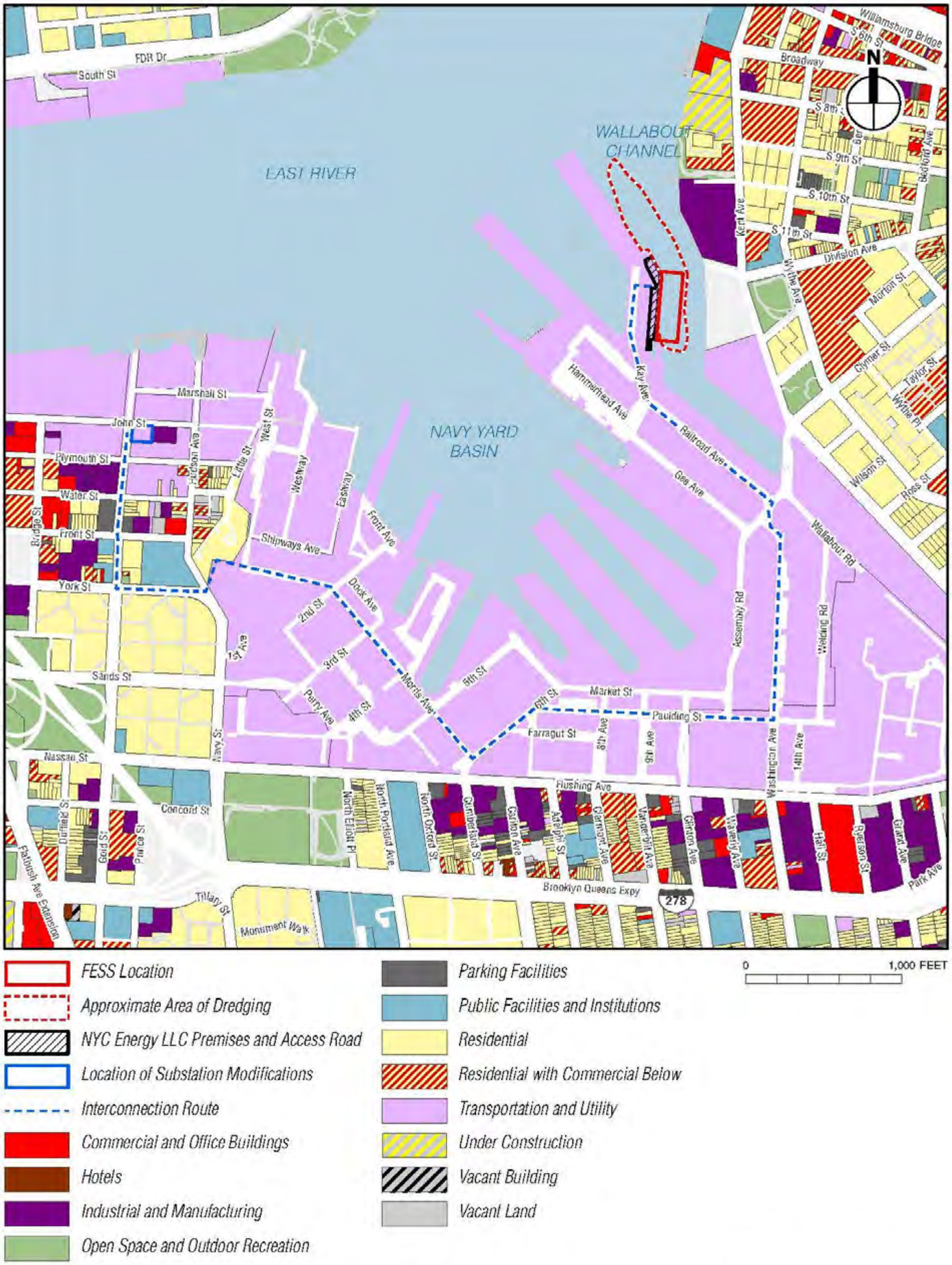
The Project site is the Brooklyn Navy Yard, a former 225-acre naval shipyard that is now operated as an industrial park by the Brooklyn Navy Yard Development Corporation (BNYDC) on behalf of the City of New York (see Figure 2). The Brooklyn Navy Yard features heavy industrial uses such as vessel fabrication and maintenance, along with commercial, retail, and media production uses. The Brooklyn Navy Yard is zoned for industrial uses. The Project site is zoned M3-1, which is for heavy industrial uses—specifically, industries that generate noise, traffic, or pollutants. Typical uses include power plants, concrete plants, and fuel supply depots. Battery energy storage systems are an as-of-right use in M3-1 districts. The Hudson Avenue East Substation and most of the interconnection route are also located in the same M3-1 district.

The area surrounding the Project site, the interconnection route, and the Hudson Avenue East Substation is highly developed and generally industrial in character (see Figure 4). The immediate vicinity is characterized by industrial and maritime uses associated with the Brooklyn Navy Yard. Directly adjacent to the site is a salt shed; a concrete operation is at the end of the pier and to the north, beyond which is the East River. The Navy Yard Basin is west of the site, and parking, storage, maritime, light industrial, commercial, and media production uses are to the south. Vacant waterfront sites and a residential neighborhood, composed largely of multifamily elevator apartment buildings, are located east of the site, across Wallabout Channel. There are several publicly accessible open-space resources on the grounds of the Brooklyn Navy Yard, including the Naval Cemetery Landscape and the Building 77 plaza. Roberto Clemente Ballfield and Jacob’s Ladder Playground, two public parks, are located approximately 750 feet east of the site, across Wallabout Channel, and Schafer Landing, a waterfront esplanade, is approximately 750 feet north of the Site, also across Wallabout Channel. Two additional public parks, Commodore Barry Park and Oxport Playground, are just outside the Brooklyn Navy Yard to the south.

Most of the interconnection route would travel through rights-of-way in the Brooklyn Navy Yard; the remainder of the route, outside the Brooklyn Navy Yard, would travel along rights-of-way in a residential area with a mix of multifamily elevator apartment buildings, townhouses, and a school. Industrial buildings, including warehouses, several other electrical substations, and Con Edison’s shuttered Hudson Avenue Generation Plant, make up the uses surrounding the Hudson Avenue East Substation.

The Project’s energy storage facility use would be a permitted use under the site’s M3-1 zoning and consistent with the surrounding industrial uses. The Project would not alter land uses in the surrounding area and would not require changes to zoning regulations or other planning policies. Therefore, it would not result in direct or indirect effects on land use or zoning. The Project would comply with all applicable zoning regulations. The Project’s consistency with City of New York Waterfront Revitalization Program (WRP) policies is discussed in the “Coastal Resources” section, below. The Project would not result in significant adverse impacts on land use or land use planning.

Figure 4: Existing Land Use



Data source: NYC Dept. of City Planning MapPLUTO 21v4 and AKRF study area survey

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3.3 Socioeconomics and Environmental Justice

3.3.1 Socioeconomics

The Project site is within Census Tract 543, which includes the Brooklyn Navy Yard in Kings County (Brooklyn). Kings County is the most populous county in New York City and the state, with approximately 2.7 million residents. For the census tracts adjacent to the Brooklyn Navy Yard (i.e.,15.01, 21, 23, 191, 211, 537, 539, 545), the share of persons under 5 years of age ranges from 3.9 to 19.8 percent, with the total share of persons under 18 years ranging from 18.5 to 56.6 percent. Approximately 13.1 to 45.6 percent of the residents in these census tracts are between 18 and 34 years old, and between 15.9 and 46.4 percent are between 35 and 64 years old. Between 1.8 and 19.9 percent are over 65 years of age.

The average household size in the census tracts adjacent to the Brooklyn Navy Yard is approximately 2.9 persons per household and the median annual household income is $58,923. Roughly 33.2 percent of individuals in these census tracts have an income below the poverty threshold, which is greater than the national average of 12.6 percent. As of 2020, approximately 4.8 percent of the jobs in Kings County were in the construction sector. In neighboring Queens County, the construction industry makes up 9.6 percent of all jobs, while construction jobs make up 1.9 percent of jobs in nearby New York County (Manhattan), with approximately 127,601 jobs in New York City as a whole. Approximately 5.1 percent of Kings County’s labor force of 1.3 million works in the construction sector within and outside the county.

The Project would result in increased employment opportunities, tax revenue generation, and direct and indirect spending at the location where the FESS would be assembled as well as supporting facilities around the country. Construction and operation of the Project would require a skilled workforce. It is estimated that the construction phase would require about 80 temporary construction workers over a construction period of approximately 18 months; workers for these highly skilled jobs and would be drawn from the local labor force. Jobs associated with the construction phase of the Project would be filled by engineers, draftsmen, laborers, dock builders, electricians, and plumbers. Upon operation, the Project would require permanent off-site workers for remote monitoring. The Project would be monitored off-site 24/7, 365 days a year. In addition, approximately 18 to 20 union workers would be needed for annual maintenance on-site. This would take place 3 or 4 months a year over the course of 30 years.

Although no new housing or supporting infrastructure is anticipated with the Project, Kings County and the Greater New York City metro area have enough housing and associated transportation infrastructure to support job creation at the facility.

Given the jobs that would be created because of the Project as well as the availability of housing and public services in the Greater New York City metro area for workers conducting annual maintenance on-site, the Project would not result in significant adverse impacts on socioeconomics.

3.3.2 Environmental Justice

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to address environmental and human health conditions in minority and low-income communities. The evaluation of environmental justice is dependent on determining if adverse impacts from the Project would disproportionately affect minority or low-income populations in the affected community.

The U.S. Environmental Protection Agency (EPA) has developed an environmental justice mapping and screening tool called EJSCREEN to assess environmental and human health conditions in accordance with EO 12898. EJSCREEN relies on national data and an approach that combines environmental and demographic indicators in maps and reports. For the Project, a study area with a 0.75-mile radius around the Project site was used for the environmental justice analysis to capture the land-based communities beyond the uninhabited areas within the Wallabout Channel, East River, and the Brooklyn Navy Yard Industrial Park. As a result, the study area captures several nearby Kings County neighborhoods, such as Fort Green, Clinton Hill, and South Williamsburg.

Table 1 presents a summary of the racial and ethnic composition of Kings County and New York State. In accordance with the EPA's Environmental Justice Guidelines, minority populations should be taken into consideration when either 1) the minority population of the affected area exceeds 50 percent or 2) the minority population of the affected area is meaningfully greater than the minority population percentage in the general population or another appropriate unit of geographic analysis (in this case, Kings County and New York State). A minority population is defined as a group of individuals who list their racial status as a race other than White alone[3] and/or identify their ethnicity as Hispanic/Latino.

Table 1: Race by Ethnicity

Race/Ethnicity	0.75-Mile Study Area	Kings County, NY	New York State
Total Population	64,167	2,736,074	20,201,249
Hispanic/Latino	16.2%	18.9%	19.5%
Non-Hispanic White	54.3%	35.4%	52.5%
Non-Hispanic African American/Black	17.1%	26.7%	13.7%
Non-Hispanic Native American	0.2%	0.1%	0.3%
Non-Hispanic Asian or Pacific Island	7.4%	13.6%	9.5%
Non-Hispanic Two or More Races	3.2%	4.1%	3.6%
Non-Hispanic Other	1.7%	1.2%	1.0%

Note: *Individual percentages may not add up to 100 percent because of rounding.*
Source: *U.S. Census Bureau. 2020. Decennial Census.*

The racial and ethnic composition of Kings County is quite diverse, with only 35.4 percent of residents identifying as non-Hispanic White. More than one-quarter (26.7 percent) of residents in Kings County identify as non-Hispanic African American/Black, and approximately 18.9 percent of all residents are Hispanic/Latino (of any race). New York State has a similar share of residents who identify as Hispanic/Latino (19.5 percent). However, overall, the state is less racially diverse, with 52.5 percent of all New York State residents identifying as non-Hispanic White. The total minority population in Kings County amounts to 64.6 percent; in New York State, it amounts to 47.5 percent. Within the 0.75-mile radius of the study area (see Figure 5), approximately 43 percent of the population identifies as a minority group (EPA 2019). Fewer than 50 percent of the residents in the study area identify as a minority group; that number is also less than the number for the larger geographic setting of Kings County or New York State.

The Project would include best management practices (BMPs) during construction to minimize the potential for adverse impacts on to low-income and minority communities in the area. All unavoidable adverse effects would be addressed with mitigation. The Project would result in localized temporary increases in noise throughout the study area during construction of the access road, dredging, pile installation, installation of the on-site electric transformer equipment, and the siting of underground electric interconnection cables and new equipment at the Hudson Avenue East Substation. However, these effects would be temporary and would end once construction is complete. Construction would be limited to daytime hours between 7:00 a.m. and 6:00 p.m., would comply with New York City noise control

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[3] The word "alone" in this case indicates that the person is of a single race, not multiracial.

requirements, and would employ standard noise control devices, as described below in Section 3.13, to minimize the potential effects of construction noise on the surrounding community.

In addition to the racial and ethnic composition of the area, potential environmental justice areas are defined by the poverty status of the communities. EPA defines low-income households as those in which household income is less than or equal to twice the federal poverty level. As seen in Table 2, below, 62 percent of the study area is considered a low-income population, compared to 41 percent in Kings County, 31 percent in New York State, and 29 percent in EPA Region 2.[4]

Table 2: Percent of Low-Income Population

Region	Share of Total Population
Study Area	62%
Kings County	41%
New York State	31%
EPA Region 2[a]	29%

[a] *EPA Region 2 is defined as New York State, New Jersey, Puerto Rico, the U.S. Virgin Islands, and eight Indian nations.*
Source: *EPA. 2022. EJSCREEN Technical Documentation.*

Despite the significant share of low-income residents in the study area compared to Kings County, New York State, and the EPA Region 2, the Project is not anticipated to have any direct or indirect adverse environmental impacts on the community because the Project would exist within a highly secured, fenced-in industrial park within Wallabout Channel. As such, the Project would not directly displace residents or existing business and employment. As detailed in other sections of this EA, the Project would have minimal environmental effects on the local community.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires the analysis of environmental justice to also include a “protection of children” component to determine if a project would place an undue burden on children. Although operation of the Project would be contained within Brooklyn Navy Yard, an evaluation of nearby schools, day-care facilities, playgrounds, or other places that children frequent was considered. The Project site is approximately 750 feet from Roberto Clemente Ballfield and Jacob’s Ladder Playground on Kent Avenue, 750 feet from Schafer Landing on the East River waterfront north of the site, and 0.75 mile away from Commodore Barry Park and Oxport Playground on Flushing Avenue. These open spaces have ballfields and playsets that are available to the public. Nearby schools include Success Academy Fort Greene, Green Hill School, and Benjamin Banneker Academy. However, because of security procedures (e.g., perimeter fencing, lighting, 24-hour surveillance) at the Brooklyn Navy Yard, including the Project site, children would not be able to enter the site. The Project would be similar to other uses within the Brooklyn Navy Yard in that it would be highly secured and restricted from public access.

As detailed in other sections of this EA, the Project would not produce adverse noise or air quality impacts in the study area. Therefore, children would not suffer disproportionately from any environmental health or safety risk.

Because the Project would result in limited impacts on the surrounding community and ultimately facilitate the use of renewable energy in New York City, with subsequent reductions in GHG emissions, direct or indirect Project impacts are not anticipated that could give rise to disproportionate impacts on minority or low-income populations in the affected area.

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[4] EPA Region 2 is defined as New York, New Jersey, Puerto Rico, the U.S. Virgin Islands, and eight Indian nations.

Figure 5: Environmental Justice

3.4 Coastal Resources

The Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.), administered by states with shorelines in coastal zones, requires states to have a Coastal Zone Management Plan to manage coastal development. Projects falling within designated coastal zones must be evaluated to ensure consistency with the Coastal Zone Management Plan, and projects receiving federal assistance must follow the procedures outlined in 15 CFR 930.30–930.46 for federal Coastal Zone consistency determinations. The purpose of this legislation is to minimize the adverse impact of development, redevelopment, and revitalization efforts on natural coastal resources. To guide development and resource management within the state's coastal area, the State created a Coastal Management Plan (CMP), which outlines the boundaries of the coastal area, the structure of the program, and statewide policies.

The Project site is located in the regulated Coastal Zone, which is within the boundaries of the New York City WRP and therefore subject to the State CMP and local WRP policies. An evaluation of the Project's consistency with relevant Coastal Zone policies is included in Appendix B. Being within New York City's Coastal Zone, the Project site is also within the Significant Maritime and Industrial Area (see Figure 6), a designation that protects and encourages working waterfront uses in areas with clusters of industrial firms and water-dependent businesses. The Project would be consistent with New York City's WRP policies, including those regarding Significant Maritime and Industrial Areas. Specifically, the Project would promote the development and operation of maritime and industrial uses as well as measures that support such uses (e.g., dredging Wallabout Channel to its USACE-authorized depth of 20 feet at MLW for navigation and maintenance purposes). The FESS would not hinder future waterfront, water-dependent, or water-enhanced uses on Pier K or at surrounding properties and would not hinder any other water-dependent uses of Wallabout Channel. Therefore, it would not result in indirect effects on coastal resources of the Significant Maritime and Industrial Area. The Project would also be consistent with New York City's WRP regarding resiliency in a floodplain because its moored design would allow the FESS to rise and fall with the tide, and its piles would secure the barges during storm events.

The Project would result in temporary impacts on aquatic resources in Wallabout Channel and NYSDEC littoral tidal zone wetlands within the Project area from sediment resuspension during dredging and in-water construction activities. The Applicant would minimize potential direct effects on these coastal resources by using BMPs to minimize any increase in suspended sediment during dredging and in-water construction activities (e.g., use of a full-length turbidity curtain[5] and environmental bucket).[6] At the time of the USACE 2004 Controlled Depth Report, depths in Wallabout Channel ranged from about 20 feet at MLW at the mouth of the channel to between 7 and 15 feet in the vicinity of the proposed mooring location. The Applicant conducted a bathymetric survey of the proposed dredge footprint and barge mooring area in August 2022 to confirm depths and determine the presence of NYSDEC littoral zone tidal wetlands. The hydrographic survey identified approximately 22,730 square feet (0.5 acre) of waters within the dredging area that are 6 feet deep or less at MLW (i.e., NYSDEC littoral zone tidal wetlands). The Project would result in permanent impacts from the conversion of wetlands within the federal navigation channel as waters are dredged to a depth of up to 20 feet. The Applicant and DOE would coordinate with NYSDEC during the permitting process regarding any mitigation required to offset the loss of NYSDEC littoral zone tidal wetlands within the dredged area. The Applicant and DOE would also coordinate with

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[5] The turbidity curtain would most likely be a Type III turbidity curtain or silt curtain, which is intended to control sediment and runoff in moving waters and moderate wind and wave conditions. Examples of Type I, Type II, and Type III turbidity curtains can be found at https://pipefloat.com/turbidity-curtains.

[6] An environmental bucket is similar to a conventional clamshell dredge but with additional features. These typically include a combination of covers, exterior pulleys, and sealed joints to reduce the amount of sediment that can spill or flow out of the bucket during dredging.

NOAA Fisheries to develop a Compensatory Mitigation Plan that would offset the 1.3 acres of aquatic habitat that would be permanently affected by shading from the FESS barges.

Dredging and pile driving would result in temporary impacts on water quality and aquatic biota, which would be minimized with implementation of BMPs to control sediment resuspension and underwater noise due to pile driving. The change in depth resulting from dredging and the overwater coverage and associated shading resulting from mooring the FESS would not result in significant adverse impacts on aquatic habitat and aquatic biota.

DOE has determined that the Project would be consistent with all applicable coastal policies of the State CMP, as administered by the New York State Department of State (NYSDOS), and initiated consultation with NYSDOS on June 2, 2023, provided in Appendix B as Correspondence B-1. Coordination with NYSDOS was still in progress as of May 2024; this would have to be completed prior to LPO’s final loan decision. Therefore, the Project would not result in significant adverse impacts on coastal resources.

Figure 6: Coastal Resources

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3.5 Floodplains

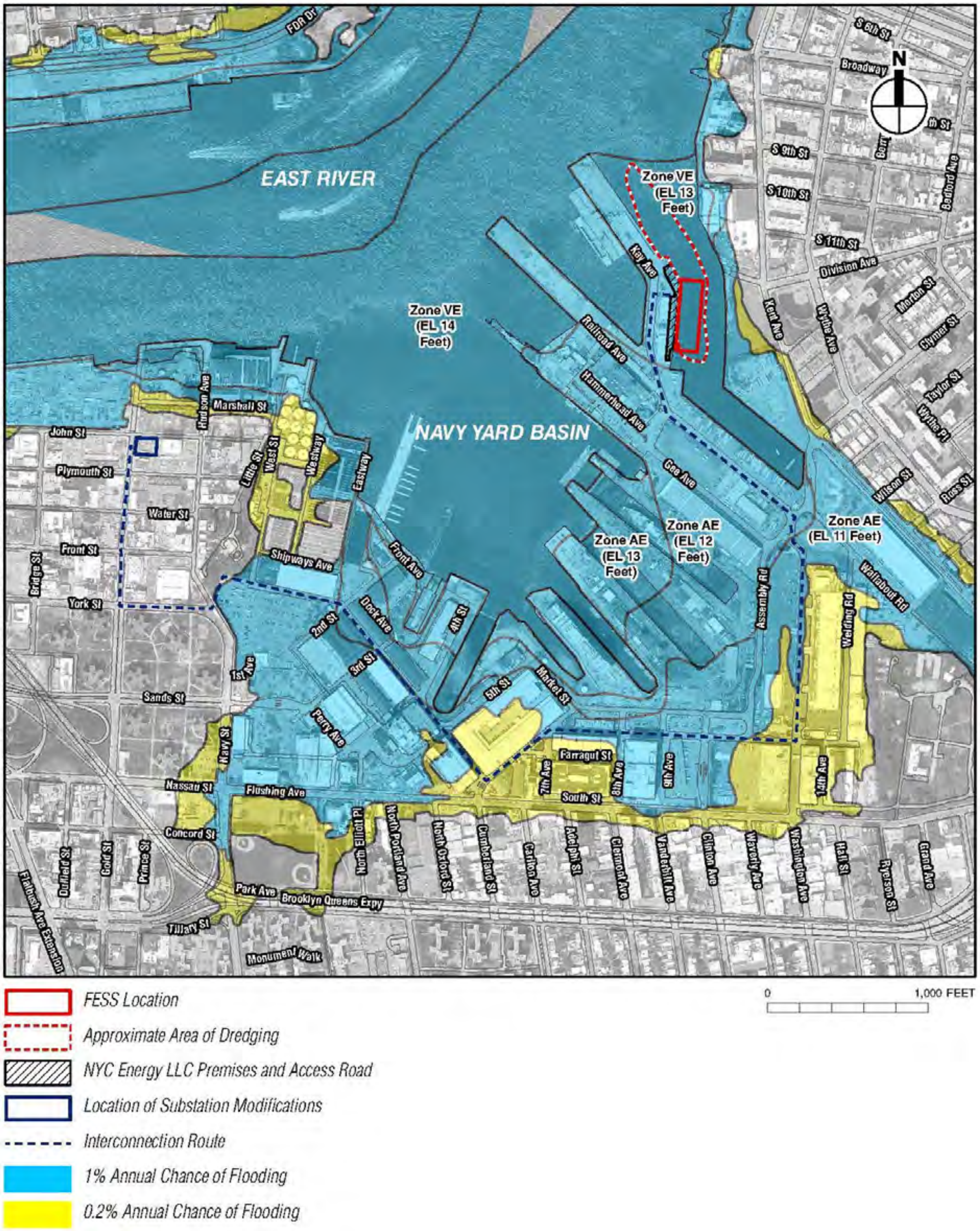
EO 11988, Floodplain Management, requires federal agencies, to the extent possible, to evaluate impacts associated with the occupancy and modification of floodplains and avoid direct or indirect support of development within the floodplain whenever there is a practicable alternative. EO 11988 and 10 CFR 1022, Compliance with Floodplain and Wetland Environmental Review Requirements, dictate that DOE must evaluate the effects of its actions on floodplains. Consistent with 10 CFR 1022.11(a), DOE determines whether federal actions in the 1 percent floodplain, or the 0.2 percent floodplain of a critical action facility, are in compliance with EO 11988. This process requires evaluating practicable alternatives to avoid development in floodplains or minimize adverse impacts if no practicable avoidance alternatives exist.

The Federal Emergency Management Administration (FEMA) uses Flood Insurance Rate Maps (FIRMs) to identify the boundaries of floodplains. Most of the Project site, except for portions of the interconnection area and the Hudson Avenue East Substation, is within FEMA's 2015 Preliminary FIRM, showing the 1 percent and 0.2 percent floodplains (see Figure 7). FEMA defines a floodplain with a 1 percent annual chance of flooding (i.e., the 100-year floodplain) as an area subject to inundation from a flood that has a 1 percent chance of being equaled or exceeded in any given year and the floodplain with a 0.2 percent annual chance of flooding (i.e., the 500-year floodplain) as an area subject to inundation from a flood that has a 0.2 percent chance of being equaled or exceeded in any given year.

The Project site is located at Berth 20 on Pier K in Wallabout Channel, which is within the floodplain with a 1 percent annual chance of flooding but with additional hazards due to storm-induced wave action (Zone VE) and a base flood elevation (BFE) of 13 feet, North American Vertical Datum of 1988 (NAVD88). Most of the interconnection route is within the floodplain with a 1 percent annual chance of flooding, Zone AE, with BFEs of 11 feet and 12 feet, NAVD88; however, a small portion of the route is within the floodplain with a 0.2 percent annual chance of flooding.

This EA constitutes a statement of finding pursuant to 10 CFR 1022.14, Compliance with Floodplain and Wetland Review Requirements. The floodplain within the Project area is affected by coastal flooding. However, coastal floodplains are influenced by astronomic tide and storm events rather than local flooding caused by precipitation. The Project's minimal occupancy of portions of the floodplain would not have adverse impact on flood elevation or increase risks due to flooding adjacent to the Project site. The Project's design has taken its location in the floodplain into account. Furthermore, resilient features would be incorporated. The mooring design for the FESS would allow it to rise and fall with any flood-related incident. The mooring piles would have the length necessary to secure the barges under BFE conditions as well as potential conditions associated with sea-level rise (SLR) for the Project's design life of 30 years. As such, the Project would not result in any direct or indirect effects on floodplains.

Figure 7: FEMA 2015 Preliminary FIRM



Data source: FEMA, January 2015 / NYS GIS Program Office: NYC Orthoimagery, six-inch resolution, captured April 2018

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3.6 Water Resources

3.6.1 Surface Water

The Project site is in Wallabout Channel, a manmade inlet in the lower East River, about 2 miles upstream of the Battery in Manhattan. Wallabout Channel is on the northeast boundary of the Brooklyn Navy Yard, in a highly developed section of New York City where the shoreline is bulkheaded or otherwise protected by manmade shoreline structures.

The channel is approximately 280 feet wide at the Project site. The mooring location for the barges is about 900 feet from the confluence of the channel with the lower East River. Wallabout Channel is navigable under USACE regulations, with an authorized depth of 20 feet at MLW; however, USACE has not provided a controlled depth report since 2004. At the time of the 2004 report, depths in Wallabout Channel ranged from about 20 feet at MLW at the mouth of the channel to between 7 and 15 feet in the vicinity of the proposed mooring location. A hydrographic survey conducted in August 2022 found that depths ranged from close to 0 feet at MLW at the head of the channel to about 50 feet at its mouth. Within the presumed dredging area, depths currently range from about 8 to 20 feet at MLW; localized depths are shallower close to the bulkhead. The substrate is primarily silt but with some clay and pockets of sand; the East River beyond the Project site provides some areas of gravel substrate. Sediments within the harbor estuary, including the East River and connected water bodies, are contaminated with pollutants such as chlordane and dichlorodiphenyltrichloroethane (DDT), metals such as mercury and copper, and various polycyclic aromatic hydrocarbons (PAHs). However, the levels of most sediment contaminants have decreased in recent decades (New York City Economic Development Corporation et al. 2022; Steinberg et al. 2004).

The Applicant collected sediment samples in June and July 2023 within the presumed dredging area, in accordance with a sediment sampling plan developed in consultation with the NYSDEC Division of Water, to evaluate the sediment that would be dredged and exposed by dredging. The results of laboratory analyses were compared with NYSDEC's Technical and Operational Guidance, Series 5.1.9, *Sediment Quality Threshold Values for Dredging, Riparian or In-Water Placement*. Sediments that would be dredged were also analyzed and compared to the NYSDEC Unrestricted Use Soil Cleanup Objectives (6 New York Codes, Rules, and Regulations [NYCRR] Part 375-6.8[a]), Restricted Use Soil Cleanup Objectives: Protection of Ecological Resources (6 NYCRR Part 375-6.8[b]), and the Restricted Use Soil Cleanup Objectives: Protection of Groundwater (6 NYCRR Part 375-6.8[b]) to develop disposal options. The sediments were also analyzed and compared to the New Jersey Department of Environmental Protection's Residential Ingestion – Dermal Soil Remediation Standard to develop disposal options. Leachate from the sediments was analyzed and compared to the New Jersey Department of Environmental Protection's Soil Leachate Remediation Standards for migration to groundwater exposure.

Sediments were found to be contaminated with metals (e.g., arsenic, cadmium, copper, lead, mercury, zinc), pesticides, chlorinated hydrocarbons, PAHs, and petroleum-related compounds. Dredging, sediment disposal, and post-dredging management of the presumed dredge area would be in accordance with state and federal requirements.

New York classifies its waters under the Clean Water Act in 6 NYCRR 890.6. Waters of the East River in the Project area are Class I, meaning they are suitable for fishing and secondary contact recreation; they are also suitable with respect to the survival and propagation of fish. The Project site is within the Inner Harbor study area of the Department of Environmental Protection's (DEP's) Harbor Survey monitoring program. Recent water quality data collected from DEP harbor survey Station E2 are presented below in Table 3 to characterize existing water quality conditions in the East River near Wallabout Channel. Station E2, which is downriver of Roosevelt Island, represents the main channel of the mid- and lower East River.

Table 3: DEP Water Quality Data for Sampling Station E2

Parameter	**Surface Waters**			**Bottom Waters**		
[Use Class I Standard]	**Min**	**Max**	**Avg**	**Min**	**Max**	**Avg**
Temperature (F) [*No standard*]	34.4	78.0	64.5	33.8	78.0	64.3
Salinity (psu) [*No standard*]	8.6	26.0	22.9	9.1	26.6	23.2
Dissolved oxygen (mg/L) [*No standard*]	1.1	12.8	5.9	0.9	12.9	5.9
Fecal coliform (cfu/100 mL) [*Monthly geometric mean no more than 2,400 cfu/100mL; no more than 20% of samples with 5,000 cfu/100mL*]	1	2,900	162.4	—	—	—
Enterococcus (cfu/100mL) [*EPA standard = 35 cfu/100mL*]	1	2,000	39.4	—	—	—
Secchi transparency (ft) [*No standard*]	1	6	3.4	—	—	—
Total suspended solids (mg/L) [*None from wastes that impair usage*]	0.3	73.0	14.5	6	49.0	21.2

Sources: *DEP Harbor Survey Water Quality Data, 2011–2021; 6 NYCRR Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations; EPA Recreational Water Quality Criteria (Office of Water 820-F-12-058).*
min = minimum; max = maximum; ave = average; psu = practical salinity unit; mg/L = milligrams per liter; mL = milliliters; cfu = colony-forming units; ft = feet

Between 2011 and 2021, surface water temperatures ranged from about 34°F to 78°F, with an average of 64°F at Station E2. Salinity ranged from about 8 to 26 practical salinity units (psu), with an average of 23 psu. Dissolved oxygen levels averaged 5.9 milligrams per liter (mg/L) in surface and bottom waters, with lower concentrations generally occurring in the warmer months of each sampling year. Average fecal coliform and enterococcus levels were comparable to those found in the open waters of New York Harbor; neither fecal coliform nor enterococcus levels have exceeded the requisite standards at any of the DEP harbor survey monitoring sites in recent years.

The Project would result in temporary direct and indirect effects associated with sediment resuspension during dredging and pile installation, which would result in a temporary and localized increase in turbidity. The use of a full-length turbidity curtain around the work area would minimize the potential effects of sediment resuspension within the waterway. Pile installation would be conducted intermittently over the course of a workday rather than continuously throughout construction, allowing resuspended sediments to dissipate as the work is conducted. The Project would use an environmental bucket for dredging to minimize the amount of sediment released from the bucket as it rises through the water column before releasing its contents in the scow. The bucket would be raised and lowered slowly to minimize sediment resuspension and the resulting turbidity. In addition, dredging would be conducted within the area behind the full-length turbidity curtain, to the extent practicable, and visible sediment plumes would be allowed to settle before moving the curtain to allow scows to enter or exit the area. Sediments that become resuspended during these activities would be contained within the perimeter of the turbidity curtain and would settle out of the water column within a few hours while the turbidity curtain remains deployed. No significant effects on water quality would occur because of sediment resuspension. The Project would not affect the water quality classification or designated uses of Wallabout Channel.

Operation of the Project would not have the potential to result in any discharges to Wallabout Channel or subsequent indirect effects on water quality. The battery storage units would be enclosed within energy storage containers and would not be exposed to precipitation. Stormwater runoff would be in contact with only the barges and storage container surfaces; the runoff would not adversely affect water quality upon discharge to Wallabout Channel. Therefore, the Project would result in temporary impacts on surface waters and no significant adverse impacts.

3.6.2 Wetlands

U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory mapping identifies the Project site as estuarine and marine deepwater habitat (E1UBL and E1UBLx), which is not considered a vegetated wetland (Figure 9). There are no freshwater State-regulated wetlands within the Project site. NYSDEC classifies the Project site as a littoral zone tidal wetland (see Figure 10), which includes lands that are under up to 6 feet of tidal waters at MLW. The hydrographic survey conducted in August 2022 identified approximately 22,730 square feet (0.5 acre) of waters within the dredging area that are 6 feet deep or less at MLW (i.e., littoral zone tidal wetlands).

As discussed above, temporary indirect impacts on NYSDEC littoral zone tidal wetlands outside the Project site due to sediment resuspension during construction would be minimized with use of a full-length turbidity curtain, an environmental bucket, and other BMPs during dredging. The Project would result in permanent direct impacts on littoral zone tidal wetlands due to conversion of the wetlands to deeper waters (i.e., with depths of up to 20 feet). The Applicant and DOE would coordinate with NYSDEC during the permitting process regarding any mitigation required to offset the loss of NYSDEC littoral zone tidal wetlands. The Applicant would be required to obtain authorization from USACE and NYSDEC prior to Project construction. Given the terms and conditions of the permits and authorizations the Applicant would be required to obtain, the Project would not result in significant adverse impacts on wetland resources.

Figure 8: NWI Wetlands

Data sources: U.S. Fish and Wildlife Services, May 2016; NYC Orthoimagery, six-inch resolution, captured April 2018

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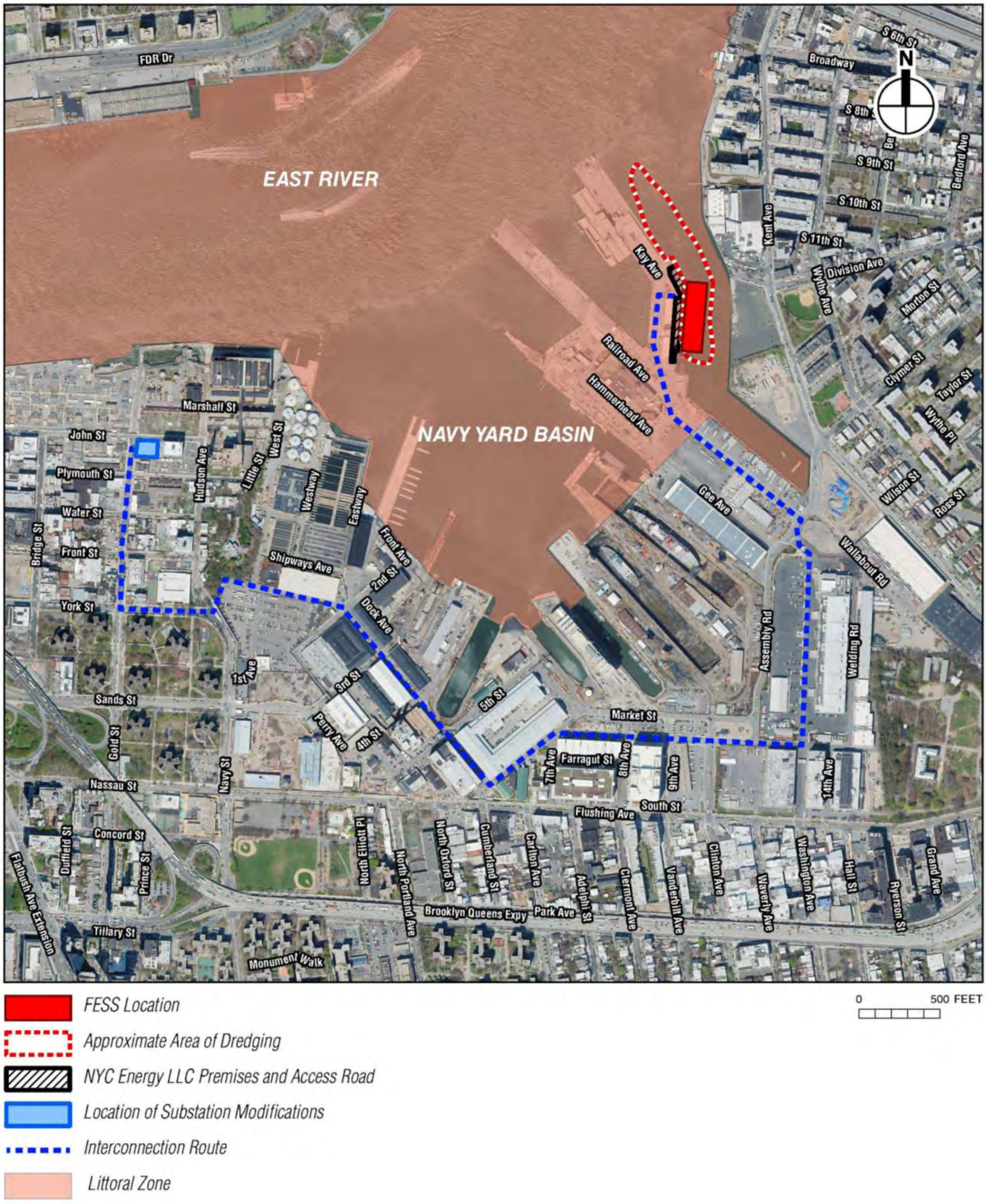
Figure 9: NYSDEC Littoral Zone Tidal Wetlands



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Data sources: New York State Department of Environmental Conservation, 2016; NYC Orthoimagery, six-inch resolution, captured April 2018

3.7 Soils and Geology

The U.S. Department of Agriculture's Natural Resources Conservation Service Soil Survey identifies five soil mapping units at the Project site: UrA (urban land, reclaimed substratum) and W (water) soil types at the barge location and UrA, UGCI (urban land-Greenbelt complex), and UtB (urban land, till substratum) along the transmission line path through city streets. Under existing conditions, the soils on-site are disturbed and associated with human activity and development. The shoreline at the Project site is straight, with its manmade bulkhead and a pile-supported portion on Pier K.

Construction of the Project would reshape the underwater topography within the dredging area but would not change the characteristics of existing soils. The installation of new interconnection cables, which would require trenching and backfilling, mainly in city streets, would result in temporary impacts on upland soils that would be negligible. At the completion of the utility installation, trenches would be backfilled and restored to the original surface grade and streets would be repaired as needed. Because dredging would not change soil characteristics, the interconnection cables would be installed within the existing right-of-way, and surface grades would not be permanently altered, the Project would not result in significant adverse impacts on soils and geologic resources.

3.8 Cultural Resources

As a federal agency, DOE must consider the potential effects of its funded actions on cultural resources and historic properties prior to engaging in any undertaking. This obligation is defined in Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and implemented by 36 CFR Part 800. The NHPA defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior." 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 NRHP, as found at 36 CFR Part 60. The term "eligible for inclusion in the NRHP" includes all properties that meet the NRHP listing criteria. Sites that have not yet been evaluated may be considered potentially eligible for inclusion in the NRHP; therefore, they 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 a undertaking may directly or indirectly affect cultural resources. Within the APE, DOE evaluated impacts on cultural resources for both standing aboveground structures and prehistoric or historic archaeological resources.

The New York State Historic Preservation Office (NYSHPO) maintains a regularly updated list of historic New York properties that are subject to NYSHPO and federal agency review. This list is accessible through the NYSHPO-maintained Cultural Resource Information System (CRIS). DOE evaluated the Proposed Action's potential effects on cultural resources in compliance with Section 106 of NHPA through a CRIS review, consultation with NYSHPO, and consultation with four federally recognized Native American tribes. DOE initiated consultation with the NYSHPO on January 17, 2023, to assess effects on historic properties. On March 16, 2023, the NYSHPO concurred with DOE's finding that the Project would have no adverse effects on historic properties (see Appendix B). Coordination with the tribes was initiated on October 24, 2022, and is ongoing. On November 21, 2022, the Delaware Tribe requested that work stop and notification be provided to them in the event of any unexpected archeological findings, which DOE agreed to.

3.8.1 Architectural Resources

Based on the proposed scope of work, DOE determined that the APE for the Project would be limited to the Project site, interconnection route, and Hudson Avenue East Substation, along with adjacent areas to evaluate potential indirect effects. Research conducted using the NYSHPO-maintained CRIS shows that a portion of the Project site and interconnection route is within the Brooklyn Navy Yard Historic District, which is listed on the New York State Register of Historic Places/NRHP (NR 13NR06474). Pier K (Structure 802) is described in the NRHP nomination form as dating to 1942. It has concrete foundations on steel piles and a bituminous concrete superstructure.

The FESS would be moored at Berth 20 on Pier K. The Project would require some minor modifications at the pier to accommodate an emergency access roadway, security fence, and trenching beneath the pier for the interconnection. The FESS barges would be moored to twelve 30-inch-diameter steel pipes. There would also be an electrical connection between the barges and the pier. The Substation L building (Building 390) is a shell of a one-story brick enclosure within the Project site on Pier K. The building, constructed in 1940, is a non-contributing resource to the Brooklyn Navy Yard Historic District. The building would be demolished with Project initiation; however, because of the building's non-contributing status, demolition would have no adverse effect. A salt shed (Building X29) on Pier K, adjacent to the Project site, is also a non-contributing resource; it was constructed in the early 2000s. The Norval building (Building X30) is another nearby non-contributing resource within the Brooklyn Navy Yard Historic District; it was constructed sometime after 1966.

Directly south of Pier K is a contributing resource, Structure 713, the Transfer Bridge, built in 1941. The nomination form indicates that the Transfer Bridge was converted to a pontoon bridge in 1977 and used to deliver new subway cars built in Japan in the 1980s. It has been abandoned since 1992 and is partially submerged.

The Project would introduce an industrial use within an existing industrial context. However, the FESS barges would be constructed off-site, thereby minimizing potential construction-related impacts on resources, such as affect the Transfer Bridge. Because the barges would be floated to the mooring site, with minimal construction needed to secure them against tidal movement, the Project would not have the potential to adversely affect the Transfer Bridge. The size and character of the barges would be similar to that of other industrial facilities in the Brooklyn Navy Yard and would not adversely affect the historic industrial character of the Brooklyn Navy Yard Historic District.

The interconnection route would follow streets between the FESS and the Hudson Avenue East Substation; it would also run beneath a surface parking lot and the Brooklyn Navy Yard Historic District. Some historic buildings are found outside the boundaries of the Brooklyn Navy Yard Historic District on the blocks adjacent to the streets where the interconnection cables would be installed, including houses within the Vinegar Hill Historic District, a New York City Landmark Historic District (LP-1952), and P.S. 307, the Daniel Hale Williams School, which is NRHP eligible (USN 04701.018537). The transmission cables along the interconnection route would be placed in a 24-inch-wide trench at a minimum depth of 36 inches, with a minimum cover of 26 inches. The interconnect would be no deeper than existing utilities, with the depth of each trench expected to be approximately 5 feet; the maximum depth near the substation is expected to be approximately 7 feet. Manholes would be installed at regular intervals and would be up to approximately 6 feet wide and 10 feet deep. The streets along the interconnect do not contain Belgian block pavers or other decorative historic paving treatments. NYC Energy would take all due precautions during installation of the transmission cables to avoid construction-related impacts on adjacent architectural resources. The interconnection would therefore have no adverse impact on architectural resources.

The Hudson Avenue East Substation houses the components needed to generate electricity; it does not contain architectural resources. Furthermore, there are no architectural resources within 90 feet of the

Hudson Avenue East Substation. Therefore, the Project would not result in construction-related impacts on architectural resources.[7]

3.8.2 Archaeological Resources

The interconnection route would follow existing streets; it would also run beneath a parking lot within the Brooklyn Navy Yard. The depth of the proposed utility installations within existing streets is not expected to extend beneath the depth of existing fill material.

Dredging of Wallabout Channel to a maximum depth of 20 feet at MLW would be required to allow barge access. Archaeological resources have not been identified at the Project site, either in Wallabout Channel or along the interconnection route. Therefore, the Project would not be expected to encounter artifacts. Should any unexpected resources be encountered during construction, the Applicant and DOE would coordinate with the NYSHPO to avoid adverse impacts. An Unanticipated Discovery Plan (UDP) has been developed to address any unanticipated discovery of archaeological resources or human remains during construction in the streets or Wallabout Channel. The UDP is attached to this document as Appendix E. The UDP outlines the protocols that would be followed in the event that such resources are unexpectedly encountered during construction, ensuring that no adverse direct or indirect impacts on archaeological resources would occur as a result.

3.8.3 Native American Interests

In conjunction with this EA and the NHPA Section 106 historical and archaeological review process, on October 24, 2022, and May 11, 2023, DOE sent a request to the following four federally recognized tribes for information on nearby cultural resources as well as any comments or concerns they had on the potential for such resources to be affected by construction of the Project (see Appendix B):

- Delaware Nation, Oklahoma
- Shinnecock Indian Nation
- Delaware Tribe of Indians
- Stockbridge-Munsee Band of Mohican Indians

Following submission of the letter, each tribe was contacted by telephone to ensure receipt of the letter and respond to any immediate questions or concerns. A written response was received from the Delaware Tribe of Indians on November 21, 2022, stating that there are no known religious or cultural sites in the Project area because of prior disturbance. The tribe requests that work stop in the event of an unexpected archeological discovery. No other comments were received. If cultural resources (e.g., human remains, lithics, pottery, remnants of older construction) are discovered during Project construction, work would cease immediately in the vicinity of the discovery and the NYSHPO, New York State Police (in the case of human remains), and appropriate Native American tribes, if applicable, would be notified. To offer guidance, the UDP for the Project has been incorporated into the Project Execution Plan, which would be on file in the on-site construction management office.

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[7] Technical Policy and Procedure Notices (TPPN) #10/88 was issued by New York City Department of Buildings on June 6, 1988, to supplement New York City Building Code regulations regarding historic structures. TPPN #10/88 outlines procedures for the avoidance of damage to historic structures that are listed in the NRHP or recognized New York City Landmarks/New York City Historic Districts resulting from adjacent construction, defined as construction within a lateral distance of 90 feet from the historic resource.

3.9 Aesthetic and Visual Resources

Aesthetic resources or viewsheds are areas of land, water, or other environmental elements that are 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. These include spaces that are readily visible from public areas and thoroughfares, such as public roadways, public parks, or high-rise buildings. If a viewshed is integral to the setting of a historic resource or part of the NHPA evaluation criterion for a resource's eligibility, it must be considered in any new development or renovation proposal.

The Project site is within the grounds of the Brooklyn Navy Yard, a former naval shipyard that is now an industrial park and partially within and adjacent to the Brooklyn Navy Yard Historic District, which is listed on the New York State Register of Historic Places/NRHP, as discussed in the "Cultural Resources" section, above. Wallabout Channel is 280 to 300 feet wide at the Project site, and the East River is approximately 2,000 feet wide at the mouth of the channel. Public views of the East River and opposite shorelines are available from waterfront areas and parks on each side of the channel and from the Williamsburg Bridge, approximately 2,000 feet north of the Project site. Public views into Wallabout Channel and the Project site are available from the Williamsburg Bridge, Schafer Landing, the terminus of Division Avenue, and Kent Avenue, across vacant lots and beyond a chain-link fence. Very limited boating activity occurs within Wallabout Channel; however, NYC Ferry vessels stop two or three times per hour on a daily basis at the South Williamsburg ferry stop, which is north of the Project site. Views of the Project site where in-water work and modifications to the pier would occur would be available primarily to ferry passengers, people using Schafer Landing, and motorists and pedestrians at the Division Street terminus. Limited views of the Project site would also be available to motorists and pedestrians passing by on Kent Avenue, boaters in the East River, and people on the Williamsburg Bridge. Views from within the Brooklyn Navy Yard are partially obscured by the existing salt shed and a trestle adjacent to the Project site.

The Project would require a 5.2-acre work zone within Wallabout Channel that would be active for a period of 4 to 6 weeks during dredging. Pile driving would then occur over 2 to 3 weeks, mooring would occur over a period of 2 weeks, and pier construction work would last about 6 months. During dredging, it is anticipated that one deck barge and two scows would be used to support equipment, store dredged material, and transport material for upland disposal at a licensed facility. A crew vessel may also be used to transport personnel to and from the barges. Installation of the piles would be conducted using a barge-based vibratory hammer once dredging is complete. Construction work on the pier would require trucks, backhoes, excavators, mobile cranes, and dump trucks. Views of the site would be generally similar to views under existing conditions but with the addition of working vessels in the channel. Given the industrial nature of the surrounding Brooklyn Navy Yard and the low profile of construction barges and other vessels, the temporary construction activity would not notably affect views from surrounding areas. Installation of the interconnection cable would be similar in scale to other periodic utility work that takes place. The interconnection cable would be within the Brooklyn Navy Yard for the majority of its route. Existing street conditions would be restored after the completion of work. Work at the Hudson Avenue East Substation would take place within the confines of the existing substation, which is in an industrial neighborhood, with the exception of work involving the crane that would be used to hoist the new GIS breaker into position from the street. Therefore, construction of the Project would have temporary effects on aesthetic resources.

The FESS barges that would be added to the channel would be similar to other industrial vessels that are currently moored within the Brooklyn Navy Yard, such as the *Matilde*, a cement barge that is moored at the same pier where the FESS barges would be moored. The barges would not significantly alter visual qualities viewed from either the pier itself or the surrounding areas. The FESS barges would be approximately the same height as the adjacent salt shed on the pier and the trestle to the south. The Project would be visible from the upper floors of several residential buildings on the east side of Kent Avenue but would not introduce any incompatible visual elements to the setting of the Brooklyn Navy Yard or eliminate any publicly accessible views of this visual resource. Working vessels have been a part of the visual context of the Brooklyn Navy Yard since it began operation. They continue to operate to the present day at the former naval shipyard, which has grown into a mixed-use industrial park. Operation of the Project would not result in a significant increase in nighttime light from security lights but would not result in substantial direct or indirect effects on aesthetic and visual resources.

Because of the design of the Project and the industrial nature of the surrounding area, there would be no significant adverse impacts of the Project on aesthetic and visual resources.

3.10 Biological Resources and Threatened and Endangered Species

3.10.1 Terrestrial Wildlife

Potential habitat for terrestrial wildlife near the Project site is extremely limited and restricted to a narrow strip of trees, shrubs, and opportunistic vegetation along the bulkheaded shoreline within the Brooklyn Navy Yard. Beyond the shoreline, the Brooklyn Navy Yard is otherwise developed with buildings, roads, and asphalt parking areas. It does not provide suitable habitat for many terrestrial wildlife species. The limited habitat within the vicinity of the Project site supports only urban-adapted generalist species that tolerate high levels of human activity and development. These include Norway rat (*Rattus norvegicus*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), and feral cats. The USFWS identifies 22 species of birds, which are protected under the Migratory Bird Treaty Act, and the bald eagle, which is protected under the Bald and Golden Eagle Protection Act, as having the potential to occur in the Project area (Appendix A-4).

Construction activities associated with the Project have the potential to result in temporary impacts on terrestrial wildlife. Species that occur in the vicinity of the Project site could be temporarily displaced because of increased noise and human activity during construction. Such activity could include the installation of piles as well as the interconnection cables and associated equipment in the Brooklyn Navy Yard. The cables would be installed beneath existing paved areas and would not result in habitat loss that could lead to future indirect effects on wildlife. Any displacement of wildlife from the Project site would be temporary and would not result in significant adverse impacts on the species, which are inherently habituated to conditions in urban habitats. In addition, individuals that occur near the Project site would be able to relocate to similar habitat within the Brooklyn Navy Yard and adjacent properties. Wildlife would be expected to return to the Project site at the completion of construction. The Project would not result in significant adverse impacts on terrestrial wildlife.

3.10.1.1 Terrestrial Threatened and Endangered Species

The USFWS Information for Planning and Consultation (IPaC) database identified five species that are listed under the Endangered Species Act (ESA) of 1973 (16 U.S.C. Chapter 35, Section 1531 et seq.) or candidate species with the potential to occur near the Project site, as indicated in Appendix B-4. These species are piping plover (*Charadrius melodus*; threatened), red knot (*Calidris canutus* rufa; threatened), roseate tern (*Sterna dougallii dougallii*; endangered), seabeach amaranth (*Amaranthus pumilus*; threatened), and monarch butterfly (*Danaus plexippus*; candidate).

Piping plover, red knot, roseate tern, and seabeach amaranth require sandy beach habitat, which does not occur at the Project site or in the vicinity; therefore, these species are not expected to occur in the area, even as transient individuals. All life stages of monarch butterfly rely on vegetated areas that support the growth of milkweed. Because the Brooklyn Navy Yard is highly developed and comprises large impervious surface areas, it is unlikely to provide vegetated habitat that would be suitable for milkweed or monarch butterfly. The Project would not result in adverse impacts on this species. Therefore, DOE has determined that there would be no significant adverse impacts to the terrestrial threatened and endangered species listed in this section.

3.10.2 Aquatic Biota

The aquatic community of the East River and connected water bodies, including Wallabout Channel, is similar in composition to that found throughout New York Harbor. Benthic macroinvertebrates found in the East River are largely classified as pollution-tolerant species, including aquatic earthworms, segmented worms, snails, bivalves, barnacles, amphipods, isopods, crabs, and shrimp (LMS 1980 and 1984; EA Engineering, Science, and Technology 1990). Wallabout Channel provides habitat for species in these groups that prefer soft substrate. In sampling conducted near the Project site, the most commonly found and widely distributed species in the lower East River near Wallabout Channel were oligochaete worms and two polychaete worm species, *Streblospio benedicti* and *Mediomastus ambiseta* (New York City Economic Development Corporation et al. 2022), both of which very likely occur in Wallabout Channel. The finfish community of the East River is typical of large coastal estuaries and inshore waterways along the Mid-Atlantic Bight. Hogchoker (*Trinectes maculatus*), tomcod (*Microgadus tomcod*), winter flounder (*Pseudopleuronectes americanus*), white perch (*Marone americana*), bay anchovy (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), and striped bass (*Morone saxatilis*) are commonly found within the East River during at least one life stage. Atlantic silverside (*Menidia menidia*), mummichog (*Fundulus heteroclitus*), northern pipefish (*Syngnathus fuscus*), striped killifish (*Fundulus majalis*), and three-spined stickleback (*Gasterosteus aculeatus*) are common to the East River year-round (National Marine Fisheries Service 2001; New York State Energy Research and Development Authority 2011). American eel (*Anguilla rostrata*), blueback herring (*Also aestivalis*), alewife (*Alosa pseudoharengus*), American shad (*Also sapidissima*), hickory shad (*Alosa mediocris*), striped bass, tomcod, and rainbow smelt (*Osmerus mordax*) are diadromous fish that may pass through the East River during migration between the Atlantic Ocean and their spawning areas in the upper Hudson River and its tributaries (New York State Energy Research and Development Authority 2011). Recent sampling efforts in the lower East River commonly observed Atlantic silverside, alewife, Atlantic menhaden, bay anchovy, bluefish (*Pomatomus saltatrix*), striped bass, winter flounder, oyster toadfish (*Opsanus tau*), and tautog (*Tautoga onitis*) in shoreline and nearshore portions of the East River. American eel, summer flounder (*Paralichthys dentatus*), spotted hake (*Urophycis regia*), weakfish (*Cynoscion regalis*), and white perch were also found in shoreline samples (New York City Economic Development Corporation et al. 2022). Any species found in the East River could be found in Wallabout Channel as they forage and migrate through the river.

Construction of the Project would result in temporary impacts on aquatic biota from sediment disturbance and noise from pile driving; temporary impacts would be related to dredging, the benthic footprint of the mooring piles, and overwater coverage from the FESS. To minimize increases in turbidity, dredging would be conducted in accordance with BMPs as well as USACE and NYSDEC permit conditions, which include restrictions on in-water construction. Restricted activities include in-water work from January 15 through May 31 to protect spawning winter flounder, sediment-disturbing activities from March 1 through June 30 to protect anadromous species, and dredging from November 15 through May 20 to protect overwintering striped bass. Dredging would be done with use of an environmental bucket to limit the amount of sediment released to the water column while the bucket is withdrawn. Pile driving would be conducted in accordance with NOAA Fisheries' conservation recommendations. These include limiting the use of impact hammers; instead, vibratory hammers would be used to seat the piles using a cushion block, a soft-start approach, and a bubble curtain. The Project would also adhere to restrictions for the protection of anadromous species and other regulated resources.

Dredging of 5.2 acres would increase depths by up to 20 feet at MLW and remove roughly 81,500 cubic yards of sediment. Although dredging would result in deeper waters, it would not represent a significant change in the character of the aquatic habitat available to fish and other organisms. Furthermore, it would not alter substrate characteristics because similar sediments are most likely present beneath those at the surface.

Mooring the FESS barges in Wallabout Channel would result in a 56,940-square-foot (1.3-acre) increase in overwater coverage compared to existing conditions in the channel. This shading of aquatic habitat resulting from the increase in overwater coverage would result in non-significant adverse impacts on aquatic biota from the alteration of habitat beneath the barges. However, some light would still penetrate beneath some portion of the barge over the course of the day, and similar habitat would continue to be available in the vicinity of the moored FESS barges. Appendix E includes correspondence between DOE and NOAA Fisheries regarding compensatory mitigation to offset shading impacts on Essential Fish Habitat, (EFH), as described in detail below. Compensatory mitigation would also be developed in coordination with NYSDEC to offset the Project's permanent impacts on aquatic resources (e.g., littoral zone tidal wetlands). Therefore, the Project would not result in significant adverse impacts on aquatic biota.

3.10.2.1 Essential Fish Habitat

NOAA Fisheries designates EFH within the vicinity of the Project site for 11 species. An assessment of potential impacts on EFH is provided in Appendix B-5. Because the Project would result in temporary impacts on aquatic habitat, it would also result in temporary impacts on EFH. Pursuant to the Magnuson-Stevens Act of 1976 (16 U.S.C. Chapter 38, Section 1801 et seq.) and 50 CFR 600.920, DOE initiated EFH consultation with NOAA Fisheries on May 9, 2023. NOAA Fisheries issued a response on July 25, 2023, that provided two conservation recommendations for the protection of EFH:

1. Continue to avoid in water work associated with dredging and the installation of piles between November 15 and June 30 to protect overwintering winter flounder and striped bass (11/15–4/15); spawning winter flounder, including those in early life stages (1/1–5/31); and migrating diadromous fish (3/15–6/30).
2. Develop a Compensatory Mitigation Plan to mitigate, in accordance with the 2008 Final Mitigation Rule and NOAA's Mitigation Policy for Trust Resources, for the 1.31 acres permanently affected by shading. This plan should be provided to us [NOAA Fisheries] for review and acceptance prior to finalizing the EA for the Project.

In-water work for the Project would be conducted in accordance with the time-of-year restrictions listed under Conservation Recommendation #1 for winter flounder, striped bass, and migrating diadromous fish. In coordination with NOAA Fisheries, a Compensatory Mitigation Plan has been developed to offset the impact from 1.31 acres being permanently affected by shading from the Project, in response to Conservation Recommendation #2. With these measures in place, the Project would minimize potential adverse impacts on EFH. Completion of DOE's EFH consultation was confirmed by NOAA Fisheries on April 23, 2024. Correspondence with NOAA Fisheries is provided in Appendix B-5, and the Compensatory Mitigation Plan is included in Appendix E.

3.10.2.2 Aquatic Threatened and Endangered Species

NOAA Fisheries identified federal ESA-listed shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), kemp's ridley sea turtle (*Lepidochelys kempii*), and leatherback sea turtle (*Dermochelys coriacea*) as having the potential to occur in the Project area. Appendix B-6 provides an assessment of potential impacts on these species.

Because the Project would result in temporary impacts on aquatic habitat, it would also have the potential to result in temporary impacts on sturgeon or sea turtles that could occur in the vicinity as they opportunistically forage and migrate through the East River. DOE initiated consultation with NOAA Fisheries, pursuant to the Section 7 of the ESA and 50 CFR 402, by submitting a biological assessment on May 8, 2023. On May 23, 2023, NOAA Fisheries concurred with DOE's determination that the Project is not likely to adversely affect any ESA-listed species under its jurisdiction.

3.11 Waste Management

A hazardous materials assessment was conducted for the Project site, in general conformance with ASTM Standard E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice. The assessment included a review of historical Sanborn fire insurance maps, historic topographic maps, and aerial photographs to determine previous on-site and adjacent land uses; a site inspection and general area characterization; an evaluation of state and federal regulatory database listings for the site and neighboring properties; and a determination of the need for further investigations to identify and quantify potential contamination and related liabilities. The assessment focused primarily on the FESS location but included a survey of the substation modification area and interconnection route.

Historic maps revealed that Wallabout Channel and surrounding areas have a long history of industrial and maritime uses, dating back to the 1800s. The Brooklyn Navy Yard was a ship building and repair facility with metal fabrication, painting, sand blasting, and electrical maintenance facilities. It was listed in several state and federal environmental databases, with 22 reported petroleum releases, six listings regarding State-registered petroleum and chemical bulk storage tanks, and six filed notification forms regarding hazardous waste generation. However, none of the listings were for areas within the Project site.

The Brooklyn Navy Yard, including the Project site, entered NYSDEC's Voluntary Cleanup Program (VCP) in May 1998 (NYSDEC Site No. V00120) to remediate past releases of metals, petroleum products, and polychlorinated biphenyls (PCBs). A few small areas of the site were excepted from the VCP and placed under separate NYSDEC consent orders to facilitate remediation involving the elevated concentrations of PCBs detected in surface and subsurface soils at these locations. Remediation of the yard was completed in 2018. The site is now subject to engineering controls instituted for the presence of residual contamination, which is being managed under a NYSDEC-approved Site Management Plan (SMP) (NYSDEC Site Number V00120). The SMP was prepared in accordance with NYSDEC's DER-10/Technical Guidance for Site Investigation and Remediation, dated May 2010, to manage remaining contamination at the Brooklyn Navy Yard in accordance with rules and regulations at 6 NYCRR 375 and NYSDEC's VCP for the site (Index No. 02-001-97-08, Site No. V00120). Construction activities proposed for the Project would be subject to the requirements of the SMP.

Given the age of the pier and on-site structures, asbestos-containing materials and lead-based paint may be present. On-site electrical equipment such as transformers, capacitors, fluorescent light fixtures, and voltage regulators may contain PCBs.

The Project would include a limited amount of shallow soil disturbance in the upland area at the site as well as trenching along the interconnection route and modifications to the substation. Such actions could encounter hazardous materials. Nonetheless, during construction, all subsurface work at the Brooklyn Navy Yard would be subject to the June 2018 NYSDEC SMP prepared by CORE Environmental Consultants, Inc. The plan describes the methods and procedures for any post-VCP remediation inspection, monitoring, and/or reporting to ensure the effectiveness of the remediation work. It also provides protocols for any future subsurface work subject to the plan. In accordance with an environmental easement placed on the Brooklyn Navy Yard property as part of the VCP, details regarding any intrusive construction activities at the Brooklyn Navy Yard must be presented to the NYSDEC for review and approval prior to conducting the work.

The SMP imposes an Excavation Work Plan that requires all hazardous materials encountered to be disposed of in accordance with all applicable state, federal, and local regulations. Contaminated materials would be identified during excavation through visual, olfactory, and/or instrument-based methods by a qualified environmental professional; soils exhibiting evidence of contamination using these methods would be set aside for characterization and potential off-site disposal in accordance with the Excavation Work Plan. The plan also requires all intrusive activities to be conducted in accordance with the procedures in the associated site-specific Health and Safety Plan and Community Air Monitoring Plan to protect workers, the navy yard, and surrounding community from potential impacts related to hazardous materials.

Soil-disturbing activities associated with the Project’s proposed electrical interconnection, including excavation within city streets and the installation of required improvements at Con Edison’s Hudson Avenue East Substation, are outside the jurisdiction of the Brooklyn Navy Yard SMP. However, these activities are common within New York City and governed by well-established regulatory programs that mandate specific control measures. The management of non-hazardous waste as well as construction- and demolition-related waste, often referred to as solid waste management, is regulated within New York State under 6 NYCRR Part 360. In lieu of a site-specific remedial construction management document, which would be necessary if and only if conditions are encountered prior to construction that require reporting a spill condition to the NYSDEC, Section 205 of the NYSDOT operations manual can be used to locate appropriate contingency guidance and protocols that address the handling of non-hazardous, hazardous, and/or petroleum-related soil. Should unanticipated contaminated materials be encountered during construction in an area that was not previously subject to a NYSDEC or New York City Office of Environmental Remediation–regulated program, then the contractor or the contractor’s representative would be responsible for reporting the condition to NYSDEC and managing the material accordingly, in accordance with 6 NYCRR Part 360. Section 205 of the NYSDOT operations manual identifies four types of construction-related material management plans that can be implemented proactively or in response to identifying contaminated materials:

- Contaminated Material Handling Plan
- Field Organic Vapor Monitoring Plan
- Sampling Plan
- Disposal Plan

Creating these or similar plans and following NYSDEC and/or New York City Office of Environmental Remediation regulatory requirements regarding an encounter with contamination would protect workers, the public, and the environment. NYC Energy would oversee contractor compliance with any and all activities related to hazardous material management.

Because of the engineering requirements associated with operation of the 138 kV transmission lines, which would serve as the Project’s interconnection to the regional transmission grid, NYC Energy would not be able to reuse excavated material. Heat generated by underground cables must dissipate through the soil. Accordingly, NYC Energy would backfill the trench excavations with clean soil having the required heat dissipation properties to ensure reliable operation. The excavated soil would be placed in dump trucks and moved to an appropriately licensed disposal location. Excavated material would not be stockpiled along the right-of-way or at off-site locations for reuse as backfill. This would further protect public health and the environment during construction.

The contractor(s) selected by NYC Energy to install the Project's interconnection and make the improvements at the Con Edison substation would be required to observe excavation activities to determine the potential for contaminated soils through indicators such as the presence of free product, stained soils, and oil or chemical odors. Photoionization air monitoring equipment, such as an organic vapor meter, or flame ionization devices, such as an organic vapor analyzer, can also be used. If it is determined by the contractor that contaminated soils may be present, the contractor would be required to stop all excavation activities and notify NYC Energy representatives to coordinate soil testing and make required agency notifications. Based on standard industry practice, the soil samples obtained would be analyzed for PCBs and total petroleum hydrocarbons. In addition, toxic characteristic leaching procedure (TCLP) testing, minus TCLP herbicides and TCLP pesticides, would also be conducted. Should the results of the testing determine that contaminated soils are in fact present, the contaminated soils excavated would be disposed of by a NYSDEC-licensed contractor at a facility that has been licensed to accept such material, in accordance with applicable laws.

With these protocols in place, the Project would not result in significant adverse impacts due to hazardous materials.

3.12 Noise

The Noise Control Act of 1972 required EPA to create a set of noise criteria. In response, 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 day-night average sound level (L_{dn}), which is a descriptor for cumulative 24-hour exposure to the equivalent sound level (L_{eq}),[8] below 70 A-weighted decibels (dBA) would protect the majority of people from hearing loss. The U.S. Department of Housing and Urban Development noise standards describe exterior L_{dn} noise levels of less than 65 dBA as "acceptable" and between 65 and 75 dBA as "normally unacceptable."

Noise criteria, as well as the factors used to evaluate Project noise, are dependent on the types of land uses in the vicinity. Land uses near the site include residences and open space along the Brooklyn Waterfront, both within and north of the Brooklyn Navy Yard. The dominant sources of ambient noise in the area include vehicular traffic on Kent Avenue, ferry noise associated with the South Williamsburg Ferry Terminal, and noise from aircraft overflights, including helicopters. As a result of the vehicular traffic and helicopter overflights, existing noise levels at the receptors proximate to the site are relatively high for open space areas.

The Project would result in temporary pollutant emissions during construction from dredging Wallabout Channel and installing mooring piles; installing transmission cables and new equipment at the Hudson Avenue East Substation, requiring excavation for a trench and a small foundation; installing switching equipment on the pier; and constructing a roadway on the pier to allow emergency access to the site. Construction would be limited to daytime hours between 7:00 a.m. and 6:00 p.m.; would comply with New York City noise control requirements, as specified in Title 24, Subchapter 4, Construction Noise Management, Chapter 2, Noise Control; and would employ standard noise control devices (e.g., perimeter fencing or portable barriers with acoustic insulation). The temporary increases in noise during the construction phase are expected to occur over the course of approximately 18 months, with pile driving, the most noise-intensive construction activity, occurring over the course of approximately 2 to 3

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[8] Equivalent sound level is the constant sound level that, in a given situation and time period, conveys the same sound energy as the actual time-varying, fluctuating sound. It considers the instantaneous noise levels experienced and the duration and frequency of occurrence of that noise.

weeks. The Applicant anticipates that pile driving would be conducted primarily with use of a vibratory hammer, which produces lower levels of noise than an impact hammer. The Applicant would use an impact hammer to drive piles for only the last few feet of installation at each pile. Consistent with the guidance in Section 28-102(B)(vi) of the New York City Citywide Construction Noise Mitigation Rules, the Applicant would use a cushion block to reduce impact noise from pile driving with an impact hammer. Despite the measures to reduce construction-generated noise, construction equipment may generate noise levels at nearby residential and open space areas that would be readily noticeable. However, the noise-intensive construction tasks would occur over a limited period. Furthermore, the open-space areas nearest the construction work areas have active recreational uses, such as baseball fields and playground equipment, which are not expected to be noise sensitive; therefore, the increase in noise from construction would not substantially affect use of this area during the period when the increased noise would occur. In addition, construction would normally not occur on weekends, which is when open spaces experience the highest use levels. Final submission of a noise mitigation plan, as required by Section 24-220 of the New York City Noise Code, would be the responsibility of the construction contractor. The plan would include details regarding the use of vibratory hammers versus impact hammers for pile driving, the use of a cushion block for impact pile driving, the construction timeline, daily and/or weekly schedules, and estimates of construction noise durations. Construction associated with the Project would result temporary noise impacts.

All equipment included in the Project would be designed to meet all applicable noise regulations, including Subchapter 5, Section 24-227, of the New York City Noise Code; the New York City Department of Buildings Code; and the New York City Zoning Resolution, Manufacturing District Performance Standards, Section 42-21. The equipment required for Project operation would include inverters as well as heating, ventilation, and air-conditioning units for the battery storage equipment. All equipment would be designed to comply with current regulations through the use of noise control measures, which may include the use of acoustical louvers or baffles, acoustically treated ductwork, and/or sound barriers. By meeting the stringent noise emission levels described above and adhering to the acoustical performance specifications for Project equipment, the final design of the Project would not result in any significant increase in ambient noise levels. Consequently, the Project would not result in significant adverse noise impacts.

3.13 Transportation

Traffic in the vicinity of the site is limited; the Brooklyn Navy Yard is not generally open to the public, except by appointment. Access to the Brooklyn Navy Yard for vehicles and pedestrians on Kent Avenue, Flushing Avenue, and Navy Street is available from four gates located along Sand Street, Cumberland Street, Clinton Street, and Clymer Street. Two additional gates are located along Wilson Street and Washington Avenue. The interconnection route is beneath York Street and Gold Street, outside of the Brooklyn Navy Yard. The Hudson Avenue East Substation is bordered by John Street, Hudson Avenue, Plymouth Street, and Gold Street. Interstate 278, a six-lane limited-access highway, is approximately 0.5 mile east of the site. Public transportation near the site consists of ferries, subways, and buses. A NYC Ferry stop is located within the Brooklyn Navy Yard; another is located in South Williamsburg. Subway stations are located at Fulton Street, Clinton-Washington Avenue, and Classon Avenue, approximately 1.25 miles south of the site, and at Marcy Avenue approximately 0.75 mile east of the site across Wallabout Channel. The B48, B57, B62, B67, and B69 bus lines all stop within or near the Brooklyn Navy Yard. The Brooklyn Navy Yard is a bike-friendly environment, and dedicated bike lanes are available outside of the yard on Navy Street, Flushing Avenue, and Kent Avenue.

The East River is a navigable waterway. Therefore, a Private Aid to Navigation permit from the U.S. Coast Guard would be obtained prior to Project construction to ensure no adverse impacts on navigation. As part of its approval process for authorization of the Project, USACE would coordinate internally under Sections 10 and 14 of the Rivers and Harbors Act (33 U.S.C. 408) to ensure no Project-related impacts on navigation within the federally authorized channel.

The FESS would be unmanned. There would be no traffic associated with its operation, apart from periodic maintenance inspections. The barges would be constructed off-site and would be towed unmanned to the Brooklyn Navy Yard. They would be floated into final position in Wallabout Channel by tugboat. The battery storage containers, materials and equipment for work on the pier, the interconnection cables, and the materials and equipment needed for modifications to the Hudson Avenue East Substation would be transported by truck. Up to 8 containers per day over a period of up to 45-days containing the batteries would be delivered by truck to the site. There would be up to 8 trucks per day, each carrying one of the standard-sized shipping containers. Trucks would approach the site regionally using Interstate 278 approximately 0.5-miles east of the site, and then exit to Flushing Avenue, a NYCDOT-designated local truck route[9], to enter the site. The site roadway connections with Interstate 278 and the local truck route on Flushing Avenue will facilitate permitting of oversize loads with NYCDOT. The procurement of any “heavy haul” or “oversize load” permits required for the final approved route would be the responsibility of the trucking company. This low level of daily activity, when distributed into hourly activity overlapping with peak background traffic periods on Flushing Avenue and Interstate 278, would not have a significant impact on traffic.

The Brooklyn Navy Yard, including Pier K, is not open to regular vessel calls. Direct and indirect effects on traffic due to increases in the number of passenger vehicles for construction workers would be negligible, short term, and limited to the duration of construction. Up to 80 workers would be needed for construction; all would be expected to arrive on-site from locations outside the Brooklyn Navy Yard. Personnel would travel to the site either by NYC Ferry or by walking, biking, or taking public transportation. In-water work would result in a temporary increase in the number of construction vessels at the site for the duration of dredging and pile installation. It is currently anticipated that construction would require one crew boat, two scows, and one deck barge during dredging and one deck barge during pile installation. This increase in vessel traffic would result in temporary impacts on vessel traffic in the East River and Wallabout Channel.

Construction vessels would not interfere with navigation and would not remain in the area following the completion of construction. To ensure that construction vessels associated with the Project would not interfere with regional navigation, NYC Energy would consult with the Port of New York/New Jersey Harbor Safety, Navigation, and Operations Committee. The committee meets on a monthly basis and includes major navigational stakeholders in the New York City region, including the U.S. Coast Guard, USACE, the Maritime Administration, Port Authority of New York and New Jersey, pilots, ship operators, tug/barge operators, NOAA, small passenger vessel operators, first responders, and others. It is anticipated that, as a result of consultation, Project contractors would be required to inform the U.S. Coast Guard of Project-related vessel activity. Such activity would be included in the Local Notice to Mariners for the New York City region, which is issued on a weekly basis by the U.S. Coast Guard. This would ensure that navigational stakeholders would be informed of the Project and aware of Project-related vessel traffic. Therefore, the Proposed Action would not result in significant adverse impacts on vessel traffic in the East River.

3.14 Health and Safety

EO 13045, Protection of Children; the Department of Homeland Security National Response Framework (January 2008; updated October 2019); and the New York State Department of Health public and human health standards protect vulnerable populations from risk and harm.

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[9] https://www.nyc.gov/html/dot/downloads/pdf/map-2022-truck-map.pdf

The Project site is served by the New York Police Department's 88th Precinct; the Hudson Avenue East Substation is served by the 84th Precinct. Fire Department of New York City (FDNY) Engine 211/Ladder 119 are approximately 0.5 mile southeast of the site, and FDNY's Marine 6 waterborne unit is based at an adjacent pier only 750 feet from the site. Brooklyn Hospital Center is approximately 1 mile south of the site.

Standard BMPs and applicable federal, state, and local regulations and standards for construction and operation of the facility would be implemented to ensure the safety of workers and the public. This would include compliance with federal Occupational Safety and Health Administration regulations.

An FDNY letter of approval for "outdoor stationary storage battery systems" would be required for the Project. Therefore, the Applicant is closely coordinating with the FDNY regarding the siting and design of the Project. At the initiation of Project development, NYC Energy met with FDNY representatives on February 12, 2019, to introduce the Project. At the meeting, the Project's waterborne location was cited by Battalion Chief Richard Schlueck of the Special Operations Command as being the safest place to locate energy storage systems in urban areas. The Special Operations Command is a team of specialists who assist the regular firefighters in unique or highly critical situations.

Because the Brooklyn Navy Yard is an industrial park with limited access, the population in immediate proximity to the Project site is minimal. The FESS would house lithium-ion or lithium-iron-phosphate batteries within stacked storage containers that would be outfitted with cooling units and remote monitoring systems. The FESS barges would be outfitted with a fire suppression system, consisting of a dry standpipe with sprinklers over each energy storage container. The system would be accessed by the FDNY through an exterior connection.

The Project would not result in any temporary impacts on public health and safety during the construction period. The Project would protect public health and safety through design features such as a fire suppression system; operational protocols, including 24/7 remote monitoring of the FESS 365 days a year; and close coordination with the FDNY. Therefore, the Project would not result in any significant adverse impacts on public health and safety.

3.15 Cumulative Impacts

Cumulative impacts are potential effects on the environment from the incremental impact of the Project when added to other past, present, and reasonably foreseeable future actions undertaken by other agencies (federal or nonfederal) or persons (40 CFR Part 1508.1[g]). Projects were identified through a review of active project lists as well as the Brooklyn Navy Yard Master Development Plan (BNY Master Plan), with additional information provided by the Applicant. The review identified the following current and reasonably foreseeable future projects:

- Two planned mixed-use development sites identified in the BNY Master Plan, one on the east side and one on the west side of Wallabout Channel, both south of the Project site. The developments would include waterfront open space along either side of the channel.
- A planned mixed-use development site identified in the BNY Master Plan north of Flushing Avenue and west of the Washington Avenue Gate. This development would include public open space.
- A planned mixed-use development site identified in the BNY Master Plan at the parking lot north of the Sands Street Gate. This development would include public open space.
- A proposed commercial development at 500 Kent Avenue, which is planned to include 750,000 square feet of office and retail space, an underground parking garage, and 37,000 square feet of public open space along Wallabout Channel, directly opposite the Project site.

LPO reviewed the identified projects in the region to determine the resources that may be subject to a cumulative impact. The review focused on resources that may be affected by both the Project and other projects in the region. Based on this review, the following resources were evaluated for cumulative impacts:

- Biological resources
- Air quality and climate change
- Greenhouse gas emissions and climate change

The Project, when considered together with the identified projects in the region, would not have the potential to result in significant cumulative impacts on other resources because of geographic location and separation of the projects, the disturbed nature of the project sites, and/or the lack of construction or operational overlap that would result in an incremental impact on a particular resource.

3.15.1 Biological Resources

Construction activities associated with the Project as well as any of the mixed-used or commercial developments planned for the area would result in negligible cumulative impacts on terrestrial habitats and the wildlife species that occur in the area, which are common urban-adapted species and acclimated to anthropogenic noise. The effect on wildlife would be limited to temporary avoidance of the construction areas. The Project site and surrounding areas are heavily developed industrial and commercial sites that offer limited habitat to only species that are tolerant of disturbance. Construction in these areas would have negligible temporary effects on wildlife. There is no potential for permanent cumulative impacts on terrestrial habitat because the Brooklyn Navy Yard beyond Berth 20 at Pier K is developed with buildings, roads, and asphalt parking areas. It does not provide suitable habitat for many terrestrial wildlife species; therefore, the Project would not result in the loss of suitable habitat. The other projects that would be developed in the vicinity of the Project site would not involve in-water construction activities or create permanent in-water structures. There is no potential for cumulative impacts on aquatic biota. Therefore, cumulative impacts on biological resources associated with the operation of the Project and the other projects in the region would not be significant.

3.15.2 Greenhouse Gas Emissions and Climate Change

Climate change is driven by the collective contributions of diverse individual sources of emissions to global atmospheric GHG concentrations. It is projected to have wide-ranging effects on the environment, including rising sea levels, changes in precipitation levels, and increases in temperature. Although an individual proposed project may have an insignificant impact on GHG emissions, identification of the emissions can help decision-makers develop practicable opportunities for reducing GHG emissions and ensuring consistency with policies aimed at reducing overall emissions.

The Project would not add any new GHG emission sources. The FESS would charge directly from the NYISO-controlled NYS Transmission System during nighttime offshore wind generating hours. The stored energy would be available for discharge to the NYS Transmission System during peak energy demand periods. Therefore, the Project would reduce regional pollutant emissions associated with electricity generation during peak energy demand periods. The reduction in GHG emissions associated with shifting 1,200 MWh of electricity generation from peak energy demand periods to baseload generation conditions for the New York City Panel on Climate Change/Westchester Emissions and Generation Resource Integrated Database (eGRID) subregion is anticipated to result in an annual reduction in carbon dioxide equivalent (CO_2e) emissions of approximately 62 metric tonnes each year (i.e., going from 507 metric tonnes during peak energy demand periods to 445 metric tonnes under baseload conditions). The estimated annual net benefit to society would be between $1,056 and $10,497 per year for the average social costs of GHG emissions[10] with a 5 percent discount and the 95th-percentile cost with a 3 percent discount, respectively.[11] GHG emissions associated with construction of the Project would be minimal compared to these reductions. Consequently, the Project would be consistent with State targets under the Climate Leadership and Community Protection Act (i.e., for 70 percent of the state's electricity be produced from renewable resources by 2030 and a 100 percent carbon-free grid to be in place by 2040) and would offset any potential emissions associated with electricity consumption from the mixed-used or commercial developments. Energy storage would help integrate clean energy generated by solar as well as onshore and offshore wind projects throughout the state. In general, the potential benefits associated with reducing GHG emissions could reduce associated climate change impacts (e.g., increases in atmospheric temperatures, changes in precipitation, increases in the frequency and intensity of extreme weather events, rising sea levels).

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[10] Costs associated with emissions of CO_2, methane, and N_2O were estimated.

[11] Interagency Working Group on Social Cost of Greenhouse Gases. 2021. *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under Executive Order 13990.* February 2021.

4. DRAFT FINDING

Based on this EA, DOE has determined that providing a federal loan guarantee to Empower Brooklyn, LLC, to fund the construction and startup of the Project, as described in Section 2, will not have a significant effect on the human environment. Preparation of an environmental impact statement is therefore not required, and DOE is issuing this Finding of No Significant Impact.

This Finding of No Significant Impact should not be construed as a final decision about issuance of a loan guarantee.

Todd Stribley
NEPA Compliance Officer
DOE Loan Programs Office

Date

5. LIST OF AGENCIES CONTACTED

U.S Fish and Wildlife Service

NOAA Fisheries, Office of Habitat Conservation

NOAA Fisheries, Office of Protected Resources

New York State Historic Preservation Office

Delaware Nation

Shinnecock Indian Nation

Delaware Tribe of Indians

Stockbridge-Munsee Band of Mohican Indians

New York State Department of State

6. LIST OF PREPARERS

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Claudia Cooney, Historic Preservation, 28 years of experience

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APPENDIX A SUPPLEMENTAL ALTERNATIVES ANALYSIS

Supplemental Alternatives Analysis

A. INTRODUCTION AND PROJECT PURPOSE AND NEED

NYC Energy LLC intends to construct and operate a floating battery energy storage system (FESS) providing up to 300 MW / 1200 MWhr of energy storage capacity using stacked energy storage containers and associated critical equipment located on three side-by-side barges manufactured for the Project and moored in Wallabout Channel in the Brooklyn Navy Yard.

The proposed FESS will, in part, assist New York State and New York City in adapting to climate change in a timely manner and lessening the intensity of the effects of climate change through the reduction of greenhouse gas emissions and strengthening resiliency measures. To address the threats posed by climate change, in 2019 the Climate Leadership and Community Protection Act (CLCPA) was signed into law. The CLCPA establishes a target/goal for New York State to achieve 100 percent zero-emission electricity by 2040, with 70 percent of the State's electricity generated from renewable energy sources by 2030. A key component to achieve NYS's clean energy targets/goals rests with the development of battery energy storage systems, which will enhance the operational flexibility and efficiency of the electric grid to balance the integration and use of energy generated by alternative renewable energy sources. For New York City, the development of energy storage is critical to integration of electricity generated by offshore wind into the City's electric transmission grid. New York State is building 9,000 MW of offshore wind by 2035, the majority of which is anticipated to connect directly into New York City. Wind turbines often produce more energy than is immediately consumed, and energy storage systems are needed to store the surplus electricity during periods of high wind production. This surplus energy is then readily available for use when the wind is limited, such as during calm periods, at night, or during power outages. Accordingly, the development of energy storage facilities and increasing transmission system efficiency represents critical first steps toward the integration and delivery of power generated by offshore wind to meet New York City's electric demand. By storing the excess energy generated, energy storage systems ensure a consistent and reliable power supply, maximizing the benefits of offshore wind.

Considering the above, the CLCPA established a target/goal to develop 3,000 MW of battery energy storage capacity in New York by 2030. In her January 2022 State of the State Address, New York Gov. Kathy Hochul announced plans to double the state's energy storage deployment target to at least 6,000 MW by 2030. Governor Hochul also called for an updating of New York State Department of Public Service's (NYSDPS) and New York State Energy Research and Development Authority's (NYSERDA) energy storage deployment Road Map. In December 2022, NYSERDA and NYSDPS released New York's 6 GW Energy Storage Roadmap (Roadmap 2.0) that builds on the prior work efforts and provides recommendations to cost-effectively achieve the increased storage target. The FESS will help to integrate the clean, renewable power generated by offshore wind projects into New York City's electric transmission grid. The development of energy storage within New York City will lessen the City's dependence on its oldest fossil fuel-fired generating assets, particularly during peak energy demand periods, and will maximize the use of electricity provided by offshore wind. Therefore, this transition will not only reduce the carbon footprint of older energy generation units and fossil fuel peaker plants within New York City, but it will also result in a net improvement in air quality for New York City residents. The FESS reduces the need for the operation of legacy, fossil fuel generators to meet periods of increased electricity demand. However, as intermittent renewable power sources, such as wind, provide a larger proportion of New York City's electric generation mix, battery energy storage systems will be critical to overall system reliability. Functionally, energy storage facilities will be used to smooth and time-shift renewable generation and minimize curtailments. Therefore, battery energy storage facilities are key to the successful integration of alternative energy sources into Con Edison's renewable energy generation portfolio.

In addition to supporting the state policy goals established by the CLCPA, the proposed FESS could also serve as a mobile emergency power system that would result in deployment of the FESS (or a portion thereof) out of the Brooklyn Navy Yard. As a mobile emergency power system, the FESS can be deployed anywhere along the NYC inner coastal water way system near a point of interconnection (including mobile substations deployed during an emergency by Con Edison or OEM) that has existing mooring capabilities and sufficient water depths to accommodate the barges. The FESS when used as an emergency power system can be interconnected and ready to operate after a catastrophic event or when notified by the authorities (e.g., Con Edison, NYC Office of Emergency Management (OEM), etc.). The FESS is designed to be able to be quickly dispatched as a mobile emergency power system that can be moved to locations in need within the NYC area, as required by the relevant authority. As a mobile emergency power system, the FESS would provide emergency support for the Con Edison distribution system or critical customer (e.g. hospitals, water treatment plants, etc.), commercial buildings as well as supply connections to meet Con Edison's critical customer load at an impacted location.

The purpose of this Alternatives Analysis is to provide a detailed evaluation of the site and design alternatives contemplated for the FESS Project with consideration of water dependency and the purpose and need for the project. The siting of water dependent uses is central to the New York State Department of Environmental Conservation's (NYSDEC) Protection of Waters regulatory program,[1] the Tidal Wetlands Regulatory Program[2], and to the New York State Coastal Management Program administered by the New York State Department of State (NYSDOS). Under the NYSDEC Protection of Waters regulations (6 NYCRR §608.1) and the NYSDOS Coastal Management Program (CMP), a water-dependent use is defined as "an activity which can only be conducted on, in, over or adjacent to a water body because such activity requires direct access to that water body, and which involves, as an integral part of such activity, the use of the water." NYSDEC must consider a project's water dependency when issuing a permit under Part 608 and/or 661, and NYSDOS must consider water dependency in its determination of consistency with the CMP. When a project is not objectively water dependent in accordance with the definition under Part 608, it must demonstrate that there are no practicable alternatives to the proposed waterfront site. Similarly, in evaluating an application for permit under the Tidal Wetland regulatory program, the applicant must demonstrate that the project is reasonable and necessary, considering such factors as reasonable alternatives to the proposed regulated activity and the degree to which the activity requires water access or is water dependent. Under the New York

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[1] 6 NYCRR Part 608

[2] 6 NYCRR Part 661.9(b)(1)(iii)

State CMP, a non-water-dependent project sited at the waterfront must not hinder future water dependent uses appropriate for that location.

This analysis incorporates information provided previously in an Alternatives Analysis memorandum[3] that was included in the Joint Application for the project submitted on November 3, 2023, supplemented by additional information and analyses where appropriate.

B. PROJECT DESCRIPTION AND BACKGROUND

The design of the proposed FESS Project includes three barges equipped with battery energy storage containers and associated equipment moored within Wallabout Channel. Each barge will have a 100 MW capacity, for a total of 300 MW capacity for the Project. The FESS will be moored in Wallabout Channel at Berth 20 of Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York (**Figure 1**). A portion of Wallabout Channel will be dredged to the U.S. Army Corps of Engineers (USACE) authorized depth of 20 feet at mean low water (MLW) to allow access for the barges. The FESS will either be constructed offsite and floated into place, or it will be assembled once the barges are in place with the battery units delivered to Pier K by truck. The Project will interconnect to the New York Independent System Operator (NYISO)-controlled New York State Transmission System (NYS Transmission System) via two 138 kV interconnection cables that will run beneath public and private rights of way to the existing Hudson Avenue East 138 kV Substation in Brooklyn, which is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison). The barges will remain moored at the shoreline and connected to the grid for the duration of NYC Energy's 30-year lease term with the Brooklyn Navy Yard Development Corporation and a co-terminus lease of lands underwater with the New York State Office of General Services.

PREFERRED ALTERNATIVE

The FESS comprises three barges, each measuring 146 feet long by 130 feet wide (56,940 square feet total) and equipped with battery energy storage containers and associated equipment within Wallabout Channel. When fully loaded, the barges will have a maximum draft of approximately 16 to 18 feet and will require dredging of 5.2 acres within Wallabout Channel to the USACE authorized depth of 20 feet at MLW with one foot of allowable overdredge. The barges will accommodate three levels of stacked battery storage units and each barge will have a total height of approximately 60 feet above the main barge deck. As shown in **Attachment 1**, each barge will contain: battery storage units, an equipment room, and a control room containing switch gear and communications equipment for the battery storage units. The control room and equipment room must be located on each barge and not on Pier K to support the potential use of each barge independently for emergency deployment.

The barges will be moored using up to twelve 30-inch diameter steel pipe piles installed in Wallabout Channel off Berth 20 of Pier K at the Brooklyn Navy Yard. The piles will be outside the federal navigation channel and will contain a total of 33.5 cubic yards of flowable concrete below spring high water (SHW) and mean high water (MHW). The barges will meet all U.S. Coast Guard requirements to be certified as vessels, including the ability to be used as a means of transportation on water which ensures they can get underway and be moved out of the federal

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[3] Memorandum from AKRF to DOE dated June 26, 2023, "Alternatives Analysis for Floating Battery Energy Storage System (FESS) Project in Wallabout Channel, Brooklyn Navy Yard, New York."

channel within a reasonable amount of time. The moorings and the utility interconnections are designed to enable the barges to be quickly and easily separated from land, if required.

C. SITE AND DESIGN CONSTRAINTS

As described in the sections below, to facilitate the provision of battery storage capacity and the retirement of fossil-fueled peaker plants in accordance with New York State's CLCPA energy goals and New York's 6 GW Energy Storage Roadmap (Roadmap 2.0), the FESS project site selection must consider certain site and design requirements including:

- Interconnection to an existing substation,
- Consistency with the New York City Zoning Resolution and established Zoning Districts,
- Spatial requirements,
- The specific innovative technology requirements under the Environmental Policy Act of 2005 loan program, and
- Use for emergency mobilization.

EXISTING INTERCONNECTION

The Project has applied and been reviewed for electric interconnection service with a point of interconnection at the Hudson Avenue 138 kV Substation and would be significantly delayed should another interconnection point be sought. Interconnecting to an existing electrical substation and utilizing previously developed areas within the Brooklyn Navy Yard and existing roadway rights of way (ROW) for the interconnecting transmission line eliminates the need for major construction of new infrastructure in a coastal area of New York City where space is limited. Utility-scale interconnections must be approved through the New York State Independent System Operator (NYSIO) interconnection process, which includes an "interconnection queue," which formally establishes an order of projects requesting interconnections. The process requires a series of evaluations including an optional feasibility study, a System Reliability Impact Study (SRIS), and a Facilities Study (FS). The FESS has successfully completed the SRIS and FS. The initial feasibility study and SRIS process takes about two years, and the FS and development of an Interconnect Agreement takes an additional 12 to 15 months. NYC Energy was previously granted a point of interconnection at Con Edison's Hudson Avenue 138 kV Substation for a gas fired electric generating facility, which received NYSIO permits in the early 2000s, and was subsequently granted a "material modification" to change the facility to battery storage to facilitate the Project. Use of another interconnection point would require the FESS Project to identify and secure the location, re-enter the queue, which would significantly delay the availability of the battery energy storage system to serve New York City by 36 to 39 months while the required evaluations are conducted and would hinder the goals of the CLCPA.

Additionally, the next closest point of interconnection to the project site with potential interconnection capacity to accommodate the output of the FESS is the Gowanus substation, which would require over 10 miles of interconnection cables through Brooklyn Navy Yard and NYC Department of Transportation (NYCDOT) rights-of-way from the project location. **Figures 2 and 3** show the location of the Project in the Brooklyn Navy Yard, the Gowanus substation, and other substations in the vicinity that the project could connect to if there were capacity available. This substation is the only one besides the Hudson Avenue substation that has enough headroom (i.e., capacity) currently available to support the Project.

NEW YORK CITY ZONING RESOLUTION AND ZONING DISTRICTS

The New York City Zoning Resolution consists of 14 articles that establish the zoning districts for the City and the regulations governing land use and development. Utility-scale battery energy storage is an "industrial use" which is only permitted "as-of-right" in six commercial (C1, C2, C4, C5 C6, C8) and the three manufacturing districts in New York City (M1, M2, and M3). On December 6, 2023, the New York City Council passed the City of Yes for Carbon Neutrality initiative,[4] which modified the City's zoning regulations to support its climate goals. With this initiative, battery energy storage facilities fall under the definition of "Energy infrastructure equipment" which includes renewable energy generation systems, such as solar or wind energy systems, and energy storage systems, such as fuel cells and batteries, which are essential throughout all districts to support the acceleration towards a distributed energy grid with electricity from fully renewable sources. Utility-scale battery energy storage systems with a capacity greater than 10 MW can now be sited in all manufacturing (M1 through M3) and most commercial (C1 through C8)[5] zoning districts. Energy storage systems are permitted in these zoning districts under Use Groups 6, 17, and 14. As summarized below, battery energy storage facilities in New York City are subject to various codes and zoning restrictions that limit the availability of upland sites based on the Use Group and zoning district.

- Residential Zoning Districts
  - Limited to 10,000 square feet for as-of-right development.
- Commercial Zoning Districts
  - Use Group 6, and 14 (Energy infrastructure equipment, open or enclosed) with no size limitations and subject to the provisions of Section 37-20 (SPECIAL SCREENING AND ENCLOSURE PROVISIONS) is allowed in commercial zones C1, C2, C4, C5, C6, and C8 as-of-right.
  - No facility size or lot size restriction for open or enclosed facilities.
- Manufacturing Zoning Districts
  - Use Groups 4, 6, and 14 (Energy infrastructure equipment, open or enclosed) are allowed as-of-right in manufacturing zones M1, M2, and M3 with no size limitations and subject to the provisions of Section 37-20 (SPECIAL SCREENING AND ENCLOSURE PROVISIONS).
  - No facility size or lot size restriction for open or enclosed facilities.

Attachment 2 provides example upland layouts for a 300 MW capacity battery energy storage facility in a commercial zoning district (page 1) and a manufacturing zoning district (pages 2 and 3). These concept illustrations apply the restrictions identified in the New York City Zoning Resolution, including front setbacks, rear setbacks, emergency access, fencing or screening, maximum height, and maximum floor area ratio, as applicable. As shown in the attachment, an upland facility in a commercial district would require approximately 7.4 acres to accommodate the equipment and zoning restrictions, and an upland facility in a manufacturing district would require approximately 4.2 acres.

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[4] https://www.nyc.gov/site/planning/plans/city-of-yes/city-of-yes-carbon-neutrality.page

[5] Battery energy storage (Use Group 6) is not allowable in commercial districts C3 and C7.

SPATIAL REQUIREMENTS

Generally, battery energy storage facilities require about one acre per 30 to 40 MWs depending on how the battery units can be arranged and where the interconnection is located. This is based on the size of existing facilities in New York State, all of which are on upland properties and range from about 1 acre for facilities less than 5 MWs to 8 acres in size for utility-scale battery energy storage systems such as the proposed FESS. There are currently no facilities on land that employ a stacked design with internal cooling systems, like that proposed for the Project. Therefore, the size of these existing upland facilities largely depends on the arrangement of the battery units, the use of air cooling rather than internal cooling to maintain appropriate temperatures, and setbacks required by local regulations. They are typically located at least 300 feet from residential properties to minimize the impacts from noise related to the cooling systems and power inverters.

There are no available properties near an existing substation in New York City large enough to accommodate the 300 MW/1200 MW(h), single-story air-cooled system like those currently functioning elsewhere in the state. Even a stacked system in New York City would require between 4.2 and 7.4 acres of upland property to meet the zoning requirements described above (see **Attachment 2**). Such property would need to be in a commercial or manufacturing zoning district and would also need to be reasonably close to an available interconnection point and existing substation. Additionally, as described under the Zoning District section, manufacturing districts appropriate for battery storage uses, which have fewer lot size and/or setback requirements compared to commercial districts, are typically sited along the waterfront. Available space along the waterfront in proximity to existing substations in New York City is limited, especially the amount of space that would be required for the project. The floating and modular battery unit design of the FESS allows for better flexibility with respect to siting and spatial requirements.

LOAN ELIGIBILITY

Title XVII of the Energy Policy Act of 2005 (EPAct) established a federal loan guarantee program for certain projects that employ innovative technologies. Projects eligible for this loan program are those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." To be eligible for this particular loan program, the project must demonstrate that it is innovative and uses new or improved technologies as compared to traditional methods currently in service, such as warehouse or other upland facility storage. The FESS Project secured an invite to be considered for a loan guarantee under the EPAct partially because it is a first-of-its-kind utility-scale floating system capable of storing up to 300 MW/1200 MW(h) of energy. It can be readily adapted to a variety of maritime industrial sites in space-constrained and densely populated urban areas, where suitable properly zoned land is not available, and fire and safety issues associated with utility-scale battery energy storage systems also need to be considered.

Sited on land, the FESS Project would not be eligible for this loan program and would need to secure funding for the entire project through other means. An upland location in a commercial or manufacturing zoning district near a substation with available headroom, like the Gowanus substation, would likely require NYC Energy to purchase land from existing occupants, which would be economically infeasible considering the cost of the project itself without the EPAct loan guarantee.

EMERGENCY MOBILIZATION

As a floating system, the FESS could serve as a mobile emergency power system that can be deployed anywhere along the New York City inner coastal waterway system. The barges will not be self-propelled but can be transported by tug to any location that has existing mooring capabilities and sufficient water depths to accommodate the barges. The emergency power system can be connected and ready to operate as required after a catastrophic event or when notified by Con Edison, the New York City Office of Emergency Management, or other agencies. The FESS is designed to be quickly dispatched to provide emergency support for the Con Edison distribution system or critical customers (e.g., hospitals, water treatment plants, commercial buildings), and could supply connections to meet Con Edison's critical customer load at an impacted location. To be used as a mobile emergency system, each barge will be equipped with a control room and equipment room containing switch gear and communication equipment allowing it to quickly and easily connect to a mobile transformer or mobile substation trailer, which converts the stored energy and supports its distribution at the 138kV level to match the existing underground cable transmission system in the City. The FESS would acquire any approvals necessary upon emergency deployment of the FESS, the nature of which would likely depend on the type of emergency authorization issued and the specific language within.

D. ALTERNATIVES ANALYSIS

The analysis of specific alternatives below includes an evaluation of potential upland sites and an evaluation of barge designs that were considered and determined to be not practicable compared to the preferred alternative.

UPLAND SITE ALTERNATIVES

The evaluation of upland alternatives for the energy storage facility considers all properties within a compatible commercial or manufacturing zoning district within 10,000 feet of an existing substation with sufficient headroom for an interconnection. This is the maximum distance that could be considered reasonable for trenching to interconnection cables based on the cost of construction and the cable network itself. The existing substations are identified in **Figures 2 and 3** along with the surrounding areas zoned for manufacturing or commercial use. As described above, the facility is compatible with certain manufacturing and commercial districts in addition to the M3 district where it is currently sited in Wallabout Channel. Of the upland properties compatible with a battery energy storage facility, only those at least 4.2 acres or 7.4 acres would be able to support a 300 MW storage capacity based on the spatial requirements for manufacturing or commercial zoning districts, respectively. This limits the potentially compatible upland properties to those shown in **Figure 4**. Because the process for obtaining a different point of interconnection is time consuming and would significantly hinder the City's energy storage goals, and associated climate goals under the CLCPA, the evaluation of the upland properties in the sections below also considers the distance to NYC Energy's approved point of interconnection at the Hudson Avenue substation.

No upland site alternative would provide the mobile emergency system capability, nor would it be eligible to be considered for eligibility for the EPAct loan guarantee. Instead, the project would need to be funded using private funds or other state, city, or federal grants. In addition to being inapplicable for this federal loan, the project would need to obtain upland property within New York City large enough to accommodate the project, which would present a likely insurmountable financial burden and result in the loss of the proposed 300 MW/1200 MW(h) battery energy storage capacity for the City. Regardless of non-practicability of an upland site, two upland alternatives are evaluated below.

BROOKLYN NAVY YARD UPLAND PROPERTIES

The Project was designed to use space within the Brooklyn Navy Yard, which has a history of industrial uses and is in an M3-1 zoning district. Battery energy storage is an as-of-right use in M3-1 heavy industrial zoning districts. Typical uses in M3 districts include power plants, solid waste transfer facilities and recycling plants, and fuel supply depots. The Brooklyn Navy Yard is particularly suitable for the FESS Project in terms of zoning requirements. Under Zoning Resolution Article 14, Chapter 4 "Special Brooklyn Navy Yard District (BNY)[6]" the City aims to: 1) encourage investment in the Brooklyn Navy Yard and facilitate the expansion of the Brooklyn Navy Yard as a modern manufacturing complex (ZR 144-00(a)), and 2) promote the most desirable use of land in accordance with a well-considered plan and thus conserve the value of land and buildings, and thereby protect the City's tax revenues (ZR 144-00(f)). The Brooklyn Navy Yard features heavy industrial uses such as fabrication and vessel maintenance, and commercial, retail, and media production uses. The area around the Hudson Avenue substation is also composed of industrial buildings like warehouses, other substations, including Con Edison's Brooklyn Clean Energy Hub, which is currently under construction, and Con Edison's shuttered Hudson Avenue Generation Plant.

While the FESS is consistent with existing uses within the Brooklyn Navy Yard, there is no upland space available within the Yard that would accommodate the 300 MW facility. A facility of this capacity would require approximately 4.2 acres of upland. Space within the upland portion of the Brooklyn Navy Yard is either occupied by existing uses or reserved for future adaptation in accordance with the Brooklyn Navy Yard Master Plan (the Master Plan) and rezoning. The Master Plan divides the Yard into districts allotted for new manufacturing buildings, increased public access, and educational programming for the purpose of generating new jobs and revenue. The focus of the Brooklyn Navy Yard is economic development, and the Master Plan does not address the use of upland property within the Yard for battery energy storage.

The FESS's use of state lands underwater within Wallabout Channel is authorized through an easement with the New York State Office of General Services under Section 75 of the Public Lands Law. The Brooklyn Navy Yard Development Corporation has granted NYC Energy a 30-year lease comprising a 0.59-acre portion of Pier K to accommodate the transformers and landside connections. This leased property on Pier K is not large enough to accommodate the storage containers and ancillary equipment, and the lease cannot be transferred to a different property within the Brooklyn Navy Yard. The in-water location of the FESS would preserve upland properties in the Brooklyn Navy Yard for other development purposes in accordance with the Master Plan, which would increase overall revenue in line with the City's goals as outlined in the Zoning Resolution.

INTERCONNECTION POINT AT GOWANUS SUBSTATION

As described under the discussion of site and design constraints, the next closest point of interconnection to the project site with potentially available capacity to support the project is the Gowanus substation (see **Figure 3**). This substation is the only one besides the Hudson Avenue substation in New York City that has enough headroom (i.e., capacity) currently available to

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[6] https://zr.planning.nyc.gov/article-xiv/chapter-4#144-00

support the Project. While the Gowanus substation is in a zoning district appropriate for the Project, the parcels around the substation are occupied by existing commercial, transportation, and working waterfront uses and are not available to NYC Energy without significant expenditure. As shown in **Figure 4**, NYC Energy would need to lease or purchase and redevelop a currently occupied property to provide the estimated 4.2 acres of space needed to construct an upland facility in a manufacturing zoning district. There are no properties of sufficient size in a commercial zoning district near the Gowanus substation (see **Figure 4**). Even if NYC Energy were financially or logistically able to purchase or lease any of these properties and secure an interconnection point at the Gowanus substation, the project would not be eligible for the EPAct loan guarantee for innovative energy technologies, which would make it economically non-viable, and would not be deployable as a mobile emergency system.

DESIGN ALTERNATIVES

PREFERRED BATTERY STORAGE SYSTEM DESIGN

The FESS would connect to the existing Hudson Avenue substation on land, eliminating the need for transformers and GIS breakers to be located on the barges and limiting the onboard equipment to that required for energy storage and mobile emergency deployment. Each barge is designed to operate as a separate 100 MW facility that can be deployed in an emergency as a single unit and, therefore, each barge includes an equipment room and control room that operate the battery storage units onboard. To reduce the spatial requirements on the barges, the FESS design uses skid-mounted string inverter, which reduces the number and footprint of the power conversion system (PCS) units (see **Attachment 1**) and reduces the size of the switch gear and communications equipment needed in the onboard control room. The containerized design of the CATL EnerX battery storage system represents the latest state-of-the-art technology currently available on the market, and they were chosen for the project specifically for their stacking ability and internal cooling systems. The containerized liquid-cooling battery system eliminates the need for air-cooling, which would require more space between storage units, would not allow stacking, and would result in a larger facility footprint. The stacked design reduces the amount of space needed to accommodate the battery storage units while meeting circulation and spatial requirements associated with manufacturer recommendations and FDNY fire codes. The multi-level design of the barges, with the battery storage units on one level, the PCS units on the second level, and the control and equipment rooms on the third level, further minimizes the overall footprint of the facility.

BARGE DESIGN – TWO BARGES

NYC Energy considered a design using two barges instead of three, which would have reduced manufacturing costs for the project. However, a design using two barges instead of three would require larger vessels to accommodate the 300 MW battery storage system. For the two-barge design, each barge would measure approximately 220 feet long by 130 feet wide, while each of the three proposed barges are smaller at 146 feet long by 130 feet wide. This results in a total footprint that is smaller for three barges (56,940 square feet) compared to that for two barges (57,200 square feet). In addition to the smaller overwater footprint, the three smaller barges are also easier to maneuver than larger vessels, which is beneficial for positioning them within the project site and for moving them should they be required to temporarily relocate to the GMD Shipyard within the Brooklyn Navy Yard during maintenance dredging, for example, or be deployed for mobile use during emergency periods.

BARGE DESIGN – PHASED DEVELOPMENT

NYC Energy considered a phased development, with the installation of battery units with 80 MW capacity in Phase 1, with an additional 220 MW capacity added in Phase 2. This alternative would allow for a longer manufacturing lead-time because the additional units would be installed at a later date rather than being installed all at once on the barges at the manufacturing location or at Berth 20 of Pier K at the Brooklyn Navy Yard. While the initial weight of the barges in Phase 1 would be less than if all units were installed at the same time, the Phase 2 installation would result in the same weight as proposed. This means that the barges would require the same amount of dredging to -20 feet at MLW to support the full build-out whether it is phased or not. Ultimately, the potential impacts to aquatic resources with this alternative would be the same as those presented for the preferred installation of 300 MW of storage at once. This alternative would also extend the timeline for the provision of 300 MW of storage capacity, which could reduce the chance of the State reaching its 2030 energy goals as established by the CLCPA.

E. CONCLUSION

The FESS Project requires a unique set of site characteristics to fulfill the project's purpose. First the project needs to be proximate to an approved point of interconnection with adequate headroom to accept the electricity to be discharged during operation. Design of a smaller project would limit the project's contribution to the New York State's goal of developing 6 GW of energy storage by 2030s as well as result in a reduction of future displacement of existing fossil-fueled generating facility during times of peak energy use, thereby limiting potential community air quality benefits. Also, selection of an upland site would result in the project losing the ability to be deployed as a mobile emergency system. Moreover, if the project was sited at an upland location, it would not provide emergency power capabilities and would not be economically feasible because it would not be eligible for the federal loan and would also need to acquire and redevelop a currently occupied property of sufficient size near the Gowanus substation. Given the site and design constraints and loss of public policy benefits described above, the proposed floating design and location for the battery storage facility was determined to be the most practicable alternative. The FESS barges have been designed to limit the overwater footprint by installing equipment in three levels and using land-based transformers and GIS breakers. The first level comprises stacked battery storage units using the latest containerized liquid-cooling battery system available on the market which allows the containers to be stacked safely, the second the PCS units, and the third efficiently designed equipment and control rooms. The spaces between the battery storage containers on the barges are limited to that required by FDNY fire codes and manufacturer recommendations. Should they be deployed in an emergency, the barges would be able to quickly disconnect its existing site interconnections and connect to mobile transformers and existing infrastructure on land.

FIGURES

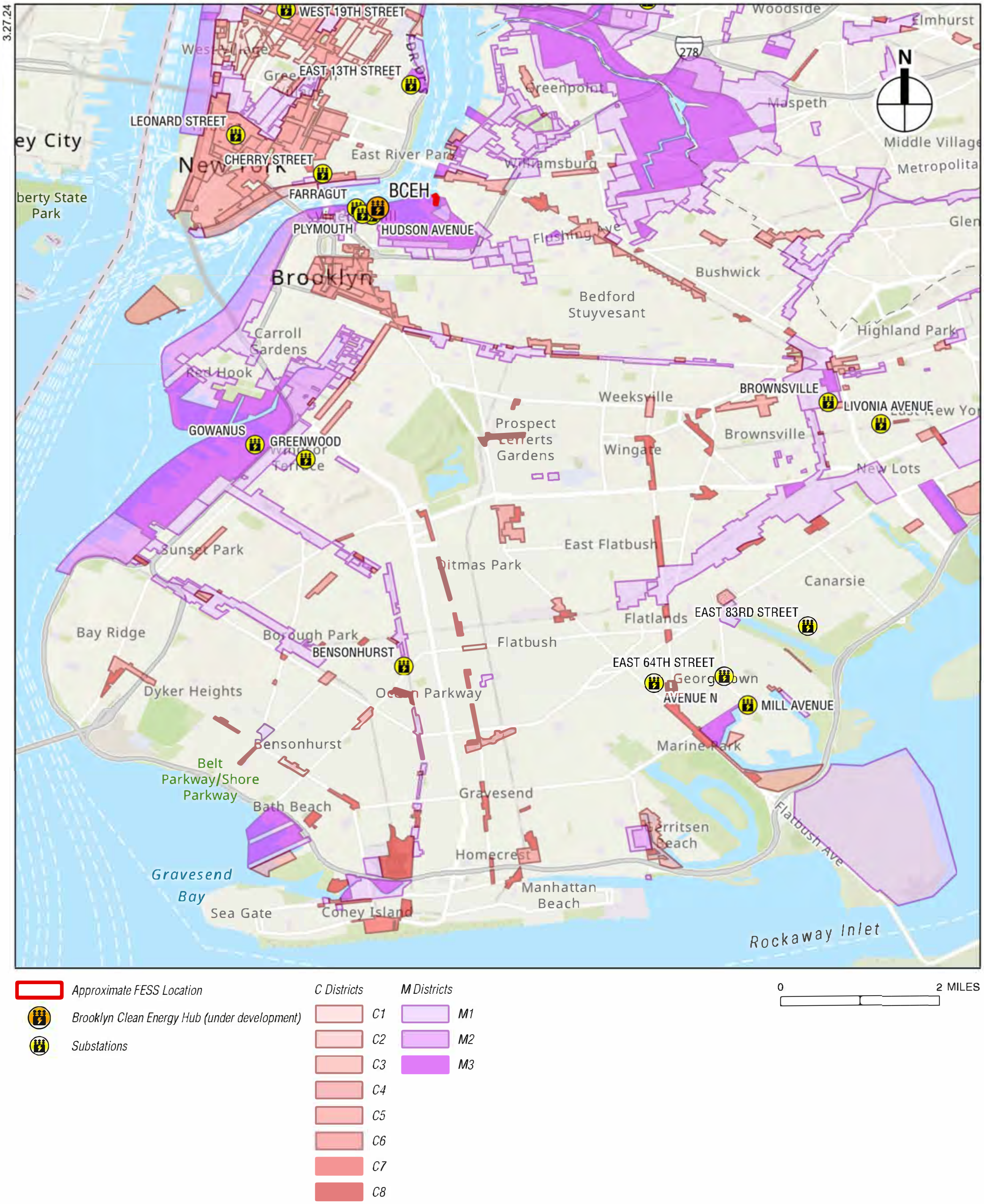
10.25.23

Project Location

Figure 1

NYC ENERGY 300 MW FLOATING BESS

3.27.24

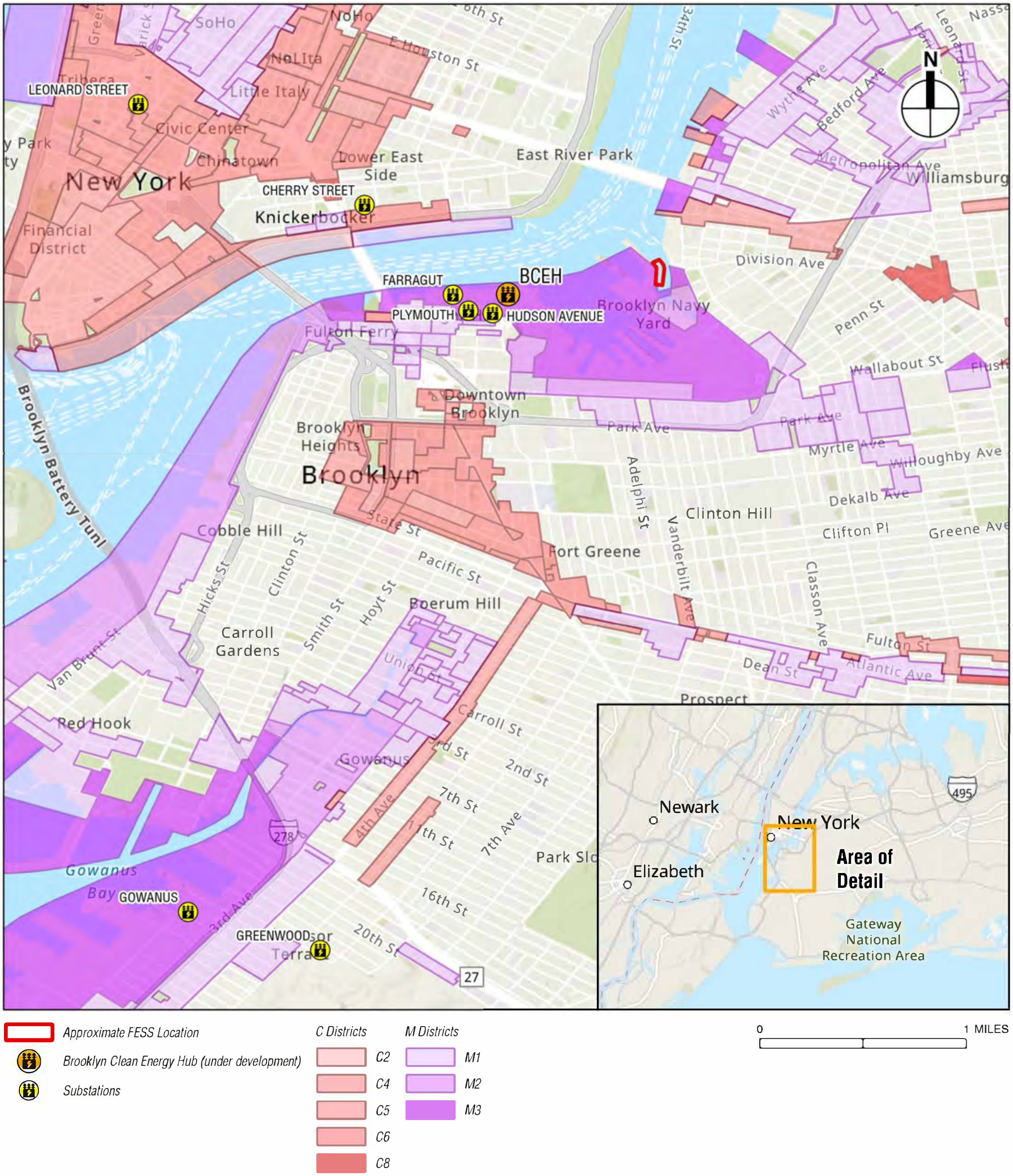


Substations and Zoning

Figure 2

NYC ENERGY 300 MW FLOATING BESS

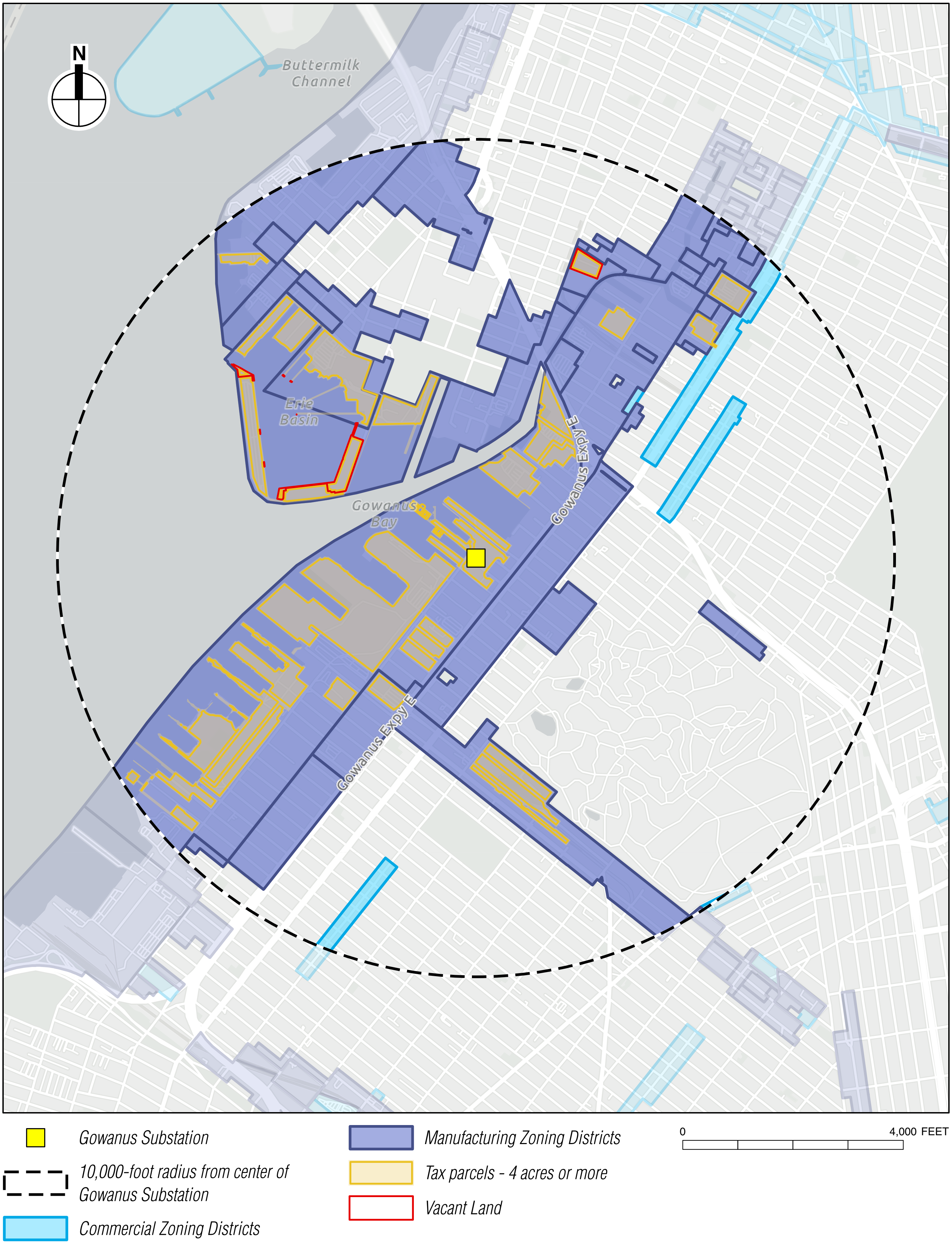
3.27.24



Substations and Zoning

Figure 3

4.19.24



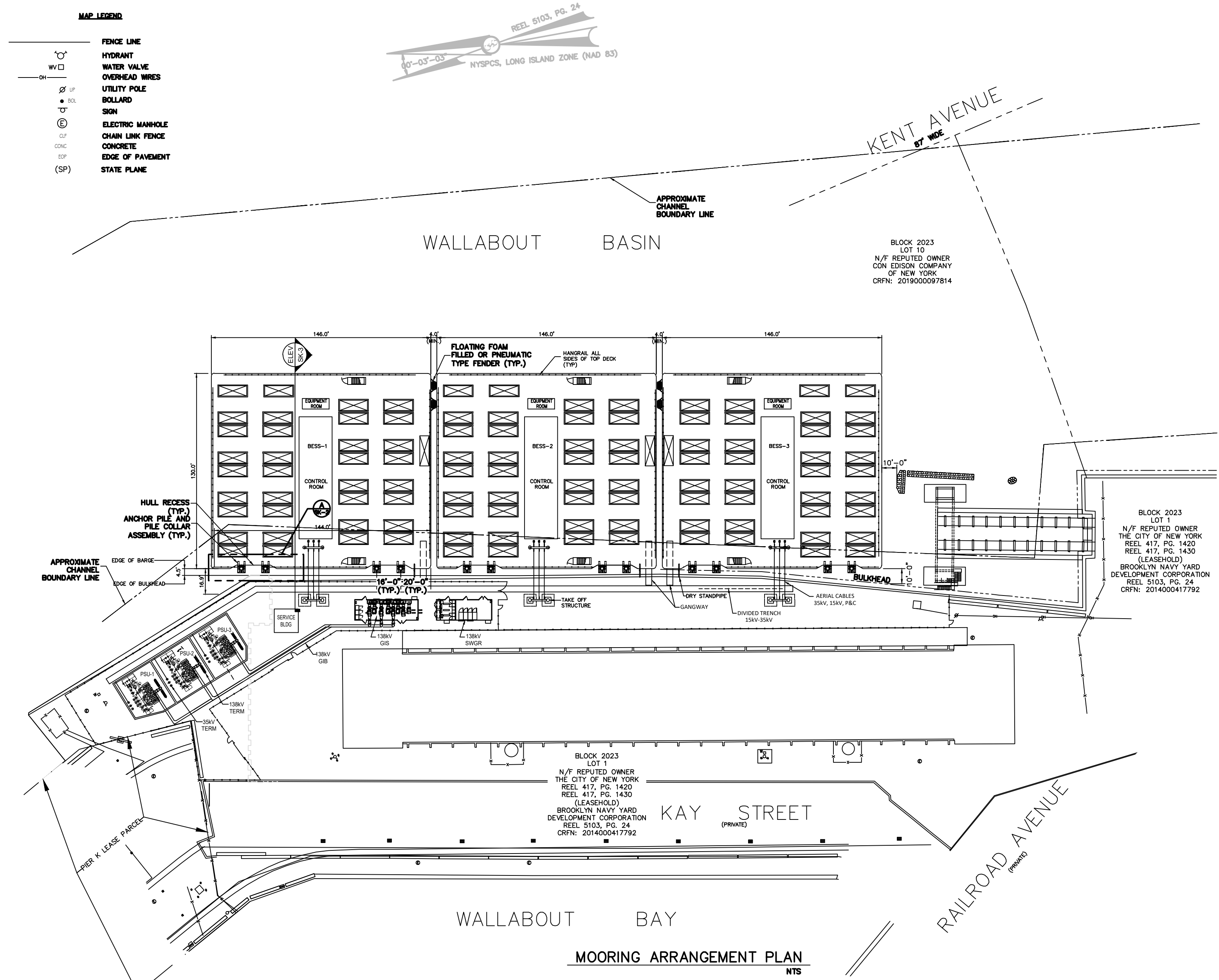
NOTE: there are no 7-acre parcels in a commercial zoning district

Compatible Upland Properties

NYC ENERGY 300 MW FLOATING BESS

Figure 4

ATTACHMENT 1



MOORING ARRANGEMENT PLAN
NTS

NOTES:

1. THE ABOVE PLAN REPRESENTS A SCHEMATIC LAYOUT FOR A PILE BASED MOORING SYSTEM DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES AND DESIGN STANDARDS. THE MOORING SYSTEM COMPRISES ANCHOR PILES, PILE COLLARS, FENDERS, AND A CONFIGURATION THEREOF. ALL OTHER STRUCTURES, COMPONENTS, AND CONFIGURATIONS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THE MOORING SYSTEM DESIGN.
2. BACKGROUND SURVEY AND NON-MOORING RELATED ELEMENTS WERE TAKE FROM A PRELIMINARY DESIGN DRAWING SET PREPARED BY RST TECHNICAL SERVICES, LLC AND DATED 05/23/23. McLAREN TECHNICAL SERVICES, INC. ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSION THAT MAY HAVE BEEN INCORPORATED AS A RESULT OF INCORRECT INFORMATION PROVIDED TO McLAREN.
3. CHANNEL BOUNDARY LINES SHOWN ARE APPROXIMATE AND WERE PLOTTED BASED ON OVERLAY WITH USACE ARCGIS SURVEY MAPS.
4. A VIBRATORY HAMMER IS ANTICIPATED TO BE UTILIZED FOR PILE DRIVING. SHOULD AN IMPACT HAMMER BE NECESSARY, A BUBBLE CURTAIN WILL BE INSTALLED AROUND THE WORK AREA DURING PILE DRIVING. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL AND MAINTAIN THE BUBBLE CURTAIN.

USGS Quad:	Brooklyn
Waterway:	Wallabout Channel
Latitude:	40° 42' 22" N
Longitude:	73° 58' 12" W
County:	Kings

Datum: NAVD88

Mooring Arrangement Plan

NYC Energy Barge
NYC Energy LLC
322 West 57th Street, #46U
NY, NY 10019

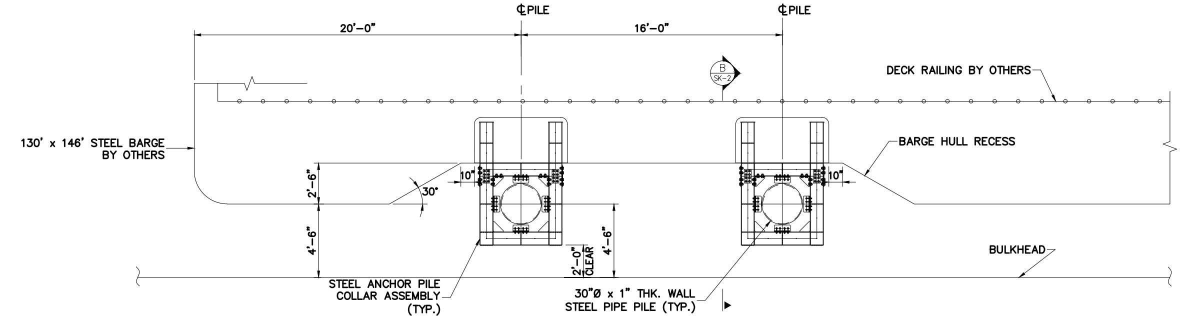
Scale: NTS

Oct. 6, 2023

McLaren ENGINEERING GROUP
M. G. McLaren Engineering and Land Surveying P.C.
100 Snake Hill Road, West Nyack, NY 10994
T. (845) 353-6400 www.mgmclaren.com

SK-1

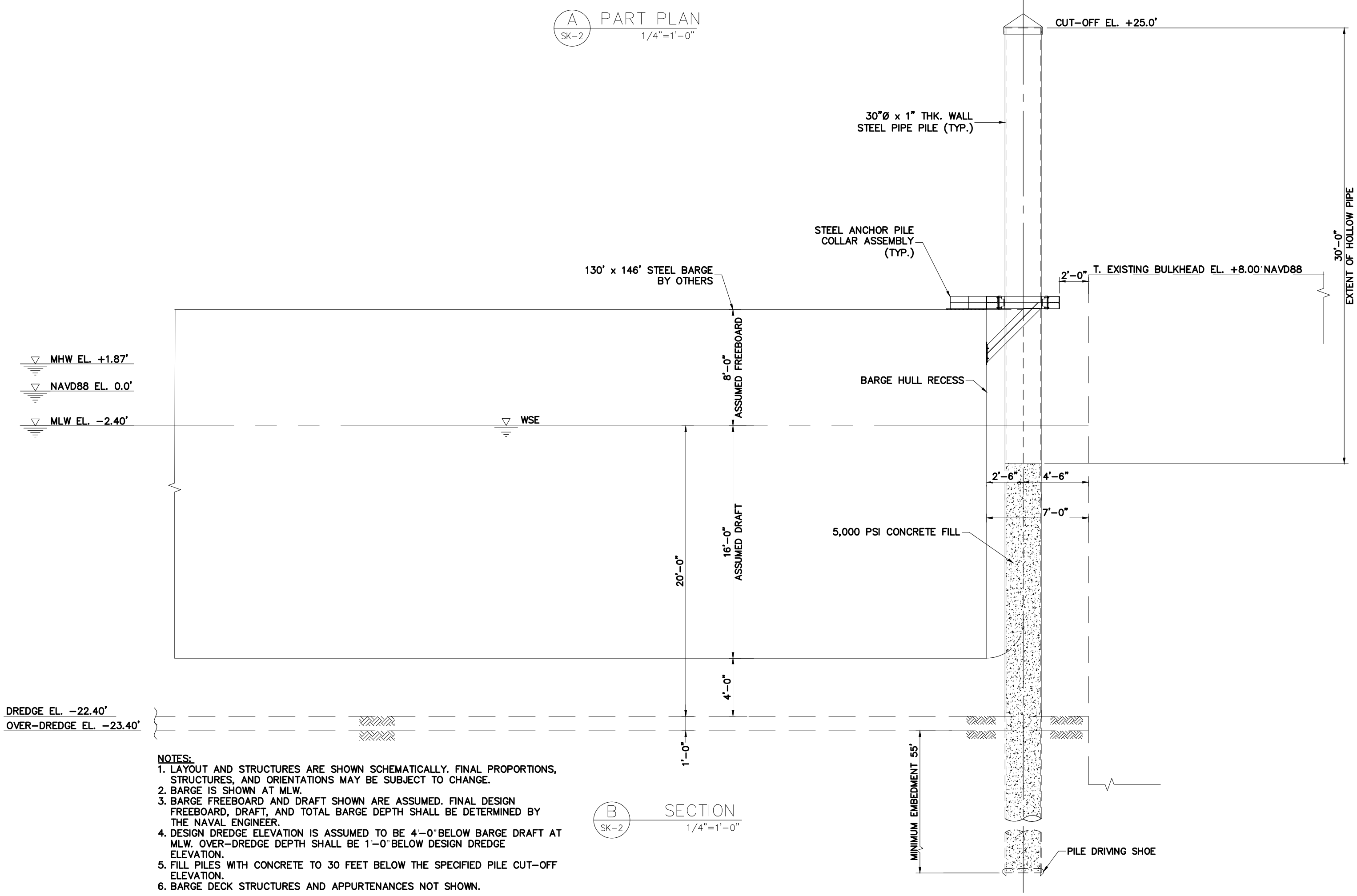
Sht 1 of 3



A PART PLAN
SK-2 1/4"=1'-0"

TIDAL DATUM	
	NAVD88 (ft)
500-YR RETURN PERIOD	14.0
BASE FLOOD ELEVATION (BFE) PER PFIRM	13.0
100-YR RETURN PERIOD	10.9
50-YR RETURN PERIOD	9.7
10-YR RETURN PERIOD	6.9
SPRING HIGH TIDE (SHT)	2.37
MEAN HIGHER-HIGH WATER (MHHW)	2.20
MEAN HIGH WATER (MHW)	1.87
NAVD88	0.00
MEAN DIURNAL TIDE LEVEL (DTL)	-0.21
LOCAL MEAN SEA LEVEL (LMSL)	-0.24
MEAN TIDE LEVEL (MTL)	-0.27
MEAN LOW WATER (MLW)	-2.40
MEAN LOWER-LOW WATER (MLLW)	-2.62

NOTES:
1. WATER ELEVATIONS SHOWN FOR PROJECT SITE BASED ON NOAA VDATUM V. 3.7 "NEW JERSEY/ NEW YORK/ CONNECTICUT-NORTHERN NJ, NY HARBOR, WESTERN LONG ISLAND SOUND, V. 3.7".
2. RETURN PERIOD STILLWATERS ARE EXTRACTED FROM FEMA'S CITY OF NEW YORK PRELIMINARY FLOOD INSURANCE STUDY DATED 12/05/13.



NOTES:
1. LAYOUT AND STRUCTURES ARE SHOWN SCHEMATICALLY. FINAL PROPORTIONS, STRUCTURES, AND ORIENTATIONS MAY BE SUBJECT TO CHANGE.
2. BARGE IS SHOWN AT MLW.
3. BARGE FREEBOARD AND DRAFT SHOWN ARE ASSUMED. FINAL DESIGN FREEBOARD, DRAFT, AND TOTAL BARGE DEPTH SHALL BE DETERMINED BY THE NAVAL ENGINEER.
4. DESIGN DREDGE ELEVATION IS ASSUMED TO BE 4'-0"BELOW BARGE DRAFT AT MLW. OVER-DREDGE DEPTH SHALL BE 1'-0"BELOW DESIGN DREDGE ELEVATION.
5. FILL PILES WITH CONCRETE TO 30 FEET BELOW THE SPECIFIED PILE CUT-OFF ELEVATION.
6. BARGE DECK STRUCTURES AND APPURTENANCES NOT SHOWN.

B SECTION
SK-2 1/4"=1'-0"

McLaren
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SK-2

Sht 2 of 3

Mooring Arrangement Section
NYC Energy Barge
NYC Energy LLC
322 West 57th Street, #46U
NY, NY 10019

Oct. 6, 2023

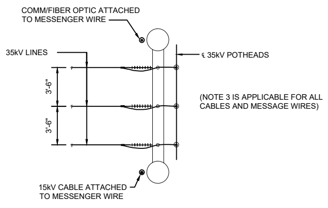
Scale: NTS

USGS Quad: Brooklyn
Waterway: Wallabout Channel
Latitude: 40° 42' 22" N
Longitude: 73° 58' 12" W
County: Kings Datum: NAVD88

TIDAL DATUM CHART	
	NAVD88 (ft)
500-YR RETURN PERIOD	14.0
BASE FLOOD ELEVATION (BFE) PER PFIRM	13.0
100-YR RETURN PERIOD	10.9
50-YR RETURN PERIOD	9.7
10-YR RETURN PERIOD	6.9
SPRING HIGH TIDE (SHT)	2.37
MEAN HIGHER-HIGH WATER (MHHW)	2.20
MEAN HIGH WATER (MHW)	1.87
NAVD88	0.00
MEAN DIURNAL TIDE LEVEL (DTL)	-0.21
LOCAL MEAN SEA LEVEL (LMSL)	-0.24
MEAN TIDE LEVEL (MTL)	-0.27
MEAN LOW WATER (MLW)	-2.40
MEAN LOWER-LOW WATER (MLLW)	-2.62

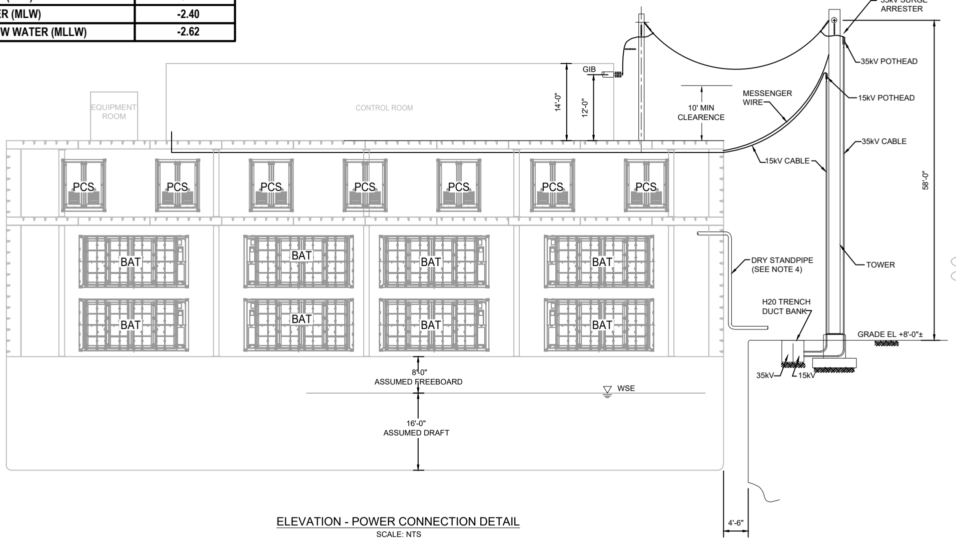
NOTES:

1. WATER ELEVATIONS SHOWN FOR PROJECT SITE BASE ON NOAA VDATUM V. 3.7 "NEW JERSEY / NEW YORK / CONNECTICUT-NORTHERN NJ, NY HARBOR, WESTERN LONG ISLAND SOUND, V. 3.7".
2. RETURN PERIOD STILLWATERS ARE EXTRACTED FROM FEMA'S CITY OF NEW YORK PRELIMINARY FLOOD INSURANCE STUDY DATE 12/05/13



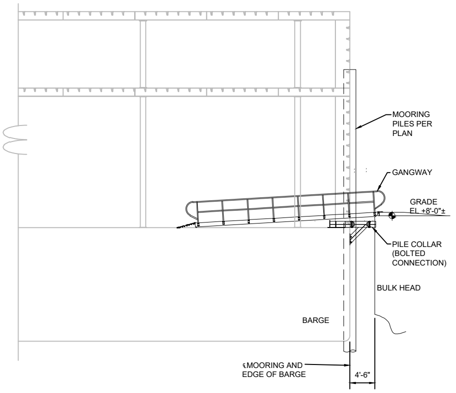
TOWER PLAN VIEW

SCALE: 3/16" = 1'-0"



ELEVATION - POWER CONNECTION DETAIL

SCALE: NTS



ELEVATION - GANGWAY / MOORING PILES DETAIL

SCALE: 3/32" = 1'-0"

BARGE UNDOCKING SEQUENCE:

1. TURN OFF POWER FROM GRID AT BNY GIS BREAKER.
2. TURN OFF POWER FROM THE FACILITY IN THE CONTROL ROOM.
3. DISCONNECT ALL ELECTRICAL CABLES AND MESSENGER WIRES FROM THE BARGE TO THE LANDSIDE (UNLATCH QUICK DISCONNECTS).
4. SECURE AND DISCONNECT OTHER UTILITY CONNECTIONS SUCH AS THE FIRE STAND PIPE HOSE.
5. BARGE OPERATING PERSONNEL DEPART BARGE.
6. BARGE OPERATING PERSONNEL OR LINE CREW ON BEACH REMOVE THE GANGWAYS TO SHORE.
7. TUGS ARRIVE.
8. TUG PERSONNEL USE BARGE LADDER TO TRANSFER TO\FROM BARGE.
9. TUG PERSONNEL ABOARD BARGE.
10. TUGS MAKE UP TO THE BARGES. NOTE THAT THE BATHYMETRY MAY LIMIT THE CONFIGURATION OF TUGS WHILE IN THE SLIP.
11. PIN THE BARGE TO DOCK OR PILES USING THE TUGS WHILE THE MOORINGS TO SHORE ARE REMOVED. TEMPORARY MOORING LINES MAY BE USED AND THEN REMOVED ONCE ALL SHORE MOORINGS ARE FREE.
12. TUGS MANEUVER BARGES OUT OF THE SLIP.
13. TUGS MAY SHIFT POSITION ON THE BARGE ONCE CLEAR OF THE SLIP IN WALLABOUT CHANNEL TO ALLOW FOR ENHANCED EFFICIENCY AND BETTER CONTROL WHILE IN TRANSIT.
14. TUGS TRANSIT BARGE TO DESTINATION IN NY HARBOR. THE BARGE MUST REMAIN WITHIN PROTECTED WATERS INSIDE NY HARBOR AS THE BARGE WILL NOT HAVE A LOAD LINE CERTIFICATE.
15. PROCESS REVERSED TO DOCK. PARK, PIN, SECURE MOORING LINES, DISCONNECT TUGS.

RST Technical Services, LLC
UWCHLAND, PA (484)421-7279

SK-3

Sht 3 of 3

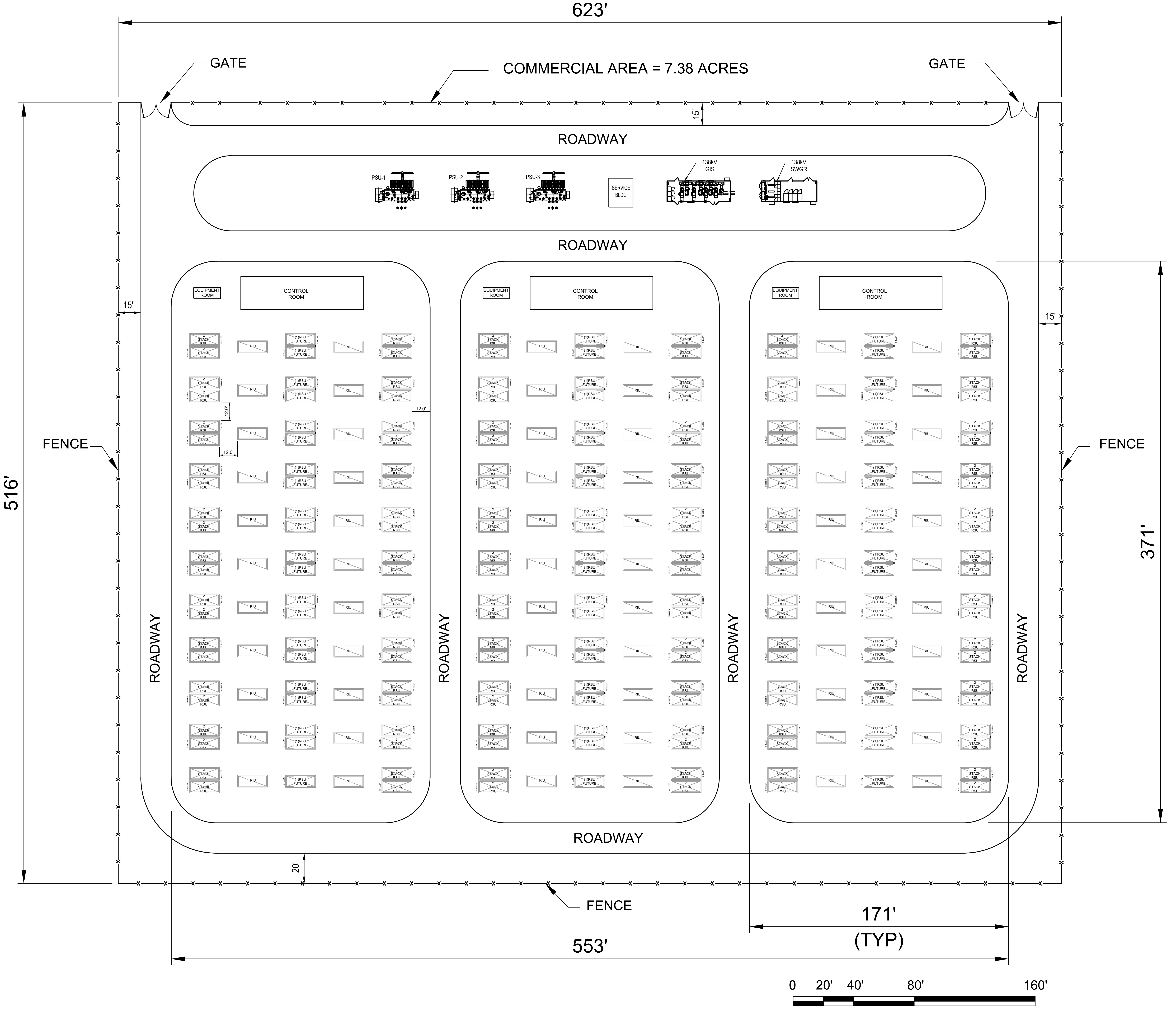
GENERAL ARRANGEMENT
NYC Energy Barge
NYC Energy LLC
322 West 57th Street, #46U
NY, NY 10019

Oct. 6, 2023

Scale: NTS

USGS Quad: Brooklyn
Waterway: Wallabout Channel
Latitude: 40° 42' 22" N
Longitude: 73° 58' 12" W
County: Kings Datum: NAVD88

ATTACHMENT 2



REVISION HISTORY

REV	ZONE	DESCRIPTION	DWN	DATE	APVD

GENERAL NOTES

1. EQUIPMENT AND OUTFIT DETAILS IN THIS DRAWING ARE INTENDED FOR ILLUSTRATIVE PURPOSES ONLY AND DO NOT NECESSARILY REPRESENT ACTUAL DETAILS OR DIMENSIONS OF SPECIFIED ITEMS.

2. 264 CATL OR EQUAL ENERGY STORAGE UNITS (RSU) 5P*2P52S*8
   63 CATL FUTURE ENERGY STORAGE UNITS (RSU)ASDF

3. 66 GE OR EQUAL ENERY STORAGE INVERTERS (RIU)

4. CATL SUPERVISORY SOLUTION

5. DRY FIRE STANDPIPE SYSTEM WILL BE INSTALLED AS PER FDNY REQUIREMENTS.

6. CCTV CAMERAS WILL BE INSTALLED AS PER FDNY REQUEST.

7. THIS LAYOUT DEPICTS A 300 MW BESS ALTERNATIVE SITE FACILITY ALLOWED IN ALL COMMERCIAL DISTRICTS (C1-8) IN ACCORDANCE WITH THE NYC "YES" INITIATIVE. THE FOLLOWING SPECIAL PROVISIONS HAVE BEEN ADDRESSED:

   SECTION 33-23 - PARAGRAPH (A) HAS A HEIGHT RESTRICTION OF 23' ABOVE THE CURB LINE.

   SECTION 33-44 - MINIMUM FRONT SETBACKS ARE GENERALLY 15'

   SECTION 33-26 - MINIMUM REAR YARD SETBACK IS 20'

8. ALL ROADWAYS ARE DESIGNED FOR EMERGENCY ACCESS.

RST Technical Services, LLC

CLIENT
NYC ENERGY
NEW YORK, NEW YORK

PROJECT
300 MW ENERGY STORAGE BARGE

TITLE
300 MW MODULAR FACILITY
PROFILE AND ARRANGEMENT

SIZE D
DWG NO. COMMERCIAL ZONE LAYOUT
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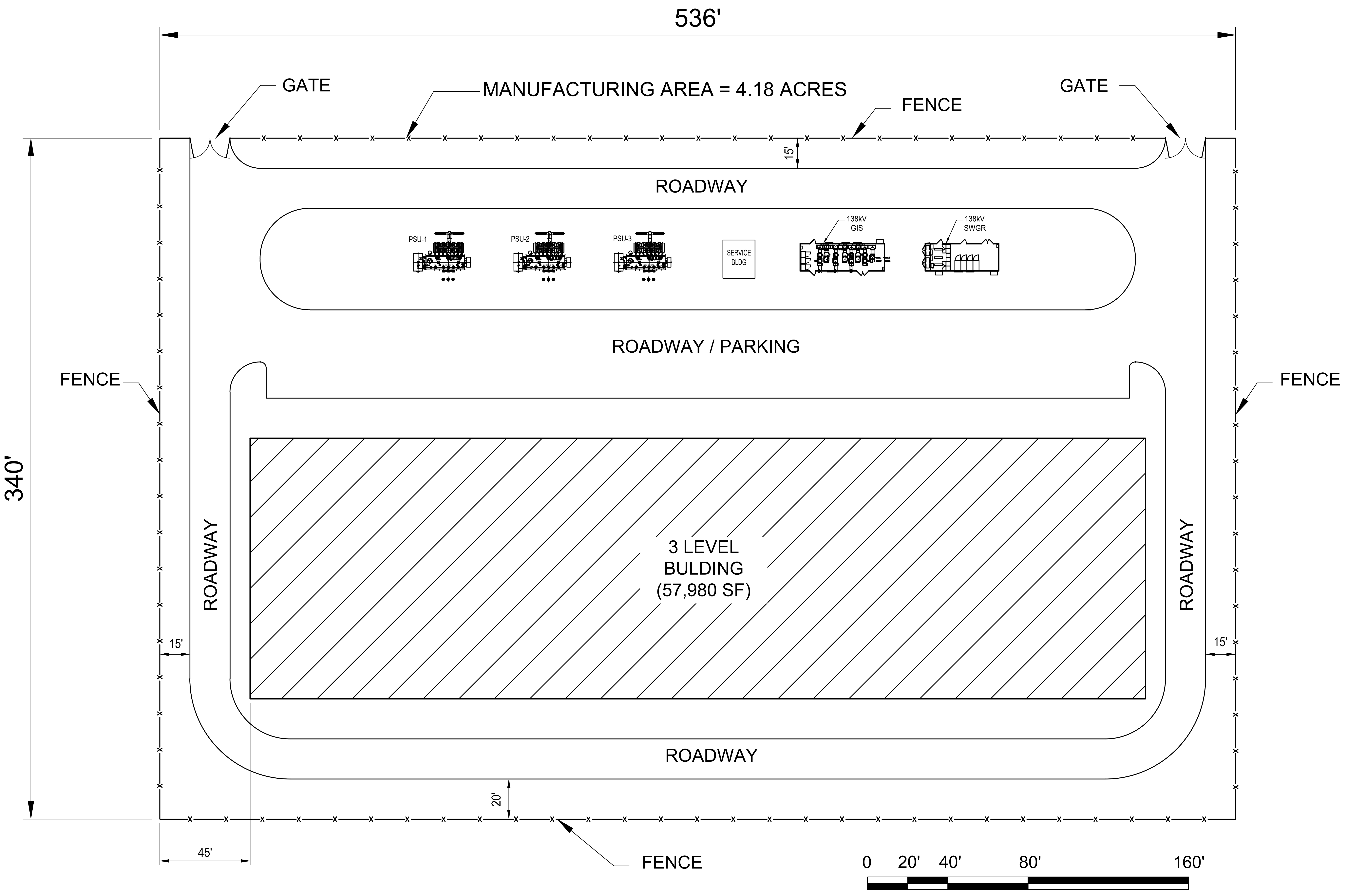

REVISION HISTORY

REV	ZONE	DESCRIPTION	DWN	DATE	APVD

GENERAL NOTES

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3. 66 GE OR EQUAL ENERY STORAGE INVERTERS (RIU)
4. CATL SUPERVISORY SOLUTION
5. DRY FIRE STANDPIPE SYSTEM WILL BE INSTALLED AS PER FDNY REQUIREMENTS.
6. CCTV CAMERAS WILL BE INSTALLED AS PER FDNY REQUEST.
7. THIS LAYOUT DEPICTS A 300 MW BESS ALTERNATIVE SITE FACILITY ALLOWED IN MANUFACTURING DISTRICTS (GROUP6 AND 14) IN ACCORDANCE WITH THE NYC "YES" INITIATIVE. THE FOLLOWING SPECIAL PROVISIONS HAVE BEEN ADDRESSED:

   SECTION 41-11 - DESCRIBES M1 ZONE AS LIGHT MANUFACTURING - ALL MANUFACTURING HAS TO BE IN AN ENCLOSED BUILDING. NOT RECOMMENDED FOR ESS FACILITIES.

   SECTION 43-12 - MAXIMUM FLOOR AREA RATIO

   SECTION 43-43 - MAXIMUM HEIGHT OF FROM WALL AND REQUIRED FRONT SETBACKS.
8. ALL ROADWAYS ARE DESIGNED FOR EMERGENCY ACCESS.

RST Technical Services, LLC

CLIENT
NYC ENERGY
NEW YORK, NEW YORK

PROJECT
300 MW ENERGY STORAGE BARGE

TITLE
300 MW MODULAR FACILITY
PROFILE AND ARRANGEMENT

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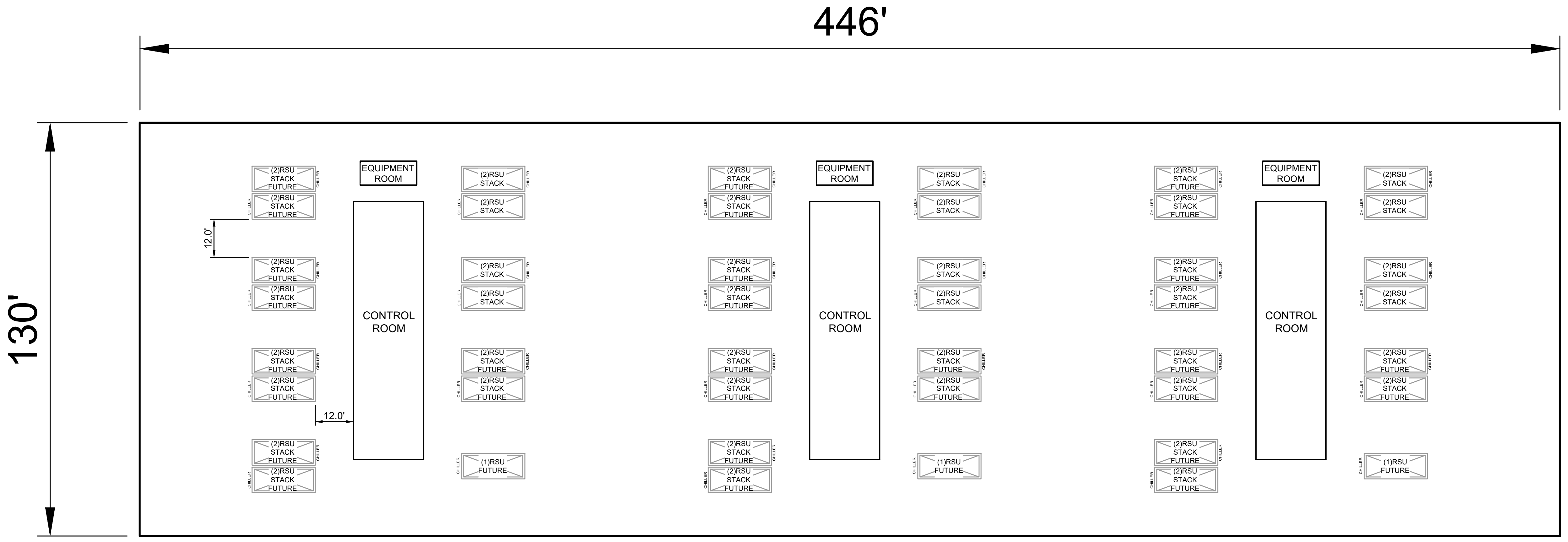
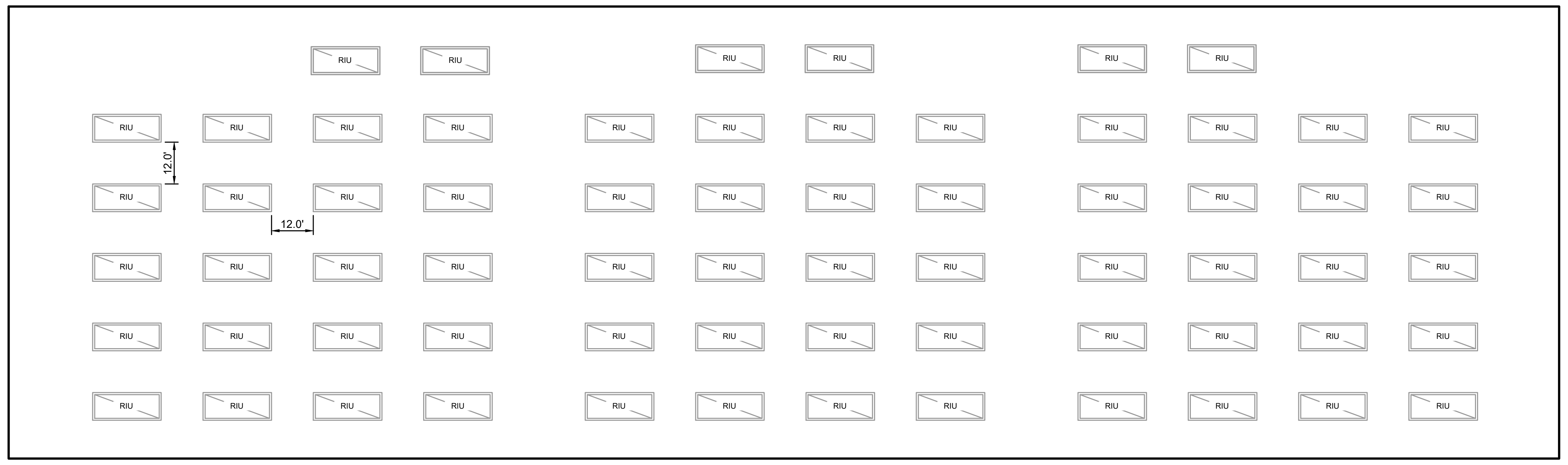


THIRD FLOOR



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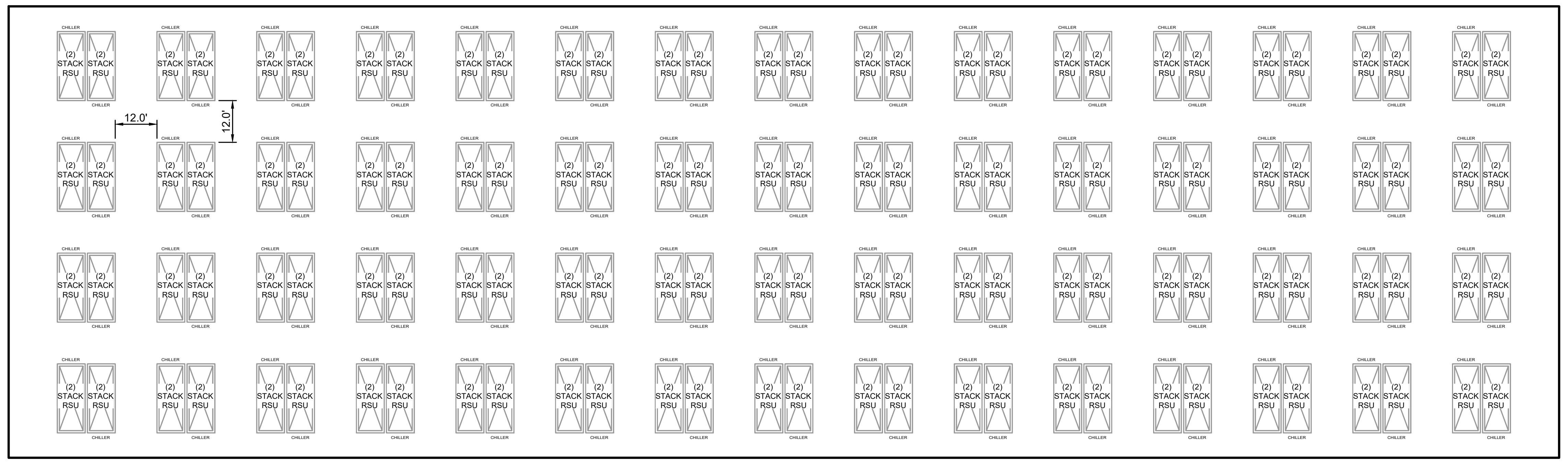
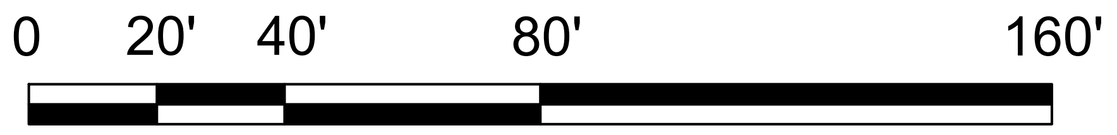


FIRST FLOOR



RST Technical Services, LLC

CLIENT
NYC ENERGY
NEW YORK, NEW YORK

PROJECT
300 MW ENERGY STORAGE BARGE

TITLE
300 MW MODULAR FACILITY
PROFILE AND ARRANGEMENT

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APPENDIX B AGENCY AND TRIBAL CORRESPONDENCE

APPENDIX B-1 NYSDOS Coastal Management Program Consultation

Department of Energy
Washington, DC 20585

June 2, 2023

New York State Department of State
Office of Planning and Development
Attn: Consistency Review Unit
One Commerce Plaza
Suite 1010
99 Washington Avenue
Albany, New York 12231

Re: New York State Coastal Management Program Consistency Review of Floating Energy Storage System Project; Department of Energy Title XVII Innovative Energy Loan Guarantee Program

Dear Consistency Review Unit:

Empower Brooklyn LLC, on behalf of NYC Energy LLC, has submitted a U.S. Department of Energy (DOE) Loan Guarantee application for the development of a 300 megawatt (MW) floating energy storage system (FESS) that will incorporate stacking energy storage containers and associated equipment on three side by side barges in Wallabout Channel adjacent to Berth 20 of Pier K within the Brooklyn Navy Yard in Brooklyn, Kings County, New York (proposed project). Each barge would have a 100 MW capacity, for a total of 300 MW capacity for the project. NYC Energy LLC has entered into a lease with the Brooklyn Navy Yard Development Corporation to allow docking of the barges and installation of transmission lines on Brooklyn Navy Yard property. DOE is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and related federal environmental review requirements for the proposed project. DOE is the lead federal agency under NEPA. **Enclosure 1** provides an aerial view of the Project Site.

In accordance with the Coastal Zone Management Act under 15 CFR 930.30–930.46 for consistency for federal agency activities, DOE has prepared an evaluation of the project's consistency with the New York State coastal policies and the New York City Waterfront Revitalization Program policies and has determined that the project evaluated in the EA is consistent with all applicable policies. Summary tables for the New York State and New York City policies are provided at the end of this letter. More information about the project and supporting analysis for this determination are provided below.

PROJECT DESCRIPTION

The proposed project would place 3 barges each measuring 146 feet long by 130 feet wide (56,940 square feet total) and equipped with pre-installed battery energy storage containers and associated equipment within Wallabout Channel. When fully loaded, the barges would have an estimated draft of 16 to 18 feet and would require dredging of the channel to the USACE authorized depth of 20 feet at mean low water (MLW).

Dredging would be conducted within about 5.2 acres in Wallabout Channel to the USACE authorized depth of 20 feet at MLW. During dredging, it is anticipated that one deck barge and two scows would be used to support equipment, storage of dredge materials, and transportation of materials for upland disposal at a licensed facility. A crew vessel may also be used to transport personnel to and from the barges. According to the most recent USACE Controlling Depth Report from 2004, water depths ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location. A hydrographic survey was conducted in August 2022 to provide updated bathymetry for Wallabout Channel that will be used to refine the dredging area for the Project (**Enclosure 2**). The survey identified water depths ranging from close to 0 feet at MLW at the head of the Channel to about 50 feet at its mouth. Within the presumed dredging area, water depths currently range from about 8 to 20 feet at MLW, potentially with localized shallower waters close to the bulkhead. To accommodate the 16 to 18-foot barge draft, approximately 81,500 cubic yards of sediment would be removed from the 5.2-acre dredge area within the Channel. Dredging would be conducted using an environmental bucket with no barge overflow. Any debris encountered during dredging would be removed using the environmental bucket[1] and separated from the dredged material onboard a deck barge via mechanical raking. Sediment sampling would be conducted in advance of any dredging required for the project to determine the proper treatment and disposal requirements for the material. Bottom sediments and debris would be transported for upland disposal at a licensed facility meeting these requirements. All dredging activities would be surrounded by a full-length weighted turbidity curtain and would be conducted within seasonal work windows. The turbidity curtain would be secured at either end so it does not move significantly during the in-water work. Dredging would likely take about 4 to 6 weeks to complete. There would be no discharge of the dredged material into waters of the United States.

The Project would accommodate three levels of battery storage units and each barge would have a total height of about 65 to 67 feet above the main barge deck. The barges would be moored using up to twelve 24-inch diameter steel pipe piles spaced approximately 25 feet apart and installed at Berth 20 of Pier K in the Brooklyn Navy Yard. Construction would include the dredging, pile installation, and mooring of the barges and would be completed over a period of approximately 12 months. The start date of construction is contingent on the Project receiving all applicable permits and authorizations, and will proceed as soon as practicable. These in-water activities would be completed in accordance with all regulatory restrictions for in-water construction, including no in-water work from January 15 through May 31 to protect spawning winter flounder, no sediment disturbing activities from March 1 through June 30 to protect anadromous species, and no dredging from November 15 through May 20 to protect overwintering striped bass.

PURPOSE AND NEED

Title XVII of the Energy Policy Act of 2005 (EPAct) established a Federal loan guarantee program for certain projects that employ innovative technologies and authorizes the Secretary of Energy to make loan guarantees available for those projects. NYC Energy LLC has applied for a loan guarantee pursuant to the U.S. DOE's Renewable Energy and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by EPAct, (REEE Projects). DOE is evaluating whether to provide a federal loan guarantee to NYC Energy LLC to support the development of the proposed Floating Battery Storage System (Project) in Brooklyn, New York. DOE is evaluating the project in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of

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[1] An environmental bucket is similar to a conventional clamshell dredge but has additional features that typically include a combination of covers, exterior pulleys, and sealed joints intended to reduce the amount of sediments that can spill or flow out of the bucket during dredging activities (Wang et al. 2022).

NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021).

The two principal goals of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for agency action is to comply with DOE's mandate under EPAct 2005 by selecting eligible projects that meet the goals of the Act. DOE is using the NEPA process to assist in determining whether to issue a loan guarantee to NYC Energy to support the proposed project.

NYC Energy LLC is proposing to develop a utility-scale FESS of up to 300 MW/1200 MWh of energy using stacking energy storage containers and associated equipment located on barges constructed for the Project. Energy storage will play a crucial role in meeting New York State's aggressive clean energy goals and objectives. It will help to integrate clean, renewable energy alternatives (i.e., primarily wind and solar generation) into New York's electric transmission grid, allow New York to meet peak power needs without relying on its oldest peaker plants, thereby reducing dependency on fossil fuel generation, which would reduce local air emissions, and prepare the New York electric grid for energy generated by new renewable energy facilities on- and off-shore. Successful deployment of the FESS, which represents a scalable modular design solution for utility-scale battery energy storage systems that can be adapted to a variety of locations, would facilitate further the development of alternative renewable energy systems. The FESS concept could be replicated throughout the country, such as at the piers of soon-to-be retired and retired fossil fuel-fired generation facilities that are located on rivers and bays, at closed shipyards, or at vacant piers.

COASTAL ZONE POLICY ASSESSMENTS

The project area is located within New York's designated coastal zone, which includes the entirety of the New York City waterfront. Based on review of the Coastal Management Program (CMP) policies for New York State, and the New York City Waterfront Revitalization Program (WRP), multiple CMP policies and WRP policies were found to be applicable to the proposed project. The applicable New York State and City policies and policy summaries are provided below.

NEW YORK STATE COASTAL MANAGEMENT PROGRAM

Table 1 identifies the New York CMP policies that apply to the project and provides a summary of the determination of consistency with these policies. DOE's detailed consistency assessment and determination for each applicable CMP policy is provided below.

> ***Policy 2:*** *Facilitate the siting of water dependent uses and facilities on or adjacent to coastal waters.*

The FESS would be the first utility-scale floating battery storage system in the U.S., and is also consistent with New York City's goals for the Brooklyn Navy Yard as outlined in Zoning Resolution Article 14, Chapter 4, in that the in-water location of the Project would preserve upland properties for other development purposes and increase overall revenue for the property. The FESS is being implemented in support of New York City's renewable energy goals including the retirement of fossil-fueled peaker plants that serve the City. For this reason, the energy storage system needs to be in New York City and ideally needs to connect to existing energy infrastructure to limit construction and related disturbance. Further, because the FESS would facilitate the storage and delivery of offshore wind-generated power specifically, it needs to have access to nearshore electric infrastructure like existing substations and interconnection opportunities.

The Brooklyn Navy Yard is an ideal site for the FESS because it is zoned for heavy industrial uses and provides access to an existing substation plus existing rights-of-way to facilitate the transmission line connection. There are a number of benefits associated with developing a floating facility compared to an upland facility. The FESS would be prepared offsite and floated into place, which would result in very limited disturbance to existing water-dependent uses and adjacent properties. Construction and maintenance requiring the delivery of heavy or oversized equipment would be readily accommodated by the FESS's in-water location and able to avoid the disruption of vehicle transportation in New York City. It would also be resilient to sea level rise and flood risk, as the mooring piles would be of sufficient length and capacity to support the barges under these conditions and the barges would always float. The Project's consideration of projected conditions with sea level rise and climate change are discussed in detail below under WRP Policy 6.2. Most industrial zoned areas in New York City are located in a flood zone, especially those areas with existing nearshore infrastructure required to support offshore wind generation, and the in-water design of the Project would improve its resiliency as compared to siting a similar battery energy storage system on land. The floating system would not hinder existing or future waterfront, water-dependent, or water-enhanced uses of Berth 20 of Pier K or the surrounding properties because it would not require the construction of landside structures. Due to its location next to Pier K at Berth 20, it would not hinder vessel activity in Wallabout Channel. At the end of its 30-year lease with Brooklyn Navy Yard, NYC Energy would decommission and remove the FESS from its location in the Channel. If necessary, the barges could be moved at any time during this 30-year lease term. Therefore, the Project would be consistent with this policy.

> ***Policy 11:*** *Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.*

The FESS site and large portions of the interconnection route are located entirely within the 1-percent annual chance floodplain, except for certain sections of the interconnection route that are located in the 0.2-percent annual chance floodplain or outside either floodplain. The FESS location in Wallabout Channel has a base flood elevation (BFE) of +13 feet NAVD88 and is in Zone VE which indicates additional hazards due to storm-induced velocity wave action. Portions of the interconnection route pass through Zone AE with BFEs of either +11 feet or +12 feet NAVD88, through the 0.2-percent annual chance floodplain, and through streets that are not located within either floodplain. The Hudson Avenue East Substation is also outside the floodplain.

The Project would not result in any significant adverse impacts to floodplains, as it would not affect flood levels, flood risk, or the flow of flood waters within the project site or adjacent areas. It would not alter the existing site elevation, would not alter the shoreline of the site, and would not encroach into adjacent properties. The FESS would comprise three barges floating at the water's surface and moored to piles installed to a top elevation of +33 feet NAVD88, and of sufficient capacity and length to secure the barges in storm conditions and with consideration of sea level rise, as described in detail below under WRP Policy 6.2. The barges would be expected to withstand conditions of the VE Zone including risks of waves, wind, and debris. The battery storage units and all associated equipment on the FESS would be secured to the barges and would not be at risk of detachment in storm conditions. The transmission lines would be installed in a trench backfilled with thermal sand beneath City streets along the interconnection route and would not be susceptible to flood damage. Therefore, the Project would be consistent with this policy.

> ***Policy 12:*** *Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.*

There are no natural protective features at the Project site. Therefore, this policy is not applicable.

> ***Policy 15:*** *Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.*

The Project would include dredging within Wallabout Channel to provide sufficient depth for construction access and mooring of the FESS. Dredging would be conducted within about 5.2 acres in Wallabout Channel down to the USACE authorized depth of 20 feet at mean low water (MLW). According to the most recent USACE Controlling Depth Report from 2004, water depths ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location. A bathymetric survey was conducted in August 2022 in Wallabout Channel to determine the dredging area for the Project and is attached for reference (**Enclosure 2**). To accommodate the 16 to 18-foot barge draft, approximately 81,500 cubic yards of sediment would be removed from the 5.2-acre dredge area within the Channel. Removal of this material, which does not supply beach materials, and deepening of the channel to the USACE authorized depth would not result in increased erosion to the shoreline, which is bulkheaded, and would not affect the net supply or flow of sediments in the East River or Wallabout Channel. Dredging would be conducted in accordance with the measures specified in permits issued by USACE and NYSDEC. Therefore, the Project would be consistent with this policy.

> ***Policy 17:*** *Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.*

See the response to Policy 11. While the FESS would be located within a flood hazard area, the barges would always float and the mooring piles would be of sufficient capacity and length, including consideration of sea level rise, to secure the barges during storm events. The transmission lines along the interconnection route located in the 1-percent annual chance floodplain would be installed below grade and would not be susceptible to damage from flooding. Therefore, the Project would be consistent with this policy.

> ***Policy 21:*** *Water dependent and water enhanced recreation will be encouraged and facilitated, and will be given priority over non-water-related uses along the coast.*

The shoreline of Wallabout Channel is entirely bulkheaded and does not currently offer public access to the water. Additionally, given the surrounding industrial and commercial uses (e.g., Brooklyn Navy Yard, City ferry landing) and the site's proximity to an M3-1 heavy industrial zoning district, it is not optimal for recreational uses. There are currently no plans to develop a waterfront recreational use along this portion of the Brooklyn Navy Yard shoreline. While the Project would not be associated with any water dependent or water-enhanced recreational uses, it also would not hinder future recreational uses of Wallabout Channel should they occur. Therefore, the Project would be consistent with this policy.

> ***Policy 22:*** *Development when located adjacent to the shore will provide for water-related recreation whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.*

See the response to Policy 21. The Project site is not ideal for water-related recreation, but the Project would not hinder future recreational uses of the Channel should they occur. Therefore, the Project would be consistent with this policy.

> ***Policy 23:*** *Protect, enhance and restore structures, districts, areas or sites that are of significance in the history, architecture, archaeology or culture of the State, its communities, or the Nation.*

A portion of the Project site and interconnection route is within the Brooklyn Navy Yard Historic District, which is listed on the State/National Register of Historic Places (NR 13NR06474). Pier K (Structure 802) was constructed in 1942 and is a contributing resource to the Brooklyn Navy Yard Historic District. The Substation L Building (Building 390), which currently comprises the shell of a one-story brick-walled enclosure, was constructed in 1940 on Pier K and is a non-contributing resource to the Historic District. The FESS would be moored at Berth 20 of Pier K and minor modifications to the pier would be required to accommodate an emergency access roadway and security fence and trenching on the pier for the interconnection. Building 390 would be demolished because of the Project, which would not constitute an adverse effect due to the building's non-contributing status. The FESS would be constructed offsite and floated into the mooring site, thereby minimizing potential construction related impacts to Pier K. The barges would be of a size and character similar to other industrial facilities in the Brooklyn Navy Yard and would not adversely affect the historic industrial character of the Historic District.

The interconnection route would remain in the street bed between the FESS and the Hudson Avenue East Substation, running beneath a parking lot and streets in the Historic District. It would be adjacent to a number of historic buildings in the Vinegar Hill Historic District which borders the Brooklyn Navy Yard Historic District. The transmission line would be installed at the depth of existing utilities and manholes would be installed at regular intervals for access. The streets along the interconnection route do not contain decorative historic paving treatments, and NYC Energy would incorporate best management practices during construction to avoid construction-related impacts to adjacent architectural resources during the transmission line installation.

The Project would not isolate any historic standing structures from or significantly alter their setting or visual relationship with the streetscape. It also would not introduce incompatible visual, audible, or atmospheric elements to the setting of any historic structure or Historic District, nor eliminate any publicly accessible views of these resources. On March 16, 2023, the New York State Office of Parks, Recreation, and Historic Preservation concurred with DOE's determination that the project would have no adverse effect on historic properties. Therefore, the Project would be consistent with this policy.

> ***Policy 27:*** *Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment and the facility's need for a shorefront location.*

The portion of the New York Control Area where the FESS would be located, comprising New York City and a portion of Westchester County, is the most congested load zone within the New York State Transmission System, and currently relies primarily on fossil fuel-fired generation facilities during periods of peak energy demand. The FESS would facilitate New York City's plans to decarbonize electricity generation and meet its clean energy mandates, including the retirement of fossil fuel-fired urban peaker plants. The FESS would facilitate the delivery of offshore wind generation directly to New York City in place of the delivery of electricity generated by non-renewable sources that currently serve the area. The project site is ideal for this service because the FESS would be located in an area zoned for industrial uses and would connect to the existing Hudson Avenue East 138 kV substation which is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison). The interconnection cables would run beneath established rights-of-way alongside other existing utility lines. Installing the energy storage containers on a barges would ensure that the stored energy would be resilient to flood events, as the barges would always float and would not be at risk of flooding, thereby improving reliability with respect to the electrical grid. Therefore, the Project would be consistent with this policy.

> ***Policy 35:*** *Dredging and filling in coastal waters and disposal of dredged material will be undertaken in a manner that meets existing State dredging permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.*

See the response to Policy 15. Dredging would be conducted in accordance with the measures specified in permits issued by the USACE and NYSDEC to minimize impacts to aquatic resources. It would be conducted within the extent of a full-length turbidity curtain to the extent practicable to minimize discharge or resuspended sediment to the Channel or East River using an environmental bucket to minimize the loss of sediments while the bucket is being lifted through the water column. All dredged materials would be placed on a scow without barges overflow, dewatered, and transported offsite for disposal at a licensed facility. While dredging would remove surface sediments to deepen portions of the Channel, it would not alter the substrate composition and would not result in adverse effects to sediment quality. The deeper waters within the dredged area may result in improved water quality due to improved flushing and exchange of water with the East River. Therefore, the Project would be consistent with this policy.

> ***Policy 44:*** *Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.*

The Project may result in temporary and permanent impacts to NYSDEC littoral zone tidal wetlands due to temporary increases in suspended sediment and localized turbidity during construction and dredging within Wallabout Channel to accommodate the FESS. Potential effects to littoral zone tidal wetlands outside the Project site during construction would be minimized by a full-length turbidity curtain for the duration of in-water activities, and the use of an environmental bucket and other best management practices during dredging. The hydrographic survey conducted in August 2022 identified approximately 22,730 square feet (0.5 acres) of waters within the dredging area that are 6 feet deep or less at MLW (i.e., littoral zone) (**Enclosure 3**). The Project would result in permanent impacts due to conversion of these wetlands to deeper surface waters with depths up to 20 feet within the USACE authorized navigation channel. The Applicant would coordinate with NYSDEC during the permitting process with respect to any mitigation required to offset the loss of NYSDEC littoral zone tidal wetlands. Therefore, the Project would be consistent with this policy.

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM

Table 2 identifies the New York City WRP policies that apply to the project and provides a brief summary of the determination of consistency with these policies. DOE's detailed consistency assessment and determination for each applicable WRP policy is provided below.

Policy 2: *Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.*

> *Policy 2.1: Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.*

The Project site is within a Significant Maritime and Industrial Area (SMIA) that encompasses the Brooklyn Navy Yard property. For projects within a SMIA, like the FESS, Policy 2.1 has priority over all other policies of the WRP. The FESS would be consistent with the goals of the WRP within SMIAs which include the support of industrial and maritime activity, and the provision of municipal and public utility services and energy generation in well-suited locations. The FESS would also be consistent with New York City's goals for the Brooklyn Navy Yard as outlined in Zoning Resolution Article 14, Chapter 4, in that the in-water location of the Project would preserve upland properties for other development purposes and increase overall revenue for the property. As discussed above under NYS Policy 2, the FESS is being implemented in support of New York City's renewable energy goals including the retirement of fossil-fueled peaker plants that serve the City. For this reason, the energy storage system needs to be in New York City and ideally needs to connect to existing energy infrastructure to limit construction and related disturbance. Further, because the FESS would facilitate the storage and delivery of offshore wind-generated power specifically, it needs to have access to nearshore electric infrastructure like existing substations and interconnection opportunities. The Brooklyn Navy Yard is an ideal site for the FESS because it is zoned for heavy industrial uses and provides access to an existing substation and existing rights-of-way to facilitate the transmission line connection. The floating system would not inhibit the safe and efficient operation of the SMIA as an industrial or maritime area; rather, it would be consistent with industrial uses and would improve the potential for maritime operations associated with dredging for the Project. Due to its location at Berth 20 of Pier K, the FESS would not hinder vessel activity in Wallabout Channel and would not preclude the use of Pier K or other Berths or future use of the existing berth where the FESS would be moored for other water-dependent purposes.

The FESS applying for a loan guarantee from DOE's Title XVII Innovative Energy Loan Guarantee Program, which was created by the Energy Policy Act of 2005 to finance projects that employ innovative and renewable or efficient energy technologies that avoid, reduce, or sequester anthropogenic greenhouse gas emissions. The FESS would be the first utility-scale floating battery storage system in the U.S., and its water-borne nature is a contributing factor to the qualification of the Project for this type of loan. Siting this project on land would not achieve the same level of innovation. There are a number of benefits associated with developing the battery energy storage system as a floating facility compared to an upland facility. The FESS would be prepared offsite and floated into place, which would result in very limited disturbance to existing water-dependent uses and adjacent properties. Construction and maintenance requiring the delivery of heavy or oversized equipment would be readily accommodated by the FESS's in-water location and able to avoid the disruption of vehicle transportation in New York City. It would also be resilient to sea level rise and flood risk, as described under Policy 6.2, as the mooring piles would be of sufficient length and capacity to support the barges under these conditions and the barges would always float. Most industrial zoned areas in New York City are in a flood zone, especially those areas with existing nearshore infrastructure required to support offshore wind generation, and the in-water design of the Project would improve its resiliency as compared to siting a similar battery energy storage system on land. At the end of its 30-year lease with Brooklyn Navy Yard, NYC Energy would decommission and remove the FESS from its location in the Channel. If necessary, the barges could be moved at any time during this 30-year lease term. Therefore, the Project promote this policy.

Policy 2.4: Provide infrastructure improvements necessary to support working waterfront uses.

The Project would be located south of the existing City ferry landing at Kent Avenue in Wallabout Channel and would not interfere with ferry operations. Dredging for the Project would deepen a portion of the Channel down to the USACE authorized depth of 20 feet at MLW. According to the most recent USACE Controlling Depth Report from 2004, water depths ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location. A hydrographic survey was conducted by the Applicant in August 2022, which identified water depths ranging from close to 0 feet at MLW at the head of the Channel to about 50 feet at its mouth. Within the presumed 5.2 acre dredging area, water depths currently range from about 8 to 20 feet at MLW, potentially with localized shallower waters close to the bulkhead. To accommodate the 16 to 18-foot barge draft, approximately 81,500 cubic yards of sediment would be removed from the 5.2-acre dredge area within the channel. Deepening of the dredged area would improve navigation within the SMIA for vessels that use the Channel. The dredged material would be placed on a scow and transported for disposal at a licensed facility. The Project would be moored at the existing Berth 20 of Pier K at the Brooklyn Navy Yard in docking space that has been unused for over 20 years and the FESS could be moved at any time if necessary. At the end of the 30-year lease term, the barges would be decommissioned and removed from the Project site. Minor surface rehabilitation of the bulkhead cap would be required and would be completed above the surface of the water using land-based equipment. The mooring piles that would be installed to support the FESS would be at the existing Berth 20 of Pier K. The Project would connect to the Hudson Avenue East Substation through a new transmission line installed beneath existing rights-of-way but would not require potable water or sanitary sewer connections. The FESS would not interfere with transportation within or around the Brooklyn Navy Yard, nor would it hinder use of Wallabout Channel by vessels. Therefore, the Project would promote this policy.

Policy 2.5: Incorporate consideration of climate change and sea level rise into the planning and design of waterfront industrial development and infrastructure, pursuant to WRP Policy 6.2.

As described below under Policy 6.2, the Project would minimize the impacts of flooding and would be consistent with Policy 6.2. Therefore, it would promote Policy 2.5.

Policy 3: *Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation.*

> *Policy 3.2: Support and encourage recreational, educational and commercial boating in New York City's maritime centers.*

The Project would be in an industrially zoned area that does not support commercial boat operations and it would not include development of upland properties. Dredging of a portion of Wallabout Channel would deepen the channel down to the USACE authorized depth of 20 feet. Dredging has not been conducted in the channel since before 2004 and deepening the channel to accommodate the FESS would also improve navigation for larger vessels, as described above under Policy 2.4. The FESS would be moored at Berth 20 of Pier K at the Brooklyn Navy Yard which would keep it at the pier edge and would not create an obstruction in Wallabout Channel or result in hazards to navigation. The Project would incorporate resiliency measures consistent with Policy 6.2, as described below. Therefore, the Project would promote this policy.

> *Policy 3.5: In Priority Marine Activity Zones, support the ongoing maintenance of maritime infrastructure for water-dependent uses.*

The Project would require minor landside modifications to Pier K within the Brooklyn Navy Yard to accommodate the moored FESS, including grading and repairing of the bulkhead cap where the barges would be moored. The in-kind in-place surface repairs made to the existing bulkhead would be consistent maritime infrastructure repairs considered under Policy 3.5. Also in accordance with this policy, mooring of the FESS at Berth 20 of Pier K would not preclude the subsequent use or future adaptation of the shoreline for vessel docking, berthing, or tie up. As discussed above under NYS Policy 2 and WRP Policy 2.1, the in-water design of the Project would be beneficial in terms of safety and resiliency and would be consistent with the goals outlined in the City's Zoning Resolution for Brooklyn Navy Yard. The existing berth and proposed mooring piles would be used to secure the barges in the Priority Marine Activity Zone within an area zoned for industrial use, and the barges could be moved in the future if necessary. Therefore, the Project would promote this policy.

Policy 4: *Protect and restore the quality and function of ecological systems within the New York City coastal area.*

> *Policy 4.5: Protect and restore tidal and freshwater wetlands.*

The Project may result in temporary and permanent impacts to NYSDEC littoral zone tidal wetlands due to temporary increases in suspended sediment and localized turbidity during construction and dredging within Wallabout Channel to accommodate the FESS. Potential effects to littoral zone tidal wetlands outside the Project site during construction would be minimized by a full-length turbidity curtain for the duration of in-water activities, and the use of an environmental bucket and other best management practices during dredging. The hydrographic survey conducted in August 2022 identified approximately 22,730 square feet (0.5 acres) of waters within the dredging area that are 6 feet deep or less at MLW (i.e., littoral zone) (**Enclosure 3**). The Project would result in permanent impacts to these wetlands due to conversion of these wetlands to deeper surface waters with depths up to 20 feet within the USACE authorized navigation channel. The Applicant would coordinate with NYSDEC during the permitting process with respect to any mitigation required to offset the loss of NYSDEC littoral zone tidal wetlands. Therefore, the Project would be consistent with this policy.

> *Policy 4.7: Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.*

Threatened or endangered species with the potential to occur near the project site include Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), Kemp's ridley sea turtle (*Lepidochelys kempii*), and leatherback sea turtle (*Dermochelys coriacea*). Migrating and foraging habitat is available in Wallabout Channel for adult shortnose sturgeon, adult and subadult Atlantic sturgeon, and juvenile and adult sea turtles. Shortnose and Atlantic sturgeon, which can be found in the project area year-round, are only expected to occur in the relatively shallow waters of the Project site on rare and brief occasions as transient individuals, as both species prefer deeper waters. Sea turtles show a strong preference for bays and other sheltered areas off eastern Long Island that provide rich food sources but have the potential to occur near the mouth of Wallabout Channel as they migrate through the East River during the warmer months of summer and fall. The loss of 37.7 feet of bottom habitat in the footprint of the mooring piles would represent a minimal impact given the amount of similar habitat available in the area. Dredging within the Project site, which currently ranges from 7 to 14 feet deep, would create deeper waters and additional foraging habitat that could potentially be used by sturgeon migrating through the East River. Measures implemented during construction would limit the potential for temporary adverse effects to protected species, including: the use of a turbidity curtain for the duration of in-water activities, pile installation using a vibratory hammer to the extent possible, the use of a soft start and cushion block during impact hammering, and minimizing draft depth and speeds of construction vessels. DOE initiated consultation with National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act on February 10, 2023, and determined that the Project is not likely to adversely affect any listed species or critical habitat. NMFS concurred with this determination on May 23, 2023. Therefore, the Project would promote this policy.

> *Policy 4.8: Maintain and protect living aquatic resources.*

Construction of the Project would result in temporary increases in suspended sediment associated with dredging and pile installation. It would also result in increased underwater noise during pile installation. Measures implemented during construction to minimize impacts to aquatic resources due to sediment resuspension or increases in underwater noise include the use of a turbidity curtain and other best management practices during dredging, and the use of a vibratory hammer during pile installation. Dredging would be performed in accordance with the measures specified in permits issued by the USACE and NYSDEC to minimize impacts to aquatic resources. It would be conducted within the extent of a full-length turbidity curtain to the extent practicable to minimize discharge of resuspended sediment to the Channel using an environmental bucket to minimize the loss of sediments while the bucket is being lifted through the water column. All dredged materials would be placed on a scow without barge overflow, dewatered, and transported offsite for disposal at a licensed facility. While dredging would remove surface sediments to deepen this portion of the Channel, it would not alter the substrate composition and would not result in adverse effects to sediment quality. The dredged area would undergo some natural deposition of sediments over time, and the deeper waters would allow flushing to occur such that the exposed sediments would not have a long-term impact on water quality in the area. Benthic organisms would be expected to quickly recolonize the dredged area, as similar habitat is present in the surrounding area that would be unaffected or minimally affected by the project activities and would serve as the source of colonizing invertebrates. The loss of approximately 37.7 square feet of bottom habitat from the mooring piles and 1.3 acres of additional overwater coverage along the shoreline would be minimal compared to similar habitat that would continue to be available in the area. The Project would not result in significant long-term adverse impacts to water quality or aquatic habitat. Therefore, it would promote this policy.

Policy 5: *Protect and improve water quality in the New York City coastal area.*

> *Policy 5.2: Protect the quality of New York City's waters by managing activities that generate nonpoint source pollution.*

The Project would not require potable water, vessel pumpout, or sanitary sewer services. The only direct discharge related to the Project would be stormwater overflow from the barge surface. The battery storage containers would be enclosed so there is no potential for leaching into stormwater runoff. The FESS would not store fuel or other chemicals onsite. Stormwater runoff from the barges would be similar to stormwater discharge from a pier or other overwater structure and would not result in adverse impacts to surface waters. Therefore, the Project would promote this policy.

> *Policy 5.3: Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.*

See the response to Policy 4.8. Dredging for the Project would be conducted within a full-length turbidity curtain to the extent possible to minimize the potential effects of sediment resuspension on surrounding areas. At the time of the USACE 2004 Controlled Depth Report, water depths in Wallabout Channel ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location, which would make the waters too deep to be classified as NYSDEC littoral zone tidal wetlands. The Applicant conducted a hydrographic survey in August 2022. Should NYSDEC littoral zone tidal wetlands be present within the dredging footprint, the Project would result in permanent impacts to these wetlands due to conversion of these wetlands to deeper surface waters with depths up to 20 feet. The Applicant would coordinate with NYSDEC during the permitting process with respect to any mitigation required to offset the loss of NYSDEC littoral zone tidal wetlands. Dredging would not affect sediment processes within Wallabout Channel and would not impact NYSDEC littoral zone tidal wetlands outside the Project site. Therefore, the Project would promote this policy.

Policy 6: *Minimize loss of life, structures, infrastructure, and natural resources caused by flooding and erosion, and increase resilience to future conditions created by climate change.*

> *Policy 6.1: Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the site, the use of the property to be protected, and the surrounding area.*

The FESS site and large portions of the interconnection route are located entirely within the 1-percent annual chance floodplain, with the exception of certain sections of the interconnection route that are located in the 0.2-percent annual chance floodplain or outside either floodplain. The FESS location in Wallabout Channel has a base flood elevation (BFE) of +13 feet NAVD88 and is in Zone VE which indicates additional hazards due to storm-induced velocity wave action. Portions of the interconnection route pass through Zone AE with BFEs of either +11 feet or +12 feet NAVD88, through the 0.2-percent annual chance floodplain, and through streets that are not located within either floodplain. The Hudson Avenue East Substation is also outside the floodplain.

Under WRP Policy 6, the primary goal for projects in coastal areas is to reduce risks posed by current and future coastal hazards, particularly major storms that are likely to increase due to climate change and sea level rise. Consistent with this policy, the Project would not result in any significant adverse impacts to floodplains, as it would not affect flood levels, flood risk, or the flow of flood waters within the project site or adjacent areas. It would not alter the existing site elevation, would not alter the bulkheaded shoreline of the site, and would not encroach into adjacent properties. The FESS would comprise three barges floating at the water's surface and moored to piles installed to a top elevation of +33 feet NAVD88, and of sufficient capacity and length to secure the barges in storm conditions and with consideration of sea level rise. The barges would be expected to withstand conditions of the VE Zone including risks of waves, wind, and debris. The battery storage units and all associated equipment on the FESS would be secured to the barges and would not be at risk of detachment in storm conditions. The transmission lines would be installed in a trench backfilled with thermal sand beneath City streets along the interconnection route and would not be susceptible to flood damage. Ultimately, the Project would result in an energy storage and delivery system for offshore wind generation that would be resilient to sea level rise and flooding given the floating design and the below-grade interconnection route. Therefore, the Project would promote this policy.

> *Policy 6.2: Integrate consideration of the latest New York City projections of climate change and sea level rise (as published in New York City Panel on Climate Change 2015 Report, Chapter 2: Sea Level Rise and Coastal Storms) into the planning and design of projects in the city's Coastal Zone.*

Guidance provided by the NYC Department of City Planning recommends a detailed methodology to determine consistency with Policy 6.2 for projects that would construct new critical infrastructure, like the proposed project. The sections below use the detailed methodology to evaluate consistency with this policy.

> *1. Identify vulnerabilities and consequences: assess the project's vulnerabilities to future coastal hazards and identify what the potential consequences may be.*
>
> *a. Complete the Flood Evaluation Worksheet.*

The information in the following subsections is based on the results of the completed worksheet, which is provided in **Enclosure 4**.

> *b. Identify any project features that may be located below the elevation of the 1% floodplain over the lifespan of the project under any sea level rise scenario.*

The design life of the FESS barges and mooring piles is 50 years, assuming they are regularly maintained. However, because the barges would be decommissioned and removed from the site at the end of NYC Energy's 30-year lease term with Brooklyn Navy Yard, the Project is evaluated based on a 30-year lifespan.

The New York City Panel on Climate Change (NPCC) projected that sea levels are likely to increase by up to 30 inches by the 2050s, 58 inches by the 2080s, and 75 inches by 2100 under the "High" scenario projections, relative to the 2000-2004 base period (the most recent projections from the NPCC were issued in 2015). Under current conditions, the FESS Project site is in the 1-percent annual chance floodplain in Zone VE with a BFE of +13 feet NAVD88 and the interconnection route passes through Zone AE with BFEs of +11 feet and +12 feet NAVD88. Zone VE indicates an area subject to inundation by the 1-percent annual chance flood event with additional hazards due to storm-induced velocity wave action. Based on the NPCC projections, the 1-percent annual chance flood elevation for the FESS site could increase to +15.5 feet by the 2050s, +17.83 feet by the 2080s, and up to +19.25 feet by 2100. The evaluation year is 2050 for the FESS, which would be in place for 30 years.

The transmission line would be located below grade beneath existing rights-of-way in the 1-percent annual chance floodplain (BFEs of +11 and +12 feet). While they would be below the floodplain elevation, these lines would not be susceptible to flooding under existing or projected conditions as they would be below ground, installed within a trench backfilled with thermal sand, and designed to be resistant to moisture. The FESS would be moored to piles with a top elevation of +33 feet NAVD88, which would be above the flood elevation throughout the 30-year lifespan of the Project. The FESS would always float and would be free to move vertically with the water level.

> *c. Identify any vulnerable, critical, or potentially hazardous features that may be located below the elevation of Mean Higher High Water (MHHW) over the lifespan of the project under any sea level rise scenario.*

Based on the range of sea level rise predictions described above, MHHW at the Project site could increase to +4.97 feet in the 2050s, +7.3 feet in the 2080s, and +8.72 feet by 2100. The transmission line would be installed below-grade and would not be vulnerable to MHHW under existing or projected conditions. No in-water project elements would be vulnerable to MHHW under the projected conditions.

> *d. Describe how any additional coastal hazards are likely to affect the project, both currently and in the future, such as waves, high winds, or debris.*

The FESS would be within Zone VE and would be at risk from 1-percent annual chance flood events and additional hazards from wave action, including storm impacts due to waves, high winds, and debris under current and future conditions.

> *2. Identify adaptive strategies: assess how the vulnerabilities and consequences identified in Step 1 are addressed through the project's design and planning.*
>
> *a. For any features identified in Step 1(b), describe how any flood damage reduction elements incorporated into the project, or any natural elevation on the site, provide any additional protection. Describe how would any planned adaptive measures protect the feature in the future from flooding?*

Most of the Project site is currently within the 1-percent annual chance floodplain and would continue to be within the floodplain under all projected scenarios. The top elevation of the mooring piles would be well above current and projected flood elevations and would allow the FESS to rise and fall with the tides and water levels during flood events. They would be of sufficient capacity and length to anchor the barges under projected conditions and in the event of waves, high winds, and debris associated with storms. All mechanical and electrical equipment within the FESS would be enclosed in the energy storage containers and would connect to the transmission route through the bulkhead. The transmission lines would be designed for below-grade operation and resistant to moisture.

> *b. For any features identified in Step 1(c), describe how any flood damage reduction elements incorporated into the project, or any natural elevation on the site, provide any additional protection. Describe how would any planned adaptive measures protect the feature in the future from flooding?*

As described in Step 1(c), none of the project elements would be vulnerable to MHHW within their design life based on the High scenario projections.

> *c. Describe any additional measures being taken to protect the project from additional coastal hazards such as waves, high winds, or debris.*

The mooring piles would be of sufficient length and capacity to withstand coastal hazards such as waves, high winds, or debris. The FESS would be able to rise and fall with the water level during flood events while remaining secured to the piles and would always float. The energy storage containers onboard would be fully enclosed and would not be susceptible to flooding or damage from precipitation. The interconnection line would be buried and would not be susceptible to these additional coastal hazards.

> *d. Describe how the project would affect the flood protection of adjacent sites, if relevant.*

Because the floodplain within New York City is controlled by astronomic tide and meteorological forces like hurricanes, and not by fluvial flooding, the project does not have the potential to adversely affect the floodplain or result in increased coastal flooding at adjacent sites or within the study area. The project would not alter the bulkheaded shoreline or encroach into adjacent areas. Deepening of the Project site would not alter tidal flow or surface water levels such that behavior of the water would change during flood conditions. During and following construction, activities at the Project site would be managed as described above under

Policy 5.2. Any excavation would employ erosion and sediment control measures consistent with the New York State Erosion and Sediment Control Manual.

> *3. Assess policy consistency: conclude whether the project is consistent with Policy 6.2 of the Waterfront Revitalization Program.*

The Project site is within the 1-percent annual chance floodplain with additional storm hazards. It would not involve the construction of new vulnerable or hazardous features and would not require any structures to be built on land. The Project has been designed to account for current and future risks from flooding including installation of the mooring piles to an elevation that would remain above future flood elevations, and containment of all electrical and mechanical systems on the FESS. By design, the FESS would be resilient to sea level rise and storm events under projected conditions given that it is a floating system. The barges would be secured to the mooring piles, would rise and fall with the water levels, and would float at all times. It would be stable during storm events in Zone VE given these design factors. The interconnection line would be installed below-grade within a concrete conduit and would not be susceptible to coastal hazards. Further, the FESS would provide grid resiliency since it would facilitate the continued operation of the energy storage and delivery components onboard during storm events and under projected sea level rise. With these measures in place, the Project would promote this policy.

Policy 7: *Minimize environmental degradation and negative impacts on public health from solid waste, toxic pollutants, hazardous materials, and industrial materials that may pose risks to the environment and public health and safety.*

> *Policy 7.1: Manage solid waste material, hazardous wastes, toxic pollutants, substances hazardous to the environment, and the unenclosed storage of industrial materials to protect public health, control pollution and prevent degradation of coastal ecosystems.*

The Brooklyn Navy Yard, including the FESS site, was entered into the NYSDEC's Voluntary Cleanup Program in May 1998 (Site No. V00120) to remediate past releases of metals, petroleum products, and PCBs. Remediation of the Navy Yard was completed in 2018 and the site is now subject to engineering controls instituted for the presence of residual contamination, which is managed under a NYSDEC-approved Site Management Plan (SMP). Based on the age of the pier and onsite structures, asbestos-containing materials and lead-based paint may be present. Onsite electrical equipment like transformers, capacitors, fluorescent light fixtures, and voltage regulators may contain PCBs. Construction activities proposed for the Project would be conducted in accordance to the SMP, thereby minimizing the potential for adverse impacts due to hazardous material exposure. The limited shallow soil disturbance and trenching required for the Project would also be subject to the SMP and its Excavation Work Plan that requires all encountered hazardous materials to be disposed of in accordance with federal, state, and local regulations. Construction activities would be conducted in accordance with the procedures defined in the site-specific Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) to protect workers, the Navy Yard, and surrounding community from potential impacts related to hazardous materials. Soil disturbing activities for the interconnection route outside the jurisdiction of the NYSDEC-approved SMP would be conducted in accordance with a Waste Handling Plan that would be prepared and implemented for the Project. This would include best management practices for identifying, collecting, handling, storing, and disposing of project-related wastes generated or encountered during construction, including hazardous and contaminated materials. Dredged materials removed from Wallabout Channel would be transported offsite by barges or scow for disposal at a licensed facility. With these protocols in place, the Project would promote this policy.

Policy 9: *Protect scenic resources that contribute to the visual quality of the New York City coastal area.*

> *Policy 9.1: Protect and improve visual quality associated with New York City's urban context and the historic and working waterfront.*

The Project would not change any urban design features such that the context of natural or built visual resources is substantially altered. The FESS would be located along the shoreline of a former naval shipyard that is now an industrial park and would be adjacent to an active City ferry landing. The FESS barges that would be positioned within Wallabout Channel would be similar to other industrial vessels moored within the Brooklyn Navy Yard, such as the Matilde concrete barge currently moored at Pier K and would not significantly alter its visual qualities when viewed from the surrounding area. The FESS would be approximately the same height as the adjacent salt shed structure on the pier and railway trestle to the south. It would not introduce any incompatible visual elements to the setting of the Brooklyn Navy Yard and would not eliminate any publicly-accessible views of the area. Working vessels have been part of the visual context of the Brooklyn Navy Yard since it began operation and the Project would be consistent with the industrial nature of the surrounding area. Therefore, it would promote this policy.

Policy 10: *Protect, preserve, and enhance resources significant to the historical, archaeological, architectural, and cultural legacy of the New York City coastal area.*

> *Policy 10.1: Retain and preserve historic resources, and enhance resources significant to the coastal culture of New York City.*

A portion of the Project site and interconnection route is within the Brooklyn Navy Yard Historic District, which is listed on the State/National Register of Historic Places (NR 13NR06474). Pier K (Structure 802) was constructed in 1942 and is a contributing resource to the Brooklyn Navy Yard Historic District. The Substation L Building (Building 390), which currently comprises the shell of a one-story brick-walled enclosure, was constructed in 1940 on Pier K and is a non-contributing resource to the Historic District. The FESS would be moored at the existing Berth 20 of Pier K and minor modifications to the pier would be required to accommodate the mooring piles, an emergency access roadway and security fence, and trenching beneath the pier for the interconnection. Building 390 would be demolished as a result of the Project, which would not constitute an adverse effect due to the building’s non-contributing status. The FESS would be constructed offsite and floated into the mooring site, thereby minimizing potential construction related impacts to Pier K. The barges would be of a size and character similar to other industrial facilities in the Brooklyn Navy Yard and would not adversely affect the historic industrial character of the Historic District. On March 16, 2023, the New York Office of Parks, Recreation, and Historic Preservation concurred with DOE’s determination that the Protection would have no adverse effects on historic properties.

The interconnection route would remain in the street bed between the FESS and the Hudson Avenue East Substation, running beneath a parking lot and streets in the Historic District. It would be adjacent to a number of historic buildings in the Vinegar Hill Historic District which borders the Brooklyn Navy Yard Historic District. The transmission line would be installed at the depth of existing utilities and manholes would be installed at regular intervals for access. The streets along the interconnection route do not contain decorative historic paving treatments, and NYC Energy would incorporate best management practices during construction to avoid construction-related impacts to adjacent architectural resources during the transmission line installation. The Project would not isolate any historic standing structures from or significantly alter their setting or visual relationship with the streetscape. It also would not introduce incompatible visual, audible, or atmospheric elements to the setting of any historic structure or Historic District, nor eliminate any publicly accessible views of these resources. Therefore, the Project would promote this policy.

> *Policy 10.2: Protect and preserve archaeological resources and artifacts.*

Archaeological resources have not been identified at the Project site either in Wallabout Channel or along the interconnection route. The depth of the proposed transmission line within existing streetbeds would not extend beneath the depth of existing fill material, and the Project would not be expected to encounter artifacts. Should any unexpected resources be encountered during construction. On March 16, 2023, the New York Office of Parks, Recreation, and Historic Preservation concurred with DOE's determination that the Protection would have no adverse effects on historic properties, including archeological resources. DOE is also coordinating with four federally-recognized Native American Tribes regarding the project, and at this time one Tribe has responded saying there are no comments. Therefore, the Project would promote this policy.

SUMMARY TABLES

Table 1. New York Coastal Management Program Consistency Review Summary		
Policy Number	**Policy Statement**	**Discussion Notes**
1	Restore, revitalize, and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational, and other compatible uses.	N/A. The Project would remove a deteriorated building from Pier K but would not restore, revitalize, or redevelop deteriorated or underutilized waterfront areas as described in this policy.
2	Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.	Consistent. The Project site within the M3-1 heavy industrial zoning area provides required access to existing nearshore infrastructure to facilitate the storage and delivery of offshore wind-generated energy. The in-water design of the FESS would provide resiliency to sea level rise and flood risk, and the floating system would not hinder existing or future waterfront, water-dependent, or water-enhanced uses of Pier K or the surrounding properties.
3	Further develop the state's major ports of Albany, Buffalo, New York, Ogdensburg, and Oswego as centers of commerce and industry, and encourage the siting, in those port areas, including those under the jurisdiction of state public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.	N/A. The FESS is not adjacent to these port areas and the Project does not entail work that would alter a major port or waterway.
4	Strengthen the economic base of smaller harbor areas by encouraging the development and enhancement of those traditional uses and activities which have provided such areas with their unique maritime identity.	N/A. The Project will not impact harbor areas positively or negatively.
5	Encourage the location of development in areas where public services and facilities essential to such development are adequate.	Consistent. The Project does not require public services except for the existing electrical infrastructure. The fire suppression system will comprise a dry standpipe system accessible to the FDNY through an exterior connection.
6	Expedite permit procedures in order to facilitate the siting of development activities at suitable locations.	Consistent. DOE is coordinating this coastal zone evaluation letter with a National Environmental Policy Act Review (NEPA), to inform its decision making on NYC Energy's loan guarantee application to the Title XVII Innovative Energy Loan Guarantee Program
7	Significant Coastal Fish and Wildlife Habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.	N/A. The Project is not located within or adjacent to a Significant Coastal Fish and Wildlife Habitat.
8	Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bio-accumulate in the food chain or which cause significant sub lethal or lethal effect on those resources.	Consistent. The Project does not entail the introduction of hazardous wastes or other pollutants that bio-accumulate in the food chain.
9	Expand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources.	N/A. The Project has no anticipated effects on access to, supplementation of, or development of new resources.

Table 1. New York Coastal Management Program Consistency Review Summary

Policy Number	Policy Statement	Discussion Notes
10	Further develop commercial finfish, shellfish, and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the state's seafood, maintaining adequate stocks, and expanding aquaculture facilities.	N/A. Policy is not the Project's purpose.
11	Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.	Consistent. The Project would not affect flood levels, flood risk, or the flow of flood waters within the Project site or adjacent areas. The FESS would be secured to the mooring piles at all times and allowed to rise and fall with tides and flood waters.
12	Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands, and bluffs.	N/A. The FESS would be located in-water and the transmission line would be below-grade in existing rights-of-way, and there are no natural protective features in the project area.
13	The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.	N/A. Policy is not the Project's purpose.
14	Activities and development, including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measureable increase in erosion or flooding at the site of such activities or development, or at other locations.	Consistent. The Project would be constructed with Best Management Practices in place. All appropriate permits would be acquired and work would be conducted in accordance with all federal, state, and local laws.
15	Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.	Consistent. Dredging activities would be conducted in accordance with Best Management Practices to minimize increases in suspended sediment and adverse effects to aquatic biota and would not affect adjacent waters or shoreline.
16	Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.	N/A. Policy is not the Project's purpose.
17	Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.	N/A. Policy is not the Project's purpose. Project would not result in increased risk to natural resources or property from flooding and erosion.

Table 1. New York Coastal Management Program Consistency Review Summary

Policy Number	Policy Statement	Discussion Notes
18	To safeguard the vital economic, social and environmental interests of the state and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas.	Consistent. The Project would protect the economic and social interests of the state and its citizens because work would be done in compliance with environmental and historical preservation laws generated to protect said interests. All appropriate permits would be acquired, and work would be conducted in accordance with all federal, state, and local laws.
19	Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.	N/A. Policy is not the Project's purpose and recreational uses are not currently provided at the Project site. The FESS would not hinder existing water-related recreation resources and facilities nearby.
20	Access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.	N/A. The Project Site is in an M3-1 heavy industrial zoning district which is not conducive to public recreational use.
21	Water-dependent and water-enhanced recreation will be encouraged and facilitated, and will be given priority over non-water-related uses along the coast.	Consistent. The Project site is within a M3-1 heavy industrial zoning district which does not provide water-dependent or water-enhanced recreation. The Project would not hinder future recreational uses of Wallabout Channel or the waterfront should they occur.
22	Development, when located adjacent to the shore, will provide for water-related recreation, whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.	Consistent. The Project site is within a M3-1 heavy industrial zoning district which is generally not compatible with water-dependent or water-enhanced recreation. The Project would not hinder future recreational uses of Wallabout Channel or the waterfront should they occur.
23	Protect, enhance, and restore structures, districts, areas or sites that are of significance in the history, architecture, archaeology, or culture of the state, its communities, or the nation.	Consistent. DOE, in accordance with Section 106 of the National Historic Preservation Act, consulted with the New York State Historic Preservation Office, finding that the project would have no adverse effects in historic properties.The SHPO concurred with this finding on March 16, 2023.
24	Prevent impairment of scenic resources of statewide significance.	Consistent. The Project would not impact scenic resources of statewide significance.
25	Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance, but which contribute to the overall scenic quality of the coastal area.	N/A. Policy is not the Project's purpose.
26	Conserve and protect agricultural lands in the state's coastal area.	N/A. Project would take place on previously developed land not suitable for agricultural use.
27	Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location.	Consistent. FESS would facilitate the storage and delivery of offshore wind generation directly to New York City, which requires access to existing electrical grid infrastructure in nearshore areas. The Project would support the City's goals of decarbonizing electricity generation including the retirement of fossil fuel-fired peaker plants.

Table 1. New York Coastal Management Program Consistency Review Summary

Policy Number	Policy Statement	Discussion Notes
28	Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.	N/A. The Project does not entail or is not influenced by ice management practices.
29	Encourage the development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies, and ensure the environmental safety of such activities.	N/A. Policy is not the Project’s purpose. However, the Project would support existing offshore wind generation through storage and delivery of energy.
30	Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.	N/A. The Project would not involve the discharge of municipal, industrial, or commercial discharge of pollutants into coastal waters.
31	State coastal area policies and management objectives of approved local waterfront revitalization programs will be considered while reviewing coastal water classifications and while modifying water quality standards; however, those waters already overburdened with contaminants will be recognized as being a development constraint.	N/A. Policy is not the Project’s purpose since the Project would not involve the review of or modification to the state’s adopted coastal water classifications or water quality standards.
32	Encourage the use of alternative or innovative sanitary waste systems in small communities where the costs of conventional facilities are unreasonably high, given the size of the existing tax base of these communities.	N/A. Policy is not the Project’s purpose as it would not involve evaluation of sanitary waste systems.
33	Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.	Consistent. Industry standard BMPs would be employed while conducting all work and staging activities for the Project.
34	Discharge of waste materials into coastal waters from vessels subject to state jurisdiction will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas.	N/A. Policy is not the Project’s purpose, and the Project would have no impact on vessel discharges.
35	Dredging and filling in coastal waters and disposal of dredged material will be undertaken in a manner that meets existing State permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.	Consistent. Best Management Practices would be used during dredging activities and dredged materials would be disposed of offsite at an upland licensed facility.
36	Activities related to the shipment and storage of petroleum and other hazardous materials will be conducted in a manner that will prevent or at least minimize spills into coastal waters; all practicable efforts will be undertaken to expedite the cleanup of such discharges; and restitution for damages will be required when these spills occur.	Consistent. The Project would adhere to safety protocols and procedures developed by the project sponsor.
37	Best management practices will be utilized to minimize the non-point discharge of excess nutrients, organics and eroded soils into coastal waters.	N/A. The Project would not involve the discharge of nutrients, organics, or eroded soils.
38	The quality and quantity of surface water and groundwater supplies will be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.	Consistent. The Project would have no anticipated effects on the quality or quantity of surface or groundwater supplies.

Table 1. New York Coastal Management Program Consistency Review Summary		
Policy Number	**Policy Statement**	**Discussion Notes**
39	The transport, storage, treatment and disposal of solid wastes, particularly hazardous wastes, within coastal areas will be conducted in such a manner so as to protect groundwater and surface water supplies, significant fish and wildlife habitats, recreation areas, important agricultural land, and scenic resources.	Consistent. Construction would be conducted in accordance with the procedures defined through the NYSDEC-approved Site Management Plan (SMP) for the Brooklyn Navy Yard. Contractors would use Best Management Practices in federal and state permits for transport, storage, treatment, and disposal of hazardous and contaminated materials.
40	Effluent discharged from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.	N/A. The Project would not involve effluent from a steam electric generating or industrial facility.
41	Land use or development in the coastal area will not cause national or state air quality standards to be violated.	Consistent. The Project and its construction activities would not violate state or national air quality standards.
42	Coastal management policies will be considered if the state reclassifies land areas pursuant to the prevention of significant deterioration regulations of the federal clean air act.	N/A. Policy is not the Project's purpose as it does not propose reclassifying land areas pursuant to the Federal Clean Air Act.
43	Land use or development in the coastal area must not cause the generation of significant amounts of acid rain precursors: nitrates and sulfates.	Consistent. As supporting infrastructure for offshore wind generated energy, the Project would assist in reducing acid rain precursors.
44	Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.	Consistent. The Project would include mitigation for the conversion of NYSDEC littoral zone tidal wetlands to deeper surface waters in the dredged area.

Table 2. New York City Waterfront Revitalization Program Consistency Review Summary		
Policy Number	**Policy Statement**	**Discussion Notes**
1.1	Encourage commercial and residential redevelopment in appropriate Coastal Zone areas.	N/A. Policy is not Project's purpose as it does not include commercial or residential development.
1.2	Encourage non-industrial development with uses and design features that enliven the waterfront and attract the public.	N/A. Policy is not Project's purpose as it does not include commercial or residential development.
1.3	Encourage redevelopment in the Coastal Zone where public facilities and infrastructure are adequate or will be developed.	N/A. Policy is not Project's purpose as it does not include commercial or residential development.
1.4	In areas adjacent to SMIAs, ensure new residential development maximizes compatibility with existing adjacent maritime and industrial uses.	N/A. Policy is not Project's purpose as it does not include commercial or residential development.
1.5	Integrate consideration of climate change and sea level rise into the planning and design of waterfront residential and commercial development, pursuant to WRP Policy 6.2.	N/A. Policy is not Project's purpose as it does not include commercial or residential development.
2.1	Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.	Promote. The Project would be within a Significant Maritime and Industrial Area and would be consistent with this policy through its support of offshore wind electricity generation.
2.2	Encourage a compatible relationship between working waterfront uses, upland development and natural resources within the Ecologically Sensitive Maritime and Industrial Area.	N/A. The Project site is not within or adjacent to an Ecological Sensitive Maritime and Industrial Area.
2.3	Encourage working waterfront uses at appropriate sites outside the Significant Maritime and Industrial Areas or Ecologically Sensitive Maritime Industrial Area.	N/A. The Project site is within a Significant Maritime and Industrial Area.
2.4	Provide infrastructure improvements necessary to support working waterfront uses.	Promote. Dredging for the Project to the USACE authorized navigational channel depth would improve the function of Wallabout Channel. Project would modify an existing berth to accommodate mooring of the FESS.
2.5	Incorporate consideration of climate change and sea level rise into the planning and design of waterfront industrial development and infrastructure, pursuant to WRP Policy 6.2.	Promote. The Project would incorporate flood protection measures throughout the design and would improve resiliency of the electrical grid during storm events.
3.1	Support and encourage in-water recreational activities in suitable locations.	N/A. Project site is within an M3-1 heavy industrial zoning area and is not suitable for in-water recreational activities. The Project would not hinder future recreational uses should they occur.
3.2	Support and encourage recreational, educational and commercial boating in New York City's maritime centers.	N/A. Project site is within an M3-1 heavy industrial zoning area and is not suitable for recreational, educational, and commercial boating activities. The Project would not hinder these uses should they occur in the future.
3.3	Minimize conflicts between recreational boating and commercial ship operations.	N/A. Project site is within an M3-1 heavy industrial zoning area and is not suitable for recreational boating activities, and the Channel does not support commercial ship operations. The Project would not hinder these uses should they occur in the future.

Table 2. New York City Waterfront Revitalization Program Consistency Review Summary		
Policy Number	**Policy Statement**	**Discussion Notes**
3.4	Minimize impact of commercial and recreational boating activities on the aquatic environment and surrounding land and water uses.	N/A. Policy is not the Project's purpose and would not involve commercial or recreational boating activities.
3.5	In Priority Marine Activity Zones, support the ongoing maintenance of maritime infrastructure for water-dependent uses.	Promote. Dredging and surface rehabilitation of the bulkhead would support maritime infrastructure for water-dependent uses.
4.1	Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas.	N/A. The Project is not within or adjacent to a Special Natural Waterfront Area.
4.2	Protect and restore the ecological quality and component habitats and resources within the Ecologically Sensitive Maritime and Industrial Area.	N/A. The Project is not within or adjacent to an Ecologically Sensitive Maritime and Industrial Area.
4.3	Protect designated Significant Coastal Fish and Wildlife Habitats.	N/A. The Project is not within or adjacent to a Significant Coastal Fish and Wildlife Habitat.
4.4	Identify, remediate and restore ecological functions within Recognized Ecological Complexes.	N/A. The Project is not within or adjacent to a Recognized Ecological Complex.
4.5	Protect and restore tidal and freshwater wetlands.	Promote. The Project would include mitigation for the conversion of NYSDEC littoral zone tidal wetlands to deeper surface waters in the dredged area.
4.6	In addition to wetlands, seek opportunities to create a mosaic of habitats with high ecological value and function that provide environmental and societal benefits. Restoration should strive to incorporate multiple habitat characteristics to achieve the greatest ecological benefit at a single location.	N/A. Policy is not the Project's purpose and it would not include restoration or habitat enhancement.
4.7	Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.	Promote. The Project would employ Best Management Practices to minimize impacts to protected species during construction, and the Project would result in minimal habitat alteration.
4.8	Maintain and protect living aquatic resources.	Promote. The Project would employ Best Management Practices to minimize impacts during construction, and the Project would result in minimal habitat alteration.
5.1	Manage direct or indirect discharges to waterbodies.	N/A. The Project would not involve effluent or vessel discharge.
5.2	Protect the quality of New York City's waters by managing activities that generate nonpoint source pollution.	Promote. Stormwater discharge from the FESS would not result in adverse impacts to water quality.
5.3	Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.	Promote. Best Management Practices would be used during dredging activities and dredged materials would be disposed of offsite at an upland licensed facility.
5.4	Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.	N/A. The Project would not affect groundwater, streams, or source water for wetlands.
5.5	Protect and improve water quality through cost-effective grey-infrastructure and in-water ecological strategies.	N/A. Policy is not the Project's purpose.

Table 2. New York City Waterfront Revitalization Program Consistency Review Summary

Policy Number	Policy Statement	Discussion Notes
6.1	Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the site, the use of the property to be protected, and the surrounding area.	Promote. The Project would not affect flood levels, flood risk, or the flow of flood waters within the Project site or adjacent areas. The FESS would be secured to the mooring piles at all times and allowed to rise and fall with tides and flood waters under current and projected conditions.
6.2	Integrate consideration of the latest New York City projections of climate change and sea level rise (as published in New York City Panel on Climate Change 2015 Report, Chapter 2: Sea Level Rise and Coastal Storms) into the planning and design of projects in the city's Coastal Zone.	Promote. The Project would not affect flood levels, flood risk, or the flow of flood waters within the Project site or adjacent areas. The FESS would be secured to the mooring piles at all times and allowed to rise and fall with tides and flood waters under current and projected conditions.
6.3	Direct public funding for flood prevention or erosion control measures to those locations where the investment will yield significant public benefit.	N/A. Policy is not the Project's purpose as it does not entail flood prevention or erosion control measures.
6.4	Protect and preserve non-renewable sources of sand for beach nourishment.	N/A. Policy is not the Project's purpose as it does not include beach nourishment and would not affect sources of sand for beach nourishment
7.1	Manage solid waste material, hazardous wastes, toxic pollutants, substances hazardous to the environment, and the unenclosed storage of industrial materials to protect public health, control pollution and prevent degradation of coastal ecosystems.	Promote. Construction would be conducted in accordance with the procedures defined through the NYSDEC-approved Site Management Plan (SMP) for the Brooklyn Navy Yard. Contractors would use Best Management Practices in federal and state permits for transport, storage, treatment, and disposal of hazardous and contaminated materials.
7.2	Prevent and remediate discharge of petroleum products.	N/A. The Project would not involve use of petroleum products.
7.3	Transport solid waste and hazardous materials and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.	N/A. The Project would not involve transport of solid waste or hazardous materials.
8.1	Preserve, protect, maintain, and enhance physical, visual and recreational access to the waterfront.	N/A. The Project would be located at Berth 20 of Pier K within Brooklyn Navy Yard, which is in an industrial zoning area that does not offer physical, visual, or recreational access to the waterfront.
8.2	Incorporate public access into new public and private development where compatible with proposed land use and coastal location.	N/A. The industrial land use and FESS location at Berth 20 of Pier K within the Brooklyn Navy Yard are not currently compatible with public waterfront access, and the Project site is not publicly owned.
8.3	Provide visual access to the waterfront where physically practical.	N/A. The industrial land use and FESS location at Berth 20 of Pier K within the Brooklyn Navy Yard are not currently compatible with public waterfront access.
8.4	Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.	N/A. Policy is not the Project's purpose and the Project site is not publicly owned.

Table 2. New York City Waterfront Revitalization Program Consistency Review Summary		
Policy Number	**Policy Statement**	**Discussion Notes**
8.5	Preserve the public interest in and use of lands and waters held in public trust by the State and City.	N/A. The Project site and the Project would not result in the transfer of public lands to another entity. The Project would obtain leases to occupy state-owned and city-owned land and would serve the public interest through the provision of renewable energy resources.
8.6	Design waterfront public spaces to encourage the waterfront’s identity and encourage stewardship.	N/A. Policy is not the Project’s purpose and the Project site is not publicly owned.
9.1	Protect and improve visual quality associated with New York City's urban context and the historic and working waterfront.	Promote. The FESS would be compatible with the urban context and historic and working waterfront within the Brooklyn Navy Yard.
9.2	Protect and enhance scenic values associated with natural resources.	N/A. The Project would not impact known scenic resources.
10.1	Retain and preserve historic resources, and enhance resources significant to the coastal culture of New York City.	Promote. DOE, in accordance with Section 106 of the National Historic Preservation Act, consulted with the New York State Historic Preservation Office, finding that the project would have no adverse effects in historic properties. The SHPO concurred with this finding on March 16, 2023.
10.2	Protect and preserve archaeological resources and artifacts.	Promote. DOE, in accordance with Section 106 of the National Historic Preservation Act, consulted with the New York State Historic Preservation Office, finding that the project would have no adverse effects in historic properties. The SHPO concurred with this finding on March 16, 2023. Four Native American Tribes are also being consulted. Soil disturbance for the Project would be within existing, previously disturbed rights-of-way.

Sincerely,

David A. Oster
Environmental Protection Specialist
U.S. Department of Energy

Encl: 1 – Project Location Map
2 – August 2022 Hydrographic Survey
3 – NYSDEC Littoral Zone Tidal Wetlands
4 – Flood Elevation Worksheet

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Memorandum

To: Dan Chibbaro, DCP

From: Sandy Collins, AKRF

Date: August 25, 2023

Re: Floating Energy Storage System (FESS) Project – Responses to Comments on NYC Waterfront Revitalization Program Policy Analysis

cc: Peter Bayzon (NYSDOS); David Oster (DOE); Ed Seaman, Ryan Maheux (NYC Energy); Kevin Maher, Melissa Grese (AKRF)

This memorandum has been prepared on behalf of the U.S. Department of Energy (DOE) in response to the Department of City Planning's (DCP) comments on NYC Energy LLC's Floating Energy Storage System (FESS) Project at the Brooklyn Navy Yard, issued to DOE on August 4, 2023 via email. Responses to DCP's requests for information and additional policy analyses are provided below.

General

- **Please submit a signed Consistency Assessment Form (CAF) that aligns with the policy responses that were selected in the application as "Promoted."**

The signed CAF indicating which policy responses were selected as "Promoted" is provided as **Enclosure 1** to this memo.

- **It was noted that a flood elevation worksheet was included in an enclosure, but the worksheet/enclosure was not received. DOS confirmed they are also not in receipt.**

The flood elevation worksheet that was prepared for the Policy 6.2 evaluation is provided as **Enclosure 2** to this memo. Please note that the top elevation for the mooring piles has been changed from +33.1 feet NAVD88 to +25 feet NAVD88 since submittal of the initial consistency evaluation, but this modification does not affect the analysis provided for WRP Policy 6.2.

Policy 3

- **The width of the FESS barge appears to be a significant concession of the Wallabout Channel's narrow navigation channel. Please expand on how the project won't hinder vessel operations by including more information about current vessel operations in the channel and the coordination that will take place to minimize conflicts with those operations.**

Current vessel operations within Wallabout Channel are limited compared to other areas of the New York Harbor. Based on publicly available AIS vessel tracking data, a total of 116 named vessels representing 14 different types were observed in the Channel between 2018 and 2022, with between 37 and 55 disparate vessels occurring during any given year. Of the 116 vessels identified, 53 are tagged as passenger or ferry vessels observed at the mouth of the Channel near the South Williamsburg Ferry Landing as shown in the figure included in **Enclosure 3**. These vessels accounted for 85% of the total recorded occurrences between 2018 and 2022,[1] and 28% of the recorded occurrences for 2022 alone (see **Enclosure 3**). The FESS barges would be over 600 feet south of the South Williamsburg Ferry Landing and would not interfere with this service. After passenger vessels, the most commonly observed vessel types in Wallabout Channel during the 5-year period were New York City Police Department (NYPD) law enforcement boats accounting for 12.2% of occurrences, which appeared to use the Channel on a regular basis including a landing location just south of the Project site (see **Enclosure 3**). New York City Fire Department (FDNY) search and rescue vessels were also observed each year, although less frequently than the law enforcement vessels. The FDNY's Marine 6 Unit and an NYPD regional training facility are stationed in the Brooklyn Navy Yard, which may account for the use of Wallabout Channel by these vessels. Other vessels intermittently observed in the Channel over the 5-year period included tugs, fishing boats, pleasure craft, and research vessels. Larger vessels like barges or cargo ships were rarely observed and were not tracked near the head of the Channel past the FESS Project site.

The FESS barges would be about 130 feet wide, which is approximately 43% of the 300-foot width of Wallabout Channel at the project site, leaving about 170 feet of the channel width open for vessel use. This available width for vessel passage is illustrated in **Enclosure 4** which contains representative images of the FESS barges' outline and elevation as they relate to the Channel width. The vessel types observed in the Channel on a regular basis between 2018 and 2022 are relatively small and could easily maneuver around the FESS barges. Shallow water depths towards the head of the channel and the narrowing of the channel itself also currently limit vessel use beyond the FESS Project site. The hydrographic survey conducted for the Project in 2022 indicates that the channel depth decreases from 40 to 45 feet at mean low water (MLW) at the mouth of the channel to 5 to 8 feet at MLW in the vicinity of the Project site. Only vessels with smaller drafts, like the NYPD and FDNY vessels or recreational boats, are able to access this portion of Wallabout Channel. The FESS barges would not hinder current vessel operations because only smaller vessels are anticipated to use the Channel near the Project site and these vessels would be able to maneuver around the 130-foot wide barges. Dredging for the Project would also increase water depths and improve navigation from the mouth of the Channel up to the Project site. Larger vessels are not expected to occur adjacent to or beyond the FESS barges given the shallow water depths and narrowing width towards the head of the Channel, which do not allow safe access for wider vessels or those with larger drafts. NYC Energy would coordinate with the NYPD and FDNY with respect to ongoing and future vessel activity by these agencies with the moored FESS barges.

- **In PMAZs, actions that affect the design of shoreline structures, in-water structures, and other pieces of infrastructure should prioritize designs that accommodate water-dependent uses. Since an ESS is not a water-dependent use, please discuss if on-land alternative locations were considered for this project and why the in-water location was considered to be the preferred alternative.**

The Project Site is within a Significant Maritime and Industrial Area (SMIA) under WRP Policy 2.1 and a Priority Marine Activity Zone (PMAZ) under WRP Policy 3.5. As noted in the guidance for Policy 2, SMIAs encompass areas best suited for water-dependent uses but also include much of the city's land zoned for industrial uses, and therefore, can also support essential industrial uses that are not water-dependent and cannot incorporate water-dependent elements. Under Policy 3, PMAZs represent areas with a high concentration of waterborne uses or infrastructure to support these uses. For projects taking place in an SMIA or PMAZ, the guidance for Policies 2.1 and 3.5 indicate that projects taking place within a SMIA or PMAZ should not "inhibit the safe and efficient operation of the SMIAs as industrial or maritime areas" (Policy 2.1) or "preclude the subsequent use or future adaptation of the shoreline for vessel docking,

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[1] Attributed to multiple trips by the 55 named vessels observed between 2018 and 2022.

berthing, or tie-up" (Policy 3.5). The Brooklyn Navy Yard does not currently lease any portion of its shoreline in Wallabout Channel to parties other than NYC Energy LLC, and there are no known commercial or industrial uses of the Channel at this time. The Project would include adaptive reuse of an abandoned electrical substation within the Project leasehold and would include grading, fencing, and lighting on currently unused land.

Consistent with the guidance for Policies 2 and 3, the Project would not hinder future waterfront, water-dependent, or water-enhanced uses of Pier K or the surrounding properties because it does not require any new structures on land or modifications to the bulkhead, would not significantly obstruct vessel use in Wallabout Channel, and would not result in permanent occupation of the waterway. As noted in the response above, the FESS barges would occupy approximately 43% of the width of Wallabout Channel, leaving 57% or 170 feet of the channel width open to passage at the Project site. Given the range of vessel types that currently use the Channel described above, this would leave sufficient space for maneuvering around the FESS barges. Additionally, the FESS barges would be moored at the bulkhead in the channel and would be able to get underway as required. They would be fitted with quick-release connections to the mooring piles, electrical wires, tow pads, and bridles. They would not hinder future water dependent uses or preclude the use of other shoreline areas of Wallabout Channel where vessels could tie up, consistent with Policy 3.5. Additionally, by its nature as an energy storage facility for power generated by renewable sources, the FESS would be consistent with the goal of Policy 2.1 for public investment in SMIAs to integrate sustainable practices, pollution prevention, and climate resilience.

Policy 2.1 indicates that certain uses can be sited on the waterfront in SMIAs if available upland sites are not feasible or appropriate for the intended use. **Enclosure 5** provides an alternatives analysis for the Project location, including a summary of the site and design constraints that determined the in-water location is the most practicable alternative for the FESS Project. As described in detail in the alternatives analysis, the requirements for the Project are: an approved interconnection to an existing substation, consistency with the New York City Zoning Resolution and established Zoning Districts, physical space for the quantity of battery storage units needed to provide 300 MW of storage capacity, the feasibility of connecting power generated by offshore wind to the existing grid, and the innovative nature of the Project and its eligibility with the Department of Energy's federal loan guarantee program under Title XVII of the Energy Policy Act of 2005. The Project is intended to further New York State's climate goals under the 2019 Climate Leadership and Community Protection Act (CLCPA) by facilitating operational flexibility and efficiency of the electric grid while integrating renewable energy sources (e.g., wind and solar) with existing and future system demands. It would contribute to the CLCPA's stated goal of developing 6,000 MW of battery energy storage capacity in New York by 2030, and thus would need to be constructed in a relatively short timeframe.

As described in detail in the alternatives analysis in **Enclosure 5**, one of the driving factors for the Project's location is access to NYC Energy's approved point of interconnection at Con Edison's Hudson Avenue 138 kV Substation in an area zoned for heavy industrial use in the Brooklyn Navy Yard. Connection to the approved interconnection point, rather than restarting the process for interconnection approval at a new location, is important for the Project's contribution to the CLCPA's goal of 6,000 MW of battery energy storage capacity by 2030. Restarting the process would significantly delay the availability of this storage capacity by 36 to 39 months. A 300 MW energy storage system requires an up to 8-acre site located in an industrial zoned area (e.g., M3-1). The availability of space meeting the spatial, zoning, and setback requirements for a utility-scale facility like the Project is limited in New York City, and the FESS must be sited close to the approved point of interconnection. Areas outside the Brooklyn Navy Yard but within reasonable distance to the Hudson Avenue Substation are either occupied by other manufacturing or industrial uses or zoned as commercial or residential areas. The in-water location of the FESS would also preserve upland properties for other development purposes, which is a goal of Zoning Resolution Article 14, Chapter 4 "Special Brooklyn Navy Yard District (BNY)" where the Project is located. In addition to being the most practicable location for the FESS Project, the in-water site would also provide resiliency to flood and storm conditions by allowing the barges to rise and fall with the water level. It would also provide an extra level of fire safety due to its proximity to the New York City Fire Department's (FDNY) Marine 6 Unit located within Brooklyn Navy Yard adjacent to Pier K.

Policy 6

- **Include a section on the risk of the barge capsizing as a result of a storm event and how that risk will be mitigated.**

The FESS barges would be designed and constructed to meet all U.S. Coast Guard (USCG) stability requirements, including the standards for stability under Part 3 "Hull Construction and Equipment" under the U.S. Coast Guard *ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways.* The vessels would be considered deck cargo barges by USCG and would be required to satisfy an associated set of stability criteria to demonstrate adequate margins against capsizing and foundering. The design would take into account the final height and weight of the battery storage units when incorporating measures for stability. **Enclosure 6** provides a detailed description of the stability evaluation that will be conducted for the FESS barges. In addition to this design criteria, to mitigate the risk of capsizing, the barges would be anchored in place by mooring piles that would be designed to withstand a Category 5 hurricane and associated storm surge.

Policy 7

- **Include a section on the risk of battery fire and how that risk will be mitigated.**

The battery system installed on the FESS barges would comprise separate energy storage containers using lithium ferrophosphate (LFP) batteries obtained from Contemporary Amperex Technology, Co. (CATL). CATL battery systems are designed in accordance with the UL 9540 Standard for Safety of Energy Storage Systems and Equipment and the requirements of the UL 9540A Test Method for fire safety hazards. The FESS barges would also meet all requirements of the National Fire Protection Association (NFPA) Standard 855 for Energy Storage Systems and the NYC Fire Code requirements under 3 RCNY 608-1 for "outdoor stationary storage battery systems." Each of these standards and codes include a series of requirements for battery storage systems such that they mitigate the risk of fire. As part of the FESS Project's compliance with these requirements, each battery storage container would be equipped with a Battery Management System (BMS) and would contain an internal fire suppression system and sprinkler system. Each container would also include a liquid circulating chiller unit (e.g., glycol) which would continuously cool each LFP battery within the container. The fire suppression system would be immediately activated by the BMS if there is any indication of a thermal runaway. An explosion-proof fan within each container would also exhaust gases caused by a thermal runaway to limit any chance of explosion. The internal sprinkler systems would be accompanied by an external sprinkler system over the containers, all of which would connect to a standpipe on Pier K that would provide a water supply in case of emergency. In accordance with FDNY requirements, the FESS barges would also be equipped with a CCTV system to monitor the containers and the BMS would provide an alert to a central control facility in the unlikely event of a fire. In discussion with NYC Energy, the FDNY through the Battalion Commander has stated that the Project site in the Brooklyn Navy Yard surrounded by water would be, by far, one of the safest locations in the City for an energy storage facility. The FDNY Marine 6 unit is stationed at Berth 11 in the Brooklyn Navy Yard less than a quarter mile west of the Project site and would be able to respond very quickly by boat to a fire, should it be necessary.

List of Enclosures

Enclosure 1	WRP Consistency Assessment Form
Enclosure 2	WRP Policy 6.2 Flood Elevation Worksheet
Enclosure 3	Vessel Activity Data Summary for Wallabout Channel, 2018 – 2022
Enclosure 4	Representative Illustrations of FESS Barges in Wallabout Channel
Enclosure 5	Alternatives Analysis Memo for FESS Project dated August 15, 2023
Enclosure 6	Memorandum from Glosten to Halmar International "NYC Power Barges - Stability" dated August 16, 2023

ENCLOSURE 1

FOR INTERNAL USE ONLY
Date Received: ____________________

WRP No. ______________________
DOS No. ______________________

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM
Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP or other local, state or federal discretionary review procedures, and that are within New York City's Coastal Zone, must be reviewed and assessed for their consistency with the *New York City Waterfront Revitalization Program* (*WRP*) which has been approved as part of the State's Coastal Management Program.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, the New York City Department of City Planning, or other city or state agencies in their review of the applicant's certification of consistency.

A. APPLICANT INFORMATION

Name of Applicant: NYC Energy LLC

Name of Applicant Representative: Ed Seaman

Address: 322 West 57th Street #46U, New York, NY 10019

Telephone: 347-739-7137 Email: eseaman@halmarinternational.com

Project site owner (if different than above): Brooklyn Navy Yard

B. PROPOSED ACTIVITY

If more space is needed, include as an attachment.

1. Brief description of activity

NYC Energy LLC (NYC Energy) will develop a utility-scale floating energy storage system (FESS) in the Wallabout Channel. The FESS Project (the Project) will moor three side-by-side barges, equipped with up to three levels of battery energy storage containers, just offshore from Berth 20 of Pier K in the Brooklyn Navy Yard. The barges will be moored to steel pipe piles. The Project will require dredging of the channel to the USACE authorized depth of 20 feet at mean low water (MLW). Construction will include pile installation; barge mooring; installation of electronic connections and switching equipment at Berth 20; and laying transmission conduit from Berth 20 to the Hudson Avenue East Substation.

2. Purpose of activity

The Project will help integrate clean, renewable energy into New York's electric transmission grid, reduce reliance on older fossil-fueled peaker plants for meeting peak power needs, and prepare New York's electric grid for on- and off-shore renewably generated power. Furthermore, the successful deployment of this innovative FESS concept will create a scalable modular design that could be replicated throughout the country.

C. PROJECT LOCATION

Borough: Brooklyn Tax Block/Lot(s): Block 2023 Lot 1; Block 22 Lot 1

Street Address: n/a - Berth 20 offshore from Pier K in Brooklyn Navy Yard

Name of water body (if located on the waterfront): Wallabout Channel

D. REQUIRED ACTIONS OR APPROVALS

Check all that apply.

City Actions/Approvals/Funding

City Planning Commission ☐ Yes ☑ No

☐ City Map Amendment
☐ Zoning Map Amendment
☐ Zoning Text Amendment
☐ Site Selection – Public Facility
☐ Housing Plan & Project
☐ Special Permit
(if appropriate, specify type: ☐ Modification ☐ Renewal ☐ other) Expiration Date: ______

☐ Zoning Certification
☐ Zoning Authorizations
☐ Acquisition – Real Property
☐ Disposition – Real Property
☐ Other, explain: ______

☐ Concession
☐ UDAAP
☐ Revocable Consent
☐ Franchise

Board of Standards and Appeals ☐ Yes ☑ No

☐ Variance (use)
☐ Variance (bulk)
☐ Special Permit
(if appropriate, specify type: ☐ Modification ☐ Renewal ☐ other) Expiration Date: ______

Other City Approvals

☐ Legislation
☐ Rulemaking
☐ Construction of Public Facilities
☐ 384 (b) (4) Approval
☐ Other, explain: ______

☐ Funding for Construction, specify: ______
☐ Policy or Plan, specify: ______
☐ Funding of Program, specify: ______
☐ Permits, specify: ______

State Actions/Approvals/Funding

☑ State permit or license, specify Agency: NYSDEC Permit type and number: Articles 15 and 25, 401 WQC
☐ Funding for Construction, specify: ______
☐ Funding of a Program, specify: ______
☐ Other, explain: ______

Federal Actions/Approvals/Funding

☐ Federal permit or license, specify Agency: USACE Permit type and number: CWA 404, Sec 10 & 408
☑ Funding for Construction, specify: U.S. Department of Energy federal loan guarantee program (Title XVII Energy Policy Act 2005)
☐ Funding of a Program, specify: ______
☐ Other, explain: ______

Is this being reviewed in conjunction with a Joint Application for Permits? ☐ Yes ☑ No

E. LOCATION QUESTIONS

1.	Does the project require a waterfront site?	☑ Yes	☐ No
2.	Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land under water or coastal waters?	☑ Yes	☐ No
3.	Is the project located on publicly owned land or receiving public assistance?	☐ Yes	☐ No
4.	Is the project located within a FEMA 1% annual chance floodplain? *(6.2)*	☑ Yes	☐ No
5.	Is the project located within a FEMA 0.2% annual chance floodplain? *(6.2)*	☐ Yes	☑ No
6.	Is the project located adjacent to or within a special area designation? *See Maps – Part III of the NYC WRP. If so, check appropriate boxes below and evaluate policies noted in parentheses as part of WRP Policy Assessment (Section F).*	☑ Yes	☐ No

☑ Significant Maritime and Industrial Area (SMIA) *(2.1)*

☐ Special Natural Waterfront Area (SNWA) *(4.1)*

☑ Priority Maritime Activity Zone (PMAZ) *(3.5)*

☐ Recognized Ecological Complex (REC) *(4.4)*

☐ West Shore Ecologically Sensitive Maritime and Industrial Area (ESMIA) *(2.2, 4.2)*

F. WRP POLICY ASSESSMENT

Review the project or action for consistency with the WRP policies. For each policy, check Promote, Hinder *or* Not Applicable (N/A). *For more information about consistency review process and determination, see* ***Part I*** *of the NYC Waterfront Revitalization Program. When assessing each policy, review the full policy language, including all sub-policies, contained within* ***Part II*** *of the WRP. The relevance of each applicable policy may vary depending upon the project type and where it is located (i.e. if it is located within one of the special area designations).*

For those policies checked Promote *or* Hinder, *provide a written statement on a separate page that assesses the effects of the proposed activity on the relevant policies or standards. If the project or action promotes a policy, explain how the action would be consistent with the goals of the policy. If it hinders a policy, consideration should be given toward any practical means of altering or modifying the project to eliminate the hindrance. Policies that would be advanced by the project should be balanced against those that would be hindered by the project. If reasonable modifications to eliminate the hindrance are not possible, consideration should be given as to whether the hindrance is of such a degree as to be substantial, and if so, those adverse effects should be mitigated to the extent practicable.*

		Promote	Hinder	N/A
1	**Support and facilitate commercial and residential redevelopment in areas well-suited to such development.**	☐	☐	☑
1.1	Encourage commercial and residential redevelopment in appropriate Coastal Zone areas.	☐	☐	☑
1.2	Encourage non-industrial development with uses and design features that enliven the waterfront and attract the public.	☐	☐	☑
1.3	Encourage redevelopment in the Coastal Zone where public facilities and infrastructure are adequate or will be developed.	☐	☐	☑
1.4	In areas adjacent to SMIAs, ensure new residential development maximizes compatibility with existing adjacent maritime and industrial uses.	☐	☐	☑
1.5	Integrate consideration of climate change and sea level rise into the planning and design of waterfront residential and commercial development, pursuant to WRP Policy 6.2.	☐	☐	☑

		Promote	Hinder	N/A
2	**Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.**	☑	☐	☐
2.1	Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.	☑	☐	☐
2.2	Encourage a compatible relationship between working waterfront uses, upland development and natural resources within the Ecologically Sensitive Maritime and Industrial Area.	☐	☐	☑
2.3	Encourage working waterfront uses at appropriate sites outside the Significant Maritime and Industrial Areas or Ecologically Sensitive Maritime Industrial Area.	☐	☐	☑
2.4	Provide infrastructure improvements necessary to support working waterfront uses.	☑	☐	☐
2.5	Incorporate consideration of climate change and sea level rise into the planning and design of waterfront industrial development and infrastructure, pursuant to WRP Policy 6.2.	☑	☐	☐
3	**Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation.**	☑	☐	☐
3.1.	Support and encourage in-water recreational activities in suitable locations.	☐	☐	☑
3.2	Support and encourage recreational, educational and commercial boating in New York City's maritime centers.	☐	☐	☑
3.3	Minimize conflicts between recreational boating and commercial ship operations.	☐	☐	☑
3.4	Minimize impact of commercial and recreational boating activities on the aquatic environment and surrounding land and water uses.	☐	☐	☑
3.5	In Priority Marine Activity Zones, support the ongoing maintenance of maritime infrastructure for water-dependent uses.	☑	☐	☐
4	**Protect and restore the quality and function of ecological systems within the New York City coastal area.**	☑	☐	☐
4.1	Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas.	☐	☐	☑
4.2	Protect and restore the ecological quality and component habitats and resources within the Ecologically Sensitive Maritime and Industrial Area.	☐	☐	☑
4.3	Protect designated Significant Coastal Fish and Wildlife Habitats.	☐	☐	☑
4.4	Identify, remediate and restore ecological functions within Recognized Ecological Complexes.	☐	☐	☑
4.5	Protect and restore tidal and freshwater wetlands.	☑	☐	☐
4.6	In addition to wetlands, seek opportunities to create a mosaic of habitats with high ecological value and function that provide environmental and societal benefits. Restoration should strive to incorporate multiple habitat characteristics to achieve the greatest ecological benefit at a single location.	☐	☐	☑
4.7	Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.	☑	☐	☐
4.8	Maintain and protect living aquatic resources.	☑	☐	☐

		Promote	Hinder	N/A
5	**Protect and improve water quality in the New York City coastal area.**	☑	☐	☐
5.1	Manage direct or indirect discharges to waterbodies.	☐	☐	☑
5.2	Protect the quality of New York City's waters by managing activities that generate nonpoint source pollution.	☑	☐	☐
5.3	Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.	☑	☐	☐
5.4	Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.	☐	☐	☑
5.5	Protect and improve water quality through cost-effective grey-infrastructure and in-water ecological strategies.	☐	☐	☑
6	**Minimize loss of life, structures, infrastructure, and natural resources caused by flooding and erosion, and increase resilience to future conditions created by climate change.**	☑	☐	☐
6.1	Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the site, the use of the property to be protected, and the surrounding area.	☑	☐	☐
6.2	Integrate consideration of the latest New York City projections of climate change and sea level rise (as published in *New York City Panel on Climate Change 2015 Report, Chapter 2: Sea Level Rise and Coastal Storms*) into the planning and design of projects in the city's Coastal Zone.	☑	☐	☐
6.3	Direct public funding for flood prevention or erosion control measures to those locations where the investment will yield significant public benefit.	☐	☐	☑
6.4	Protect and preserve non-renewable sources of sand for beach nourishment.	☐	☐	☑
7	**Minimize environmental degradation and negative impacts on public health from solid waste, toxic pollutants, hazardous materials, and industrial materials that may pose risks to the environment and public health and safety.**	☑	☐	☐
7.1	Manage solid waste material, hazardous wastes, toxic pollutants, substances hazardous to the environment, and the unenclosed storage of industrial materials to protect public health, control pollution and prevent degradation of coastal ecosystems.	☑	☐	☐
7.2	Prevent and remediate discharge of petroleum products.	☐	☐	☑
7.3	Transport solid waste and hazardous materials and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.	☐	☐	☑
8	**Provide public access to, from, and along New York City's coastal waters.**	☐	☐	☑
8.1	Preserve, protect, maintain, and enhance physical, visual and recreational access to the waterfront.	☐	☐	☑
8.2	Incorporate public access into new public and private development where compatible with proposed land use and coastal location.	☐	☐	☑
8.3	Provide visual access to the waterfront where physically practical.	☐	☐	☑
8.4	Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.	☐	☐	☑

		Promote	Hinder	N/A
8.5	Preserve the public interest in and use of lands and waters held in public trust by the State and City.	☐	☐	☑
8.6	Design waterfront public spaces to encourage the waterfront's identity and encourage stewardship.	☐	☐	☑
9	**Protect scenic resources that contribute to the visual quality of the New York City coastal area.**	☑	☐	☐
9.1	Protect and improve visual quality associated with New York City's urban context and the historic and working waterfront.	☑	☐	☐
9.2	Protect and enhance scenic values associated with natural resources.	☐	☐	☑
10	**Protect, preserve, and enhance resources significant to the historical, archaeological, architectural, and cultural legacy of the New York City coastal area.**	☑	☐	☐
10.1	Retain and preserve historic resources, and enhance resources significant to the coastal culture of New York City.	☑	☐	☐
10.2	Protect and preserve archaeological resources and artifacts.	☑	☐	☐

G. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program as expressed in New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name: Sandy Collins, AKRF Inc.

Address: 7250 Parkway Drive, Suite 210, Hanover, MD 21076

Telephone: 388-646-9657 Email: scollins@akrf.com

Applicant/Agent's Signature: Sandra L Collins

Date: 8/15/2023

Submission Requirements

For all actions requiring City Planning Commission approval, materials should be submitted to the Department of City Planning.

For local actions not requiring City Planning Commission review, the applicant or agent shall submit materials to the Lead Agency responsible for environmental review. A copy should also be sent to the Department of City Planning.

For State actions or funding, the Lead Agency responsible for environmental review should transmit its WRP consistency assessment to the Department of City Planning.

For Federal direct actions, funding, or permits applications, including Joint Applicants for Permits, the applicant or agent shall also submit a copy of this completed form along with his/her application to the NYS Department of State Office of Planning and Development and other relevant state and federal agencies. A copy of the application should be provided to the NYC Department of City Planning.

The Department of City Planning is also available for consultation and advisement regarding WRP consistency procedural matters.

New York City Department of City Planning
Waterfront and Open Space Division
120 Broadway, 31st Floor
New York, New York 10271
212-720-3696
wrp@planning.nyc.gov
www.nyc.gov/wrp

New York State Department of State
Office of Planning and Development
Suite 1010
One Commerce Place, 99 Washington Avenue
Albany, New York 12231-0001
518-474-6000
www.dos.ny.gov/opd/programs/consistency

Applicant Checklist

☐ Copy of original signed NYC Consistency Assessment Form

☐ Attachment with consistency assessment statements for all relevant policies

☐ For Joint Applications for Permits, one (1) copy of the complete application package

☐ Environmental Review documents

☐ Drawings (plans, sections, elevations), surveys, photographs, maps, or other information or materials which would support the certification of consistency and are not included in other documents submitted. All drawings should be clearly labeled and at a scale that is legible.

☐ Policy 6.2 Flood Elevation worksheet, if applicable. For guidance on applicability, refer to the WRP Policy 6.2 Guidance document available at www.nyc.gov/wrp

ENCLOSURE 2

NYC Waterfront Revitalization Program - Policy 6.2 Flood Elevation Workhsheet

COMPLETE INSTRUCTIONS ON HOW TO USE THIS WORKSHEET ARE PROVIDED IN THE "CLIMATE CHANGE ADAPTATION GUIDANCE" DOCUMENT AVAILABLE AT www.nyc.gov/wrp

Enter information about the project and site in highlighted cells in Tabs 1-3. Tab 4, "Summary Charts" contains primary results. Tab 5, "0.2%+SLR" produces charts to be used for critical infrastructure or facilities. Tab 6, "Calculations" contains background computations. Appendix A contains tide elevations for station across the city to be used for the elevation of MHHW if a site survey is not available. Non-highlighted cells have been locked.

Background Information	
Project Name	Floating Energy Storage System (FESS) Project
Location	Wallabout Channel, Brooklyn Navy Yard, New York City
Type(s)	☐ Residential, Commercial, Community Facility ☐ Parkland, Open Space, and Natural Areas ☐ Tidal Wetland Restoration ☑ Critical Infrastructure or Facility ☐ Industrial Uses ☐ Over-water Structures ☐ Shoreline Structures ☐ Transportation ☐ Wastewater Treatment/Drainage ☐ Coastal Protection
Description	NYC Energy LLC (NYC Energy) will develop a utility-scale floating energy storage system (FESS) in the Wallabout Channel. The FESS Project (the Project) will moor three side-by-side barges, equipped with up to three levels of battery energy storage containers, just offshore from Berth 20 of Pier K in the Brooklyn Navy Yard. The barges will be moored to steel pipe piles. The Project requires dredging of the channel to the USACE authorized depth of 20 feet at mean low water (MLW). Construction includes pile installation; barge mooring; installation of electronic connections and switching equipment at Berth 20; and laying transmission conduit from Berth 20 to the Hudson Avenue East Substation.
Planned Completion Date	Dec-26
Expected Project Lifespan	50 years

The New York City Waterfront Revitalization Program Climate Change Adaptation Guidance document was developed by the NYC Department of City Planning. It is a guidance document only and is not intended to serve as a substitute for actual regulations. The City disclaims any liability for errors that may be contained herein and shall not be responsible for any damages, consequential or actual, arising out of or in connection with the use of this information. The City reserves the right to update or correct information in this guidance document at any time and without notice.

For technical assistance on using this worksheet, email wrp@planning.nyc.gov, using the message subject "Policy 6.2 Worksheet."

Last update: Sept. 7, 2018

Establish current tidal and flood heights.

	FT (NAVD88)	Feet	Datum	Source
MHHW	2.20	**2.20**	**NAVD88**	*Elevation measured at adjacent site in Channel*
1% flood height	13.00	**13.00**	**NAVD88**	*NYC Flood Hazard Mapper*
Design flood elevation	-->			
As relevant:				
0.2% flood height	-->			

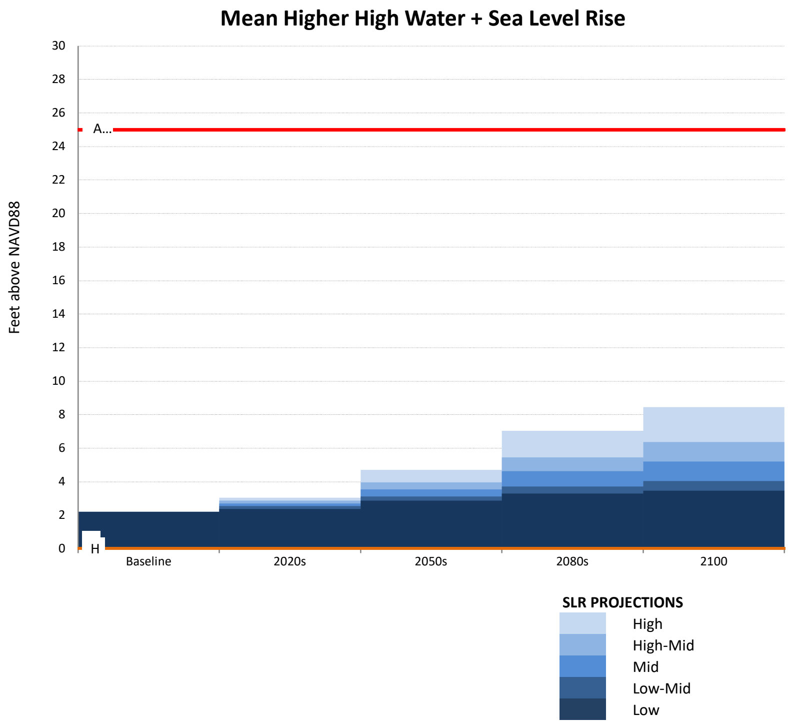
Data will be converted based on the following datums:

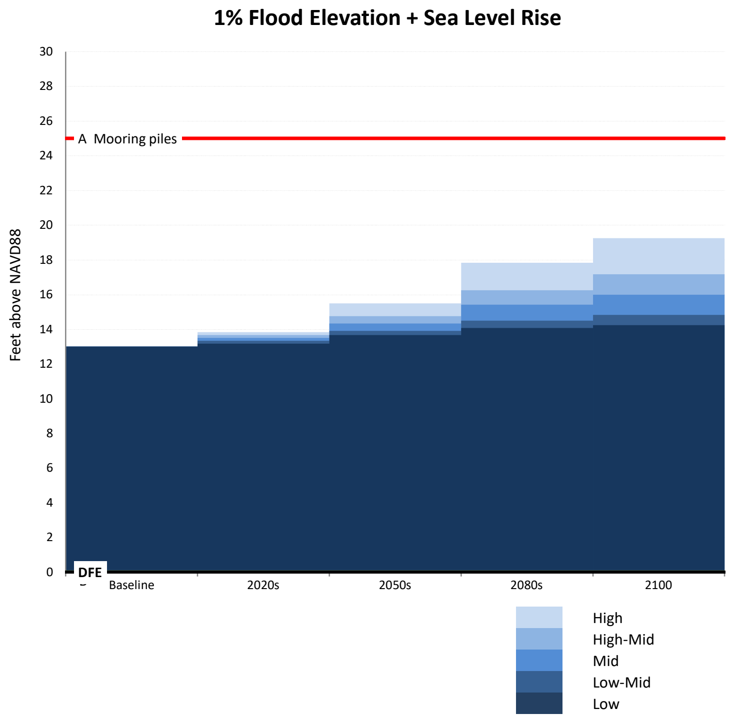
Datum	FT (NAVD88)
NAVD88	*0.00*
NGVD29	*-1.10*
Manhattan Datum	*1.65*
Bronx Datum	*1.51*
Brooklyn Datum (Sewer)	*0.61*
Brooklyn Datum (Highway)	*1.45*
Queens Datum	*1.63*
Richmond Datum	*2.09*

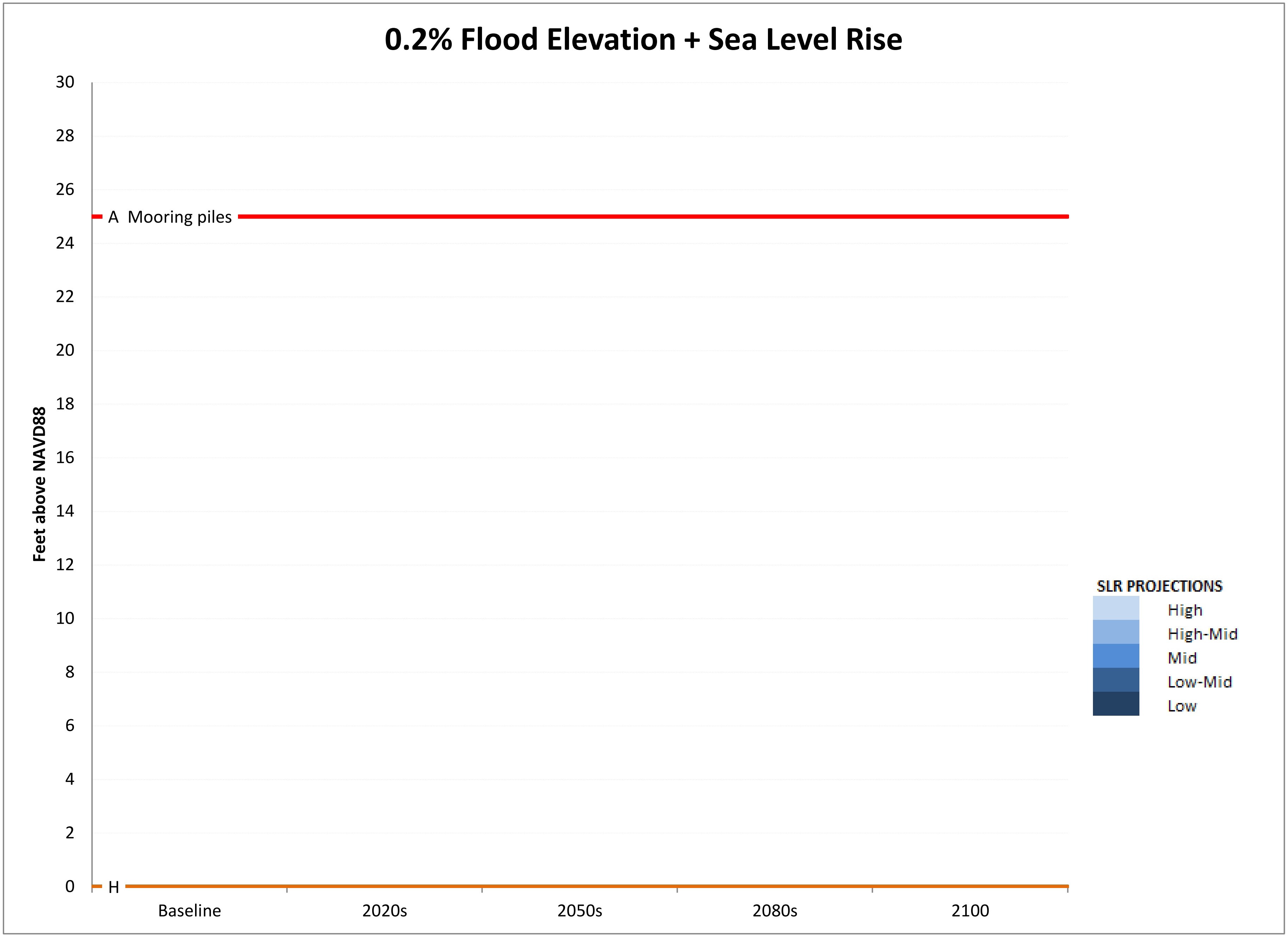
Describe key physical features of the project.

Feature *(enter name)*	Feature Category	Lifespan	Elevation	Units	Datum	Ft	Ft Above NAVD88	Ft Above MHHW	Ft Above 0.2% flood height
A Mooring piles	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☑ Other	2080	25.0	Feet	NAVD88	*25.0*	*25.0*	*22.8*	*#VALUE!*
Top elevation of mooring piles in Wallabout Channel at Berth 20 of Pier K in Brooklyn Navy Yard									
B	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									
C	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									
D	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									
E	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									
F	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									
G	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									
H	☐ Vulnerable ☐ Critical ☐ Potentially Hazardous ☐ Other			Feet	NAVD88				
Description of Planned Uses and Materials									

Assess project vulnerability over a range of sea level rise projections.






0.2% Flood Elevation + Sea Level Rise
Feet above NAVD88
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
A Mooring piles
H
Baseline
2020s
2050s
2080s
2100
SLR PROJECTIONS
High
High-Mid
Mid
Low-Mid
Low

SLR (ft)

	Low	**Low-Mid**	**Mid**	**High-Mid**	**High**	
Baseline	0.00	0.00	0.00	0.00	0.00	**2014**
2020s	0.17	0.33	0.50	0.67	0.83	**2020s**
2050s	0.67	0.92	1.33	1.75	2.50	**2050s**
2080s	1.08	1.50	2.42	3.25	4.83	**2080s**
2100	1.25	1.83	3.00	4.17	6.25	**2100**

MHHW+SLR (ft above NAVD88)

	Low	**Low-Mid**	**Mid**	**High-Mid**	**High**
Baseline	2.20	2.20	2.20	2.20	2.20
2020s	2.37	2.53	2.70	2.87	3.03
2050s	2.87	3.12	3.53	3.95	4.70
2080s	3.28	3.70	4.62	5.45	7.03
2100	3.45	4.03	5.20	6.37	8.45

1%+SLR (ft above NAVD88)

	Low	**Low-Mid**	**Mid**	**High-Mid**	**High**
Baseline	13.00	13.00	13.00	13.00	13.00
2020s	13.17	13.33	13.50	13.67	13.83
2050s	13.67	13.92	14.33	14.75	15.50
2080s	14.08	14.50	15.42	16.25	17.83
2100	14.25	14.83	16.00	17.17	19.25

0.2%+SLR (ft above NAVD88)

	Low	**Low-Mid**	**Mid**	**High-Mid**	**High**
Baseline	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2020s	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2050s	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2080s	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2100	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

	0	1
A Mooring piles	25	25
B	0	0
C	0	0
D	0	0
E	0	0
F	0	0
G	0	0
H	0	0
DFE	0.00	0.00

SLR (in)				
Low	**Low-Mid**	**Mid**	**High-Mid**	**High**
0	0	0	0	0
2	4	6	8	10
8	11	16	21	30
13	18	29	39	58
15	22	36	50	75

NOAA Tide Station Data

(to be used only when a site survey is unavailable)

Station ID	*Station Name*	*Source MHHW (Feet, NAVD88)**	*Adjusted MHHW (Feet, NAVD88)**
8518687	Queensboro Bridge	2.27	2.60
8530095	Alpine	2.11	2.44
8516614	Glen Cove	3.72	4.05
8516990	Willets Point	3.72	4.05
8518639	Port Morris	3.33	3.66
8518699	Williamsburg Bridge	2.14	2.47
8518750	The Battery	2.28	2.61
8531680	Sandy Hook	2.41	2.74
8518490	New Rochelle	3.71	4.04
8531545	Keyport	2.66	2.99
8516891	Norton Point	2.08	2.41
8517201	North Channel	2.72	3.05
8517137	Beach Channel	2.10	2.43
8517756	Kingsborough	2.13	2.46
8519436	Great Kills	2.22	2.55
8531142	Port Reading	2.82	3.15
8519483	Bergen Point	2.56	2.89
8519050	USCG	2.28	2.61
8518902	Dyckman St	2.01	2.34
8517251	Worlds Fair Marina	3.59	3.92
8518668	Horns Hook	2.54	2.87
8518643	Randalls Island	2.60	2.93
8518526	Throggs Neck	3.68	4.01

* MHHW values include an addition 0.33 feet to account for changes in sea level since the 1983-20

Source
NOAA Tides and Currents
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New
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Dyckman St
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Glen Cove
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Randalls
Island
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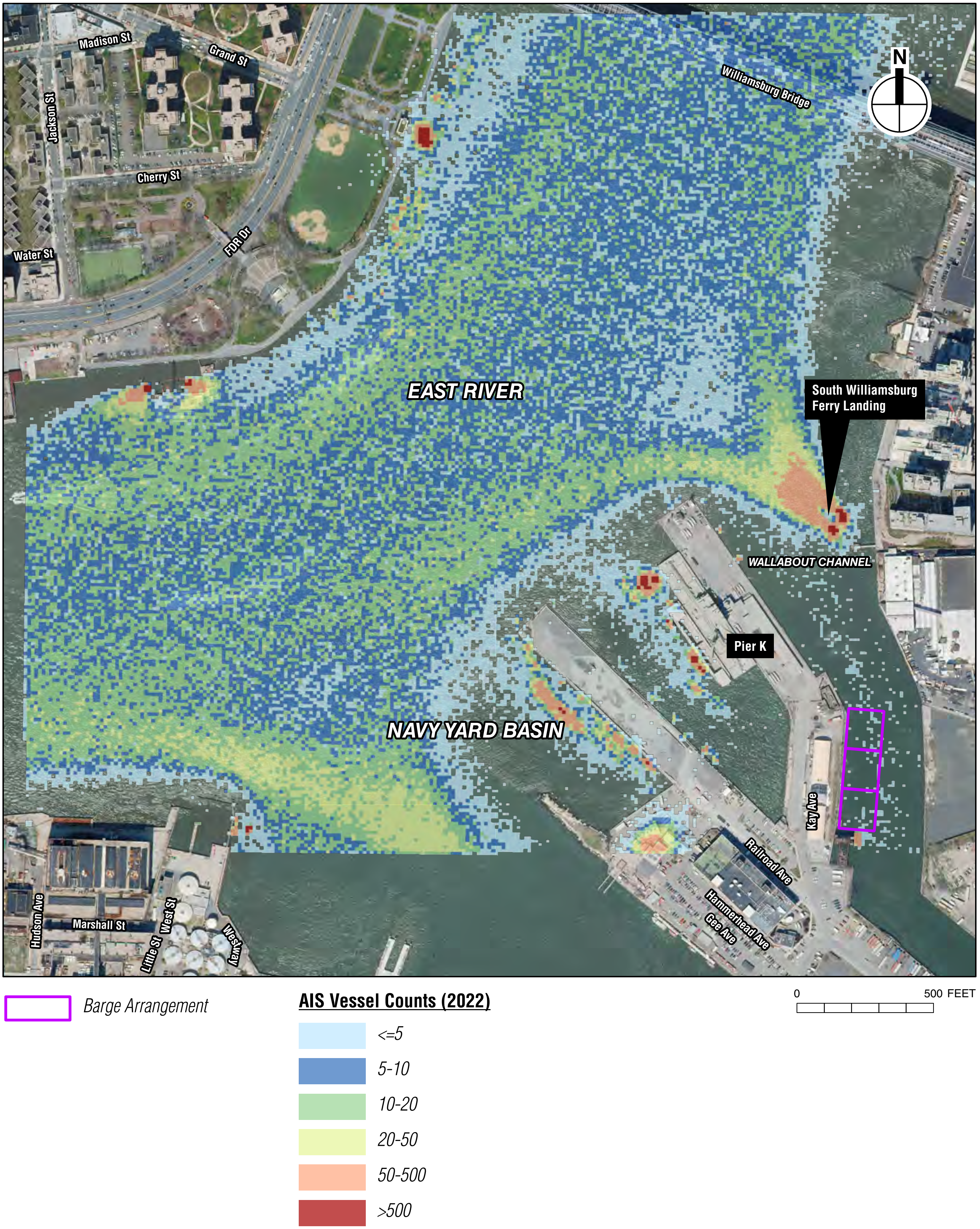
Port
Morris
8518639
Throggs
Neck
8518526
Willets
Point
8516990
Worlds Fair
Marina
8517251
Queensboro
Bridge
8518687
Horns Hook
8518668
Williamsburg
Bridge
8518699
The Battery
8518750
North
Channel
8507201
Norton
Point
8516891
CG
9050
Beach
Channel
8517137
Kingsborough
8517756
Sandy Hook
8531680

ENCLOSURE 3

8.21.23



Vessel Activity Near FESS Project Site (2022)

Recorded Vessel Activity in Wallabout Channel, 2018-2022

Vessel Type	**2018**	**2019**	**2020**	**2021**	**2022**	**Total Count by Vessel Type, 2018-2022**
Cargo				10		**10**
Coast Guard		1				**1**
Dredging					84	**84**
Fishing					10	**10**
High Speed Craft			89	144	11	**244**
Law Enforcement	5,021	5,225	9,763	2,258	1,750	**24,017**
*Passenger**	*53,836*	*64,900*	*52,958*	*12,333*	*864*	***184,891***
Pleasure Craft	5	12	71	80	10	**178**
Search and Rescue Vessel	29	31	48	92	37	**237**
Spare - Local Vessel	69	233			255	**557**
Towing	181	3,853	1	71	1	**4,107**
Tug			17	69		**86**
Unknown	1	2	38	174	68	**283**
Total Count by Year	**59,142**	**74,257**	**62,985**	**15,231**	**3,090**	**214,705**
Total Count without Passenger Vessels	**5,306**	**9,357**	**10,027**	**2,898**	**2,226**	**29,814**

* Passenger vessels represent NYC Ferry vessels that occur in the vicinity of the South Williamsburg Ferry Landing at the mouth of Wallabout Channel. These vessels do not typically occur in the portion of the Channel where the FESS barges would be located.

Source: AIS Vessel Tracking Data, accessed August 2023

ENCLOSURE 4

**Approximately to scale*

Location of FESS Barges at Berth 20 of Pier K in Wallabout Channel

440 Kent Avenue, Schaefer Landing North Tower

**Approximately to scale*

Representative Elevation of FESS Barges in Wallabout Channel

ENCLOSURE 5

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Revised Memorandum

To:	David Oster, DOE
From:	Sandy Collins, AKRF
Date:	August 15, 2023
Re:	Alternatives Analysis for Floating Battery Energy Storage System (FESS) Project in Wallabout Channel, Brooklyn Navy Yard, New York
cc:	Ed Seaman, Ryan Maheux (NYC Energy); Kevin Maher, Melissa Grese (AKRF)

NYC Energy LLC intends to construct and operate a first-of-its-kind in the United States floating battery energy storage system (FESS) of up to 300 MW storage capacity and 1200 MW(hr) of energy delivery capability using stacking energy storage containers and associated equipment located on three side by side barges manufactured for the Project. The purpose and need of the Project is to integrate the delivery of clean, renewable energy alternatives into New York's electric transmission grid and allow New York to meet peak power needs without relying on fossil fuel peaker plants. The evaluation of site alternatives for an energy storage system in New York City, including the FESS Project, must consider a number of limiting factors including:

- Proximity to an approved point of interconnection with the Con Edison 138 kV transmission system via an existing substation,
- Siting within a heavy industrial zoning district (e.g., M3-1) in accordance with the New York City Zoning Resolution and established Zoning Districts,
- Feasibility of connecting power generated by renewable energy sources to the existing grid, and
- Spatial requirements of a battery energy storage facility considering the number and arrangement of units needed based on the intended storage capacity.

The FESS Project has the additional burden of demonstrating eligibility for the Department of Energy's loan guarantee program under Title XVII of the Energy Policy Act of 2005, which provides funding for innovative technologies generally associated with actions that reduce greenhouse gases. These constraints create a challenging process for siting and designing an energy storage system in the New York City area that can connect renewable energy alternatives to the existing transmission system, meet the City zoning and flood zone requirements, ensure flood and storm resiliency under current and projected conditions, and provide enough space for operations. The design and location of the FESS Project were determined to be the most practicable options considering these requirements, as described in the sections below.

PROJECT DESCRIPTION AND BACKGROUND

The proposed design for the FESS Project will place three barges, each measuring approximately 146 feet long by 130 feet wide (56,940 square feet total) and equipped with battery energy storage containers and associated equipment within Wallabout Channel. Each barge will have a 100 MW capacity, for a total of 300 MW capacity for the Project. The FESS will be moored in Wallabout Channel at Berth 20 of Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York (see **Figures 1 through 3**). A portion of Wallabout Channel will be dredged to the United States Army Corps of Engineers (USACE) authorized depth of 20 feet at mean low water (MLW) to allow access for the barges. The FESS will either be constructed offsite and floated into place, or it will be assembled once the barge is in place with the battery units delivered by truck. The Project will interconnect to the New York Independent System Operator (NYISO)-controlled New York State Transmission System (NYS Transmission System) via two 138 kV interconnection cables that will run beneath public and private rights of way to the existing Hudson Avenue East 138 kV Substation in Brooklyn, which is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison). The barges will remain moored at the shoreline and connected to the grid for the duration of NYC Energy's 30-year lease term with the Brooklyn Navy Yard Development Corporation.

The FESS Project will further New York State's climate goals under the 2019 Climate Leadership and Community Protection Act (CLCPA), which established a target for New York State to achieve 100% zero-emission electricity by 2040 with 70% of the State's electricity generated from renewable energy sources by 2030. The CLCPA also established a goal to develop 3,000 MW of battery energy storage capacity in New York by 2030, which was doubled to 6,000 MW in the governor's 2022 State of the State Address. Battery energy storage systems like the FESS are a key component to achieving these goals because they facilitate operational flexibility and efficiency of the electric grid while integrating renewable energy sources (e.g., wind and solar) with existing and future system demands. The development of battery storage facilities improves system efficiency and reduces dependence on fossil fuel facilities, particularly during peak energy demand periods. They reduce the need for new transmission infrastructure and the continued operation of fossil fuel peaker plants to meet these demands by providing intermittent renewable power sources with the means to deliver power when not generating, which also improves overall system reliability and facilitates a smooth transition to renewable energy to achieve the State's energy goals.

SITE AND DESIGN REQUIREMENTS

EXISTING INTERCONNECTION

The FESS is a battery energy storage system intended to facilitate the storage and delivery of new offshore wind generation directly to New York. Interconnecting to an existing electrical substation and utilizing previously developed areas within the Brooklyn Navy Yard and existing roadway rights of way (ROW) for the interconnecting transmission line eliminates the need for major construction of new infrastructure in a coastal area of New York City where space is limited. Utility-scale interconnections must be approved through the New York State Independent System Operator (NYSIO) "interconnection queue," which formally establishes an order of projects requesting interconnections. The process requires a series of evaluations including an optional feasibility study, a System Reliability Impact Study (SRIS), and a Facilities Study. The initial feasibility study and SRIS process takes about two years, and the FSA and development of an Interconnect Agreement takes an additional 12 to 15 months. The FESS has successfully completed the system impact study and will be evaluated in the 2023 Class Year Facilities Study. NYC Energy was previously granted a point of interconnection at Con Edison's Hudson Avenue 138 kV Substation for a gas fired electric generating facility, which received NYSIO approvals in the early 2000s, and was subsequently approved to change the facility to battery storage to facilitate the Project. Use of another interconnection point would require the FESS Project to re-enter the queue, which would significantly delay the availability of the battery energy storage system for New York City by 36 to 39 months while the required evaluations are conducted and would hinder the goals of the CLCPA. The next closest point of interconnection is over 10 miles away and the substation at that location has no headroom to support the Project and the surrounding area is zoned for commercial and residential use, two uses less compatible with the Project as compared to the site's proposed industrial location within the Brooklyn Navy Yard, as discussed below.

NY CITY ZONING RESOLUTION AND ZONING DISTRICTS

The New York City Zoning Resolution consists of 14 articles that establish the zoning districts for the City and the regulations governing land use and development. Utility-scale battery energy storage is an "industrial use" which is only permitted "as-of-right" in the three manufacturing districts in New York City (M1, M2, and M3). Development for "non-accessory" BESS facilities, which is what a project the size of the proposed FESS would be considered, outside a manufacturing district requires special permit(s) from the NYC City Planning Commission and/or Board of Standards & Appeals and review under the City Environmental Quality Review Act, which would significantly extend the development schedule for the project, thereby delaying the project's contribution to the aggressive renewable energy goals outlined under the CLCPA. The Project was designed to use space within the Brooklyn Navy Yard, which has a history of industrial uses and is in an M3-1 zoning district. Battery energy storage is an as-of-right use in M3-1 heavy industrial zoning districts[1]. Typical uses in M3 districts include power plants, solid waste transfer facilities and recycling plants, and fuel supply depots. These districts and uses are usually located near the waterfront, which historically and currently supports transportation of materials by commercial vessels and barges. The siting of industrial uses near the waterfront also places most of them in the flood zone resulting in the need for flood resilient design considerations. A floating system is resilient to flooding with the proper mooring piles and can be located in a manufacturing zoning district without requiring significant space for construction or permanent operations.

The Brooklyn Navy Yard is particularly suitable for the FESS Project in terms of zoning requirements. Under Zoning Resolution Article 14, Chapter 4 "Special Brooklyn Navy Yard District (BNY)[2]" the City aims to: 1) encourage investment in the Brooklyn Navy Yard and facilitate the expansion of the Brooklyn Navy Yard as a modern manufacturing complex (ZR 144-00(a)), and 2) promote the most desirable use of land in accordance with a well-considered plan and thus conserve the value of land and buildings, and thereby protect the City's tax revenues (ZR 144-00(f)). The in-water location of the FESS would preserve upland properties for other development purposes, which would increase overall revenue in line with the City's goals as outlined in the Zoning Resolution.

SPATIAL REQUIREMENTS

Generally, battery energy storage facilities require about one acre per 30 to 40 MWs depending on how the battery units can be arranged and where the interconnection is located. They are also typically located at least 300 feet from residential properties to minimize the impacts from noise related to the cooling systems and power inverters. The New York City Fire Department (FDNY) requires all outdoor energy storage equipment to be located a minimum of 10 feet from lot lines, vehicle parking, and public infrastructure. The floating and modular battery unit design of the FESS allow for better flexibility with respect to siting and spatial requirements. Additionally, as described under the Zoning District section, manufacturing districts appropriate for battery storage uses are typically sited along the waterfront. Available space along the waterfront in proximity to existing substations in New York City is limited, especially the amount of space that would be required for the project.

LOAN ELIGIBILITY

Title XVII of the Energy Policy Act of 2005 (EPAct) established a federal loan guarantee program for certain projects that employ innovative technologies. Projects eligible for this loan program are those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ

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[1] Use Group 18, https://zr.planning.nyc.gov/article-iv/chapter-2#42-15

[2] https://zr.planning.nyc.gov/article-xiv/chapter-4#144-00

new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." To be eligible for this particular loan program, the project must demonstrate that it is innovative and uses new or improved technologies as compared to traditional methods currently in service, such as warehouse or other upland facility storage. The FESS Project secured an invite to be considered for a loan guarantee under the EPAct partially because it is a first-of-its-kind utility-scale floating system capable of storing up to 300 MW of energy. It can be readily adapted to a variety of maritime industrial sites in space-constrained and densely populated urban areas, where suitable properly zoned land is not available, and where fire and safety issues associated with utility-scale battery energy storage systems must be considered.

ALTERNATIVES CONSIDERED

UPLAND SITE ALTERNATIVES

The availability of space meeting the zoning and setback requirements for a utility-scale facility like the Project is limited in New York City. The Project must also be located close to the Hudson Avenue Substation for which it was granted approval for an interconnection. There is not enough available land at the Brooklyn Navy Yard for an upland utility-scale energy storage project. Upland battery energy storage projects can range from 30 to 40 MW per acre. An upland location would require a site of up to 8 acres. Using this much upland area within the Brooklyn Navy Yard for this single use would not be consistent the goals of the Zoning Resolution described above which focus on preserving the upland properties for a mix of other development purposes, and possibly hinder future uses along the waterfront. Further, use of an upland site would conflict of the goals of the Brooklyn Navy Yard Master Plan, which sets out a vision for creating new vertical manufacturing space which would allow 30,000 people to work in the Yard by 2030.

Areas outside the Brooklyn Navy Yard but within reasonable distance to the Hudson Avenue 138 kV Substation, the point of interconnection for the Project, are either occupied by other manufacturing/industrial uses or zoned as commercial or residential areas.

In addition to the siting flexibility, a floating system provides resiliency to flooding with the proper mooring piles and can be in a manufacturing zoning district without requiring significant space or construction. It also would not hinder future uses of the waterfront, does not require structures on land, would not obstruct vessel use in the surrounding waters, and would connect to existing electrical infrastructure. Battery storage within a warehouse or other upland facility would require extensive floodproofing measures and would likely not be eligible for the EPAct loan guarantee, making this option cost prohibitive.

IN-WATER DESIGN ALTERNATIVES

Phased Development

With a phased development, the Project would install battery units with 80 MW capacity in Phase 1, with an additional 220 MW capacity added in Phase 2. This alternative would allow for a longer manufacturing lead-time, because the additional units would be installed at a later date rather than being installed all at once on the barges at the manufacturing location or at Berth 20 of Pier K at the Brooklyn Navy Yard. The potential impacts to aquatic resources with this alternative would be the same as those presented for the preferred installation of 300 MW of storage at once. This alternative would extend the timeline for the provision of 300 MW of storage capacity, which could reduce the chance of the State reaching its 2030 energy goals as established by the CLCPA.

Single, Larger Barge

With this alternative, one larger barge would be equipped with the battery storage units and moored at the proposed location at Berth 20 of Pier K. The larger barge would require fewer piles for mooring, resulting in a smaller benthic footprint, but would result in more overwater coverage than the Project as it is currently designed with three smaller barges positioned side by side. One larger barge would also offer less flexibility with respect to positioning along the mooring location, if needed.

Second Barge or Full Build-Out

With this alternative, the Project would be completed in two phases, with Phase 2 resulting in the placement of a second barge waterward of the first barge at Berth 20 of Pier K. This alternative would reduce the water depths needed to support the loaded barges, because the weight of the battery storage units would be divided between two barges, thereby reducing the dredging depth. However, this alternative would still require some dredging because Wallabout Channel is currently as shallow as 8 feet deep at the project site, which is not deep enough to support the weight of the batteries and maintain separation from the bottom. With two barges the overwater coverage would be at least twice that of a single barge.

SUMMARY

To facilitate the provision of battery storage capacity and the retirement of fossil-fueled peaker plants in accordance with New York State's CLCPA energy goals, the FESS project site must have access to existing electrical substations to provide for interconnection to the grid. The Project has an approved point of interconnection at the Hudson Avenue 138 kV Substation and would be significantly delayed should another interconnection point be sought. A utility scale energy storage project such as the FESS Project is best suited in an area zoned for industrial use, like the Brooklyn Navy Yard which are typically along the waterfront. The project site is within a heavy industrial zoning district (M3-1), in which the FESS is an as-of-right use, and is in close proximity to required electrical infrastructure including the approved interconnection with the Hudson Avenue Substation. It is also located near the FDNY's water unit, enhancing safety in the event of an emergency. Because the FESS Project requires a unique set of site characteristics, and its innovation to be eligible for the EPAct loan is being the first-of-its-kind utility-scale floating system capable of storing up to 300 MW of energy, the proposed floating design and location for the battery storage facility was determined to be the most practicable alternative.

ENCLOSURE 6

Glosten

PROJECT MEMORANDUM

NYC Power Barges - Stability *28 August 2023*

TO: Halmar International
FROM: Stephen White, PE
JOB/FILE NO. 23088.01

References

1. Chibbaro, D, NYC Department of City Planning, email to D, Oster, DOE, “RE: [EXTERNAL] WRP Request for Comments (Battery Storage), F-2023-0408 (DA),” 4 August 2023.

Introduction

Halmar International is working on a project to build and install three power barges in NYC. The power barges will be fitted with utility scale battery banks and be moored against pilings at a pier in Brooklyn NY. The purpose of this memo is to respond to a comment received by Halmar from the NYC Department of City Planning related to the barge stability in a storm event (Reference 1). The specific comment is:

> Policy 6 – Include a section on the risk of the barge capsizing as a result of a storm event and how that risk will be mitigated.

The barge design will consider stability according to USCG criteria for deck cargo barges. Within the context of the Policy 6 a “storm event” is understood to include a hurricane. The approach to evaluating the barge stability is further elaborated in the following section.

Barge Stability

The barges will be considered deck cargo barges by USCG. USCG requires that deck cargo barges satisfy a set of stability criteria to demonstrate adequate margin against capsize and foundering. The barges will only operate on the protected waters of NY Harbor inside the boundary line. Thus, the applicable stability criteria considers service on protected waters.

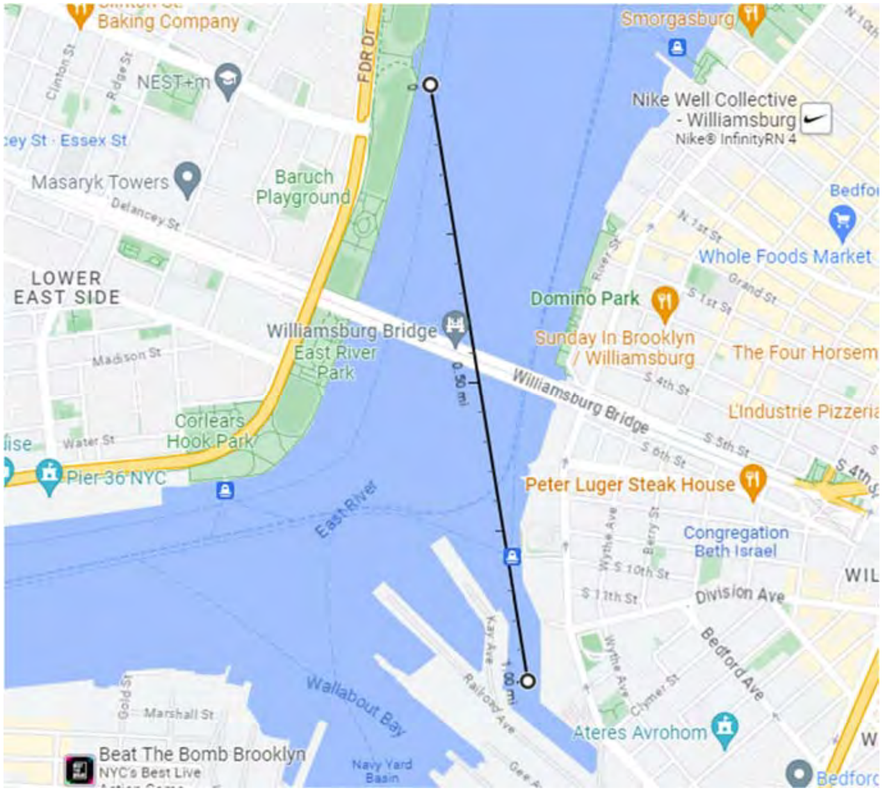
A load line certificate is normally required for vessels over 79 ft in length making ocean transits. A load line is a mark on the vessel indicating the maximum allowable draft. However, a load line is not required since the barges will only operate inside the protected waters of NY Harbor inside the boundary line. While a certified load line is not required, the stability evaluation will specify a maximum allowable draft.

The USCG stability criteria applicable to this barge and service are codified by 46 CFR Part 174 Subpart B. The stability criteria for protected waters require 10 foot-degrees of righting energy up to the angle of maximum righting arm, the downflooding angle, or 40 degrees, whichever is smallest. Additionally, the barge must provide sufficient metacentric height to satisfy the Weather Criteria codified in 46 CFR 170.170 for service on protected waters.

The barge is considered as an independent floating body for the purpose of evaluating the required USCG stability criteria. The stability evaluation will include the weight of the batteries and supporting structure above the deck. The Weather Criteria considers the effect of wind applied as a pressure on the projected area of the hull, superstructure, and other items above the deck. Compliance with the required stability criteria demonstrates that the barges have sufficient margin against foundering and capsize for conditions expected on protected waters including storms.

Hurricane events are not normally encountered on protected waters. While uncommon, hurricane events such as hurricane Sandy in 2012 have occurred in NY. Therefore, it is prudent to establish a voluntary project stability criterion that considers a hurricane event. Hurricanes are storm events with sustained wind speeds over 64 knots, storm surge, large amounts of rain, and large wind driven waves in open waters.

The barge will be moored pier side in Brooklyn NY in a location that is well protected in all directions. As shown in the following figure, the largest possible fetch in this location is only about one mile which will limit the size of waves possible. Therefore, the most significant environmental overturning force on the barge during a hurricane event will be wind. The project will establish a hurricane event design wind speed. The barge stability will be evaluated for that wind speed with the wind load applied as a steady pressure against the exposed area of the barge, superstructure, and other items above the deck. Calculations will demonstrate that the barge will have a margin against capsize when floating as a free body with the wind applied as a steady pressure. Considering the barge as a free body is a conservative approach since the mooring piles will tend to stabilize the barge against capsize.



Thus, the barge stability evaluation will demonstrate that the barge has sufficient stability characteristics to comply with the required USCG criteria and an additional voluntary project criterion considering a hurricane event to mitigate the risk of capsize.

STATE OF NEW YORK
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KATHY HOCHUL
GOVERNOR

ROBERT J. RODRIGUEZ
SECRETARY OF STATE

December 22, 2023

David Oster
Environmental Protection Specialist
United States Department of Energy
david.oster@hq.doe.gov

Re: F-2023-0408 (DA)
US EPA Loan Program Office - Federal Loan guarantee
U.S. Army Corps of Engineers/ New York District Permit Application – NYC Energy LLC
Proposed Floating Energy Storage System (FESS) with the development of a utility-scale floating energy storage system with up to 300 megawatts of energy using stacked energy storage containers and associated equipment on barges. The proposed deployment of three barges, each measuring 146' long x 130' wide (56,940 square feet total) and total height of approximately 65 to 67 feet above the main barge deck. A total of twelve 30" diameter steel pipe piles installed in Wallabout Channel off Berth 20 of Pier K at the Brooklyn Navy Yard. Also, dredging approximately 5.2 acres within Wallabout Channel will be dredged to the federally authorized depth of -20' at MLW (81,500 cubic yards) to be dewatered, and transported offsite.
Wallabout Channel, Brooklyn Navy Yard, Brooklyn, NY
Kings County
Request for Additional Information

Dear David Oster:

The Department of State (Department) began its review of the above-referenced activity on June 2, 2023. The Department requested 15 day extension of the Review Period on July 13, 2023.Through a series of discussions, the Department and the US Department of Energy (DOE) agreed to an alternative time period, pursuant to 15 § CFR 930.41 (C), ending on January 16, 2024.

Pursuant to 15 CFR § 930.34, the following additional information and data is necessary to enable the Department of State to adequately assess the consistency of the proposed activity with the New York Coastal Management Program (NYS CMP):

- Please provide a binding mechanism that will require the barges in question to be capable of getting underway either under their own power or with tugboat assistance within a reasonable period of time.

- Please provide a draft demolition and removal plan for the proposed facility.

- Please provide an expanded analysis of NYC Policy 5 specifically evaluating any potential thermal water quality impacts resulting from the operation of the battery storage facility.

- Please provide a draft emergency response plan and risk assessment for fire hazards relating to the batteries and their components. Please include any potential air quality or water quality impacts associated with combustion/smoke, or fire suppression over the water.

- Please indicate whether the barge will be classified as a vessel and would need to comply with any Vessel Incidental Discharge regulations, such as the U.S. Environmental Protection Agency's Vessel Discharge Permit.[1]

This is necessary to evaluate the proposed activity's consistency with the New York City Waterfront Revitalization Policy 2.1 and 5.1. Policy 2.1 promotes water-dependent and industrial uses in Significant Maritime and Industrial Areas. Policy 5.1 prioritizes the management of direct or indirect discharges to waterbodies.

As the Department anticipates requesting the Draft Environmental Assessment as additional data and information during its concurrent review of this battery storage facility's Army Corps of Engineers' permit application, the Department respectfully requests that DOE agree to an alternative time period of review that would allow DOE to provide a copy of the Draft Environmental Assessment and a reasonable period of time for the Department to consider it prior to making its decision.

Please provide the information requested above **as soon as possible**. If this additional information and data is not provided, the Department of State may, pursuant to 15 CFR § 930.43(b), object to the proposed activity on the grounds of insufficient information.

Please contact me at Peter.Bayzon@dos.ny.gov or (518) 474-5290 if you have any questions regarding this matter. When communicating with us regarding this matter, please refer to Department of State file number F-2023-0408 (DA).

Sincerely,

Peter Bayzon

Peter S. Bayzon
Coastal Resources Specialist
Office of Planning and Development
Community Infrastructure

cc: ACOE – NY District - Chris Minck
NYS DEC - Jamie Lacko
NYC DCP - Dan Chibbaro
NYSDOS - Laurel Bohl

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[1] https://www.epa.gov/vessels-marinas-and-ports/vessels-vgp

AKRF

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January 17, 2024

Peter Bayzon
Coastal Resources Specialist
New York State Department of State
One Commerce Plaza
99 Washington Avenue
Albany, NY 12231-0001

Re: Environmental Assessment for Floating Energy Storage System Project, F-2023-0408 (DA)
Response to Request for Additional Information

Dear Mr. Bayzon:

This letter has been prepared on behalf of the U.S. Department of Energy (DOE) in response to the New York State Department of State's (NYSDOS) request for additional information dated December 22, 2023, with respect to DOE's federal loan guarantee for NYC Energy LLC's (the Applicant) Floating Energy Storage System (FESS) Project in Wallabout Channel, Brooklyn. DOE submitted an evaluation of the Project's consistency with the New York State coastal policies and New York City local waterfront revitalization program policies to NYSDOS on June 2, 2023, and subsequently submitted an alternatives analysis to NYSDOS and the NYC Department of City Planning on June 26, 2023, and August 15, 2023, and provided supplemental information on August 29, 2023. Responses to NYSDOS's request for additional information issued on December 22nd are provided below.

<u>Required Items</u>

1. **Please provide a binding mechanism that will require the barges in question to be capable of getting underway either under their own power or with tugboat assistance within a reasonable period of time.**

The Applicant anticipates that U.S. Army Corps of Engineers (USACE) authorization for the Project will include a requirement for the barges to get underway within a reasonable period of time, and the USACE permit condition(s) would be the primary binding mechanism requiring the barges to be capable of getting underway. The Applicant will enter into a Towage Agreement with McAllister Towing of New York LLC, Moran Towing Corporation (Moran), or an equivalent firm licensed to provide tugboat services to relocate the FESS vessels when required, such as when and if required by a regulatory agency, including but not limited to USACE. A Standby Letter of Operation from Moran is included as **Enclosure 1** and indicates that following NYC Energy's commencement of construction of the FESS, a definitive agreement will be negotiated for the provision of tug services.

2. **Please provide a draft demolition and removal plan for the proposed facility.**

Enclosure 2 provides a Draft Decommissioning Plan for the proposed FESS barges detailing the steps to remove the proposed facility. In summary, the vessels would be moved to a location where the batteries would be removed for sale to a recycler, the barges would be sold for scrap, and the mooring piles would be removed. A determination when decommissioning might occur depends on the anticipated useful commercial life. With routine maintenance, including periodic battery replacements or upgrades, NYC Energy anticipates that the useful life of the facility will be a minimum of 30 years.

3. **Please provide an expanded analysis of NYC Policy 5 specifically evaluating any potential thermal water quality impacts resulting from the operation of the battery storage facility.**

As noted in DOE's evaluation of coastal zone policies submitted on June 2, 2023, NYC Policies 5.4 and 5.5 are not applicable to the Project. NYC Policy 5.1 is also not directly applicable to Project because the FESS barges would not require potable or non-potable water, would not discharge fresh water into Wallabout Channel, would not produce thermal effluent, and would not produce any vessel wastewater. However, in response to this request, the Applicant has evaluated the potential for operation of the battery storage units to result in any thermal water quality impacts.

As indicated in the product information provided in **Enclosure 3**, the CATL EnerC+ Containerized Liquid-Cooling Battery System that would be used for the Project comprises battery storage containers that do not transmit heat. Each container contains a Battery Management System (BMS) which monitors current, voltage, temperature, and cycles to maintain safe operation of the battery units. The BMS continuously monitors each battery in real time and controls a Thermal Management System (TMS) and a Fire Suppression System (FSS) to prevent any build-up of heat within each container. The TMS for each battery container includes chiller and heater units that are automatically activated to keep the system operating at ideal temperatures. The chiller unit prevents overheating by circulating a coolant to a chiller plate when the battery temperature is over the setting value. In case of an emergency, each unit's FSS is capable of automatically shutting down the system if overheating occurs. These safety measures are designed to prevent fire or combustion of the battery components, but they would also prevent any thermal impacts to Wallabout Channel. With these measures in place, the Project does not have the potential to result in any level of thermal output that could affect water quality within the channel. Therefore, the Project would promote NYC Policy 5.1.

4. **Please provide a draft emergency response plan and risk assessment for fire hazards relating to the batteries and their components. Please include any potential air quality or water quality impacts associated with combustion/smoke, or fire suppression over the water.**

An Emergency Response Plan (ERP) will be prepared for the FESS facility in accordance with New York Fire Department (FDNY) requirements and FDNY's guidelines[1] for outdoor energy storage. An approved ERP is required before the facility can operate, and the final ERP will be provided to NYSDOS. As noted above, the FESS will use CATL battery container systems, which contain state-of-the-art fire suppression systems and have not had any fire issues. Each battery storage container will have a FSS to prevent fire or combustion of the battery components. The FSS includes smoke detectors, hydrogen (H_2) detectors, fire control panels, aerosol, dry pipe, explosion-proof fans, and Uninterruptible Power Solution (UPS). The FSS monitors the thermal runaway risks through the detectors, extinguishes the thermal runaway including any flames, and controls the loss to a minimum by activating these components. The FESS is independent of any other system and is the security guard of CATL battery container systems.

All fire suppression activities will be conducted in accordance with FDNY requirements and protocols. In regard to potential air quality or water quality impacts associated with combustion/smoke, or fire suppression over the water, in July 2023, Governor Hochul announced the creation of an Inter-Agency Fire Safety Working Group (Working Group) following fires at three battery energy storage developments to ensure the safety and security of energy storage systems across the state. The Working Group includes representatives from the Division of Homeland Security and Emergency Services (DHSES) Office of Fire Prevention and Control (OFPC), the New York State Energy Research and Development Authority (NYSERDA), the New York State Department of Environmental Conservation (NYSDEC), the

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[1] Available at https://nysolarmap.com/media/2109/fdny-emp-outline_1_25_21-final.pdf

Department of Public Service (DPS), and the Department of State (NYSDOS). On December 21, 2023, the Governor's office announced the release of the initial findings of the Working Group. Based on available analyses of air quality, soil, or water data collected in the days following the incidents, the Working Group concluded that there were no reported injuries and no harmful levels of toxins detected at the site of fire incidents. Additionally, based on the information evaluated to date, no evidence of significant off-site migration of contaminants were associated with any of the fires. The Working Group's initial findings are available at: https://www.nyserda.ny.gov/About/Newroom/2023-Announcements/2023-12-21-Governor-Hochul-Announces-Results-of-Fire-Safety-Working-Group.

5. **Please indicate whether the barge will be classified as a vessel and would need to comply with any Vessel Incidental Discharge regulations, such as the U.S. Environmental Protection Agency's Vessel Discharge Permit. [https://www.epa.gov/vessels-marina-and-ports/vessels-vgp]**

The FESS barges will be certified as vessels in accordance with U.S. Coast Guard (USCG) requirements with the American Bureau of Shipbuilders (ABS) standards for in-harbor vessels. As vessels, the FESS barges will comply with all Vessel Incidental Discharge regulations including the U.S. Environmental Protection Agency's Vessel General Permit (VGP) which applies to "vessels operating in a capacity as a means of transportation…" that are at least 79 feet in length. The FESS barges will be unfueled and will not be fitted with sanitary facilities, so there will be no possibility of inadvertent discharge of fuel oil or sewage to coastal waters. It is anticipated that the FESS barges will not require any ballast, but there is the potential that small amounts of freshwater ballast may be needed within small tanks in the hull. If this is required, ballast water will be obtained through the City's municipal water supply.

Please feel free to contact me at AKRF (646-388-9657 or scollins@akrf.com) should you have any questions regarding this response or if you require additional information.

Sincerely,

Sandra L Collins

Sandy Collins
Senior Vice President, AKRF

cc: Dave Oster, DOE
Laurel Bohl, NYSDOS
Chris Minck, USACE
Jamie Lacko, NYSDEC
Dan Chibbaro, DCP
Robert Lanza, ICF
Ed Seaman, NYC Energy
Kevin Maher, AKRF

Enclosure 1: Standby Letter of Operation from Moran Towing Corporation
Enclosure 2: Draft Decommissioning Plan
Enclosure 3: Product Information for CATL EnerC+ Containerized Liquid-Cooling Battery System

ENCLOSURE 1

International

421 East Route 59
Nanuet, New York 10954
845.735.3511 Ph.#
845.735.3388 Fax#
www.halmarinternational.com

January 9, 2024

Moran Towing Corporation
50 Locust Avenue
New Canaan, CT 06840

Re: Standby Letter of Operation

Greetings:

This Standby Letter of Operation ("SLO"), once countersigned on behalf of Moran Towing Corporation (Moran), sets forth mutually agreed terms for the future provision of services that Moran will provide to NYC Energy LLC (Customer). Customer and Moran together may be referred to as Parties.

Customer is developing, permitting, building and will operate an Energy Storage System with an electric storage capacity of 300 MW (ESS) which will be installed on three vessels and located on moorings to be installed at Pier K in the Wallabout Channel in Brooklyn, New York. The vessels will not be equipped with means of propulsion.

Once installed and in operation, Customer may from time to time be required or find it convenient to unmoor one or more of the three vessels and temporarily relocate the unmoored vessels to a location outside of the Wallabout Channel.

Customer intends to engage Moran, and Moran intends, to provide Tug Services as that term is defined in Moran's **Schedule of Rates, Terms and Conditions, Towage Agreement, New York and New Jersey** (Schedule of Rates) a copy of the currently effective version of which is annexed hereto.

Promptly following Customer's commencement of construction of the ESS, Customer and Moran shall negotiate a definitive agreement pursuant to which Moran will commit to provide Tug Services subject to its Schedule of Rates, if, when, and to the extent needed by Customer (the Contingent Services Agreement).

The Contingent Services Agreement will incorporate the currently effective Schedule of Rates and provide such other terms and conditions as the Parties may agree upon including terms providing for:

(i) The provision of notice by Customer to Moran that Tug Services are required;

(ii) The time period in which Moran will complete such services; and

(iii) Details to be provided by Customer concerning (a) the equipment needed to be supplied by Moran; (b) the locations to which the vessels are to be moved; and (c) the staff and equipment Moran will require Customer to have on hand to facilitate the provision of Tug Services.

HALMAR
International

421 East Route 59
Nanuet, New York 10954
845.735.3511 Ph.#
845.735.3388 Fax#
www.halmarinternational.com

This SLO is not binding upon either Party and, notwithstanding any past, present, or future written or oral indications of negotiation or agreement to some or all matters under negotiation, the Parties shall not be bound each to the other until the terms contained herein have been incorporated into a fully executed Contingent Service Agreement or other form(s) of an agreement subject to approval of the the Parties. If you are in agreement with the terms set forth in this SLO, please sign in the space provided below.

Sincerely,

Chris Larsen

Halmar International, LLC

Agreed: Nathan Hauser

Moran Towing Corporation

NATHAN HAUSER
REGIONAL VP - NORTHEAST

moran

New York/New Jersey

50 Locust Avenue
New Canaan, CT 06840

A Division of Moran Towing Corporation

TELEPHONE: (203) 442-2836 (24-Hour Dispatchers)
Email: newyork@morantug.com **www.morantug.com**

Schedule of Rates, Terms and Conditions
Effective: May 1, 2023

TOWAGE AGREEMENT
New York and New Jersey

Dated: ______________________________

It is hereby agreed between Messrs: ____________________________________(hereinafter called "OWNERS") and Moran New York and New Jersey, a division of Moran Towing Corporation (and its successors) (hereinafter called "MORAN") that MORAN will furnish Tugs for and attend to all the towage requirements at the Port of New York and New Jersey, its tributaries and other agreed locations of vessels owned, managed or controlled by OWNERS, and OWNERS agree to place all of their towage requirements at the Port of New York and New Jersey, its tributaries and other agreed locations with MORAN in accordance with the then current "Schedule of Rates, Terms and Conditions" as may be amended from time to time.

OWNERS agree that MORAN shall have the right at any time, upon thirty (30) days advance notice to OWNERS, to increase its rates or adjust terms or conditions, but if OWNERS do not consent to such changes, they may cancel this Contract upon written notice received by MORAN prior to expiration of said thirty (30) day advance notice period.

This Contract shall remain in force from ______________________ and shall continue thereafter from year to year until cancelled by either party giving to the other notice in writing of cancellation at least thirty (30) days prior to the annual expiration date.

Acceptance:
OWNERS

By: ____________________________
Authorized Signature

Moran New York/New Jersey
Division of Moran Towing Corporation

By: ____________________________
Authorized Signature

ALL TUG SERVICES REQUESTED BY OR ON BEHALF OF A VESSEL ARE PERFORMED BY MORAN SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH IN THE THEN CURRENT "SCHEDULE OF RATES, TERMS AND CONDITIONS" (WHICH SCHEDULE INCLUDES LIMITATIONS AND DISCLAIMERS WITH RESPECT TO PERFORMANCE OF SAID SERVICES AND OBLIGATIONS AND OPTIONS FOR OWNERS). THE SCHEDULE IS APPLICABLE TO TUG SERVICES PERFORMED FOR ALL VESSELS WHETHER OR NOT SAID VESSELS ARE SUBJECT TO AN EXCLUSIVE TOWAGE AGREEMENT. NO TERM OR CONDITION OF THE SCHEDULE MAY BE DELETED OR AMENDED UNLESS AGREED TO IN A WRITING SIGNED BY AN OFFICER OF MORAN AND BY OWNERS.

THE CURRENT SCHEDULE OF RATES, TERMS AND CONDITIONS IS PUBLISHED ON MORAN'S WEBPAGE AT WWW.MORANTUG.COM

SCOPE:

THE FOLLOWING SCHEDULE OF RATES, TERMS AND CONDITIONS SHALL APPLY FOR TUG ASSISTANCE TO VESSELS IN THE PORT OF NEW YORK and NEW JERSEY AND ITS TRIBUTARIES IN CLEAR WATER AND SAFE BERTHS.

RATES:

Rates for Tug assistance are based on the Vessel's highest applicable tonnage as published in the then current edition of "Lloyds Register of Ships" at the following rates in U.S. Dollars. Should the vessel type not have an assigned tonnage, rates will be provided upon request.

1 DOCKING OR UNDOCKING

As an aid in determining the correct geographical zone, please refer to the zone description and the map shown on the back of this Contract. Rates for locations in the vicinity of the Port of New York and New Jersey, other than those set forth below, will be furnished upon request.

NOTIFICATION

Notice for all Tug service should be given at least four (4) hours prior to the time the Tug is required.

TANK VESSELS (up to 2 Tugs):

Deadweight Tons:	**Zone Rates:**												
	1	2	3	4	5	7	8	9	10	11	12	13	14
Min 30,000	$6,344	$6,043	$6,638	$7,785	$6,118	$7,739	$6,043	$7,107	$7,118	$7,897	$8,212	7,785	8,056
30,001-35,000	$7,500	$7,147	$7,845	$8,011	$7,218	$9,130	$6,970	$8,387	$8,103	$8,685	$9,995	8,011	8,284
35,001-40,000	$8,651	$8,254	$9,047	$8,590	$8,327	$10,568	$8,103	$9,660	$9,259	$9,515	$11,373	8,590	9,548
40,001-45,000	$9,797	$9,355	$10,253	$9,739	$9,440	$11,977	$9,319	$10,964	$10,479	$10,374	$12,575	9,739	10,824
45,001-50,000	$10,954	$10,452	$11,448	$11,254	$10,562	$13,318	$10,445	$12,247	$11,739	$11,386	$14,059	11,254	12,098
50,001-55,000	$12,107	$11,558	$12,656	$12,431	$11,660	$14,725	$11,432	$13,554	$13,583	$12,604	$15,538	12,431	13,375
55,001-60,000	$13,253	$12,655	$13,872	$13,627	$12,780	$16,190	$12,576	$14,828	$14,882	$13,805	$17,014	13,627	14,644
60,001-65,000	$14,404	$13,753	$15,068	$14,804	$13,885	$17,599	$13,427	$16,109	$16,180	$15,001	$18,486	14,804	15,920
65,001-70,000	$15,560	$14,856	$16,281	$15,798	$14,995	$18,997	$14,627	$17,410	$17,488	$16,212	$19,974	15,798	17,197
70,001-75,000	$16,716	$15,956	$17,479	$16,841	$16,100	$20,396	$15,584	$18,689	$18,765	$17,407	$21,455	16,841	18,471
Each additional 5,000 tons or portion thereof add:	$1,154	$1,105	$1,198	$1,191	$1,112	$1,417	$1,009	$1,282	$1,302	$1,198	$1,483	1,191	1,278

PASSENGER VESSELS – Net Registered Tonnage, Minimum 25,000NRT (up to 2 Tugs):

Docking or Undocking: $6,500, includes up to two tugs

Greater than 25,000NRT, each 2,500 ton increment or portion, add an additional $400 to Docking or Undocking Rate.

OTHER VESSELS (Container, General Cargo, Bulker, Ro/Ro, and all other Vessels – up to 2 Tugs):

Net Registered Tons:		Zone Rates:									
	1	2	3	4	5	7	8	9	10	11	13	14
Min 8,000	$6,294	$6,654	$6,991	$11,034	$6,991	$13,448	$7,111	$5,744	$6,294	$7,429	$6,689	$6,771
8,001-9,000	$7,015	$7,374	$7,784	$11,277	$7,784	$13,742	$8,212	$6,524	$7,128	$7,535	$7,570	$7,690
9,001-10,000	$7,734	$8,093	$8,576	$11,529	$8,576	$14,052	$8,994	$7,290	$7,690	$7,690	$8,487	$8,599
10,001-11,000	$8,454	$8,813	$9,366	$11,779	$9,366	$14,356	$9,930	$8,054	$7,897	$7,897	$9,359	$9,503
11,001-12,000	$9,173	$9,533	$10,159	$12,042	$10,159	$14,676	$10,632	$8,212	$8,212	$8,212	$10,253	$10,407
12,001-13,000	$9,893	$10,253	$10,952	$12,536	$10,952	$15,279	$11,519	$8,427	$8,487	$8,526	$11,149	$11,298
13,001-14,000	$10,613	$10,973	$11,744	$13,037	$11,744	$15,887	$12,484	$8,685	$8,733	$8,792	$12,033	$12,215
Each additional 1,000 tons or portion thereof add:	$721	$721	$793	$904	$793	$1,102	$914	$684	$721	$793	$793	$904

Should a Vessel lose her ability to maneuver (power or steering) during the Docking or Undocking evolution, said Vessel will incur an additional minimum charge of two (2) hours at the hourly rate of $1,620 per Tug pro-rated to the nearest half (1/2) hour.

2 ADDITIONAL TUGS

When more than two (2) Tugs are requested or required to assist a Vessel in circumstances such as weather, tidal conditions, congestion, difficult berths, USCG mandated regulations, Pilot recommendations or any other factors required, additional charges will be applied to the docking or undocking charges utilizing fifty percent of the docking or undocking rate per each additional Tug.

3 BACKING

When it becomes necessary for vessels to be backed one-half mile or more due to specific berth requirements, the applicable rate for docking or sailing will be increased by fifty (50%) percent.

Contract discounts only apply to Docking / Undocking rates in paragraph 1 - 3 above. Tug services provided to a Vessel on an hourly basis are not subject to a discount.

4 HOURLY RATES – Subject to a two (2) hour minimum per Tug

Hourly rates are applicable to certain services as set forth herein. Unless otherwise provided, such rates will be billed at an hourly rate per Tug of $1,620 pro-rated to the nearest half (1/2) hour. For purposes of calculating hourly rates, running times noted in paragraph 7 each way shall be charged to and from the place where Tug services are rendered.

TRANSPORTING/SHIFTING

Hourly rate plus applicable zone running time shall be charged for all Tug services performed in connection with the movement of a Vessel from berth to berth, berth to anchor, anchor to berth and anchor to anchor; whether the Tug is made fast to the Vessel.

ATTENDANCE

Hourly rate plus applicable zone running time each way shall be charged for all Tug services in attending to a Vessel, including service at anchorage or similar Tug services.

ESCORTING AND TETHERED ESCORTING

When Tug(s) are requested or required to provide escorting services to a Vessel, the applicable Escorting rate noted below shall be charged plus zone run time to and from the service location. Escorting services shall be subject to a two-hour minimum per tug, pro-rated to the nearest half (1/2) hour.

Escorting:	$1,620 per hour per Tug
Tethered escorting:	$2,700 per hour per Tug

DETENTION

The rates set forth herein include waiting time of up to one-half hour. Measured for docking, from the time that the Tug is ordered alongside by the Pilot or Master of the Vessel and, for undocking, from the time that the Tug reports at the scheduled sailing time. Waiting time in excess of one-half hour shall be charged at the applicable hourly rate for each Tug. In addition, if the Vessel is delayed for any reason not attributable to MORAN after commencement of the work, all such delay shall be charged at the applicable hourly rate for each Tug prorated to the nearest half hour. With respect to docking and undocking delays, the detention charge shall be the applicable hourly rate as set forth in paragraph 4, pro-rated to the nearest half hour.

5 ANCHORAGE SERVICES

When Tugs are requested to take a Vessel to or from an anchorage, an anchor surcharge of $1,750 per tug will be added.

6 LINE HANDLING SERVICES

Running or releasing rope ship lines	$1,450
Running or releasing wire ship lines	$1,950

7 ZONE RUNNING TIME AND DESCRIPTION

Zone 1	1.25hrs	69th Street Brooklyn to Gowanus Canal
Zone 2	1.50hrs	Erie Basin and the Battery to the Williamsburg Bridge
Zone 3	2.00hrs	Williamsburg Bridge to Queensboro Bridge
Zone 4	2.50hrs	Queensboro Bridge to Hunts Point and Bowery Bay
Zone 5	2.00hrs	The Battery to Pier 97 and Pier 7 – Jersey City to Days Point
Zone 6	2.75hrs	Pier 97 and Days Point to George Washington Bridge
Zone 7	3.25hrs	George Washington Bridge to Yonkers
Zone 8	1.25hrs	South of Pier 7, Jersey City to Bayonne Terminal
Zone 9	1.25hrs	Staten Island Ferry Terminal to Verrazano Bridge
Zone 10	1.00hrs	Staten Island Ferry Terminal and Constable Hook to Bayonne Bridge
Zone 11	1.50hrs	Bayonne Bridge to Goethals Bridge and Newark Bay to New Jersey Turnpike Extension Bridge
Zone 12	2.00hrs	New Jersey Turnpike Extension Bridge to Pulaski Skyway Bridge in Passaic River and Turning Basin in Hackensack River
Zone 13	1.50hrs	Goethals Bridge to Tufts Point in Arthur Kill
Zone 14	2.00hrs	Tufts Point to Ferry Point, Perth Amboy and Ward Point Staten Island
Zone 15	2.50hrs	Raritan River, South Amboy Reach to Titanium Reach
Zone 16	2.50hrs	Leonardo, New Jersey

8 HOLIDAYS

Services performed on a Holiday shall be charged the applicable rate plus an additional 35%. If a Tug service commences on a regular day and concludes on a Holiday, or vice versa, the Holiday rate shall apply.

Holidays observed: All Federal Holidays

9 CANCELLATION - REPORTING

When Tug orders are cancelled or changed after the Tug has been dispatched from its Tug Station, but before it commences performance of the requested service, three quarters (3/4) of the applicable rate will be charged. Cancellation / Reporting rates are subject to hourly zone running time and Holiday rate provisions.

10 TRACTOR TUGS

When a tractor Tug is requested or required, the rate charged for that Tug shall be increased by fifty percent (50%) over the applicable rate and/or hourly rate set forth herein excluding Tractor Tug tethered escorting.

11 PEAK HOUR SERVICE

Service requested between the hours of 03:00-08:00 and 15:00-20:00 may be assessed a twenty-five (25%) surcharge.

12 ICE CHARGES

When a Tug providing services to a Vessel is operating in ice conditions, the rate charged for that Tug shall be increased by fifty percent (50%) over the applicable rate and /or hourly rate set forth herein.

When it is necessary for a Tug to break ice in connection with docking or undocking a Vessel, or to clear an ice bound slip for any reason, said service will be charged at an hourly rate of $3,250 per Tug, measured from Tug station to Tug station. No running time will be charged if the Tug used to break ice is also used in the Docking and Undocking operation. The hourly rate applicable to ice breaking will be pro-rated to the nearest half (1/2) hour.

13 TAXES

Any transportation, use, sales or any similar federal, state or local taxes or fees levied with respect to the provision of services hereunder shall be paid by OWNERS. Any such exactions shall appear as a separate line item on MORAN'S service invoices

14 FUEL SURCHARGE

All rates published in this Schedule are subject to prevailing fuel surcharges.

TERMS AND CONDITIONS

DEFINITIONS: As used herein, the following terms shall mean:

"Deadship": shall mean a Vessel that at the commencement of any services requested from and provided by MORAN does not have use of, or which will not be using, its propelling power and/or steering.

"Escort / Tethered Tugs": shall mean the services in which a Tug is requested or required to attend upon a Vessel during transit. Tethering shall mean a Tug's line is attached to the Vessel during all or part of the escort service.

"MORAN": shall mean Moran Towing Corporation (and its successors).

"OWNERS": shall mean, collectively, the Vessel and the owner, charterer, operator, agent and manager of the Vessel receiving Tug services from MORAN.

"Schedule": shall mean the Schedule of Rates, Terms and Conditions for the applicable port that is in effect on the date that Tug services are rendered to a Vessel. A current copy of said Schedule may be found on MORAN's webpage at www.morantug.com

"Tug" or "Tugs": shall mean the tugboats provided or arranged by MORAN to perform the requested services.

"Tug Interests": shall mean MORAN, the Tugs, their respective owners, affiliates, operators, charterers, managers, underwriters, masters and crews.

"Tug Station": shall mean the Tug's customary berth at MORAN's facility or, if applicable, the berth or other place from which the Tug departed to perform the requested services and/or to which it proceeded following the provision of such services.

"Vessel": shall mean a vessel that receives Tug services.

1 DEADSHIP AND OTHER SERVICES

Rates for Deadship moves and for all other services not covered by the above rates, will be furnished upon request. For all services rendered to Deadships, MORAN and OWNERS agree to the following additional terms:

a) In consideration of the uncertain towage characteristics of a Deadship and of MORAN's agreement to furnish Tug services to said Deadship hereunder, OWNERS agree (i) to maintain hull and machinery insurance in an amount at least equal to the full value of the Deadship, (ii) to maintain full form protection and indemnity insurance in an amount not less than one hundred million dollars ($100,000,000.00) and (iii) to name Tug Interests as named assureds or joint members (as applicable) with waiver of subrogation in favor of said assureds in all said policies, which policies shall be primary to any insurance maintained by and on behalf of Tug Interests. OWNERS shall be responsible to Tug Interests for any deductibles maintained with respect to said insurances. OWNERS further agree to provide to MORAN proper evidence of such insurance prior to commencement of a Deadship move, but the failure to do so shall not operate as a waiver by the Tug Interests of OWNERS' obligation to procure and maintain insurance as described herein, and OWNERS agree that they shall be treated as being self-insured for any shortfall in coverage. For an absence of doubt, it is the intent of this paragraph to extend to Tug Interests, as primary cover for any liability arising out of performance of services hereunder to a Deadship for which Tug Interests may be liable, the enumerated insurances maintained by OWNERS on the Vessel assisted.

b) OWNERS shall make all necessary arrangements for a master and, if required or deemed advisable by OWNERS, a duly licensed pilot to serve aboard the Deadship and to direct the activities of the Tugs and the navigation of the flotilla. In the event that OWNERS utilize a pilot, the pilot shall be deemed the borrowed servant of the Deadship assisted and OWNERS for all purposes and in every respect, the pilot's services while so engaged being the work of the Deadship assisted and OWNERS and being subject to the exclusive supervision and control of the Deadship's master or OWNERS' other command personnel aboard.

c) MORAN reserves the right to perform deadship moves under different terms and conditions to be agreed in writing, dependent upon the particulars of the proposed move.

2 VESSELS AGROUND OR IN DISTRESS

Rates for Tug services to Vessels aground or in distress or when performed during heightened Coast Guard port conditions will be furnished upon request. The provision of such Tug services to any Vessel aground or in distress or during heightened Coast Guard port conditions shall be subject to the terms and conditions of this Schedule in all instances. However, MORAN reserves the right to perform such Tug services under different terms and conditions to be agreed in writing, dependent upon the particulars of the specific event.

3 DELEGATION

If at any time MORAN Tugs are not conveniently available to perform all or part of any service requested hereunder, MORAN reserves the right to delegate performance of said service, or part thereof, to another service provider without notice to OWNERS and without warranty by MORAN as to the seaworthiness or suitability of delegated service provider's tugs or the competency of it crews. OWNERS agree that such delegated service provider shall be considered an independent contractor and not an agent, servant or employee of MORAN and that said service provider, while performing such delegated service, shall have the benefit of all defenses, exemptions and limitations of liability set forth in this Schedule. MORAN shall not be liable for damages if for any reason, MORAN is unable to have Tugs and/or delegated tugs on hand to serve OWNERS' Vessel. In such event, OWNERS are at liberty to engage any other tugs to serve it at such time but without the right to charge MORAN any difference in price or otherwise to claim any damages resulting from MORAN'S inability to provide the requested service. MORAN reserves the right to recover all costs, without discount, incurred by delegating performance of any service hereunder to another service provider.

4 FORCE MAJEURE

Tug Interests shall not be responsible or liable for any expense, loss, damage or claim whatsoever caused by or resulting from delays, failures or omission hereunder in the performance of services due to strikes, lockouts, labor disturbances, riots, fire, earthquakes, storms, lightning, pandemics, epidemics, war, disorders, acts of God, acts of the public enemy, port congestion, mechanical breakdowns, shortage of Tugs, priorities in service, pilot requests, unusual tidal conditions or any other cause whatever beyond their control.

5 DAMAGE CLAIM TIME LIMITS AND FORUM

a) OWNERS shall notify MORAN of any damage to the Vessel allegedly attributable to Tug Interests. Such notice shall be in writing and shall be delivered as soon as practicable, but not later than forty-eight (48) hours following occurrence. MORAN shall be afforded an opportunity to inspect or survey such damage before the Vessel leaves port.. Any action in any forum to recover damages from Tug Interests, or any of them, shall be commenced within one year after the occurrence giving rise to the claim, failing which said claim shall be deemed waived.

b) This Schedule shall be governed by and construed in accordance with the Maritime Law of the United States and, to the extent not in conflict therewith, by the laws of the state of New York, excluding its conflict of laws rules. The parties agree that any proceeding involving this Schedule or the Services performed hereunder shall be brought in the United States District Court for the Southern District of New York or, if said court shall not have jurisdiction thereof, then in a state court of competent jurisdiction sitting in New York County, New York. TUG INTERESTS AND OWNERS IRREVOCABLY WAIVE THEIR RIGHT TO TRIAL BY JURY WITH RESPECT TO ANY CLAIM OR DISPUTE ARISING IN WHOLE OR IN PART OUT OF THE TERMS AND CONDITIONS OF THIS CONTRACT OR THE PROVISION OF SERVICES HEREUNDER.

6 LIMITATION OF LIABILITY

a) The furnishing of any service or anything done by MORAN in connection therewith shall not be construed to be or to give rise to a personal contract, and it is understood that Tug Interests, shall have the benefit of all exemptions from, and limitations of, liability to which an owner of a vessel is entitled under the Limitation of Liability Statutes of the United States. MORAN WARRANTS THE EXERCISE OF REASONABLE CARE IN THE PERFORMANCE OF SERVICES

BUT DISCLAIMS ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF WORKMANLIKE SERVICE.

b) Unless entitled to immunity or to defenses to, exemptions from and limitations of liability provided under this Schedule or under any applicable law, rule or regulation that would reduce their liability to an amount less than that hereinafter set forth, Tug Interests shall be liable, only to the extent of their negligence, which negligence shall not be assumed but shall be affirmatively proven, for claims, demands, causes of action, liabilities, penalties and costs (including third party claims) arising out of or in connection with any occurrence or series of connected occurrences related to the provision of Tug services, line handling or other services pursuant to this Schedule up to a maximum aggregate amount of two hundred fifty thousand dollars (U. S. $250,000.00). OWNERS understand and agree that Tug services provided hereunder are rendered at all times under the supervision and command of OWNERS' servants, (including the Master of the Vessel being assisted and docking pilots), or of State pilots, none of whose actions or inactions may be imputed to the Tug Interests. OWNERS further understand and agree that the rates charged by or on behalf of MORAN for Tug or other services are predicated upon the limitations of liability and the indemnities set forth in this Schedule. Should OWNERS desire that Tug Interests retain liability in excess of two hundred fifty thousand dollars (U.S. $250,000.00) they must notify MORAN in writing, whereupon MORAN will quote rates for Tug or other services provided hereunder predicated on higher liability limits. Any such quote must be accepted by OWNERS in writing at least twenty-four (24) hours prior to commencement of Tug services to the Vessel, failing which the rates and liability limitations otherwise provided herein shall prevail. Nothing herein shall be construed to waive or limit the right of Tug Interests to assert any defenses to liability available to them or to avail themselves of any rights of limitation or exemption from liability under any applicable law, rule, or regulation.

c) OWNERS and any Vessel assisted hereunder assume all risk of, and shall indemnify Tug Interests from and against, any and all loss or damage sustained by OWNERS, by Tug Interests or by any other vessel, property or person that results from the parting, heaving or sudden movement of any hawser or other line, by whomsoever furnished or howsoever caused.

d) Notwithstanding anything to the contrary in this Schedule or elsewhere, OWNERS understand and agree that the rates charged hereunder are also predicated on agreement that the Tug Interests shall have no liability for any consequential, punitive, exemplary or special damages of any kind howsoever arising.

e) OWNERS agree to indemnify, defend and hold harmless the Tug Interests from and against any and all claims, demands, causes of action, liabilities and costs (including attorneys' fees, penalties, fines and third party claims of whatever nature) that are attributable to the acts or omissions, whether or not negligent, of the Tug Interests, or any of them, or to the unseaworthiness of any Tug and which arise out of or in connection with any occurrence or series of connected occurrences related to the provision of Tug services, line handling or other services pursuant to this Schedule to the extent that they exceed, in the aggregate, the applicable amounts set forth in subparagraph 6(b) above. The parties intend for this indemnity to apply in all instances including, without limitation, allision, collision, personal injury, fire, explosion, grounding, fuel spills or other pollution incidents (including, without limitation, penalties and obligations arising out of violation of any applicable pollution law or regulation or being named a responsible party thereunder) and third-party claims. OWNERS warrant that they possess sufficient and adequate insurance on the Vessels assisted pursuant to this Schedule, including hull and machinery, P&I, cargo and pollution coverage to comply with all applicable laws and to respond for any losses arising out of or connected in any way with the Tug or other services provided hereunder, with all rights of subrogation for losses under said insurances waived as to Tug Interests and with Tug Interests entitled to all benefits of a named assured or joint member, as applicable, under said insurances, which shall be primary to any insurances maintained by Tug Interests.

f) Nothing herein shall preclude MORAN from recovering from any party responsible for any damages sustained by any Tug providing service hereunder.

7 PILOTAGE

a) MORAN does not furnish pilots or pilotage, so that whenever any licensed pilot, or a captain of any Tug which is furnished to or is engaged in the service of assisting a Vessel participates in directing the navigation of such Vessel, or in directing the assisting Tugs from on board such Vessel or from elsewhere, it is agreed that he becomes the borrowed servant of the Vessel assisted and OWNERS for all purposes and in every respect, the pilot's services while so engaged being the work of the Vessel assisted and OWNERS and being subject to the exclusive supervision and control of the Vessel's master or OWNERS' other command personnel aboard. Any such service performed by any such person is beyond the scope of his employment, if any, for MORAN and OWNERS shall indemnify, defend and hold harmless Tug Interests for any and all damages arising out of any act or omission of any such person. The provisions of this paragraph may not be changed or modified in any manner whatsoever except by written instrument signed by an officer of MORAN.

b) With respect to Vessels that are not owned by the person or company ordering the Tug service, it is understood and agreed that such person or company warrants that it has authority to bind the Vessel owners/operators to all the provisions of this Schedule and agrees to indemnify and hold Tug Interests harmless from all damages and expenses that may be sustained or incurred in the event and in consequence of such person or company not having such authority.

c) In consideration of MORAN transporting a pilot without charge to and/or from the Vessel being assisted hereunder, OWNERS agree that they shall indemnify, defend, and hold harmless Tug Interests from and against any and all claims, demands, causes of actions, liabilities and costs (including attorney's fees) incurred in connection with or arising out of any claim by or on behalf of a pilot for personal injury or death sustained while being transported by MORAN to or from the Vessel being assisted, excepting only any injury sustained by said pilot to the extent attributable to the gross or willful negligence of MORAN. As used herein, the term "being transported by MORAN" shall include, without limitation, all time when the pilot is (i) present on MORAN's shoreside premises enroute to or from the Vessel being assisted and (ii) boarding, on board or disembarking from a Tug or other vessel supplied by or on behalf of MORAN. As used herein, the term "pilot" shall also include any assistant pilot, trainee, or other person who may accompany the pilot in any capacity.

8 CONTRACT TERMINATION

If at any time during the term hereof, MORAN reasonably concludes that the solvency or financial condition of OWNERS is threatened it may, in its sole discretion, cancel this contract, such cancellation to take effect immediately upon receipt by OWNERS of email or other written notification thereof. If, subsequent to cancelation, OWNERS provide to MORAN evidence concerning their ability to meet their current and future financial obligations, MORAN may, in its sole discretion, elect to reinstate this contract (with or without modifications thereto) effective upon receipt by OWNERS of email or other written notification thereof.

9 ENFORCEABILITY

If any provision of this Schedule is found void or unenforceable, the remaining terms and conditions shall remain in full force and in effect.

10 AMENDMENTS

a) Should the U.S. Coast Guard or any other U.S., state or government agency, port authority, terminal or association (including any pilot or pilot association), or any designee of any of the foregoing, issue any regulation or requirement that obligates MORAN to make capital improvements to the Tugs, to provide Tugs with higher horsepower or different operational capabilities or that obligates MORAN to operate the Tugs in a different manner or with different crew complement that increases its operating costs, MORAN shall have the right to amend the Schedule in order to reflect the new requirements and, as applicable, to mitigate the costs thereof.

b) In addition to amendments implemented pursuant to changes in conditions referred to in paragraph 10 (a), MORAN reserves the right from time to time to amend the rates, terms and conditions set forth herein or to add additional provisions.

c) If, within thirty (30) days following implementation of any said amendment, OWNERS or those acting on behalf of the Vessel object in writing to said amendment, the implementation thereof shall be stayed for a period of thirty (30) days (measured from the date said objection is received by MORAN) and the parties shall negotiate in good faith to achieve a mutually satisfactory outcome. If the parties are unable to reach agreement within said thirty (30) day period, the said amendment shall again come into effect. In such event, OWNERS shall have the option to terminate this contract on thirty (30) days' advance written notice to MORAN, said option to be exercised within fifteen (15) calendar days after the date that the said amendment again comes into effect, failing which said option shall lapse.

11 SECURITY

OWNERS acknowledge MORAN's long term and substantial presence in the port and waive any right to demand that MORAN post security in connection with any claim by or on behalf of OWNERS or the Vessel being assisted for any expense, loss or damage claimed to have arisen, in whole or in part, as a result of any service rendered in connection with this Schedule. Notwithstanding the foregoing, if any said claim, exclusive of interest, shall reasonably be expected to exceed five million dollars ($5,000,000.00) MORAN agrees, upon request, to post as security a letter of undertaking by its P&I club in customary form, which OWNERS agree shall constitute acceptable security.

12 PAYMENT TERMS

Net 30 days. In the event that a payment is not made when due, in whole or in part, MORAN shall be entitled to recover all costs of collection, including reasonable attorneys' fees and court costs, and interest of 1½% per month on all outstanding balances. Payments received by or on behalf of OWNERS shall be applied as follows: First to satisfy all fees, costs (including attorneys' fees) and interest due and owing on any invoice rendered to OWNERS commencing with the oldest such invoice and second, to satisfy all Tug service charges arising hereunder commencing with the oldest open invoice and then to each subsequent invoice. Notwithstanding anything contained herein, in providing services to the assisted Vessel, MORAN is relying upon the credit of the Vessel, and maintains its right to assert a lien against said Vessel for any amounts due for the services rendered, including those referenced above.

13 MISCELLANEOUS

a) Severability. In case any provision in this Schedule shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby and such provision shall be ineffective only to the extent of such invalidity, illegality or unenforceability.

b) Entire Agreement. This Schedule sets forth the entire understanding of the parties with respect to the subject matter hereof, supersedes all existing agreements between them concerning such subject matter, and may be modified only by a written instrument duly executed by each party.

ENCLOSURE 2

New York City Energy LLC
Floating Energy Storage System Project

PRELIMINARY DRAFT

Decommissioning Plan

January 2024

Site Location:
Brooklyn Navy Yard
Borough of Brooklyn, Kings County

A. INTRODUCTION

NYC Energy LLC (NYC Energy) is developing a utility-scale floating energy storage system (FESS) of up to 300 megawatts (MW)/1,200 megawatt-hours (MWh) of storage capacity using stacked energy storage containers and associated equipment on three side-by-side barges (the project). The FESS will be moored in Wallabout Channel at Berth 20 of Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York. It will interconnect to the New York Independent System Operator (NYISO)-controlled New York State Transmission System via two underground 138 kV interconnection cables that will run beneath public and private rights of way to the existing Hudson Avenue East Substation in Brooklyn, which is owned and operated by the Consolidated Edison Company of New York, Inc.

This document provides a general description of the decommissioning activities anticipated in support of the restoration of the project sites over water and upland when the project reaches the end of its useful life. Decommissioning would result in the removal of facility structures and equipment from the project site, making it potentially available for redevelopment for another use. The decision to permanently cease facility operations, such that decommissioning would be appropriate, would be solely at the discretion of the Owner and would be based on commercial factors. As long as the facility remains economically viable, operations would continue negating the need to consider decommissioning.

A determination when decommissioning might occur depends on the anticipated useful commercial life. With routine maintenance, including periodic battery replacements or upgrades, NYC Energy anticipates that the useful life of the facility will be a minimum of 30 years.

B. DECOMMISSIONING PLAN

Certain criteria would guide the decommissioning process. These criteria might be performed on-site, or the facility can be moved in accordance with the Project’s Barge Relocation Plan to a waste disposal location. First, the facility must be dismantled safely and removed in an environmentally safe manner. Second, the Owner (or new owner) may determine that certain structures or buildings would remain as they could support the project site’s future use, upgraded as necessary. Third, recycling would be employed to maximize recovery of scrap metal and other materials, including the batteries themselves, for which there is a market. Fourth, foundations, mooring piles and underground utilities would be removed to the extent necessary, except for those previously deeded to and operated by public authorities, municipalities, utilities or other agencies, and/or unless commercial agreements allowing for the conservation and reuse of foundations and utilities can be reached at the time of decommissioning. Fifth, the site would be regraded and revegetated to avoid the likelihood of potential erosion.

Actual decommissioning would proceed in four major phases: removal of specialized equipment; removal of basic structures; removal of foundations, piping, and utilities (to the extent necessary); and site restoration. For removal of specialized installations, electrical equipment would be de-energized and all hazardous materials associated with or housed in that equipment would be removed for recycling/disposal, including batteries. Equipment racks can be a source of scrap metal. For removal of basic structures, dismantling would first occur. Much of this material would be sold as scrap metal. For removal of foundations, to the extent required, piping, and utilities, excavation would be necessary. The first part of this phase would be removal of aboveground piping, followed by excavation and removal of foundations (with appropriate disposal of the concrete and steel girders), and excavation and piecemeal removal of underground piping. Finally, excavated areas would be backfilled. For site restoration, all pavement would first be removed to the extent necessary. Then, the areas will be appropriately reseeded.

C. SPECIAL CONSIDERATIONS FOR BESS DECOMMISSIONING

The FDNY Certificate of Fitness holder supervising a stationary storage battery system will be responsible for its decommissioning. The deactivation, de-energizing, dismantling and removal of the stationary storage battery system must be conducted by trained and knowledgeable persons in accordance with manufacturer’s specifications. The owner, manufacturer, installer, hazardous materials carrier or other party responsible for removal, transportation and/or disposal of the stationary storage battery system shall ensure that the battery system is lawfully decommissioned, transported and disposed of in accordance with USDOT hazardous materials regulations and other applicable laws, rules and regulations.

The decommissioning process must be in accordance with the decommissioning plan approved by the FDNY. In general, prior to decommissioning, the Certificate of Fitness holder should the ensure:

1. Proper Isolation

   Batteries remain electrically and mechanically isolated through the use of the E-Stop and disconnect switches until the affected batteries have been removed.

2. Removal of all damaged/end of useful life batteries

   Any damaged batteries and any battery that reaches the end of its useful life should be removed from service and properly disposed. Heat compromises the performance of virtually all electronics, and can be particularly harmful to battery electrolyte operation. If the temperature exceeds the maximum operating temperature in the battery’s specification, the end of life will be shorten. For example, any battery that reaches a temperature of double its maximum operating temperature should be removed from service and disposed of.

3. A Qualified Hazardous Waste Management Company will handle the disposal and transportation of the battery waste

   Specific management standards for batteries include containing any universal waste battery that shows evidence of leakage, spillage, or damage that could cause leakage. The container must be closed, structurally sound, and compatible with the batteries. Batteries or battery packs may be sorted, mixed, discharged, regenerated, disassembled into individual batteries, or removed from products as long as the individual battery cell is not breached. Cells may be opened to remove electrolyte from the battery, but must be closed again immediately. Electrolyte or any other material generated by the handler must be evaluated to determine if it is a hazardous waste and, if so, managed appropriately under 40 CFR part 262 regulations.

   The person transporting the waste must comply with the transportation standards in 40 CFR part 273 subpart D of the universal waste regulations. These standards prohibit disposal or treatment of the universal wastes and cover management standards, complying with DOT regulations, storage time limits, responding to releases, and exports.

The hazardous waste management company must comply with all local, state and federal laws. Hazardous waste information is maintained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system of hazardous waste handlers. The RCRAInfo Search can be used to determine identification and location data for specific hazardous waste handlers. It also provides a wide range of information on treatment, storage and disposal facilities (TSDFs) regarding permit and closure status, compliance with federal and state regulations, and cleanup activities. A facility can be specified using any combination of facility name, geographic lo-cation (e.g., zip code) and facility industrial classification (EPA ID).

4. Transporting Hazardous Materials

   Batteries, that have been damaged or identified by the manufacturer as being defective for safety reasons, or that have the potential of producing a dangerous evolution of heat, fire, or short circuit (e.g., those being returned to the manufacturer for safety reasons) may be transported by highway, rail or vessel only, and must be packaged as follows:

   a. Each cell or battery must be placed in individual, non-metallic inner packaging that completely encloses the cell or battery;
   b. The inner packaging must be surrounded by cushioning material that is non-combustible, non-conductive, and absorbent; and
   c. Each inner packaging must be individually placed in one of the following packagings meeting the applicable requirements of part 178, subparts L, M, P and Q of this subchapter at the Packing Group I level.

5. Package Markings

   The outer package must be marked with an indication that the package contains a “Damaged/defective lithium ion battery” and/or “Damaged/defective lithium metal battery,” as appropriate. The marking must be in characters at least 12 mm (0.47 inches) high. The mark must indicate the UN number, `UN3090' for lithium metal cells or batteries or `UN 3480' for lithium ion cells or batteries. Where the lithium cells or batteries are contained in, or packed with, equipment, the UN number `UN3091' or `UN 3481' as appropriate must be indicated. Where a package contains lithium cells or batteries assigned to different UN numbers, all applicable UN numbers must be indicated on one or more marks. The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.

D. FUNDING

It is expected that the aboveground portion of the facility’s components would be offered for sale, for salvage or scrap value. Even if there were no market for the purchasing of the project’s components for salvage purposes, the scrap value of the equipment and structures on the project site would be anticipated to be more than sufficient to offset the costs for complete demolition of the facility.

E. PRELIMINARY CONSTRUCTION SPECIFICATIONS FOR DECOMMISSIONING

Construction specifications for decommissioning will be dependent on a variety of factors and conditions present at the project site at the time of decommissioning, including the projected future use of the property. As such, detailed construction specifications cannot be developed at this time. Nevertheless, the following construction specifications are illustrative of the types of specifications that would likely be included in a Contractor Bid Package for decommissioning.

COORDINATION

The Contractor will be required to closely coordinate its construction operations with the OWNER and any additional subcontractors and entities to ensure efficient and orderly demolition and decommissioning of each part of the Work, especially those activities that depend on each other for efficient sequencing of the Work.

PRE-DEMOLITION MEETING

Prior to the start of demolition activities, Owner will convene a Pre-Demolition Meeting to be attended by representatives of Owner, Field Engineer, Engineer of Record, Contractor, and primary subcontractors. The Contractor shall prepare and distribute the meeting agenda, preside over the conference and distribute meeting minutes. At the meeting the attendees will review methods and procedures related to equipment deconstruction, including, but not limited to, the following:

1. Condition of construction to be demolished, and construction to be selectively demolished;
2. Review structural load and stability limitations of existing structures;
3. Review and finalize demolition schedule, and verify availability of personnel, equipment, and facilities needed to avoid delays;
4. Review areas where existing construction is to remain and requires protection;
5. Review and finalize protection requirements;
6. Review general plans for demolition;
7. Review Job Hazard Analyses (JHAs) and Process Hazard Analyses (PHAs);
8. Review procedures for noise, dust and vibration control;
9. Review pre-demolition survey conducted by Contractor-designated competent person;
10. Review procedures for protection of adjacent properties; and,
11. Review procedures required for obtaining necessary permits, approvals, etc. for the Work.

TEMPORARY FACILITIES AND CONTROLS

The Contractor will be required to provide the temporary field offices, utilities, and associated facilities and controls as specified and as required by federal, state, and local regulations, standards, and codes. This includes furnishing, installing, connecting, operating and maintaining all construction utility systems and all appurtenances required for Work under the Contract. The applicable standards and regulations issued by the organizations and agencies listed below are incorporated by reference:

1. American National Standards Institute (ANSI);
2. National Electrical Code (NEC);
3. National Electrical Manufacturers Association (NEMA);
4. New York State Department of Transportation (NYSDOT);
5. Occupational Safety and Health Administration (OSHA); and,
6. NYC Department of Building (DOB) permits and approvals.

During mobilization, the Contractor will establish Exclusion Zones that include the areas within which appropriate PPE is required according to the Contractor's Health and Safety Plan (HASP). The Contractor must also establish safety and emergency response facilities and protocols, as appropriate to the specific work being performed.

FIRE PREVENTION AND CONTROL

The Contractor shall be responsible for compliance with the safety provisions of the National Fire Protection Association's "National Fire Codes," the Building Code of New York State, and the Fire Codes of New York State and City of New York pertaining to the Work.

SAFETY/SECURITY OF THE JOBSITE

The Contractor shall be responsible for safety and security at the Jobsite and shall maintain, as appropriate, guards, signs, temporary passages, and other protection necessary for that purpose. If any loss or damage results from theft or other cause, the Contractor shall promptly repair or replace such loss or damage at no cost to the Owner. The Contractor shall also be liable for any damage caused by it to adjoining property or another contractor's property.

GENERAL HEALTH AND SAFETY REQUIREMENTS

The Contractor shall perform all Work in accordance with the Owner’s Health and Safety requirements, as well as in compliance with federal, state, and local laws, regulations, codes, ordinances and other required practices. The Contractor shall be responsible for all aspects of jobsite safety for employees, subcontractors, vendors, and visitors.

The Contractor shall retain a Health and Safety Officer(s) (HSO) for the duration of the on-site work. The Health and Safety Officer(s) shall be present at the Jobsite at all times during the Work.

The Contractor shall prepare, gain approval for, and implement a Health and Safety Plan (HASP) that covers all aspects of the Work prior to mobilization. The HASP must meet the requirements set forth in Owner’s health and safety requirements and 29 CFR 1910.120(b)(4)(ii), and other applicable regulations.

The Contractor shall provide all labor, equipment, and materials to implement all health and safety processes required during the Contract period, as described in the Contract Documents and required by the Contractor's HASP and applicable regulations.

The HASP shall include, at a minimum, the following:

1. A task-by-task job hazard analysis of the potential physical, chemical, and biological hazards likely to exist during the Work, and operating procedures describing how work will be performed to minimize risks associated with those hazards.
2. A task-by-task description of the engineering controls, administrative procedures, and PPE to be used to protect Contractor's workers and others from the identified hazards.
3. A description of the air monitoring equipment and procedures to be used while directly monitoring the Work for the safety of the workers.
4. Community air monitoring plan (CAMP) in accordance with Owner's requirements.
5. A description of confined space entry program.
6. A description of the electrical safety requirements.
7. A Fire Protection and Prevention Plan.
8. An Emergency Response Plan for responding to and notifying the Field Engineer of releases of any materials into the environment.
9. A detailed description of the action levels to be used for upgrading and downgrading the levels of PPE used by the Contractor's employees.
10. Step-by-step personnel and equipment decontamination procedures, including methods for waste management and disposal.
11. A description of the Incident/Accident Response Procedures for handling and reporting injuries, incidents, accidents, and near misses.
12. Emergency response information, including Contractor procedures, to address major emergencies.

TEMPORARY FENCE ENCLOSURES

The Contractor shall provide and maintain temporary fence enclosures required to prevent personnel from entering restricted areas as defined in the Contractor's approved HASP. A safety zone approved by the jurisdiction having authority shall be provided around the demolition area as shown in the Contractor's approved Health and Safety Plan. Fences shall be erected to prevent persons other than workers from entering.

NOISE CONTROL

The Contractor must comply with all NYC noise ordinances. All construction machinery and vehicles shall be equipped with practical sound-muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the Work.

MATERIALS AND WASTE MANAGEMENT

The Contractor shall comply with all applicable federal, state, and local laws, regulations, standards, and codes, including, but not limited to, those listed below:

1. New York State Department of Environmental Conservation (NYSDEC):

   a. Spill Technology and Remediation Series (STARS) Memo #1 Petroleum-Contaminated Soil Guidance Policy, August 1992 (all except parts III and IV)
   b. CP-51: Soil Cleanup Guidance Policy, October 21, 2010
   c. Final DER-10 Technical Guidance for Site Investigation and Remediation, May 2010

2. New York Code of Rules and Regulations (NYCRR):
   a. 6 NYCRR Part 360, Solid Waste Management Facilities
   b. 6 NYCRR Part 364, Waste Transporter Permits
   c. 6 NYCRR Part 370, Hazardous Waste Management System – General
   d. 6 NYCRR Part 371, Identification and Listing of Hazardous Wastes
   e. 6 NYCRR Part 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
   f. 6 NYCRR Part 373, Waste Management Facilities
   g. 6 NYCRR Part 374, Management of Specific Hazardous Waste
   h. 6 NYCRR Part 375, Environmental Remediation Programs
   i. 6 NYCRR Part 376, Land Disposal Restrictions
   j. 12 NYCRR Part 56, Industrial Code Rule 56
3. New York State (NYS) Navigation Law Article 12 – Oil Spill Prevention, Control, and Compensation
4. U.S. Department of Health and Human Services, National Institute of Occupational Safety and Health (NIOSH):
   a. Publication 84-100 and updates, NIOSH Manual of Analytical Methods
5. United States Department of Transportation (USDOT):
   a. 19 CFR Parts 100-185, Hazardous Material Regulations
   b. 49 CFR Part 171, General Information, Regulations, and Definitions
   c. 49 CFR Part 172, Subpart C – Shipping Papers
   d. 49 CFR Part 172, Subpart D – Marking
   e. 49 CFR Part 172, Subpart E – Labeling
   f. 49 CFR Part 172, Subpart F – Placarding
   g. 49 CFR Part 172, Subpart G – Emergency Response Information
   h. 49 CFR Part 172, Subpart H, Training
   i. 49 CFR Part 173, Shippers General Requirements for Shipments and Packaging materials, recycling materials, and disposing waste:
   j. 49 CFR Part 177, Carriage by Public Highway
   k. 49 CFR Part 178, Specifications for Packaging

6. United States Environmental Protection Agency (USEPA):
    a. 40 CFR Part 61, National Emission Standard for Hazardous Air Pollutants
    b. 40 CFR Part 82, Protection of Stratospheric Ozone
    c. 40 CFR Part 260, General Regulations for Hazardous Waste Management
    d. 40 CFR Part 261, Identification and Listing of Hazardous Waste
    e. 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste
    f. 40 CFR Part 263, Standards Applicable to Transporters of Hazardous Waste
    g. 40 CFR Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
    h. 40 CFR Part 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
    i. 40 CFR Part 268, Land Disposal Restrictions
    j. 40 CFR Part 270, EPA Administered Permit Programs: The Hazardous Waste Permit Program
    k. 40 CFR Part 273, Standards for Universal Waste Management
    l. 40 CFR Part 302, Designation, Reportable Quantities (RQs), and Notification
    m. 40 CFR Part 745, Lead; Requirements for Lead-Based Paint activities in Target Housing and Child Occupied Facilities; Final Rule
    n. 40 CFR Part 761, Polychlorinated biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
7. United States Department of Labor (USDOL), Occupational Safety and Health Administration (OSHA):
    a. 29 CFR Part 1910, Occupational Safety and Health Standards
    b. 29 CFR Part 1926, Safety and Health Regulations for Construction

MATERIALS AND WASTE MANAGEMENT PLAN (MWMP)

The Contractor is required to prepare a plan consisting of materials and waste identification, handling, transportation and disposal. Include separate sections in the plan for demolition and construction materials and waste. Indicate anticipated types and quantities of demolition, site-clearing and construction materials and waste generated by the Work. Also include methods that will be used for separating all materials and waste including types and sizes of containers, container labeling, and designated location on-site where materials separation activities and storage will be located. Include a detailed description of storage area requirements.

The Contractor shall provide all labor, materials, and equipment to load, store, stage, transport, and dispose of all materials and waste generated during the Work.

The Contractor shall perform waste characterization sampling and complete waste profile forms required to gain acceptance of the materials and waste at the disposition facilities proposed in the MWMP.

The Contractor shall be responsible for having and maintaining all permits and licenses required for the loading, transportation, and disposal of materials and wastes generated.

The Contractor shall dispose of waste at an Owner approved disposal facility.

STAGING AREA LOCATIONS

During the Work, the Contractor shall establish the staging area locations based on the approved MWMP and Contract Documents. The Contractor shall isolate all staging areas from surrounding work areas using temporary barricades. The Contractor shall post signs in all staging areas warning of the presence of regulated materials where these wastes are present.

SALVAGING MATERIALS

The Contractor shall remove, disconnect, decommission, clean and store items to be salvaged for reuse on-site or for Owner's use as directed by the Field Engineer. Salvaged materials shall be stored in a secure and dry location and shall be protected from the elements and any form of damage while in the Contractor's possession.

RECYCLING MATERIALS

Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

LOADING

The Contractor shall provide all labor, materials, and equipment needed to load all materials and waste onto the transportation vehicles. The Contractor shall ensure that the equipment used to load materials and waste is appropriate for the task, and that the equipment capacity is not exceeded based on the manufacturer's recommendations.

TRANSPORTATION

The Contractor shall provide all labor, materials, and equipment to transport all materials and wastes generated during the Work to the approved disposal facilities based on the waste classifications. The Contractor or subcontractor shall be a registered hazardous waste carrier (i.e., carriers shall have an EPA identification number) and shall be registered with the NYSDEC, if transporting hazardous waste. The Contractor shall have a current 6 NYCRR 364 waste transporter permit for disposal of regulated waste.

The Contractor shall transport all materials and waste in accordance with applicable federal, state, and local laws and regulations, including but not limited to, those of NYSDOT and USDOT. The Contractor shall be responsible for all citations and fines resulting from the improper transport of materials by the Contractor. Drivers must have commercial driver licenses with hazardous material endorsement, if transporting hazardous materials.

The Contractor shall ensure that all vehicles that haul toxic or hazardous wastes are properly placarded in accordance with 29 CFR Parts 171-180 and 40 CFR 761, and other applicable NYSDEC, USDOT, USEPA and NYSDOT regulations. Vehicles transporting hazardous waste shall carry only waste generated by the Owner.

The Contractor shall use the haul routes included in the Contractor's MWMP. The Contractor shall comply with the requirements of local authorities in selecting transportation routes.

The Contractor shall track the transportation progress of all hauling vehicles, and ensure that all waste transported by the Contractor are delivered to their intended destination within five days of their departure from the Jobsite. The Contractor shall report all delayed deliveries to the Field Engineer in writing at the time the delay occurs.

The Contractor shall notify the Field Engineer and prepare for Owner's approval and submittal, all reports required by 40 CFR Parts 261 and 761 and 6 NYCRR Parts 370 through 376, and other applicable regulations, for shipments of hazardous and toxic waste that do not arrive at their destination.

ELECTRICAL SAFETY REQUIREMENTS

The Contractor shall comply with all applicable federal, state, and local laws and regulations and codes concerning electrical safety, including, but not limited to, those in 29 CFR Part 1926 Subparts K and V, NFPA 70 (National Electrical Code) and 241 (Standard for Safeguarding Construction, Alteration, and Demolition Operations), New York State Building Code, and New York State Fire Code.

The Contractor's employees, subcontractors and equipment shall obtain electrical clearance through the Owner's authorized representative and/or maintain safe working distances from energized systems.

The Contractor shall provide an experienced, licensed electrician to evaluate the energized status of electrical systems to be removed or otherwise handled during the Work. If an energized system is encountered, the Contractor shall not de-energize any portion of it without prior approval from the Owner and the Field Engineer, unless responding to an emergency.

CONTROL AND HANDLING OF PETROLEUM PRODUCTS, CHEMICALS AND OTHER HAZARDOUS MATERIALS

The Contractor shall conduct fueling and lubrication of equipment and vehicles in a manner that prevents spills and volatilization. The Contractor shall properly dispose of all excess oil, lubricants, and fuels in accordance with local, state, and federal regulations. The Contractor shall provide adequate secondary containment for all containers or aggregate containers containing over 55 gallons in size that contain fuel, oil, or another hazardous substance.

The Contractor shall provide a Spill Prevention, Control, and Countermeasure Plan that:

1. Describes how and shows how the Contractor will prevent release of oils, chemicals, fuel and other hazardous materials.
2. Describes how the Contractor will respond to spills and releases.
3. Identifies the location of spill response materials and equipment to be stored and replenished for the duration of the Contract.
4. Describes the training plan to train on-site workers on how to prevent and respond to spills.
5. Describes the notification procedures to be implemented in the event of a release.

The Contractor shall provide all labor, materials, and equipment to clean up spills of fuel, oil, chemicals or other fluids from Contractor vehicles or equipment. The Contractor shall clean up spills in accordance with applicable law and regulations and to the satisfaction of the Field Engineer.

The Contractor shall report all releases of fuels, oils, lubricants, and any other chemical products to the Field Engineer immediately. The Contractor shall document the spill occurrence in writing to the Field Engineer. Any costs incurred by Owner for spill response and remediation shall be back-charged directly to the Contractor. Owner shall notify the required authorities, if required.

The Contractor shall make every effort to contain any spilled materials (e.g. oils, chemicals, hazardous materials, fuel) and prevent spilled materials from entering the environment.

All piping systems, mechanical equipment, etc. that are to be removed or abandoned, and that are known or suspected to contain liquids, shall be flushed and purged of liquids by an Owner approved fluids removal service company prior to removal, cutting or disconnection. This Contract includes sampling and testing of liquids for proper waste characterization and disposal.

At a minimum, piping systems, mechanical equipment, etc. that are known or suspected to have transported or contained lube oil, other oil, dielectric fluids or fuels, wastewater, caustics, hazardous chemical and other contaminated liquids during operations shall be flushed/vacuumed by the pre-approved fluids removal service company.

The Contractor shall assume all piping and equipment have residual fluids when cutting and removing piping and equipment. The Contractor shall provide drip pans and/or containment when cutting and/or removing pipes and equipment to prevent releases to the environment.

DISPOSAL

The Contractor is responsible for the transport and legal disposal of materials and waste. The Contractor must comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure and environmental pollution. The Contractor shall only utilize fully licensed and permitted transporters.

No waste shall be transported off-site without the Field Engineer’s approval.

All waste disposal documentation must be signed by the Owner.

REGULATED MATERIAL REMOVAL

The Contractor shall furnish all labor, materials, supplies, equipment, power, facilities and incidentals necessary to remove and transport all regulated materials that will be impacted by the proposed Work, as specified and as directed by the Field Engineer.

The Contractor and subcontractors are responsible for complying with applicable Federal, State and Local laws, codes, rules and regulations. Most electronic equipment and batteries identified on the Site can be recycled following proper manifest procedures. A hazardous waste exemption notification will be required to be submitted to the NYSDEC if the used electronic equipment will be recycled.

The Contractor shall perform the regulated material removal prior to demolition. Prior to any demolition activities, the Contractor shall utilize appropriately trained workers to perform the required Regulated Material Removal scope of work. In addition, all personnel entering the regulated areas for the purpose of performing removal, segregation, packaging, or handling of regulated materials must have received the required OSHA 40 hour Haz Mat training as outlined by 29 CFR 1910.120(a) (i) and appropriate annual refresher training as required.

All batteries are to be removed as a Universal Hazardous Waste in approved containers and disposed of or recycled pursuant to NYSDEC Universal Waste Regulations (6 NYCRR 374).

Contractor shall assume all thermostats, temperature gauges and pressure switches contain greater than 0.2 ppm TCLP mercury. All thermostats are to be removed as a Universal Hazardous Waste in approved containers and disposed of or recycled pursuant to the NYSDEC Universal Waste Regulations (6 NYCRR 374).

The Contractor shall prepare required manifests and/or shipping papers for Owner's (or their authorized agent's) approval and signature.

The Contractor shall be responsible for the proper segregation and handling of all conditionally exempt "inert construction and demolition debris" in accordance with the Project Specifications.

Contractor shall provide sufficient containerized storage or secured stockpiles to allow for testing of the materials after removal, and before disposal, in accordance with the disposal facility's requirements.

All regulated materials shall be transported under bills of lading or manifests approved by Owner.

STORMWATER MANAGEMENT

The Contractor will be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001), as applicable. The SWPPP shall describe how the Contractor will comply with the SWPPP and other Contract requirements that relate to stormwater and construction dewatering.

Disturbance of potentially contaminated area(s) and the resulting discharge of contaminated stormwater or dewatering effluent must be authorized under State or Federal oversight as part of a remedial program or after review by the Regional Water Manager. Contaminated area means soils or groundwater which contain any toxic or non-conventional pollutants identified in Tables 6-10 of SPDES application Form NY-2C. A. The Contractor is responsible for ensuring that all applicable permits, approvals, and licenses have been obtained for the Work and are posted and/or available as required.

CLEAN UP

Upon completion of the Work under this Contract, the Contractor shall remove all tools and materials, plant, apparatus, waste, rubbish and debris and shall leave the premises clean, neat and orderly as specified and as approved by the Field Engineer.

ENCLOSURE 3

Create the era of intelligent electrification

EnerC+ 306

CATL

EnerC+

Containerized Liquid-Cooling Battery System

| Basic specification

Module configuration	10P52S*8
Cell capacity	306Ah
Working Ratio	0.5P
Rated voltage	1,331.2V
Voltage range	1164.8V...1497.2V
Rated energy	4.073MWh
Rated power	2.03MW
Max. short-circuit current	120 kA
Communication protocol	CAN, Modbus TCP/IP, RS485
Operating temperature	-25℃...+55 ℃
Storage temperature	-30℃...+60 ℃
Cooling method	Liquid cooling
Max. Corrosion level	C5.
IP Level	IP55
Color	RAL 7032
Product weight	36 T
Dimension (L*W*H)	6058mm*2462mm*2896mm

| Testing and certification

IEC 61000-6-2/4 IEC 62477-1 IEC 62619 IEC 62933-5-2 IEC 63056 UL 1973 UL 9540 UL 9540A CE UK

| Design satisfaction

NFPA 855 NFPA 68 NFPA 70

CCS RoHS REACH

Improvements vs. 280Ah

Breakthrough ESS cell technology

Higher usable energy of whole life cycle

Cell level:

9% higher energy @306Ah BOL

12% higher usable energy at end of 1st year @306Ah

- ✓ Coupling design of high energy density & long life cycle to improve usable energy
- ✓ Much lower degradation rate at initial stage

Higher RTE & lower heat generation

RTE 95%→96%

30% lower heat generation

- ✓ High energy efficiency cell technology and the chemistry system with high kinetics and low polarization, to reduce the cooling power consumption and operation cost

Higher IRR

20Y 70% SOH @typical profile

lower storage degradation

- ✓ Super-low storage degradation rate
- ✓ 10% higher usable energy @EOL to increase the IRR

Higher safety

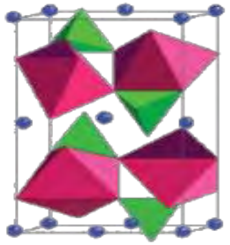
0 safety failure in whole life cycle.

Safety control technology for thermal-runaway

- ✓ Intrinsically safe chemistry system
- ✓ Safety protection of mechanical structure.

Top level safety : Chemistry Structure and Electrical safety

LFP high thermal stability，no propagation



LFP Olivine Structures

- More Stabile

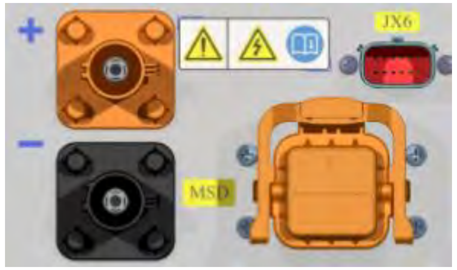
Prismatic Cell with reliable Vent

- UL9540A approved in cell, module, unit, and installation four levels

Cell Winding

- No decarburization
- No metal particles

Multi-level electrical protection

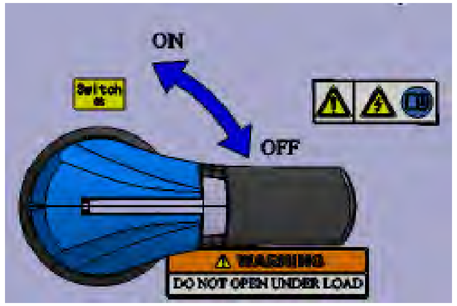


Integrated MSD and Fast plug

- More efficient and safe in service

Integrated DC fuse in module and rack level

- Customized 250kA high breaking capacity DC fuse to support 20 racks parallel



Integrated DC isolating switch in all racks

- More safe in maintenance

Top level safety : Safety Management in Whole Product Life cycle

Current

Voltage

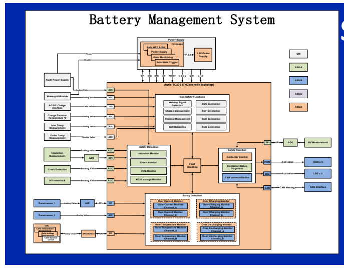
Temp.

Cycles

Online Monitoring

Basic Functions

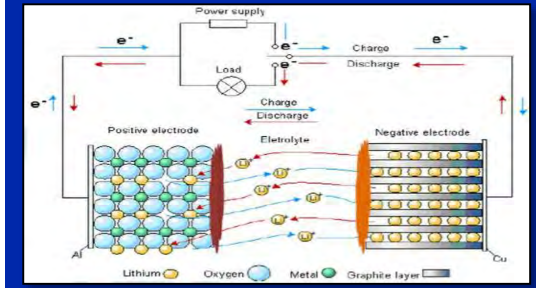
- V/T Sampling
- SOX Estimation
- Charge/Dis Mngt.
- Contactor Control



Safety Protection

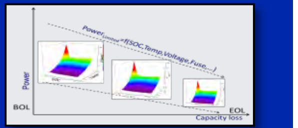
- 4 level OT/OC/OV/UV/UT protection(Alarm ,power limit ,power limit to 0,breakrelay
- Isolation Monitoring

Battery State Online Monitoring



SOX Model

Aging Model



Power Model

- ➢ Safe Usage Strategy
- ➢ Life Estimation Strategy
- ➢ Cell Failure Monitoring
- ➢ System Self-test

- ➢ Battery State Evaluation under Real Operation Profile
- ➢ Battery RT Power Model

- ➢ HV Circuit Monitoring
- ➢ System Thermal Mngt.
- ➢ BMS Fault Detection

Remote Monitoring

Top level safety： Availability in all environment

High Earthquake resistance

- Design base on IEEE 693 moderate level （optional: high)

High IP protection

- IP 55 and NEMA 3R approved

High anti-corrosion

- C5 coating according to ISO 9223

High Availability

- -25 ...+55 ℃ high temperature shock and extreme temperature operating are verified

图片需要更新

Top safety： Intelligent Fire Suppression System

Integrated Fire Detection and Suppression

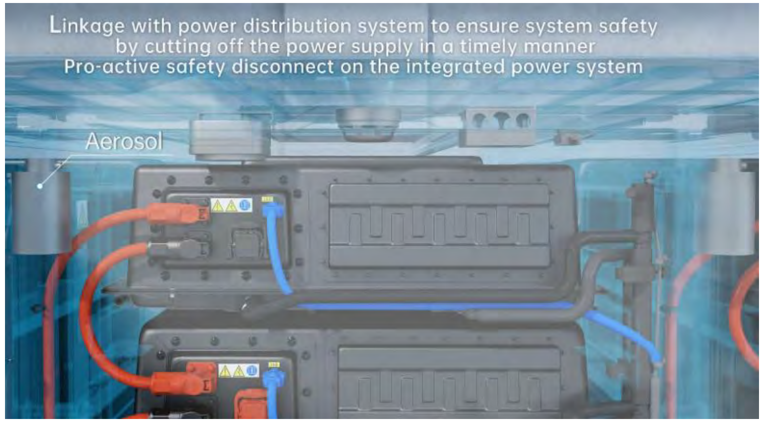
- UL version & CE version available
- NFPA855 and NFPA69 design

Intelligent Fire Alarm System

Independent Control and Early Detection Prevention

Detection System

- Gas detector
- Smoke detector
- Horn & Strobe device



Linkage with power distribution system to ensure system safety by cutting off the power supply in a timely manner

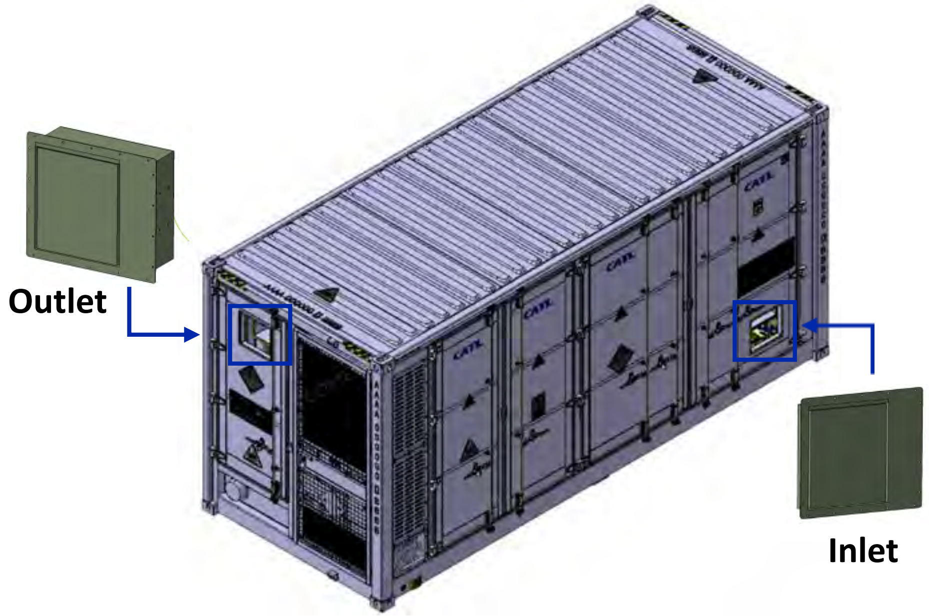
Pro-active safety disconnect on the integrated power system

Fire Suppression system

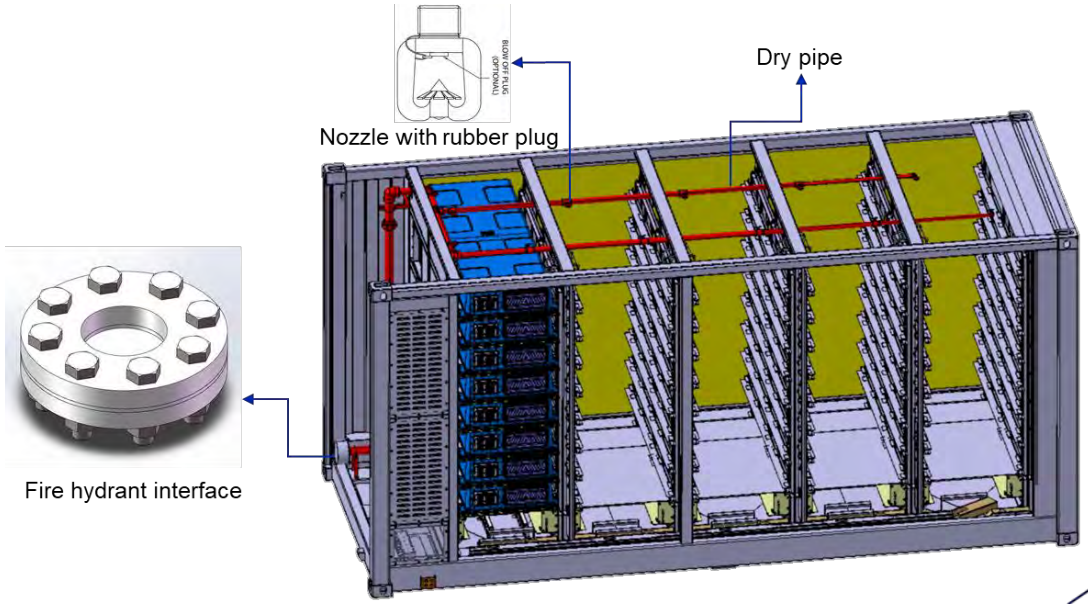
- Aerosol auto-release
- E-stop auto-activate

EnerC+ Fire Suppression System

- ➢ Explosion-proof fan system
- When the combustible gas in the container accumulates, the explosion-proof fan system is started to prevent deflagration
- Explosion-proof fan system meets **NFPA69** standard and has **ATEX** certification



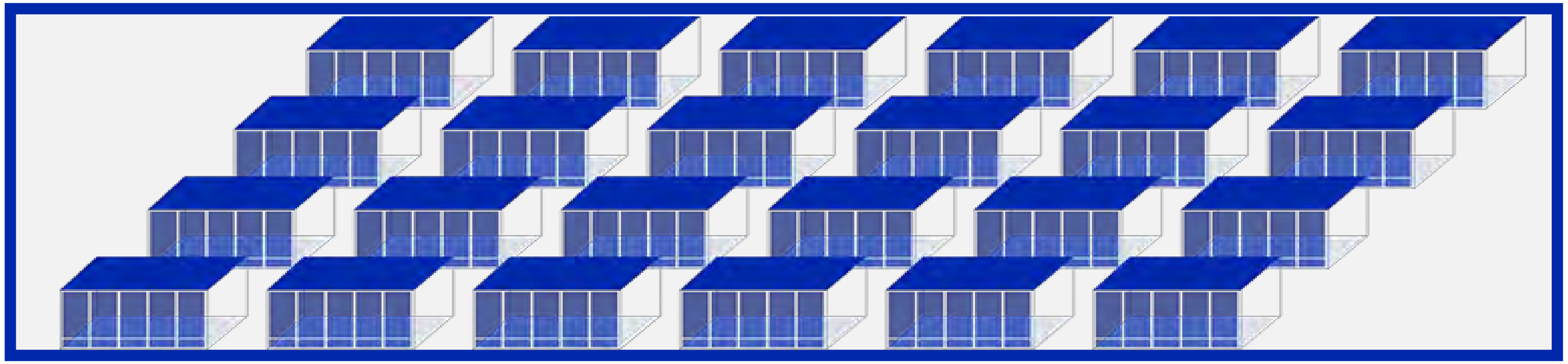
- ➢ Dry pipe system (**Optional**)
- As the last line of defense, the dry pipe system can effectively control the spread of fire.
- The dry pipe system meets NFPA855 & NFPA 15 standard
- Pipe design meets API (API 5L Grade B Pipe Seamless, SCH 40) standard, Color: RAL 3000 (Red).



High energy density

Cell to pack: Increase significantly the energy density of container.

Modular design: Liquid-cooling system、 Main-control box、 Fire suppression system.



CATL 20 feet container

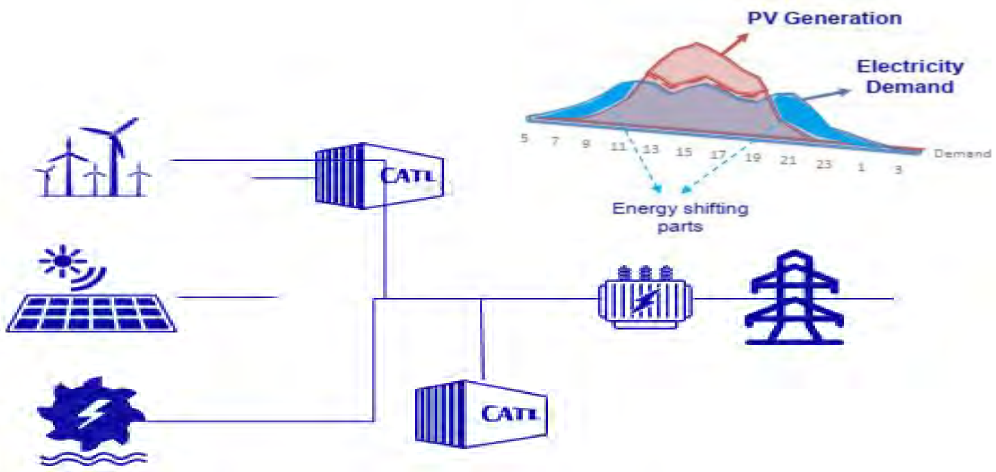
EnerC+

100MWh Covered area

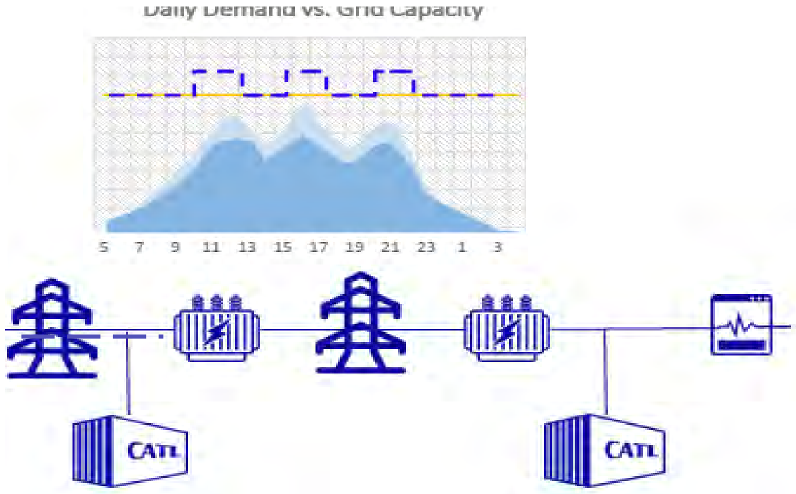
55% ↓

Economic Analysis

Renewable electricity generation application



Grid transmission application

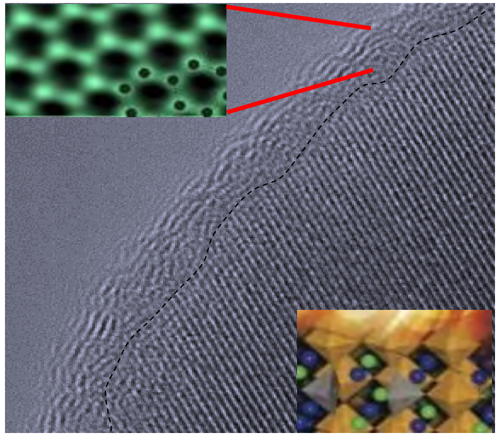


Economic Analysis	Renewable electricity generation
Comparison item	EnerC+ with 306Ah-E Vs EnerC with 280Ah-E
System layout area saving	↓28%
Throughput	↑15%
LCOE	↓5%
Initial investment cost (no supply in the first three years)	↓5%
Return period	↓0.5year
Return on investment	↑5%

Long-life 3D ultra-low Lithium Consumption Technology

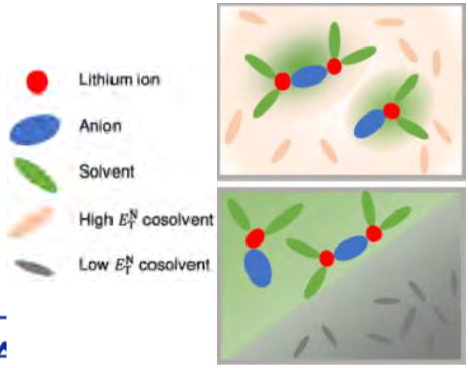
① Inert electron net: compact+conductive

- Reduce the adsorption of harmful substances in pores



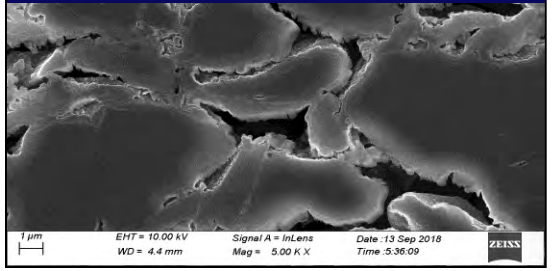
② Low-lithium-consumption electrolyte with new cosolvent

- Optimize the structure of solvated lithium ion, adjust SEI
- Reduce the rate of side reaction



③ Reduce lithium consumption at the negative electrode

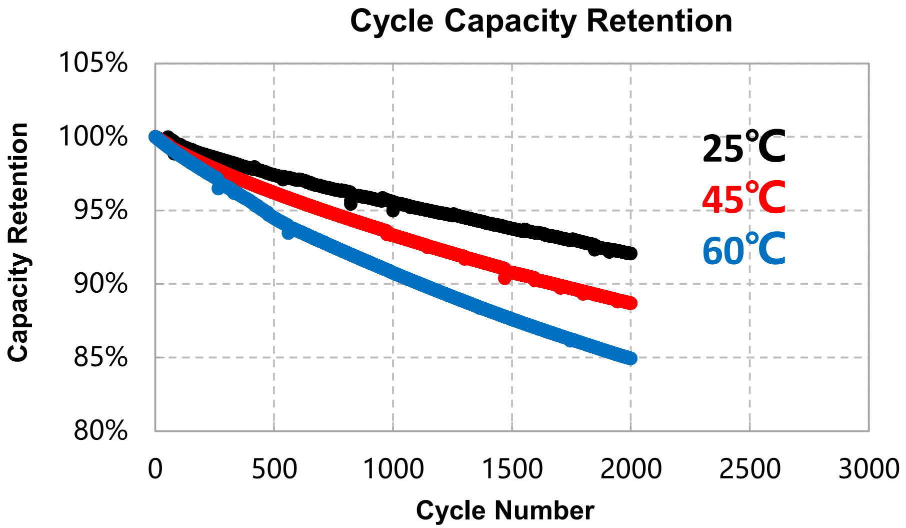
✓ Ion Shield: inhibit side reaction and help lithium intercalation



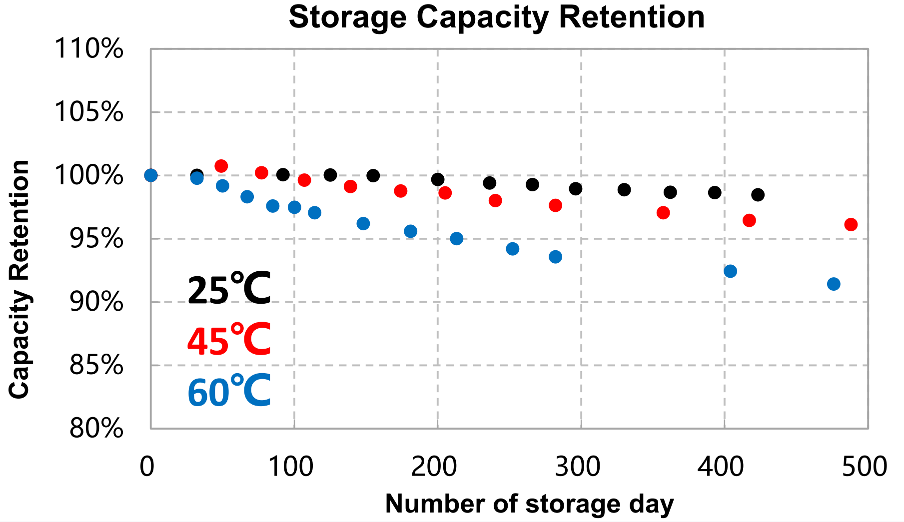
✓ Filter: prevent the passing of side reaction products

✓ Fine Repair of SEI: high conductivity of lithium+ electron insulating

Wide temperature range and long life



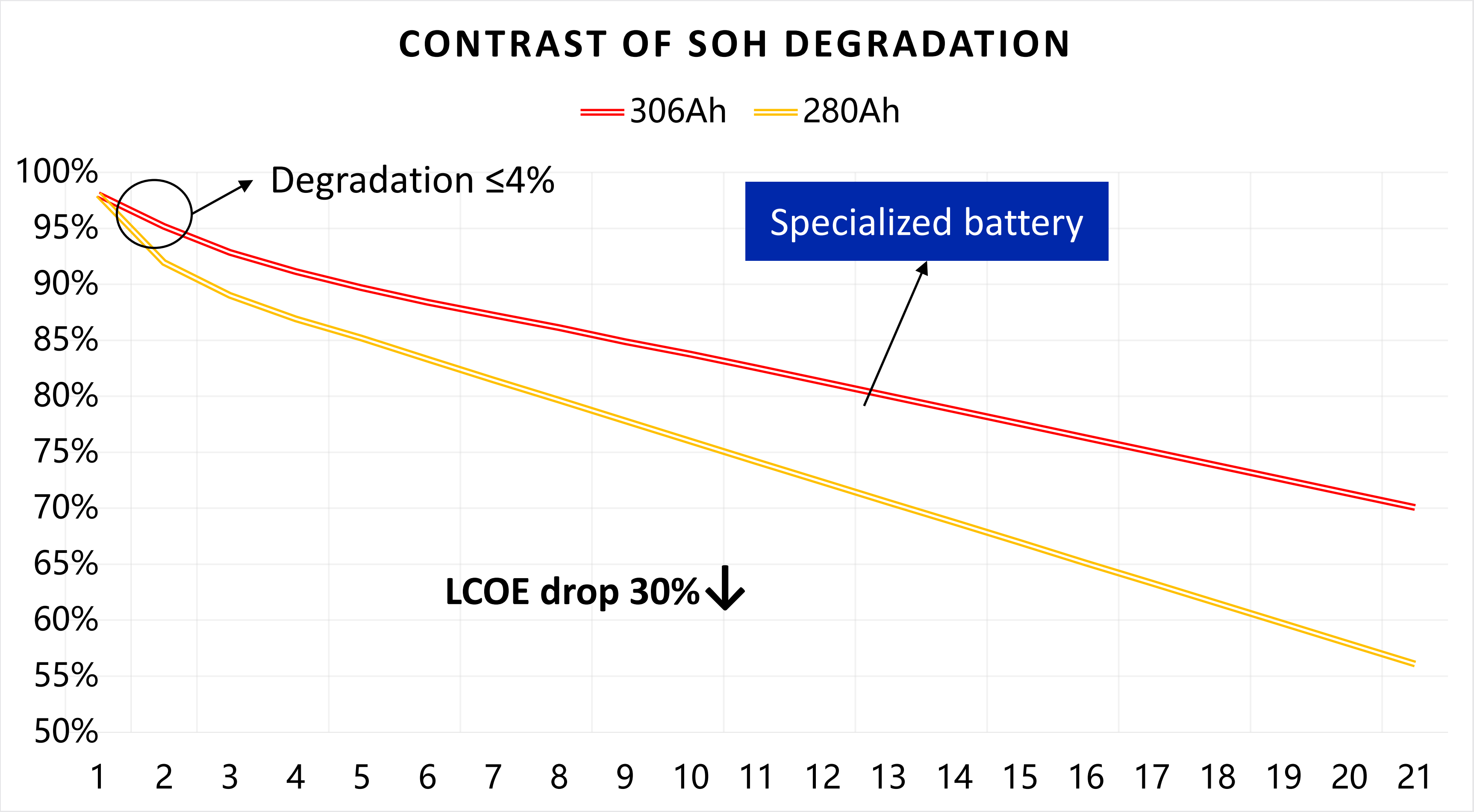
Cycle Capacity Retention



Storage Capacity Retention

Intrinsic low lithium consumption and excellent cycle and storage capacity retention, enable the battery to meet the needs of all applications in the market.

Long Life performance



High efficiency

Slow degradation

Long life

APPENDIX B-2 Consultation with NY State Historic Preservation Office

New York State Parks, Recreation and Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

March 16, 2023

David Oster
Environmental Protection Specialist
U.S. Department of Energy - Loan Programs Office
1000 Independence Ave SW
Washington, DC 20585

Re: DOE
NYC Energy, LLC - Floating Energy Storage System
Wallabout Channel, Brooklyn, NY
23PR00394
NAN-2015-00507-EBO

Dear David Oster:

Thank you for continuing to consult with the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project.

We have reviewed your Section 106 consultation letter dated February 27th, 2023, as well as the supporting documentation that was provided to our office on February 27th, 2023. Based upon our review, SHPO concurs with the determination that the proposed undertaking will have No Adverse Effect upon historic properties.

If you have any questions, I am best reached via e-mail.

Sincerely,

Olivia Brazee
Historic Site Restoration Coordinator
olivia.brazee@parks.ny.gov

via e-mail only

APPENDIX B-3 Consultation with Federally Recognized Native Nations

Department of Energy
Washington, DC 20585

October 24, 2022

Katelyn Lucas
Director, Tribal Historic Preservation
Delaware Nation, Oklahoma
PO Box 825
Anadarko, OK 73005

SUBJECT: U.S. Department of Energy Proposed Federal Loan Guarantee to Empower Brooklyn, LLC for NYC Energy in Brooklyn, Kings County, New York

Dear Katelyn Lucas:

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) to assist in determining whether to issue a Federal loan guarantee to Empower Brooklyn, LLC to support the construction and operation of a floating energy battery system (FESS) to be moored in Wallabout Channel adjacent to Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York. The facility consists of utility-scale battery energy storage systems that would be available for discharge to the New York State (NYS) Transmission System during peak energy demand periods. DOE has determined that issuance of this loan constitutes an undertaking subject to Section 106 of the National Historic Preservation Act (NHPA). Therefore, as a part of this environmental review process, DOE is also conducting a historic resource review in compliance with Section 106 of the NHPA.

The proposed project would be comprised of two phases: In Phase I, a single barge equipped with 80 MW of energy storage and necessary containers to accommodate the additional batteries for Phase II would be installed. Phase II would install 220 MW of additional battery capacity on the barge, raising the total capacity to 300 MW at the completion of Phase II. To facilitate the Project, a portion of Wallabout Channel would be dredged to the U.S. Army Corps of Engineers (USACE) authorized depth of 20 feet at Mean Low Water (MLW) to allow access for the barges. The Project would interconnect to the New York Independent System Operator (NYISO)-controlled NYS Transmission System via two 138 kV interconnection cables running beneath public and private rights of way to the existing Hudson Avenue East 138 kV Substation in Brooklyn, which is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison).

The FESS barge would be up to 440 feet long and 130 feet wide, rising to a total height of 60 to 65 feet above the waterline. The FESS would be constructed offsite and floated to its planned mooring location with all major components already installed. NYC Energy would

lease an approximately 26,000-square foot portion of Pier K. Modifications within this area would include the demolition of a small existing structure on the pier that formerly housed a substation, the installation of six steel mooring piles that would anchor the barge in place but allow for vertical movement with the tide, installation of electrical connections to the barge and switching equipment on the pier, and construction of an emergency access road and security fencing around the site (See Figure 1 Site Plan, attached). The interconnection cables would run approximately 9,250 feet from the Site to the Hudson Avenue East Substation in a trench that would be approximately two feet wide and five feet deep (manholes would be installed at regular intervals and would be up to approximately six feet wide and 10 feet deep). Modifications to the Hudson Avenue East Substation would include the removal of older equipment (an air buss breaker) and its replacement with newer equipment (a GIS breaker). Figures 2 and 3 attached provided site location information and an aerial photograph of the project area.

This letter is intended to notify you of the proposed Federal project (a potential loan guarantee to Empower Brooklyn, LLC), identify if you have an interest in the proposed project site in Brooklyn, New York, and provide you with the opportunity to comment and engage DOE in government-to-government consultation on the proposed project. Any comments or concerns you provide will help ensure that DOE considers Tribal interests and complies with its NEPA and NHPA Section 106 responsibilities.

The DOE is preparing a draft EA in accordance with NEPA and related federal review requirements, which will be provided to you when it is completed. In 2017, NYC Energy, LLC proposed a power generating facility consisting of a barge-mounted, natural gas-fired combined-cycle power plant to be moored at the same location as the Project to the New York State Historic Preservation Office (SHPO; SHPO Project Review: 17PR04906). In the project area, the Brooklyn Navy Yard Historic District was identified. The Project would affect several resources in the historic district. Building 390, a non-contributing resource within the district, would likely be demolished. Structure 713, a Transfer Bridge built in 1941 and a contributing resource to the district, is located directly south of Pier K and the project area. The proposed FESS barge would be constructed offsite and would be floated into the mooring site with minimal construction undertaken to secure it against tidal movement, thereby minimizing potential construction related effects to Structure 713. The interconnection route would remain in the street bed between the FESS and the Hudson Avenue East Substation, running beneath a surface parking lot and streets through the historic district. To date, no archaeological resources were identified in the project area. In a letter dated August 11, 2017, the New York SHPO determined that this previous project would have No Adverse Effect on historic and cultural resources.

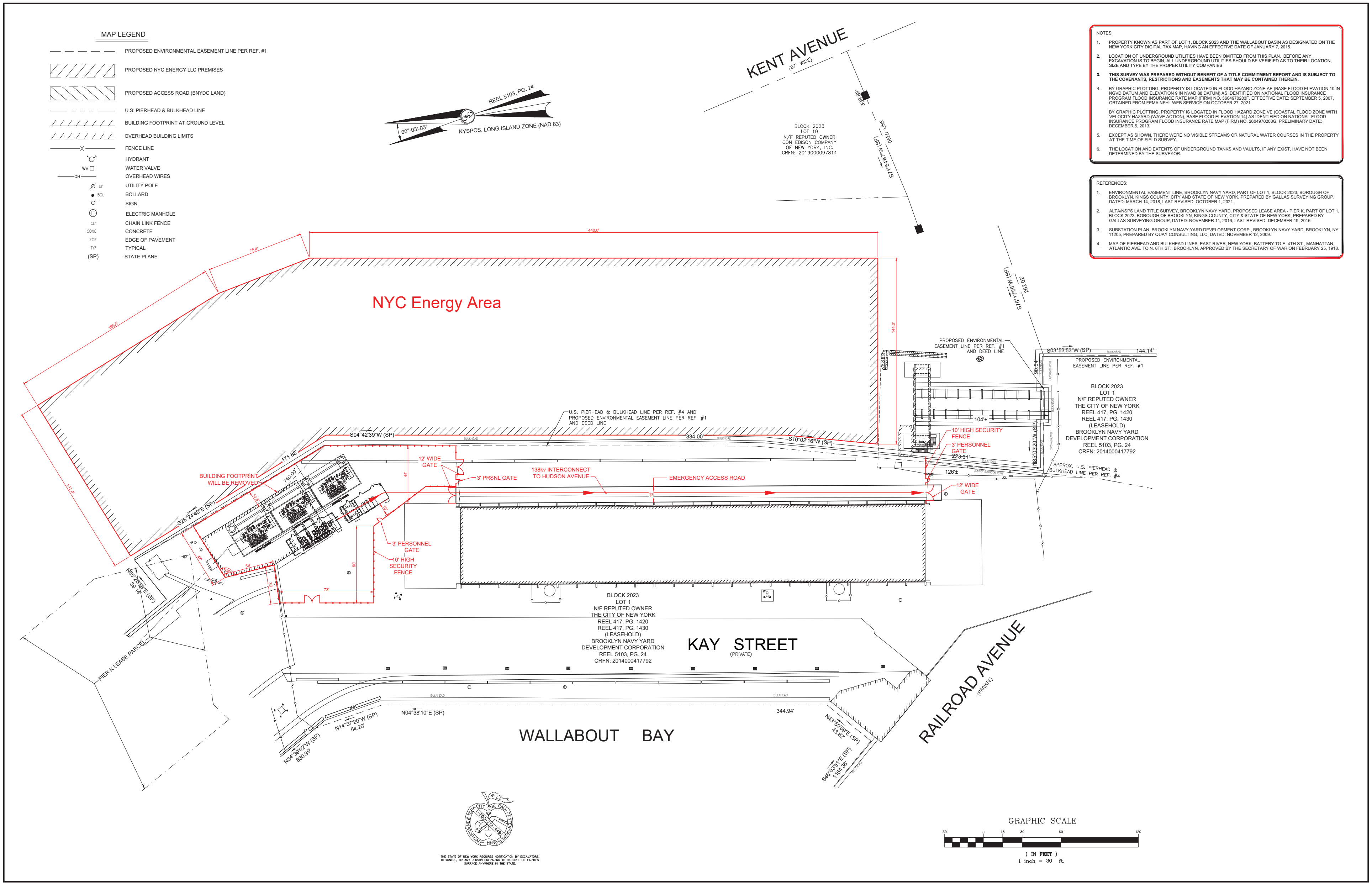
I would greatly appreciate notification if you do or do not have an interest in the project sites, as well as any comments or concerns you may have, within thirty (30) days of receipt of this letter. Should you have an interest in the project sites, I will provide you with additional information pursuant to NEPA and the NHPA as it becomes available. Please provide your notification of interest and any comments or concerns by email at LPO_Environmental@hq.doe.gov, or I can also be reached by telephone at 240-457-7973.

Respectfully,

David A. Oster
NEPA Document Manager
Loan Programs Office

Attachments:
Figure 1: Site Plan
Figure 2: Project Location
Figure 3: Aerial Image

2.7.22



NOTES:

1. PROPERTY KNOWN AS PART OF LOT 1, BLOCK 2023 AND THE WALLABOUT BASIN AS DESIGNATED ON THE NEW YORK CITY DIGITAL TAX MAP, HAVING AN EFFECTIVE DATE OF JANUARY 7, 2015.
2. LOCATION OF UNDERGROUND UTILITIES HAVE BEEN OMITTED FROM THIS PLAN. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.
3. **THIS SURVEY WAS PREPARED WITHOUT BENEFIT OF A TITLE COMMITMENT REPORT AND IS SUBJECT TO THE COVENANTS, RESTRICTIONS AND EASEMENTS THAT MAY BE CONTAINED THEREIN.**
4. BY GRAPHIC PLOTTING, PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE (BASE FLOOD ELEVATION 10 IN NGVD DATUM AND ELEVATION 9 IN NVAD 88 DATUM) AS IDENTIFIED ON NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP (FIRM) NO. 3604970203F, EFFECTIVE DATE: SEPTEMBER 5, 2007, OBTAINED FROM FEMA NFHL WEB SERVICE ON OCTOBER 27, 2021.

   BY GRAPHIC PLOTTING, PROPERTY IS LOCATED IN FLOOD HAZARD ZONE VE (COASTAL FLOOD ZONE WITH VELOCITY HAZARD (WAVE ACTION), BASE FLOOD ELEVATION 14) AS IDENTIFIED ON NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP (FIRM) NO. 2604970203G, PRELIMINARY DATE: DECEMBER 5, 2013.
5. EXCEPT AS SHOWN, THERE WERE NO VISIBLE STREAMS OR NATURAL WATER COURSES IN THE PROPERTY AT THE TIME OF FIELD SURVEY.
6. THE LOCATION AND EXTENTS OF UNDERGROUND TANKS AND VAULTS, IF ANY EXIST, HAVE NOT BEEN DETERMINED BY THE SURVEYOR.

REFERENCES:

1. ENVIRONMENTAL EASEMENT LINE, BROOKLYN NAVY YARD, PART OF LOT 1, BLOCK 2023, BOROUGH OF BROOKLYN, KINGS COUNTY, CITY AND STATE OF NEW YORK, PREPARED BY GALLAS SURVEYING GROUP, DATED: MARCH 14, 2018, LAST REVISED: OCTOBER 1, 2021.
2. ALTA/NSPS LAND TITLE SURVEY, BROOKLYN NAVY YARD, PROPOSED LEASE AREA - PIER K, PART OF LOT 1, BLOCK 2023, BOROUGH OF BROOKLYN, KINGS COUNTY, CITY & STATE OF NEW YORK, PREPARED BY GALLAS SURVEYING GROUP, DATED: NOVEMBER 11, 2016, LAST REVISED: DECEMBER 19, 2016.
3. SUBSTATION PLAN, BROOKLYN NAVY YARD DEVELOPMENT CORP., BROOKLYN NAVY YARD, BROOKLYN, NY 11205, PREPARED BY QUAY CONSULTING, LLC, DATED: NOVEMBER 12, 2009.
4. MAP OF PIERHEAD AND BULKHEAD LINES, EAST RIVER, NEW YORK, BATTERY TO E. 4TH ST., MANHATTAN, ATLANTIC AVE. TO N. 6TH ST., BROOKLYN, APPROVED BY THE SECRETARY OF WAR ON FEBRUARY 25, 1918.

Source: GALLAS SURVEYING GROUP

Site Plan

Figure 1

NYC ENERGY 300 MW FLOATING BESS

2.4.22

Project Location

Figure 2

2.4.22

Data source: Orthoimagery via NYS State, http://gis.ny.gov/gateway/mg/index.html

🟥 FESS Location

⬚ Approximate Area of Dredging

▨ NYC Energy LLC Premises and Access Road

🟦 Location of Substation Modifications

┅ Interconnection Route

Aerial

NYC ENERGY 300 MW FLOATING BESS

Figure 3

Department of Energy
Washington, DC 20585

October 24, 2022

David Martine
Tribal Historic Preservation Officer
Shinnecock Indian Nation
PO Box 5006
Southhampton, NY 11968

SUBJECT: U.S. Department of Energy Proposed Federal Loan Guarantee to Empower Brooklyn, LLC for NYC Energy in Brooklyn, Kings County, New York

Dear David Martine:

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) to assist in determining whether to issue a Federal loan guarantee to Empower Brooklyn, LLC to support the construction and operation of a floating energy battery system (FESS) to be moored in Wallabout Channel adjacent to Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York. The facility consists of utility-scale battery energy storage systems that would be available for discharge to the New York State (NYS) Transmission System during peak energy demand periods. DOE has determined that issuance of this loan constitutes an undertaking subject to Section 106 of the National Historic Preservation Act (NHPA). Therefore, as a part of this environmental review process, DOE is also conducting a historic resource review in compliance with Section 106 of the NHPA.

The proposed project would be comprised of two phases: In Phase I a single barge equipped with 80 MW of energy storage and necessary containers to accommodate the additional batteries for Phase II would be installed. Phase II would install 220 MW of additional battery capacity on the barge, raising the total capacity to 300 MW at the completion of Phase II. To facilitate the Project, a portion of Wallabout Channel would be dredged to the U.S. Army Corps of Engineers (USACE) authorized depth of 20 feet at Mean Low Water (MLW) to allow access for the barges. The Project would interconnect to the New York Independent System Operator (NYISO)-controlled NYS Transmission System via two 138 kV interconnection cables running beneath public and private rights of way to the existing Hudson Avenue East 138 kV Substation in Brooklyn, which is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison).

The FESS barge would be up to 440 feet long and 130 feet wide, rising to a total height of 60 to 65 feet above the waterline. The FESS would be constructed offsite and floated to its planned mooring location with all major components already installed. NYC Energy would

lease an approximately 26,000-square foot portion of Pier K (see Figure 1 attached). Modifications within this area would include the demolition of a small existing structure on the pier that formerly housed a substation, the installation of six steel mooring piles that would anchor the barge in place but allow for vertical movement with the tide, installation of electrical connections to the barge and switching equipment on the pier, and construction of an emergency access road and security fencing around the site. The interconnection cables would run approximately 9,250 feet from the Site to the Hudson Avenue East Substation in a trench that would be approximately two feet wide and five feet deep (manholes would be installed at regular intervals and would be up to approximately six feet wide and 10 feet deep). Modifications to the Hudson Avenue East Substation would include the removal of older equipment (an air buss breaker) and its replacement with newer equipment (a GIS breaker). Figures 2 and 3 attached show the site location and aerial imagery.

This letter is intended to notify you of the proposed Federal project (a potential loan guarantee to Empower Brooklyn, LLC), identify if you have an interest in the proposed project site in Brooklyn, New York, and provide you with the opportunity to comment and engage DOE in government-to-government consultation on the proposed project. Any comments or concerns you provide will help ensure that DOE considers Tribal interests and complies with its NEPA and NHPA Section 106 responsibilities.

The DOE is preparing a draft EA in accordance with NEPA and related federal review requirements, which will be provided to you when it is completed. In 2017, NYC Energy, LLC proposed a power generating facility consisting of a barge-mounted, natural gas-fired combined-cycle power plant to be moored at the same location as the Project to the New York State Historic Preservation Office (SHPO; SHPO Project Review: 17PR04906). In the project area, the Brooklyn Navy Yard Historic District was identified. The Project would affect several resources in the historic district. Building 390, a non-contributing resource within the district, would likely be demolished. Structure 713, a Transfer Bridge built in 1941 and a contributing resource to the district, is located directly south of Pier K and the project area. The proposed FESS barge would be constructed offsite and would be floated into the mooring site with minimal construction undertaken to secure it against tidal movement, thereby minimizing potential construction related effects to Structure 713. The interconnection route would remain in the street bed between the FESS and the Hudson Avenue East Substation, running beneath a surface parking lot and streets through the historic district. To date, no archaeological resources were identified in the project area. In a letter dated August 11, 2017, the New York SHPO determined that this previous project would have No Adverse Effect on historic and cultural resources.

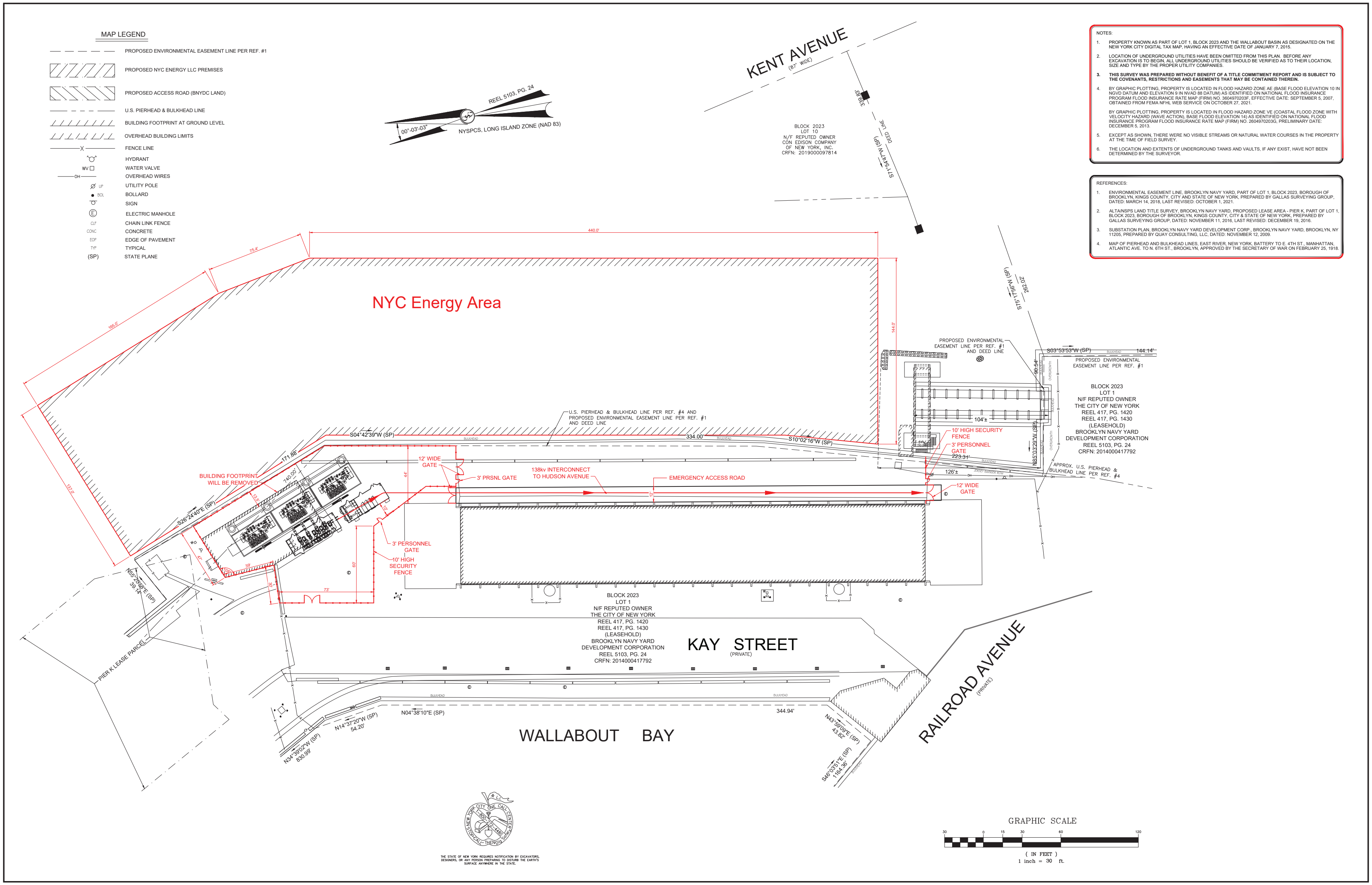
I would greatly appreciate notification if you do or do not have an interest in the project sites, as well as any comments or concerns you may have, within thirty (30) days of receipt of this letter. Should you have an interest in the project sites, I will provide you with additional information pursuant to NEPA and the NHPA as it becomes available. Please provide your notification of interest and any comments or concerns by email at LPO_Environmental@hq.doe.gov, or I can also be reached by telephone at 240-457-7973.

Respectfully,

David A. Oster
NEPA Document Manager
Loan Programs Office

Attachments:
Figure 1: Site Plan
Figure 2: Project Location
Figure 3: Aerial Image

2.7.22



NOTES:

1. PROPERTY KNOWN AS PART OF LOT 1, BLOCK 2023 AND THE WALLABOUT BASIN AS DESIGNATED ON THE NEW YORK CITY DIGITAL TAX MAP, HAVING AN EFFECTIVE DATE OF JANUARY 7, 2015.

2. LOCATION OF UNDERGROUND UTILITIES HAVE BEEN OMITTED FROM THIS PLAN. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.

3. **THIS SURVEY WAS PREPARED WITHOUT BENEFIT OF A TITLE COMMITMENT REPORT AND IS SUBJECT TO THE COVENANTS, RESTRICTIONS AND EASEMENTS THAT MAY BE CONTAINED THEREIN.**

4. BY GRAPHIC PLOTTING, PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE (BASE FLOOD ELEVATION 10 IN NGVD DATUM AND ELEVATION 9 IN NVAD 88 DATUM) AS IDENTIFIED ON NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP (FIRM) NO. 3604970203F, EFFECTIVE DATE: SEPTEMBER 5, 2007, OBTAINED FROM FEMA NFHL WEB SERVICE ON OCTOBER 27, 2021.

   BY GRAPHIC PLOTTING, PROPERTY IS LOCATED IN FLOOD HAZARD ZONE VE (COASTAL FLOOD ZONE WITH VELOCITY HAZARD (WAVE ACTION), BASE FLOOD ELEVATION 14) AS IDENTIFIED ON NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP (FIRM) NO. 2604970203G, PRELIMINARY DATE: DECEMBER 5, 2013.

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Source: GALLAS SURVEYING GROUP

NYC ENERGY 300 MW FLOATING BESS

Site Plan

Figure 1

2.4.22

Project Location

Figure 2

2.4.22

Data source: Orthoimagery via NYS State, http://gis.ny.gov/gateway/mg/index.html

🟥 *FESS Location*

⬚ *Approximate Area of Dredging*

▨ *NYC Energy LLC Premises and Access Road*

🟦 *Location of Substation Modifications*

┅ *Interconnection Route*

Aerial

Figure 3

Department of Energy
Washington, DC 20585

October 24, 2022

Susan Bachor
Preservation Representative, East Coast
Delaware Tribe of Indians
126 University Circle
East Stroudsburg, PA 18301

SUBJECT: U.S. Department of Energy Proposed Federal Loan Guarantee to Empower Brooklyn, LLC for NYC Energy in Brooklyn, Kings County, New York

Dear Susan Bachor:

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) to assist in determining whether to issue a Federal loan guarantee to Empower Brooklyn, LLC to support the construction and operation of a floating energy battery system (FESS) to be moored in Wallabout Channel adjacent to Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York. The facility consists of utility-scale battery energy storage systems that would be available for discharge to the New York State (NYS) Transmission System during peak energy demand periods. DOE has determined that issuance of this loan constitutes an undertaking subject to Section 106 of the National Historic Preservation Act (NHPA). Therefore, as a part of this environmental review process, DOE is also conducting a historic resource review in compliance with Section 106 of the NHPA.

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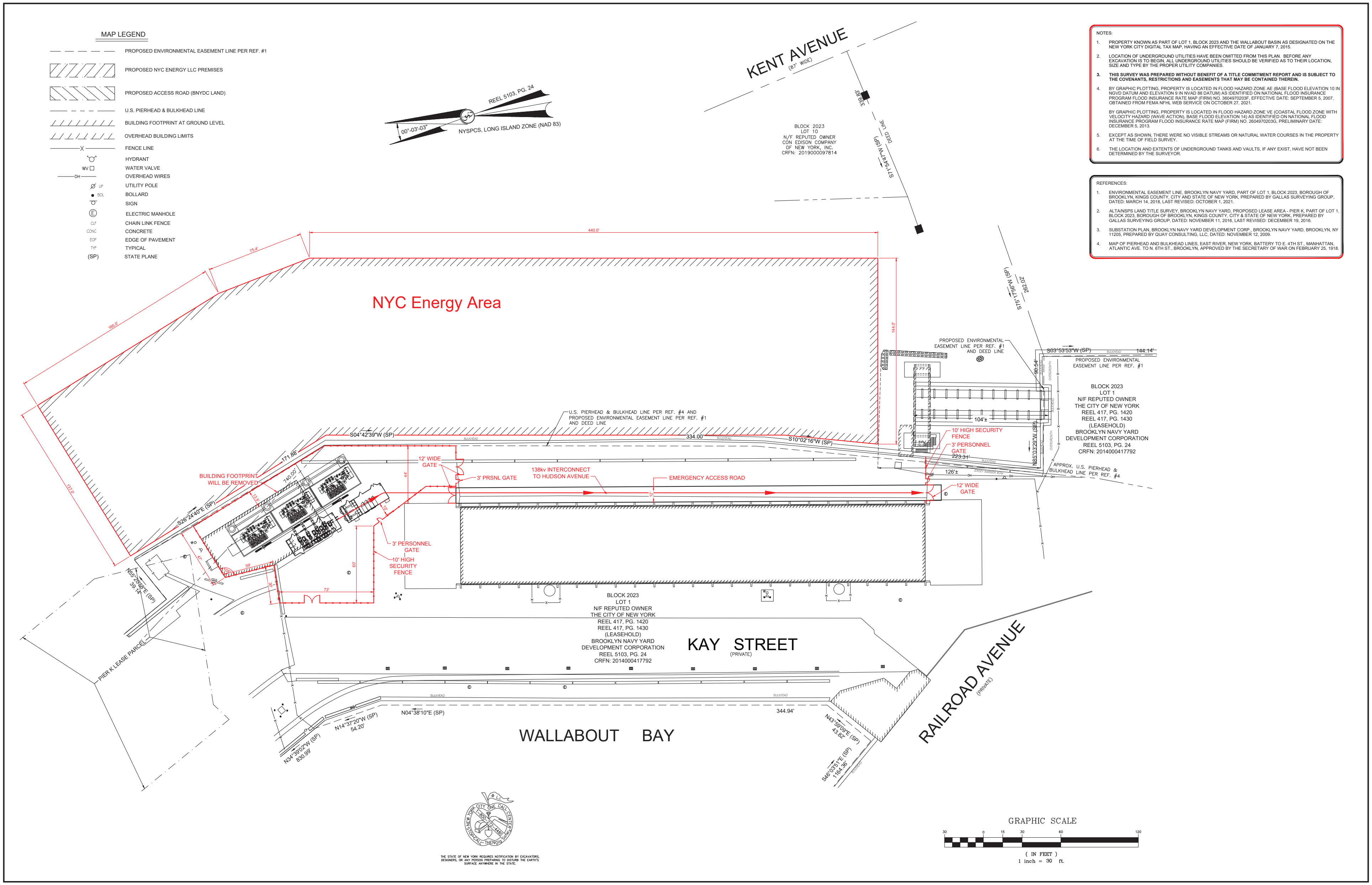
Respectfully,

David A. Oster
NEPA Document Manager
Loan Programs Office

Attachments:
Figure 1: Site Plan
Figure 2: Project Location
Figure 3: Aerial Imagery

cc: Larry Heady, Tribal Historic Preservation Officer, Delaware Tribe of Indians

2.7.22



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Source: GALLAS SURVEYING GROUP

Site Plan

Figure 1

NYC ENERGY 300 MW FLOATING BESS

2.4.22

Project Location

Figure 2

2.4.22

Data source: Orthoimagery via NYS State, http://gis.ny.gov/gateway/mg/index.html

🟥 *FESS Location*

⬚ *Approximate Area of Dredging*

▨ *NYC Energy LLC Premises and Access Road*

🟦 *Location of Substation Modifications*

┅ *Interconnection Route*

Aerial

Figure 3

The Delaware Tribe of Indians of Oklahoma
Delaware Tribe Historic Preservation
126 University Circle
Stroud Hall, Rm. 437
East Stroudsburg, PA 18301
sbachor@delawaretribe.onmicrosoft.com

David A. Oster
Environmental Compliance
Loan Programs Office

RE: Floating energy battery system (FESS) to be moored in Wallabout Channel adjacent to Pier K within the Brooklyn Navy Yard, in Brooklyn, Kings County, New York

Dear David A. Oster,

Thank you for notifying the Delaware Tribe of the plans for the above-referenced project. The Delaware Tribe is committed to protecting sites important to our tribal heritage, culture, and religion. After reviewing our files, we determined that there are no known religious or culturally significant sites within the selected project area due to prior disturbance.

We ask that if any archaeological materials (artifacts, subsurface features, etc.) are discovered during the construction process that work in the immediate area be halted until an archaeologist can view and assess the finds. Furthermore, we ask that if any human remains are accidentally unearthed during the project that you cease development immediately and inform the Delaware Tribe of Indians of the inadvertent discovery. If you have any questions, feel free to contact this office by phone at (539) 529-1671 or by email at sbachor@delawaretribe.org.

Sincerely,

Susan Bachor, M.A.
Deputy THPO & Archaeologist

APPENDIX B-4 USFWS Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Long Island Ecological Services Field Office
340 Smith Road
Shirley, NY 11967-2258
Phone: (631) 286-0485 Fax: (631) 286-4003

In Reply Refer To:
Project Code: 2022-0007659
Project Name: Floating Energy Storage System

February 15, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

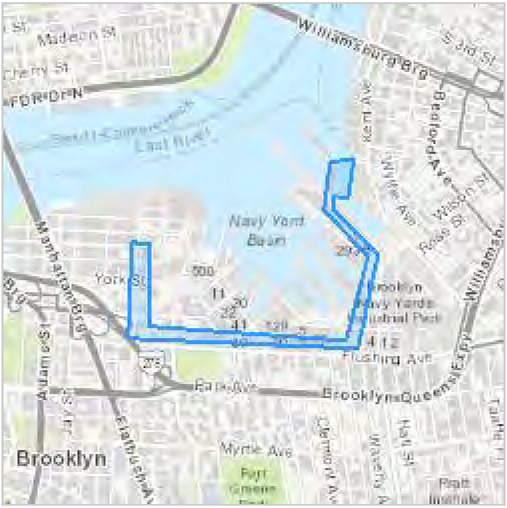
Long Island Ecological Services Field Office
340 Smith Road
Shirley, NY 11967-2258
(631) 286-0485

Project Summary

Project Code: 2022-0007659
Event Code: None
Project Name: Floating Energy Storage System
Project Type: Power Gen - Wind - Offshore
Project Description: Barge mounted energy storage containers and interconnection for storage and delivery of offshore wind-generated energy. Barge moored to piles installed at Pier K in Brooklyn Navy Yard, with transmission line installed beneath existing rights-of-way to connect to existing Hudson Avenue East Substation.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.702569749999995,-73.98255115812422,14z



Counties: Kings County, New York

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

[1] NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Seabeach Amaranth *Amaranthus pumilus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8549	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Name: Melissa Grese
Address: 7250 Parkway Drive
City: Hanover
State: MD
Zip: 21076
Email mgrese@akrf.com
Phone: 4107124848

APPENDIX B-5 Consultation with NMFS Habitat Conservation Division Essential Fish Habitat

Department of Energy
Washington, DC 20585

May 9, 2023

Ms. Karen Greene
Mid-Atlantic Field Office Supervisor and EFH Coordinator
NOAA Fisheries
Via email: Karen.Greene@noaa.gov

Re: NOAA Essential Fish Habitat Review of Floating Energy Storage System Project; Department of Energy Title XVII Innovative Energy Loan Guarantee Program

Dear Ms. Greene:

Title XVII of the Energy Policy Act of 2005 (EPAct) established a Federal loan guarantee program for certain projects that employ innovative technologies and authorizes the Secretary of Energy to make loan guarantees available for those projects. NYC Energy LLC has applied for a loan guarantee pursuant to the U.S. DOE's Renewable Energy and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by EPAct, (REEE Projects). DOE is evaluating whether to provide a federal loan guarantee to NYC Energy LLC to support the development of the proposed Floating Battery Storage System (Project) in Brooklyn, New York. DOE is evaluating the project in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021). The Project is the development of a 300 megawatt (MW) floating energy storage system (FESS) that will incorporate stacking energy storage containers and associated equipment on three barges to be moored in Wallabout Channel adjacent to Berth 20 of Pier K within the Brooklyn Navy Yard in Brooklyn, Kings County, New York (Project). **Enclosure 1** shows the project location.

In 2019, New York passed the Climate Leadership and Community Protection Act (CLCPA), which codified some of the most aggressive energy and climate goals in the country. The CLCPA establishes goals to reach net zero emissions in New York State. The act sets the goals to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030 and then to 85 percent below 1990 levels by 2050. Additional goals established by the act include that 70 percent of electric demand within the state is provided by renewable electricity by 2030 and 100 percent zero emission electricity by 2040. Energy storage will play a crucial role in meeting the climate goals established by the CLCPA. To that end, in January 2022 New York State doubled the state's 2030 energy storage deployment target from 3000 MW of storage to 6000 MW of storage by 2030. Energy storage will help to integrate clean energy into the grid that is generated by solar and onshore and offshore wind projects throughout the state.

The FESS would facilitate New York City's plans to decarbonize electricity generation and meet its clean energy mandates, including the retirement of fossil fuel-fired urban peaker plants, and would facilitate the delivery of new offshore wind generation directly to New York City. The project site in Wallabout Channel was chosen for its zoning designation (M3-1 for heavy industrial uses), its proximity to existing electrical infrastructure, and the consistency of the FESS with existing uses within the Brooklyn Navy Yard. The entire Brooklyn Navy Yard property is zoned for industrial use, including energy production or storage, and the FESS would be able to connect to the Hudson East Substation through existing rights-of-way, limiting the need for disturbance to public or private property.

The purpose of this letter is to submit an Essential Fish Habitat (EFH) Worksheet (**Enclosure 2**) for the Project to the National Oceanic and Atmospheric Administration (NOAA) Fisheries Greater Atlantic Regional Fisheries Office to document compliance with the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act (FWCA). As indicated in the Worksheet and discussed below, we have reviewed the Project and found that the Project would not result in a substantial adverse effect to EFH. This letter respectfully requests an abbreviated consultation and acknowledgement from NOAA that they have received our determination regarding the Project provided in this letter, and that NOAA has no objections to the determination.

PROJECT DESCRIPTION

The Project would place three barges, each measuring 146 feet long by 130 feet wide (56,940 square feet total) and equipped with pre-installed battery energy storage containers and associated equipment within Wallabout Channel. Each barge would have a 100 MW capacity, for a total of 300 MW capacity for the Project. When fully loaded, the barges would have an estimated draft of 16 to 18 feet and would require dredging of the channel to the USACE authorized depth of 20 feet at mean low water (MLW) according to the U.S. Army Corps of Engineers 2004 Controlling Depth Report.[1] The channel was last surveyed in 2003. The barges would accommodate three levels of battery storage units and each barge would have a total height of approximately 65 to 67 feet above the main barge deck. The barges would be moored using up to twelve 24-inch diameter steel pipe piles spaced approximately 25 feet apart and installed in Wallabout Channel off Berth 20 of Pier K at the Brooklyn Navy Yard. The piles would anchor the barges in place but allow for vertical movement with the tide. In-water construction would include the dredging, pile installation, and mooring of the barges and would be completed over a period of approximately 12 months. Dredging is anticipated to occur over four to six weeks, pile driving over two to three weeks, and mooring the barges over 2 weeks. These in-water activities would be completed in accordance with all regulatory restrictions for in-water construction, including no in-water work from January 15 through May 31 to protect spawning winter flounder, no sediment disturbing activities from March 1 through June 30 to protect anadromous species, and no dredging from November 15 through May 20 to protect overwintering striped bass.

In-water construction activities include dredging of the Project site in Wallabout Channel and installation of the mooring piles off Berth 20 at Pier K. Dredging is anticipated to be completed using a barge and two scows, and pile installation would be conducted using barge-based equipment. The FESS itself would be prepared and assembled in the Gulf of Mexico (exact location depends on the selected manufacturer) and would travel up the east coast and into the New York Harbor using established shipping channels. Some final assembly would take place when the barges arrive in Wallabout Channel. The barges would be maneuvered into position in Wallabout Channel once the piles are installed. Project activities that would be conducted on land include: installation of transformers and GIS breakers, trenching for the transmission line through NYC DOT right-of-way, repair of the bulkhead cap on Pier K, and construction of an emergency access road within the Brooklyn Navy Yard. The following sections describe these activities in detail.

Dredging

Dredging would be conducted within about 5.2 acres in Wallabout Channel to the USACE authorized depth of 20 feet at MLW. During dredging, it is anticipated that one deck barge and two scows would be used to

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[1] https://www.nan.usace.army.mil/Portals/37/docs/civilworks/ConDep03-04/Wallabout%20Channel,%20NY.pdf?ver=2013-01-31-184500-830

support equipment, storage of dredge materials, and transportation of materials for upland disposal at a licensed facility. A crew vessel may also be used to transport personnel to and from the barges. According to the most recent USACE Controlling Depth Report from 2004, water depths in 2003 ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location. A hydrographic survey was conducted in August 2022 to provide updated bathymetry for Wallabout Channel that will be used to refine the dredging area for the Project (**Enclosure 3**). The survey identified water depths ranging from close to 0 feet at MLW near the head of the Channel to about 50 feet at its mouth. Within the presumed dredging area, water depths currently range from about 8 to 20 feet at MLW, potentially with localized shallower waters close to the bulkhead. To accommodate the 16 to 18-foot barge draft, approximately 81,500 cubic yards of sediment would be removed from the 5.2-acre dredge area within the Channel. Dredging would be conducted using an environmental bucket with no barge overflow. Any debris encountered during dredging would be removed using the environmental bucket[2] and separated from the dredged material onboard a deck barge via mechanical raking. Sediment sampling would be conducted in advance of any dredging required for the project in accordance with the April 7, 2023 New York State Department of Environmental Conservation Sediment Sampling Plan (**Enclosure 4**) to determine the proper treatment and disposal requirements for the material. Bottom sediments and debris would be transported for upland disposal at a licensed facility meeting these requirements. All dredging activities would be surrounded by a full-length weighted turbidity curtain[3] and would be conducted within seasonal work windows. The turbidity curtain would be secured at either end so it does not move significantly during the in-water work. Dredging would likely take about 4 to 6 weeks to complete. There would be no discharge of the dredged material into waters of the United States.

Pile Installation

The FESS would be moored in place using up to twelve 24-inch diameter steel pipe piles installed close to the Brooklyn Navy Yard shoreline which would anchor the barges in place but allow for vertical movement with the tide, which changes by about 4 feet between low and high tide based on NOAA tidal data. The piles would be hollow and topped with a concrete cap. Installation of the piles would be conducted using a vibratory hammer once dredging is complete. If necessary, limited use of an impact hammer to seat the piles would be conducted using a cushion block and soft start. Overall, pile installation would be completed over approximately 2 to 3 weeks and would occur intermittently over the course of a workday. The piles would have a footprint of approximately 37.7 square feet on the bottom. Following pile installation, the 56,940-square foot (1.3-acre) FESS would be maneuvered into place and moored at the shoreline for the duration of NYC Energy's 30-year lease.

Land-Based Activities

Landside modifications would be made at the Project Site to Berth 20 of Pier K within the Brooklyn Navy Yard to accommodate the moored FESS and to the Hudson Avenue East Substation in Vinegar Hill. A new electrical interconnection consisting of two 138 kV cables would be installed to connect the FESS to the substation. Modifications to Pier K to accommodate the moored FESS would include the demolition of a small existing structure on the pier that formerly housed an unrelated substation, installation of electrical connections to the barges and switching equipment on the pier, grading and repairing of the bulkhead cap where the barges would be moored and construction of an emergency access road and security fencing around the Project Site. Following pile installation and connection of the piles to the shoreline, the bulkhead

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[2] An environmental bucket is similar to a conventional clamshell dredge but has additional features that typically include a combination of covers, exterior pulleys, and sealed joints intended to reduce the amount of sediments that can spill or flow out of the bucket during dredging activities (Wang et al. 2022).

[3] The turbidity curtain would likely be a Type III turbidity curtain or silt curtain, which is intended to control sediment and runoff in moving waters and moderate wind and wave conditions. Examples of Type I, Type II, and Type III turbidity curtains can be found at https://pipefloat.com/turbidity-curtains.

cap would be graded and repaired using land-based equipment over approximately 475 linear feet of the shoreline. The transformers and breakers would each be installed on a concrete foundation pad supported by 2 or 4 pipe piles driven into the soil. Measures would be implemented during these modifications to Pier K to minimize loss of debris to Wallabout Channel. The transmission line would be contained within 2 to 10-inch PVC conduits and would run from the substation through the Brooklyn Navy Yard and city streets over approximately 9,250 linear feet, primarily adjacent to existing utilities within the streetbed. The route would be established using a backhoe and dump trucks to remove and restore the trenched areas. A total of 10 to 12 manholes would be added along the route for access. These land-based construction activities would not result in impacts to aquatic resources, including the bulkhead repair which would not extend beyond the surface.

BEST MANAGEMENT PRACTICES AND MINIMIZATION MEASURES

The Project would incorporate Best Management Practices (BMPs) to avoid and minimize to the greatest extent possible any potential direct and indirect impacts to EFH for Federally-managed species and NOAA trust resources. BMPs would be required as a condition of any permits authorizing the Project, and the BMPs described below have been incorporated into the evaluations below under the EFH Assessment. Consistent with NOAA Fisheries and Federal Highway Administration (FHWA) guidance,[4] NYC Energy is proposing the following measures to avoid and minimize potential direct and indirect effects to EFH and NOAA trust resources resulting from: underwater noise during pile installation, turbidity and sedimentation, reduced water quality, vessel interaction, and habitat alteration.

Pile Installation

Components of the project that would result in increased underwater noise include vibratory and impact pile driving during installation of the mooring piles. A vibratory hammer would be used to the extent possible, and an impact hammer would only be used for the last few feet to seat the piles at their final depth. Pile installation would be subject to the following avoidance and minimization measures:

- Use of a vibratory hammer to the extent possible;
- Use of a soft start such as pile tapping prior to full energy impact hammering; and
- Use of a cushion block when impact hammering.

Turbidity and Sediment Resuspension

Sediment disturbing activities associated with the project, including dredging and pile installation, would be subject to the following avoidance and minimization measures:

- Use of a full-length turbidity curtain during all dredging and construction activities;
- Dredging only where needed within the project site to minimize the area affected;
- Dredging would take place within the extent of the turbidity curtain to the extent practicable;
- Use of an environmental bucket and reduced lift speeds[5] during dredging to minimize overflow of sediment into the water while the bucket is being lifted to the scow;
- Dredged sediments would be placed in a scow, dewatered on the scow such that there is no overflow back into the waterbody, and transported offsite for disposal;

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[4] National Marine Fisheries Service (NMFS) and Federal Highway Administration (FHWA). 2018. FHWA/NMFS Consultation Process Guide for Transportation Actions in the NMFS Greater Atlantic Region. April 2018.

[5] Reducing the lift speed is an operational modification that limits the potential for sediment to escape the bucket as it is being lifted through the water column.

- Any debris encountered during dredging would be separated from dredged sediments onboard the barge and transported offsite for disposal;
- Following construction, the mooring piles would not alter the natural sediment accretion rates or patterns within the Wallabout Channel or East River when compared to the existing characteristics of the site.

Vessel Movement

During all dredging and construction activities for the project, the use of construction vessels, including barges, tugs, and crew vessels, would be subject to the following avoidance and minimization measures:

- Number of vessels would be limited to approximately 1 crew boats, 2 scows, and 1 deck barge at any given time during construction; and
- All construction vessels would be shallow draft (5 to 10 feet) and would maintain low speeds (less than 5 knots for push boats and tugs, and less than 10 knots for crew boats).

Habitat Alteration

Installation of the mooring piles, use of barges, and shading from the project could result in temporary and permanent habitat alteration. These activities would be subject to the following avoidance and minimization measures:

- Fish would be prevented from entering areas within the turbidity curtain temporarily deployed around the project site, but the turbidity curtain would be installed only around the immediate project site to minimize this area;
- Dredged area beneath the FESS would create deeper waters and additional foraging habitat that could be used by fish migrating through the project area;
- Shading by the project would be limited to the area beneath the barges, which would continue to allow light to penetrate the water column along the barge edge at certain times of day; and
- Artificial lighting on the barges, as needed, would be oriented to avoid illumination of the surrounding waters at night to the greatest extent practicable, with the exception of any navigational lighting required by the U.S. Coast Guard.

ESSENTIAL FISH HABITAT ASSESSMENT

The EFH Assessment Worksheet included as Attachment 1 to this letter identifies the species and life stages for which EFH is designated within the project area. NYC Energy would comply with all regulatory restrictions for in-water construction activities, including no in-water construction work from January 15 through May 31 to protect spawning winter flounder, no dredging from November 15 through May 20 to protect overwintering striped bass, and no sediment disturbing activities from March 1 through June 30 to protect anadromous species.

The effects or stressors of the project that could potentially affect EFH and NOAA trust resources include vessel traffic, sediment resuspension, underwater noise during pile driving, temporary loss of foraging habitat within the turbidity curtain and ensonified areas, habitat modification in the dredge area, and permanent loss of habitat in the footprint of the piles and from shading by the FESS.

Vessel Traffic

The analysis considered three elements: 1) the existing baseline conditions, 2) the action and what it adds to existing baseline conditions, and 3) new baseline conditions (the existing baseline conditions and the action together).

Adding vessels necessary to construct the project to the existing baseline would not increase the risk that any vessel in the area would strike an individual or would increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured or detected. The baseline risk of a vessel strike within the lower East River is unknown. Existing maritime traffic on the river in the project area includes freight and barge traffic, and other commercial and recreational boats. Wallabout Channel itself does not currently accommodate large vessels due to its limited water depths, but recreational vessels may occasionally use the channel. For the project, three side by side barges would be permanently added to the waterway and they would remain moored at the shoreline unless they need to be moved in an emergency. The addition of the barges would not result in increased risk of a vessel strike because they would not regularly move within the project area.

As discussed above under the description of the project, a minimal number of vessels would be added to the baseline during dredging activities: one crew boat each day, two scows, and one deck barge. The location of the construction vessels would depend on the contractor selected for the work, but they would most likely originate from an existing homeport located in New York City, New Jersey, or Connecticut. Pile installation would require the use of one barge. All vessels would be in Wallabout Channel during construction except for the scows that would transport dredged material to the upland disposal facility within the New York metropolitan region. This represents a small increase in vessel activity in addition to the baseline for similar vessels. Movement of vessels necessary to complete the project would largely be limited to the Channel and areas just outside the Channel in the East River, and vessel speeds would be relatively slow (i.e., less than 5 knots for larger vessels and less than 10 knots for smaller crew boats). During dredging activities, the scows would make periodic trips to the upland disposal facility such as Claremont Clean Earth, a licensed facility located in Jersey City, New Jersey, located approximately 4 miles from the project site. Drafts would likely range from 5 to 10 feet across vessel types, which would provide at least 10 feet of clearance from the bottom at MLLW once the area is dredged. The addition of construction vessels would also be intermittent, temporary, and restricted to a small portion of the overall action area on any given day. After dredging is complete, only one barge would need to be in the action area for the duration of pile installation. As such, any increased risk of a vessel strike caused by the project would be too small to be meaningfully measured or detected. As a result, the effect of the action on the risk of a vessel strike in the action area would be insignificant.

Sediment Resuspension

Dredging and pile installation for the project have the potential to result in sediment resuspension and increased turbidity within the action area. The use of a full-length turbidity curtain around the project site would minimize the potential effects of sediment resuspension and increased turbidity in the waterway. Sediment disturbance associated with installation of the mooring piles would result in minor, short-term increases in total suspended sediment (TSS) of between 5 to 10 mg/L within approximately 300 feet of the pile being driven,[6] and re-deposition of sediments. Pile installation would be conducted intermittently over the course of a workday, rather than continuously throughout the construction duration, which would allow resuspended sediments to dissipate as the work is conducted. The use of a turbidity curtain during pile installation would further minimize the potential for adverse effects from sediment resuspension associated with the piles. The turbidity curtain would also prevent fish from entering the area, minimizing their potential exposure to the sediment plumes. Resuspended sediments from pile installation would not result in long-term effects to any of these species. The TSS concentrations expected for pile driving (5 to 10 mg/L) are below levels shown to have adverse effects on estuarine species, typically up to 1,000 mg/L, and the small resulting sediment plume, which would be contained within the turbidity curtain, would settle out of the water column within a few hours.

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[6] Federal Highway Administration (FHWA). 2012. Biological Assessment for the Tappan Zee Pile Installation Demonstration Project. January 2012.

Dredging of 5.2 acres within the Channel would result in resuspended sediment and elevated turbidity concentrations within the action area. Based on information from NMFS, TSS concentrations associated with mechanical clamshell bucket dredging operations have been shown to range from 105 mg/L in the middle of the water column to 445 mg/L near the bottom (USACE 2001). The project would use an environmental bucket for dredging, which would minimize the amount of sediment released from the bucket as it is raised through the water column for placement in the scow. Plumes associated with dredging have been shown to dissipate to background levels within 600 feet of the source in the upper water column and 2,400 feet in the lower water column, regardless of the type or size of the bucket used. Based on this information, turbidity would be highest in the immediate vicinity of the bucket and would dissipate within a 2,400-foot radius of the dredge location. The northern extent of the dredging area is within 2,400 feet of the western shoreline of the East River. However, it is extremely unlikely that the sediment plume would ever reach the opposite shoreline, given the use of a turbidity curtain during dredging and the speed of currents in the East River, which are approximately 4.5 to 5 feet per second near Wallabout Channel.[7] The East River currents would result in rapid dissipation of suspended sediments should the plume extend outside Wallabout Channel at any time. The TSS concentrations expected for mechanical dredging (up to 445 mg/L) are below levels shown to have adverse effects on fish, typically up to 1,000 mg/L, and the sediment plume would settle out of the water column within a few hours. The temporary nature of elevated TSS would result in minor alterations in the movements of fish if they are present in the area. Additionally, dredging would be conducted within a full-length turbidity curtain to the extent practicable, and visible sediment plumes would be allowed to settle before moving the curtain to allow scows to enter or exit the project site. Any sediment resuspended during these activities would be contained within the perimeter of the turbidity curtain and would settle out of the water column within a few hours while the turbidity curtain remains deployed.

Sediment resuspension resulting from pile installation or dredging would have insignificant effects on water depth, water flow, dissolved oxygen levels, salinity, temperature, or the ability for fish to migrate in the action area. Any sediment plume resulting from project activities would be contained within the turbidity curtain and would not be expected to reach the East River when the curtain is moved to allow scows to enter or exit the project site. Fish that could be present in the action area would be able to swim away from areas temporarily affected by sediment resuspension and would be expected to remain in the East River rather than entering Wallabout Channel at these times. The turbidity curtain would also prevent fish from entering the project site, and thus would prevent them from being exposed to the highest levels of turbidity produced during pile installation and removal at the end of the lease, debris removal, and dredging activities. Given that increases in suspended sediment would be temporary, minimal, localized to the vicinity of construction activities, and contained within a full-length turbidity curtain, and given that fish would be able to easily move away from the project site, any effects would be too small to be meaningfully measured or detected. Additionally, sediment disturbing activities would be conducted outside the seasonal work windows to minimize potential impacts to winter flounder (January 15 through May 31), overwintering striped bass (November 15 through May 20), and migrating anadromous species (March 1 through June 30). As a result, the effect of sediment resuspension on EFH or NOAA trust resources would be insignificant.

Entrapment

The deployment of turbidity curtains around the project site, which would contain both pile activities and dredging, would temporarily exclude fish from the area within the curtain in Wallabout Channel. Individuals would be able to move through the East River at all times during in-water work and would only

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[7] National Oceanic and Atmospheric Administration (NOAA). 2021. New York Harbor Current Survey 2017-2019, Including adjacent waters of New York and New Jersey. NOAA Technical Report NOS CO-OPS 095. October 2021.

be restricted from reaching the head of the Channel. The means of dredging also makes entrapment unlikely, as fish are generally able to avoid mechanical dredge buckets. For a bucket dredge to capture a fish, it must be immediately below the bucket and remain stationary as the bucket jaw closes.[8] The slow movement of the dredge bucket through the water column and the relatively small area of bottom impacted by each pass of the bucket makes the likelihood of interaction between a dredge bucket and an individual fish extremely low. Therefore, between the exclusionary effects of the turbidity curtain and the unlikelihood of being captured by dredging, the effects of entrapment from the Project would be discountable.

Underwater Noise

The greatest potential for underwater noise impacts to fish from the project would be associated with vibratory and potential impact hammering during installation of the mooring piles. They would be installed using a vibratory hammer to the extent possible and using a soft start and cushion block if impact hammering is required. All pile installation would be completed within a full-length turbidity curtain surrounding the project site.

As described in detail below, for this project, the distance to the 187 dB cSEL (or 150 dB sSEL)[9] isopleth associated with vibratory or cushioned impact hammering is no greater than 70 meters (230 feet) for sturgeon, which are used as a proxy to estimate noise impacts to similar fish. To be exposed to potentially injurious levels of noise during pile driving, a fish would need to be within 70 meters of the pile being driven to be exposed to this noise for any prolonged time period. This would be extremely unlikely to occur as it is expected that fish would modify their behavior at 106.7 meters (**Table 3**) and quickly move away from the area before cumulative injury levels are reached. The turbidity curtain would provide additional protection, as it would prevent fish from getting close to the pile driving activities where the noise levels would be highest. Given the small distance individuals would need to move to avoid the disturbance levels of noise, any effects would not be able to be meaningfully measured or detected. Therefore, underwater noise from the Project would not result in significant adverse impacts to EFH or NOAA trust resources.

As recommended by NMFS, a vibratory hammer would be used to the extent feasible, and the minimal impact hammering that would be required to seat the piles would be conducted using a cushion block to minimize underwater noise impacts. Pile tapping just prior to cushioned impact hammering would deter fish from the immediate vicinity of pile driving, outside the turbidity curtain. The projected noise at the source and distance to relevant thresholds for species in the action area was determined based on the NMFS Greater Atlantic Regional Fisheries Office (GARFO) Acoustic Tool spreadsheet (version updated September 14, 2020). The estimated sound levels and distances to species injury and behavioral thresholds associated with the project are presented in Tables 1 through 3, with potential impacts to EFH species represented by thresholds developed for sturgeon. Pile installation would be limited to periods outside the in-water construction restricted windows (November 15 through June 30) to avoid impacts during winter flounder spawning and anadromous species migration, which would also avoid impacts to other federally managed species in the action area.

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[8] National Marine Fisheries Service (NMFS). 2019. Biological Opinion for the Deepening and Maintenance of the Delaware River Federal Navigation Channel, GARFO-2019-01942. November 22, 2019.

[9] Cumulative sound exposure level, or cSEL, refers to the energy accumulated over multiple strikes or continuous vibration over a period of time. The single strike SEL, or sSEL, is the amount of energy in one strike of a pile.

Table 1
Proxy Projects for Estimating Underwater Noise

Project Location	Water Depth (m)	Pile Size (inches)	Pile Type	Hammer Type	Attenuation Rate (dB/10m)
Rodeo, CA – San Francisco Bay, CA	5	24”	Steel Pipe	Vibratory	3
Rodeo, CA – San Francisco Bay, CA	5	24”	Steel Pipe	Cushioned Impact	3

Table 2
Proxy-Based Estimates for Underwater Noise

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB$_{Peak}$)	Estimated Pressure Level (dB$_{RMS}$)	Estimated Single Strike Sound Exposure Level (dB$_{sSEL}$)
24” Steel Pipe	Vibratory	193	179	168
24” Steel Pipe	Cushioned Impact	192	178	167

Table 3
Estimated Distances to Sturgeon/Salmon Injury and Behavioral Thresholds

Type of Pile	Hammer Type	Distance (m) to 206dB$_{Peak}$ (injury)	Distance (m) to sSEL of 150 dB (surrogate for 187 dBcSEL injury)	Distance (m) to Behavioral Disturbance Threshold (150 dB$_{RMS}$)
24” Steel Pipe	Vibratory	NA	70.0	106.7
24” Steel Pipe	Cushioned Impact	NA	66.7	103.3

Exposure to underwater noise levels of 206 dB Peak and 187 dB cSEL can result in injury to fish. In addition to the “peak” exposure criteria which relates to the energy received from a single pile strike, the potential for injury to fish exists for multiple exposures to noise over a period of time; this is accounted for in the cSEL threshold for sturgeon. The cSEL is not an instantaneous maximum noise level but is a measure of the accumulated energy over a specific period of time (e.g., the period of time it takes to install a pile). While it is not possible to accurately calculate the distance to the 187 dB cSEL isopleth, we calculate the distance to the 150 sSEL isopleth. The further away a fish is from the pile being driven, the more strikes it must be exposed to in order to accumulate enough energy to result in injury. At some distance from the pile, a fish is far enough away that, regardless of the number of strikes it is exposed to, the energy accumulated is low enough that there is no potential for injury.

Behavioral effects, such as avoidance or disruption of foraging activities, may occur in fish exposed to noise levels above 150 dB RMS. With the pile driving activities, it is expected that underwater noise levels would be below 150 dB RMS at distances beyond a maximum of 106.7 meters (350 feet) from the pile being installed (**Table 3**). It is reasonable to assume that a fish, upon detecting underwater noise levels at or above the behavioral thresholds, would modify their behavior such that it redirects its course of movement away from the ensonified area surrounding the project site. If any movements away from the ensonified area do occur, it is extremely unlikely that this avoidance will affect essential behaviors, as the East River is sufficiently wide (over 2,200 feet) outside the Wallabout Channel where the pile installation would occur to allow fish to avoid the ensonified area and continue to forage and migrate. While the majority of the width of Wallabout Channel, which is approximately 300 feet wide, would be exposed to elevated noise levels during pile driving, pile tapping and/or slow start techniques would deter fish from the immediate vicinity, and individuals would likely avoid entering Wallabout Channel once pile installation is occurring at full strength. The turbidity curtain would further exclude fish from the immediate area of pile driving during installation. Therefore, underwater noise from the Project would not result in significant adverse effects to EFH or NOAA trust resources.

Habitat Modification

Shading by construction vessels and the FESS that would be moored to the shoreline would not significantly affect benthic habitat, as light would still penetrate most of the Channel over the course of the day, and similar habitat would continue to be available in the vicinity. Mooring the FESS would result in a 56,940-square foot (1.3-acre) increase in overwater coverage compared to the existing conditions in the Channel, which would not have a significant adverse impact on EFH or NOAA trust resources in the action area. Habitats near the mouth of Wallabout Channel and the East River beyond would not be affected by construction vessels or the FESS. The construction vessels would be moved periodically during construction, so the area occupied by the vessels would change frequently and habitat would only be shaded for short durations. Installation of the mooring piles would result in a 37.7-square foot decrease in benthic habitat, which would not represent a substantial reduction in foraging opportunities, and foraging habitat would continue to be available within the action area. Because the mooring piles would occupy a very small area in the Channel next to the bulkhead, they would not result in changes to sediment accretion rates or patterns of deposition within the project site. Therefore, the effects of habitat modification from overwater coverage and pile installation on EFH and NOAA trust resources would be insignificant.

Dredging in Wallabout Channel would result in the modification of approximately 5.2 acres of shallow water habitat within the action area. Current depths within the Channel range from about 20 feet at MLW at the mouth but decrease shortly thereafter to 7 to 14 feet at MLW. This area would be deepened to the authorized depth of 20 feet at MLW. Dredging would not alter the substrate within the Channel, which comprises silt and clay sediments with pockets of sand. Removal of the surface sediments would expose deeper subsurface sediments, which would be sampled prior to dredging to determine levels of contamination, if present. Dredging would be conducted in accordance with the measures specified in permits issued by the U.S. Army Corps of Engineers (USACE) and NYSDEC to minimize impacts to aquatic life due to contaminant concentrations in the exposed sediment, if applicable. The dredged area would undergo some natural deposition of sediments over time, and the deeper waters would allow flushing to occur such that the exposed sediments would not have a long-term impact on water quality in the action area. The sediment plume associated with dredging activities would not alter substrate characteristics outside the dredged area, as resuspended sediments would be contained within the turbidity curtain during construction. Any sediment resuspended during dredging would be expected to settle relatively quickly over similar substrate within Wallabout Channel. Benthic organisms would be expected to quickly recolonize the dredged area, as similar habitat is present in the surrounding area that would be unaffected or minimally affected by the project activities and would serve as the source of colonizing invertebrates. In the time between dredging and recolonization, fish would be able to forage in similar habitat nearby. Therefore, habitat modification from dredging would not result in significant adverse effects on EFH or NOAA trust resources.

CONCLUSION

Given the BMPs and avoidance measures described above, habitat alternation within Wallabout Channel would be minimal. Project implementation would be conditioned upon issuance of applicable federal, state, and local permits, and in accordance with any conditions of those permits. Therefore, DOE determines that the Project's adverse effect on EFH and NOAA trust resources would not be substantial and requests an abbreviated EFH consultation. We certify that we have used the best scientific and commercial data available to complete this analysis.

Sincerely,

David Oster
Environmental Protection Specialist
U.S. Department of Energy

Encl: 1 – Project Location Map
2 – EFH Assessment Worksheet
3 – August 2022 Wallabout Channel Hydrographic Survey
4 – NYSDEC Sediment Sampling Plan

ENCLOSURE 1

2.4.22

Project Location

Figure 1

NYC ENERGY 300 MW FLOATING BESS

ENCLOSURE 2

NOAA Fisheries Greater Atlantic Regional Fisheries Office Essential Fish Habitat (EFH) Assessment & Fish and Wildlife Coordination Act (FWCA) Consultation Worksheet

August 2021 rev.

Authorities

The Magnuson Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NOAA Fisheries on any action or proposed action authorized, funded, or undertaken by such agency that may adversely affect essential fish habitat (EFH) identified under the MSA. This process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in the consultation process.

The Fish and Wildlife Coordination Act (FWCA) requires that all federal agencies consult with NOAA Fisheries when proposed actions might result in modifications to a natural stream or body of water. The FWCA also requires that federal agencies consider the effects that these projects would have on fish and wildlife and must also provide for improvement of these resources. Under the FWCA, we work to protect, conserve and enhance species and habitats for a wide range of aquatic resources such as shellfish, diadromous species, and other commercially and recreationally important species that are not federally managed and do not have designated EFH.

It is important to note that these consultations take place between NOAA Fisheries and federal action agencies. **As a result, EFH assessments, including this worksheet, must be provided to us by the federal agency, not by permit applicants or consultants.**

Use of the Worksheet

This worksheet can serve as an EFH assessment for **Abbreviated EFH Consultations**, and as a means to provide information on potential effects to other NOAA trust resources considered under the FWCA. An abbreviated consultation allows us to determine quickly whether, and to what degree, a federal action may adversely affect EFH. Abbreviated consultation procedures can be used when federal actions do not have the potential to cause substantial adverse effects on EFH and when adverse effects could be alleviated through minor modifications.

The intent of the EFH worksheet is to provide a guide for determining the information needed to fully assess the effects of a proposed action on EFH. In addition, the worksheet may be used as a tool to assist you in developing a more comprehensive EFH assessment for larger projects that may have more substantial adverse effects to EFH. However, for large, complex projects that have the potential for significant adverse effects, an **Expanded EFH Consultation** may be warranted and the use of this worksheet alone is not appropriate as your EFH assessment.

An **adverse effect** is any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Consultation under the MSA is not required if there is no adverse effect on EFH or if no EFH has been designated in the project area. However, because the definition of "adverse effect" is very broad, most in-water work will result in some level of adverse effect requiring consultation with us, even if the impact is temporary or the overall result of the project is habitat restoration or enhancement. It is important to remember that an adverse effect determination is a trigger to consult with us. It does not mean that a project cannot proceed as proposed, or that project modifications are necessary. An adverse effect determination under the EFH provisions of the MSA simply means that the effects of the proposed action on EFH must be evaluated to determine if there are ways to avoid, minimize, or offset adverse effects. Additional details on EFH consultations, tools, and resources, including frequently asked questions can be found on our website.

Instructions

This worksheet should be used as your EFH assessment for **Abbreviated EFH Consultations** or as a guide to develop your EFH assessment. It is not appropriate to use this worksheet as your EFH assessment for large, complex projects, or those requiring an Expanded EFH Consultation.

When completed fully and with sufficient information to clearly describe the activities proposed, habitats affected, and project impacts, as well as the measures taken to avoid, minimize or offset any unavoidable adverse effects, this worksheet provides us with required components of an EFH assessment including:

1. A description of the proposed action.
2. An analysis of the potential adverse effects on EFH and the federally managed species.
3. The federal agency's conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable.

When completing this worksheet and submitting information to us, it is important to ensure that sufficient information is provided to clearly describe the proposed project and the activities proposed. At a minimum, this should include the public notice (if applicable) or project application and project plans showing:

- location map of the project site with area of impact.
- existing and proposed conditions.
- all in-water work and the location of all proposed structures and/or fill.
- all waters of the U.S. on the project site with mean low water (MLW), mean high water (MHW), high tide line (HTL), and water depths clearly marked.
- Habitat Areas of Particular Concern (HAPCs).
- sensitive habitats mapped, including special aquatic sites (submerged aquatic vegetation, saltmarsh, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges), hard bottom or natural rocky habitat areas, and shellfish beds.
- site photographs, if available.

Your analysis of effects **should focus on impacts that reduce the quality and/or quantity of the habitat or result in conversion to a different habitat type** for all life stages of species with designated EFH within the action area. Simply stating that fish will move away or that the project will only affect a small percentage of the overall population is not a sufficient analysis of the effects of an action on EFH. Also, since the intent of the EFH consultation is to evaluate the direct, indirect, individual and cumulative effects of a particular federal action on EFH and to identify options to avoid, minimize or offset the adverse effects of that action, is it not appropriate to conclude that an impact is minimal just because the area affected is a small percentage of the total area of EFH designated. The focus of the consultation is to reduce impacts resulting from the activities evaluated in the assessment. Similarly, a large area of distribution or range of the fish species is also not appropriate rationale for concluding the impacts of a particular project are minimal.

Use the information on the our EFH consultation website and NOAA's EFH Mapper to complete this worksheet. The mapper is a useful tool for viewing the spatial distribution of designated EFH and HAPCs. Because summer flounder HAPC (defined as: " all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH") does not have region-wide mapping, local sources and on-site surveys may be needed to identify submerged aquatic vegetation beds within the project area. The full designations for each species may be viewed as PDF links provided for each species within the Mapper, or via our website links to the New England Fishery Management Councils Omnibus Habitat Amendment 2 (Omnibus EFH Amendment), the Mid-Atlantic Fishery Management Councils FMPs (MAMFC - Fish Habitat), or the Highly Migratory Species website. Additional information on species specific life histories can be found in the EFH source documents accessible through the Habitat and Ecosystem Services Division website. This information can be useful in evaluating the effects of a proposed action. Habitat and Ecosystem Services Division (HESD) staff have also developed a technical memorandum *Impacts to Marine Fisheries Habitat from Non-fishing Activities in the Northeastern United States,* NOAA Technical Memorandum NMFS-NE-209 to assist in evaluating the effects of non-fishing activities on EFH. If you have questions, please contact the HESD staff member in your area to assist you.

Federal agencies or their non-federal designated lead agency should email the completed worksheet and necessary attachments to the HESD New England (ME, NH, MA, CT, RI) or Mid- Atlantic (NY, NJ, PA, DE, MD, VA) Branch Chief and the regional biologist listed on the Contact Regional Office Staff section on our EFH consultation website and listed below.

We will provide our EFH conservation recommendations under the MSA, and recommendations under the FWCA, as appropriate, within 30 days of receipt of a **complete** EFH assessment for an abbreviated consultation. Please ensure that the EFH worksheet is completed in full and includes detail to minimize delays in completing the consultation. If we are unable to assess potential impacts based on the information provided, we may request additional information necessary to assess the effects of the proposed action on our trust resources before we can begin a consultation. If the worksheet is not completely filled out, it may be returned to you for completion. **The EFH consultation and our response clock does not begin until we have sufficient information upon which to consult**.

If this worksheet is not used, you should include all the information required to complete this worksheet in your EFH assessment. The level of detail that you provide should be commensurate with the magnitude of impacts associated with the proposed project. You may need to prepare a more detailed EFH assessment for more substantial or complex projects to fully characterize the effects of the project and the avoidance and minimization of impacts to EFH. The format of the EFH worksheet may not be sufficient to incorporate the extent of detail required for large-scale projects, and a separate EFH assessment may be required.

Regardless of the format, you should include an analysis as outlined in this worksheet for an expanded EFH assessment, along with any additional necessary information including:

- the results of on-site inspections to evaluate habitat and site-specific effects.
- the views of recognized experts on habitat or the species that may be affected.
- a review of pertinent literature and related information.
- an analysis of alternatives that could avoid or minimize adverse effects on EFH.

For these larger scale projects, interagency coordination meetings should be scheduled to discuss the contents of the EFH consultation and the site-specific information that may be needed in order to initiate the consultation.

Please contact our Greater Atlantic Regional Fisheries Office, Protected Resources Division regarding potential impacts to marine mammals or threatened and endangered species and the appropriate consultation procedures.

HESD Contacts*

New England - ME, NH, MA, RI, CT

Chris Boelke, Branch Chief	christopher.boelke@noaa.gov
Mike Johnson - ME, NH	mike.r.johnson@noaa.gov
Kaitlyn Shaw - ME, NH, MA	kaitlyn.shaw@noaa.gov
Sabrina Pereira -RI, CT	sabrina.pereira@noaa

Mid-Atlantic - NY, NJ, PA, MD, VA

Karen Greene, Branch Chief	karen.greene@noaa.gov
Jessie Murray - NY, Northern NJ (Monmouth Co. and north)	jessie.murray@noaa.gov
Keith Hanson - NJ (Ocean Co. and south), DE and PA, Mid-Altantic wind	keith.hanson@noaa.gov
Maggie Sager - NJ (Ocean Co. and south), DE and PA	lauren.m.sager@noaa.gov
Jonathan Watson - MD, DC	jonathan.watson@noaa.gov
David O'Brien - VA	david.l.obrien@noaa.gov

Ecosystem Management (Wind/Aquaculture)

Peter Burns, Branch Chief	peter.burns@noaa.gov
Alison Verkade (NE Wind)	alison.verkade@noaa.gov
Susan Tuxbury (wind coordinator)	susan.tuxbury@noaa.gov

***Please check for the most current staffing list on our contact us page prior to submitting your assessment.**

EFH Assessment Worksheet rev. August 2021

Please read and follow all of the directions provided when filling out this form.

1. General Project Information

Date Submitted:

Project/Application Number:

Project Name: Floating Energy Storage System Project

Project Sponsor/Applicant: NYC Energy LLC

Federal Action Agency (or state agency if the federal agency has provided written notice delegating the authority[1]): Department of Energy

Fast-41: Yes ☐ No ☑

Action Agency Contact Name: David Oster

Contact Phone:

Contact Email: david.oster@hq.doe.gov

Address, City/Town, State:

2. Project Description

[2]Latitude: 40.7070529

Longitude: -73.970370

Body of Water (e.g., HUC 6 name): Wallabout Channel

Project Purpose:

Facilitate NYC's plant to decarbonize electricity generation and meet clean energy mandates through storage and delivery of new offshore wind generation

Project Description:

Phased development of a 300 MW floating energy storage system that will incorporate stacking energy storage containers and associated equipment on a barge moored in Wallabout Channel adjacent to Brooklyn Navy Yard Pier K. Barge would be 440 ft x 130 ft (57,200 sf) with estimated draft of 16-18 feet. Project would require dredging of 52,000 sf in the Channel to the USACE authorized depth of 20 feet at MLW. Six 18-inch diameter steel pipe piles would be installed off Pier K to anchor the barge in place but allow for vertical movement with the tide.

Anticipated Duration of In-Water Work including planned Start/End Dates and any seasonal restrictions proposed to be included in the schedule:

12 months beginning in Fall 2022. Completed in accordance with seasonal restrictions (Jan 15-May 31 for winter flounder, Mar 1-Jun 30 for anadromous species, Nov 1-May 20 for overwintering species)

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[1] A federal agency may designate a non-Federal representative to conduct an EFH consultation by giving written notice of such designation to NMFS. If a non-federal representative is used, the Federal action agency remains ultimately responsible for compliance with sections 305(b)(2) and 305(b)(4)(B) of the Magnuson-Stevens Act. [2] Provide the decimal, or the degrees, minutes, seconds values for latitude and longitude using the World Geodetic System 1984 (WGS84) and negative degree values where applicable.

3. Site Description

EFH includes the biological, chemical, and physical components of the habitat. This includes the substrate and associated biological resources (e.g., benthic organisms, submerged aquatic vegetation, shellfish beds, salt marsh wetlands), the water column, and prey species.

Is the project in designated EFH[3]? ☑ Yes ☐ No

Is the project in designated HAPC? ☐ Yes ☑ No

Does the project contain any Special Aquatic Sites[4]? ☐ Yes ☑ No

Is this coordination under FWCA only? ☐ Yes ☑ No

Total area of impact to EFH (indicate sq ft or acres): 1.3 acres

Total area of impact to HAPC (indicate sq ft or acres): 0

Current range of water depths at MLW	Salinity range (PPT):	Water temperature range (°F):
7 to 15 feet	23 psu (average)	32-80°F

[3]Use the tables in Sections 5 and 6 to list species within designated EFH or the type of designated HAPC present. See the worksheet instructions to find out where EFH and HAPC designations can be found. [4] Special aquatic sites (SAS) are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region. They include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes (40 CFR Subpart E). If the project area contains SAS (i.e. sanctuaries and refuges, wetlands, mudflats, vegetated shallows/SAV, coral reefs, and/or riffle and pool complexes, describe the SAS, species or habitat present, and area of impact.

4. Habitat Types

In the table below, select the location and type(s) for each habitat your project overlaps. For each habitat type selected, indicate the total area of expected impacts, then what portion of the total is expected to be temporary (less than 12 months) and what portion is expected to be permanent (habitat conversion), and if the portion of temporary impacts will be actively restored to pre- construction conditions by the project proponent or not. A project may overlap with multiple habitat types.

Habitat Location	Habitat Type	Total impacts (lf/ft^2/ft^3)	Temporary impacts (lf/ft^2/ft^3)	Permanent impacts (lf/ft^2/ft^3)	Restored to pre-existing conditions?*
Estuarine	Substrate (silt/mud)	52,000		52,000	No
Estuarine	Water column	57,200		57,200	No
Select one	Select One				Select one
Select one	Select One				Select one
Select one	Select One				Select one
Select one	Select One				Select one
Select one	Select One				Select one
Select one	Select One				Select one

*Restored to pre-existing conditions means that as part of the project, the temporary impacts will be actively restored,such as restoring the project elevations to pre-existing conditions and replanting. It does not include natural restoration or compensatory mitigation.

Submerged Aquatic Vegetation (SAV) Present?:

Yes: ☐ No: ☑

If the project area contains SAV, or has historically contained SAV, list SAV species and provide survey results including plans showing its location, years present and densities if available. Refer to Section 12 below to determine if local SAV mapping resources are available for your project area.

n/a

Sediment Characteristics:

The level of detail required is dependent on your project – e.g., a grain size analysis may be necessary for dredging. In addition, if the project area contains rocky/hard bottom habitat [6](pebble, cobble, boulder, bedrock outcrop/ledge) identified as Rocky (coral/rock), Substrate (cobble/gravel), or Substrate (rock) above, describe the composition of the habitat using the following table.

Substrate Type* (grain size)	Present at Site? (Y/N)	Approximate Percentage of Total Substrate on Site
Silt/Mud (<0.063mm)	Select one	
Sand (0.063-2mm)	Select one	
Rocky: Pebble/Gravel /Cobble(2-256mm)**	Select one	
Rocky: Boulder (256-4096mm)**	Select one	
Rocky: Coral	Select one	
Bedrock**	Select one	

[6]The type(s) of rocky habitat will help you determine if the area is cod HAPC.

* Grain sizes are based on Wentworth grain size classification scale for granules, pebbles, cobbles, and boulders.

** Sediment samples with a content of 10% or more of pebble-gravel-cobble and/or boulder in the top layer (6-12 inches) should be delineated and material with epifauna/macroalgae should be differentiated from bare pebble-gravel-cobble and boulder.

If no grain size analysis has been conducted, please provide a general description of the composition of the sediment. If available please attach images of the substrate.

Substrate likely comprises silt and clay sediments with pockets of sand

Diadromous Fish (migratory or spawning habitat- identify species under Section 10 below):

Yes: ☑ No: ☐

5. EFH and HAPC Designations

Within the Greater Atlantic Region, EFH has been designated by the New England, Mid-Atlantic, and South Atlantic Fisheries Management Councils and NOAA Fisheries. Use the EFH mapper to determine if EFH may be present in the project area and enter all species and life stages that have designated EFH. Optionally, you may review the EFH text descriptions linked to each species in the EFH mapper and use them to determine if the described habitat is present at your project site. If the habitat characteristics described in the text descriptions do not exist at your site, you may be able to exclude some species or life stages from additional consideration. For example, the water depths at your site are shallower that those described in the text description for a particular species or life stage. We recommend this for larger projects to help you determine what your impacts are.

Species Present	**EFH is designated/mapped for:**				**What is the source of the EFH information included?**
	EFH: eggs	**EFH: larvae**	**EFH: juvenile**	**EFH: adults/ spawning adults**	
winter flounder	☑	☑	☑	☑	EFH Mapper c
little skate	☐	☐	☑	☑	EFH Mapper c
Atlantic herring	☐	☑	☑	☑	EFH Mapper c
red hake	☑	☑	☑	☑	EFH Mapper c
windowpane flounder	☑	☑	☑	☑	EFH Mapper c
winter skate	☐	☐	☑	☑	EFH Mapper c
clearnose skate	☐	☐	☑	☑	EFH Mapper c
long-finned squid	☑	☐	☐	☐	EFH Mapper c
bluefish	☐	☐	☑	☑	EFH Mapper c
Atlantic butterfish	☐	☑	☐	☐	EFH Mapper c
summer flounder	☐	☑	☑	☑	EFH Mapper c

6. Habitat Areas of Particular Concern (HAPCs)

HAPCs are subsets of EFH that are important for long-term productivity of federally managed species. HAPCs merit special consideration based their ecological function (current or historic), sensitivity to human-induced degradation, stresses from development, and/or rarity of the habitat.While many HAPC designations have geographic boundaries, there are also habitat specific HAPC designations for certain species, see note below. Use the EFH mapper to identify HAPCs within your project area. Select all that apply.

☐	Summer flounder: SAV[7]	☐	Alvin & Atlantis Canyons
☐	Sandbar shark	☐	Baltimore Canyon
☐	Sand Tiger Shark (Delaware Bay)	☐	Bear Seamount
☐	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)	☐	Heezen Canyon
☐	Inshore 20m Juvenile Cod[8]	☐	Hudson Canyon
☐	Great South Channel Juvenile Cod	☐	Hydrographer Canyon
☐	Northern Edge Juvenile Cod	☐	Jeffreys & Stellwagen
☐	Lydonia Canyon	☐	Lydonia, Gilbert & Oceanographer Canyons
☐	Norfolk Canyon (Mid-Atlantic)	☐	Norfolk Canyon (New England)
☐	Oceanographer Canyon	☐	Retriever Seamount
☐	Veatch Canyon (Mid-Atlantic)	☐	Toms, Middle Toms & Hendrickson Canyons
☐	Veatch Canyon (New England)	☐	Washington Canyon
☐	Cashes Ledge	☐	Wilmington Canyon
☐	Atlantic Salmon		

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[7] Summer flounder HAPC is defined as all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH. In locations where native species have been eliminated from an area, then exotic species are included. Use local information to determine the locations of HAPC.

[8] The purpose of this HAPC is to recognize the importance of inshore areas to juvenile Atlantic cod. The coastal areas of the Gulf of Maine and Southern New England contain structurally complex rocky-bottom habitat that supports a wide variety of emergent epifauna and benthic invertebrates. Although this habitat type is not rare in the coastal Gulf of Maine, it provides two key ecological functions for juvenile cod: protection from predation, and readily available prey. See EFH mapper for links to text descriptions for HAPCs.

7. Activity Details

Select all that apply	Project Type/Category
☐	Agriculture
☐	Aquaculture - List species here:
☐	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
☐	Beach renourishment
☑	Dredging/excavation
☑	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
☐	Fill
☐	Forestry
☐	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
☐	Intake/outfall
☐	Military (e.g., acoustic testing, training exercises)
☐	Mining (e.g., sand, gravel)
☐	Overboard dredged material placement
☑	Piers, ramps, floats, and other structures Long-term mooring of barge supporting storage and delivery system for offshore wind-generated energy
☐	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
☐	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
☐	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
☐	Other:

8. Effects Evaluation

Select all that apply	Potential Stressors Caused by the Activity
☑	Underwater noise
☑	Water quality/turbidity/ contaminant release
☑	Vessel traffic/barge grounding
☐	Impingement/entrainment
☐	Prevent fish passage/spawning
☑	Benthic community disturbance
☐	Impacts to prey species

Select all that apply and if temporary[9] or permanent		Habitat alterations caused by the activity
Temp	Perm	
☐	☑	Water depth change
☐	☐	Tidal flow change
☐	☐	Fill
☐	☑	Habitat type conversion
☐	☐	Other:
☐	☐	Other:

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[9] Temporary in this instance means during construction. [10] Entrainment is the voluntary or involuntary movement of aquatic organisms from a water body into a surface diversion or through, under, or around screens and results in the loss of the organisms from the population. Impingement is the involuntary contact and entrapment of aquatic organisms on the surface of intake screens caused when the approach velocity exceeds the swimming capability of the organism.

Details - project impacts and mitigation

Briefly describe how the project would impact each of the habitat types selected above and the amount (i.e., acreage or sf) of each habitat impacted. Include temporary and permanent impact descriptions and direct and indirect impacts. For example, dredging has a direct impact on bottom sediments and associated benthic communities. The turbidity generated can result in a temporary impact to water quality which may have an indirect effect on some species and habitats such as winter flounder eggs, SAV or rocky habitats. The level of detail that you provide should be commensurate with the magnitude of impacts associated with the proposed project. Attach supplemental information if necessary.

Temporary: Increased vessel activity, sediment resuspension, and turbidity during dredging and pile installation; elevated underwater noise during pile driving; exclusion from habitat within the turbidity curtain. These activities would take place intermittently over the course of a workday, rather than creating continuous disturbance to EFH.

Permanent: Loss of 10.5 sf of benthic habitat in footprint of mooring piles; modification of bottom habitat and increased water depths in dredged area; shading of 57,200 sf of water column at the mooring location of the FESS next to Pier K

What specific measures will be used to avoid and minimize impacts, including project design, turbidity controls, acoustic controls, and time of year restrictions? If impacts cannot be avoided or minimized, why not?

No in-water construction activities from January 1 to May 31 to protect spawning winter flounder and from March 1 to June 30 to protect anadromous species. No dredging between November 15 and May 20 to protect overwintering species. All dredging and pile installation activities would be conducted within a full-length turbidity curtain. Vessels would maintain separation from the bottom at all times. Installation of piles with vibratory hammer or soft start/cushion block with impact hammer. Dredging using environmental bucket and other BMPs to reduce sediment resuspension

Is compensatory mitigation proposed? Yes ☐ No ☑

If compensatory mitigation is not proposed, why not? If yes, describe plans for compensatory mitigation (e.g. permittee responsible, mitigation bank, in-lieu fee) and how this will offset impacts to EFH and other aquatic resources. Include a proposed compensatory mitigation and monitoring plan as applicable.

Mitigation is not currently anticipated. Mitigation may be required should NYSDEC littoral zone tidal wetlands be present in the dredging area based on a forthcoming hydrographic survey. If required, compensatory mitigation would be developed in coordination with NYSDEC as the environmental review advances.

9. Effects of Climate Change

Effects of climate change should be included in the EFH assessment if the effects of climate change may amplify or exacerbate the adverse effects of the proposed action on EFH. Use the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) 8.5/high greenhouse gas emission scenario (IPCC 2014), at a minimum, to evaluate the future effects of climate change on the proposed projections. For sea level rise effects, use the intermediate-high and extreme scenario projections as defined in Sweet et al. (2017). For more information on climate change effects to species and habitats relative to NMFS trust resources, see Guidance for Integrating Climate Change Information in Greater Atlantic Region Habitat Conservation Division Consultation Processes.

1. Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?If yes, please describe how:

No - permanent habitat alteration from the project would be minimal

2. Is the expected lifespan of the action greater than 10 years? If yes, please describe project lifespan:

Yes, the FESS would be in place for the 30-year term of the lease between NYC Energy and Brooklyn Navy Yard. At the end of the lease, the barge would be decommissioned and removed

3. Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change? If yes, please describe how:

No - permanent habitat alteration from the project would be minimal and would not be amplified by climate change

4. Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change? If yes, please describe how:

No - permanent habitat alteration from the project would be minimal and would not be amplified by climate change

5. Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate? If yes, please describe how:

Permanent habitat alteration from the project would be minimal and would not be amplified by effects of climate change

10. Federal Agency Determination

Federal Action Agency’s EFH determination (select one)	
☐	There is no adverse effect[7] on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
☑	The adverse effect[7] on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
☐	The adverse effect[7] on EFH is substantial. This is a request for an expanded EFH consultation. We will provide more detailed information, including an alternatives analysis and NEPA documents, if applicable.

[7] An adverse effect is any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

11. Fish and Wildlife Coordination Act

Under the FWCA, federal agencies are required to consult with us if actions that the authorize, fund, or undertake will result in modifications to a natural stream or body of water. Federal agencies are required to consider the effects these modifications may have on fish and wildlife resources, as well as provide for the improvement of those resources. Under this authority, we consider the effects of actions on NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats, that are not managed under a federal fisheries management plan. Some examples of other NOAA-trust resources are listed below. Some of these species, including diadromous fishes, serve as prey for a number of federally-managed species and are therefore considered a component of EFH pursuant to the MSA. We will be considering the effects of your project on these species and their habitats as part of the EFH/FWCA consultation process and may make recommendations to avoid, minimize or offset and adverse effects concurrently with our EFH conservation recommendations.

Please contact our Greater Atlantic Regional Fisheries Office, Protected Resources Division regarding potential impacts to marine mammals or species listed under the Endangered Species Act and the appropriate consultation procedures.

Fish and Wildlife Coordination Act Resources	
Species known to occur at site (list others that may apply)	**Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat). Please note, impacts to federally listed species of fish, sea turtles, and marine mammals must be coordinated with the GARFO Protected Resources Division.**
alewife	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species
American eel	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species
American shad	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species
Atlantic menhaden	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species
blue crab	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species
blue mussel	Temporary increase in suspended sediment would be minimal and localized and would not affect habitat for this species. No known habitat for mussels at site
blueback herring	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species
Eastern oyster	Temporary increase in suspended sediment would be minimal and localized and would not affect habitat for this species. Oysters are not known to occur near the project area.
horseshoe crab	Temporary increase in suspended sediment would be minimal and localized and would not affect habitat for this species. No spawning habitat near project site
quahog	Temporary increase in suspended sediment would be minimal and localized and would not affect habitat for this species. Minimal loss of bottom habitat
soft-shell clams	Temporary increase in suspended sediment would be minimal and localized and would not affect habitat for this species. Minimal loss of bottom habitat
striped bass	Temporary increase in suspended sediment and underwater noise would be minimal and localized and would not affect habitat for this species.
other species:	(striped bass) No dredging between November 15 and May 20 to protect overwintering striped bass
other species:	
other species:	

12. Useful Links

National Wetland Inventory Maps
EPA's National Estuary Program (NEP)
Northeast Regional Ocean Council (NROC) Data Portal
Mid-Atlantic Regional Council on the Ocean (MARCO) Data Portal

Resources by State

Maine
Maine Office of GIS Data Catalog
Town shellfish information including shellfish conservation area maps
State of Maine Shellfish Sanitation and Management
Eelgrass maps
Casco Bay Estuary Partnership
Maine GIS Stream Habitat Viewer

New Hampshire
NH Statewide GIS Clearinghouse, NH GRANIT
NH Coastal Viewer
State of NH Shellfish Program

Massachusetts
MA DMF Shellfish Sanitation and Management Program
MassGIS Data (Including Eelgrass Maps)
MA DMF Recommended TOY Restrictions Document Massachusetts
Bays National Estuary Program
Buzzards Bay National Estuary Program
Massachusetts Division of Marine Fisheries
Massachusetts Office of Coastal Zone Management

Rhode Island
RI Shellfish and Aquaculture
RI Shellfish Management Plan
RI Eelgrass Maps
Narragansett Bay Estuary Program
Rhode Island Division of Marine Fisheries
Rhode Island Coastal Resources Management Council

Connecticut

CT Bureau of Aquaculture
Natural Shellfish Beds in CT
Eelgrass Maps
Long Island Sound Study
CT GIS Resources
CT DEEP Office of Long Island Sound Programs and Fisheries
CT River Watershed Council

New York

Eelgrass Report
Peconic Estuary Program
NY/NJ Harbor Estuary Program
New York GIS Clearinghouse

New Jersey

Submerged Aquatic Vegetation Mapping
Barnegat Bay Partnership
NJ GeoWeb
NJ DEP Shellfish Maps

Pennsylvania

Delaware River Management Plan
PA DEP Coastal Resources Management Program
PA DEP GIS Mapping Tools

Delaware

Partnership for the Delaware Estuary
Center for Delaware Inland Bays
Delaware FirstMap

Maryland

Submerged Aquatic Vegetation Mapping
MERLIN (Maryland's Environmental Resources and Land Information Network)
Maryland Coastal Atlas
Maryland Coastal Bays Program

Virginia

VMRC Habitat Management Division
Submerged Aquatic Vegetation mapping

ENCLOSURE 3

S. T. HUDSON ENGINEERS, INC.
PROFESSIONAL ENGINEERS & CONSULTANTS

Halmar – Wallabout Channel

Bathymetric & Geophysical Survey - Final Memo

Survey Date:

September 2022

Project:

22-135

Report for:

HALMAR
International

Submitted by:

S. T. Hudson Engineers, Inc.
900 Dudley Avenue
Cherry Hill, New Jersey 08002
Phone: +1 856.342.6600
Email: info@sthe.com

Report Authorization and Distribution

Authored: L. Andrews & L. Quas

Approved: S. MacDonald

Date	Rev	Description
21-Sept-2022	0	Issued for Initial Comment
22-Sept-2022	1	SSS Contact Table Added
23-Sept-2022	2	Reference NAVD88 to MLW Added

CONFIDENTIAL AND PROPRIETARY

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1 Project Summary

1.1 Introduction

S. T. Hudson Engineers, Inc. (Hudson) was contracted by Halmar International, LLC (Halmar) to perform bathymetric and geophysical survey services within Wallabout Channel, New York (Figure 1). The goal of the survey was to provide accurate bathymetry and location of potential seafloor hazards to support future dredging operations in the area. Data collection included the following sensors: a multibeam echosounder (MBES), a side scan sonar (SSS), and a vessel-based LiDAR system.

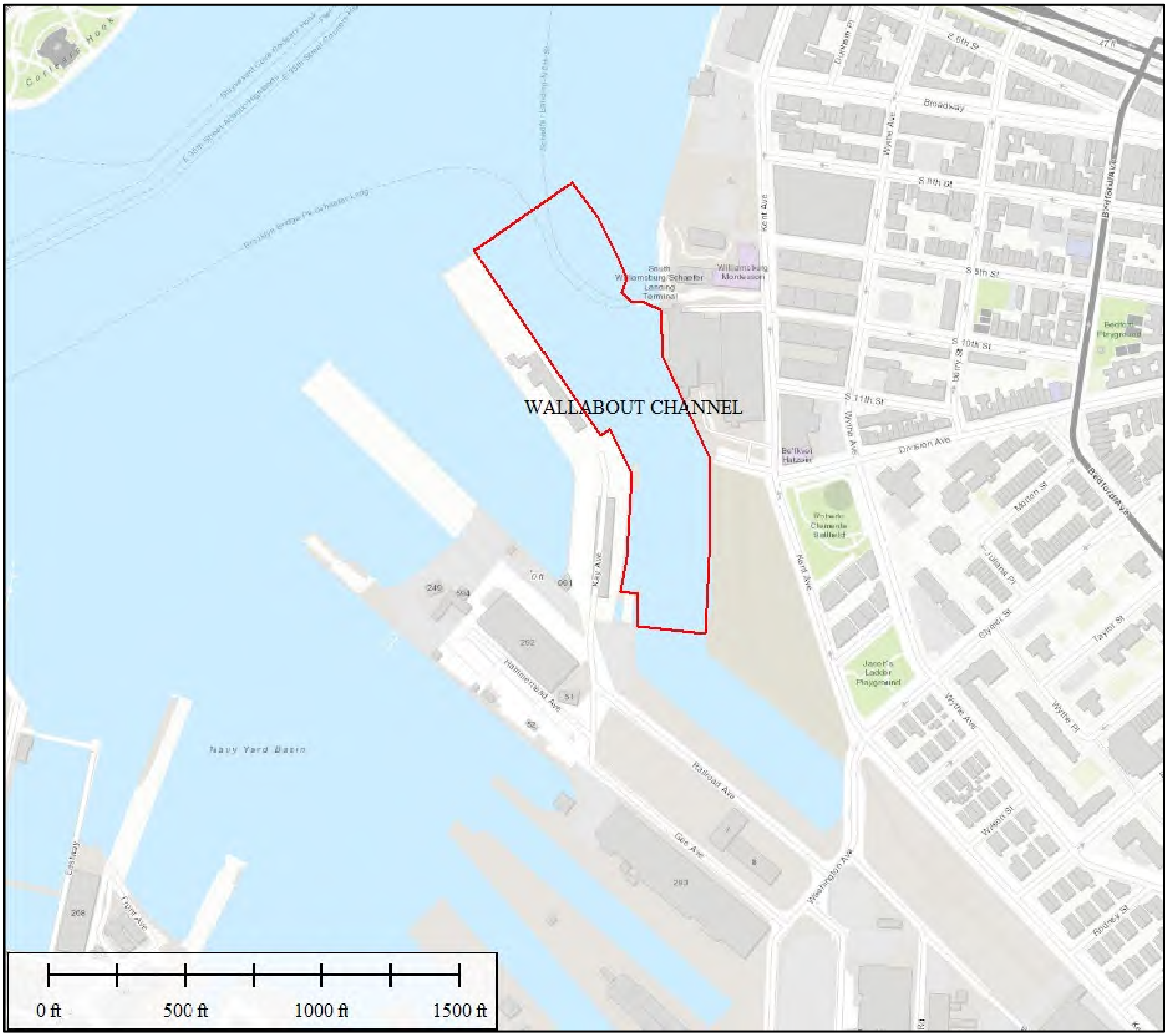


Figure 1. Survey Area in Wallabout Channel

MBES data, using a Norbit iWBMS, were acquired to obtain accurate depths of the seafloor and provide positional QC on any noted seafloor contacts. SSS data, using an EdgeTech 4125, were acquired to detect objects on the bottom that could pose a hazard to planned construction actions. LiDAR data, using a Carlson Merlin, were acquired at both high and low tide to obtain adequate coverage and overlap with the MBES dataset.

All geophysical and hydrographic survey equipment was mobilized and operated aboard the M/V *Yeti*. Navigation was provided at a fixed point on the survey vessel; known, measured offsets were applied to the reference point of each sensor to correctly place the geophysical and hydrographic data within the project coordinate system. MBES and SSS equipment were concurrently operated aboard the vessel. The MBES was mounted to the vessel, while the SSS was bow-towed.

The horizontal reference system for the project was NAD83 2011 US State Plane New York Long Island, US survey feet. The primary vertical reference for the MBES dataset was North American Vertical Datum of 1988 (NAVD88). Data were also supplied in Mean Low Water (MLW), which was applied using NOAA's VDatum for an offset of 2.49 ft from NAVD88.

Field operations on board the M/V Yeti began on the 29th of August 2022 and concluded on the 30th of August 2022. Quality assurance and control (QAQC) of data were performed onboard in real-time; data were then taken ashore and processed at the Hudson office in Cherry Hill, NJ for further QAQC and coverage checks.

2 Data Processing

Data processing was done off site from the project location in the Cherry Hill, NJ office. Data collected on the vessel was copied to an external hard drive at the end of each survey day. Data was uploaded overnight to the office for quality control analysis and verification.

2.1 GPS Processing

Post-processed Kinematic (PPK) records were recorded from the raw POSMV WaveMaster II system in *.000 file format and were processed in POSPac Version 8.6 software. These data were output as *.SBET files and applied to the multibeam bathymetry for a better motion and positioning results product. Before applying the SBET to any MBES datasets, the processor reviewed the Display Plots to QC the results. These plots included the Estimated Position Accuracies, PDOP (Position Dilution of Precision), Processing Mode, Lever Arm Figure of Merit, etc.

2.2 MBES Processing

Bathymetric records were imported and processed with QPS Qimera Version 2.4.8. Multibeam files were cleaned of noise and spurious data; GPS tides, SBETs and sound velocity profiles were applied before being delivered as a final data set. After all processing was completed, the surface was exported from Qimera and loaded in Global Mapper for final QAQC. Contours were also produced using these final surfaces.

2.3 SSS Processing

Side scan sonar records in native *.JSF files were imported into SonarWiz 7.07.07. Side scan files were bottom tracked and adjusted for cable out, catenary corrections. Identified targets were compared positionally from line to line for consistency and data were compared to other concurrently collected data for precision among sensors. Time Variant Gain was applied to visually normalize the data and increase usefulness for analysis. Lines were ordered to produce an aesthetically pleasing final mosaic. Primary contact picking was performed using the EdgeTech 4125 files and confirmed with the MBES grid. In Global Mapper, the final SSS mosaic was compared to the MBES to ensure gain adjustments were consistent and was compared to the MBES surface for final positional checks.

3 Survey Results

The section below shows the results of the bathymetric and geophysical survey performed in Wallabout Channel in August 2022. All survey results are valid for the time of data acquisition.

The bathymetry grid showed seafloor elevations of -5 to -53.5 ft NAVD88 (-2.51 to -51.01 ft MLW), as shown in Figure 2 below. Depths decreased from north to south down the channel. The seabed in this area had numerous depression scours, most notably along the eastern and southern extents of the MBES data coverage. A total of twenty-eight (28) contacts were picked from the SSS (Figure 3, Table 1). These were generally small objects which appeared geologic in nature (small rocks/boulders). Contacts picked along the northwestern edge of the site were likely debris and objects such as tires, shown in Figure 4.

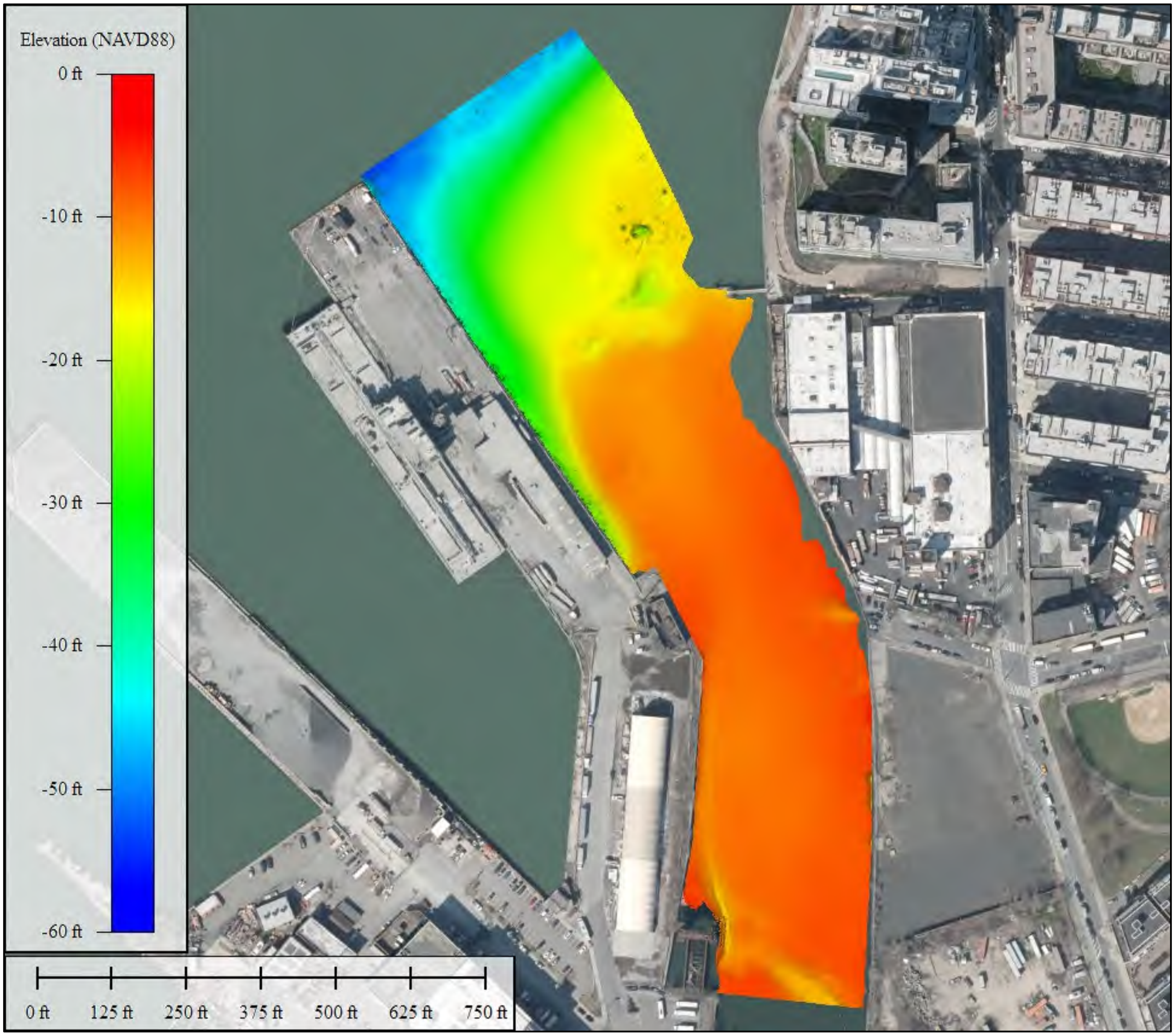


Figure 2. Bathymetry Grid in Wallabout Channel (0.8ft resolution, NAVD88)

Figure 3. Side Scan Mosaic in Wallabout Channel (0.5ft resolution) with Contacts

Table 1. Side Scan Sonar Contacts

Name	Description	Length	Width	Height	X	Y	Latitude	Longitude
S001	Possible Debris	7.38	1.06	0.18	992734.77	196235.55	40.70529391	-73.96939767
S002	Possible Debris	7.31	5.99	0.76	992752.43	196237.06	40.70529805	-73.96933395
S003	Possible Debris	3.40	1.20	0.60	992559.56	196317.26	40.70551835	-73.97002950
S004	Possible Debris	3.09	1.23	0.31	992733.18	196785.25	40.70680270	-73.96940270
S005	Possible Debris	2.08	1.59	0.43	992713.48	196817.81	40.70689210	-73.96947372
S006	Possible Debris	3.07	1.03	0.53	992747.07	196875.52	40.70705047	-73.96935248
S007	Possible Linear Debris	10.33	1.54	0.37	992664.45	196891.51	40.70709443	-73.96965046
S008	Possible Debris	7.43	2.89	0.92	992446.26	196942.30	40.70723404	-73.97043736
S009	Possible Debris	5.22	2.49	1.24	992308.35	197078.98	40.70760932	-73.97093462
S010	Possible Debris	4.27	2.25	0.56	992512.18	197097.71	40.70766056	-73.97019940
S011	Possible Debris	3.59	1.51	1.32	992205.02	197211.18	40.70797226	-73.97130716

Name	Description	Length	Width	Height	X	Y	Latitude	Longitude
S012	Possible Debris	1.72	2.06	1.44	992198.27	197222.87	40.70800436	-73.97133150
S013	Possible Debris	1.42	1.16	0.40	992563.82	197246.13	40.70806787	-73.97001297
S014	Possible Debris	4.97	2.44	1.61	992176.45	197258.86	40.70810317	-73.97141018
S015	Possible Debris	18.17	2.04	0.50	992156.01	197294.84	40.70820196	-73.97148384
S016	Possible Debris	4.70	1.38	0.83	992511.37	197327.54	40.70829137	-73.97020204
S017	Possible Linear Debris	12.57	0.33	0.18	992132.04	197329.25	40.70829640	-73.97157028
S018	Possible Debris	5.73	5.40	0.33	992392.57	197354.81	40.70836634	-73.97063051
S019	Possible Linear Debris	20.66	1.25	0.64	992072.79	197413.14	40.70852672	-73.97178389
S020	Possible Debris	2.80	3.25	6.01	992428.56	197437.15	40.70859230	-73.97050062
S021	Possible Debris	4.08	3.36	3.22	992358.02	197537.40	40.70886754	-73.97075491
S022	Possible Debris	4.73	4.57	0.98	992115.86	197680.40	40.70926025	-73.97162822
S023	Possible Debris	3.17	3.51	0.90	992103.81	197688.02	40.70928118	-73.97167166
S024	Possible Debris	5.27	7.82	1.84	992089.90	197691.75	40.70929142	-73.97172182
S025	Possible Debris	4.20	3.66	1.39	992087.21	197699.00	40.70931132	-73.97173154
S026	Possible Debris	9.54	6.44	0.17	992113.81	197742.72	40.70943131	-73.97163553
S027	Possible Debris	2.43	1.24	2.47	992263.20	197756.62	40.70946934	-73.97109667
S028	Possible Linear Debris	11.54	0.65	0.77	992268.59	197815.16	40.70963000	-73.97107717

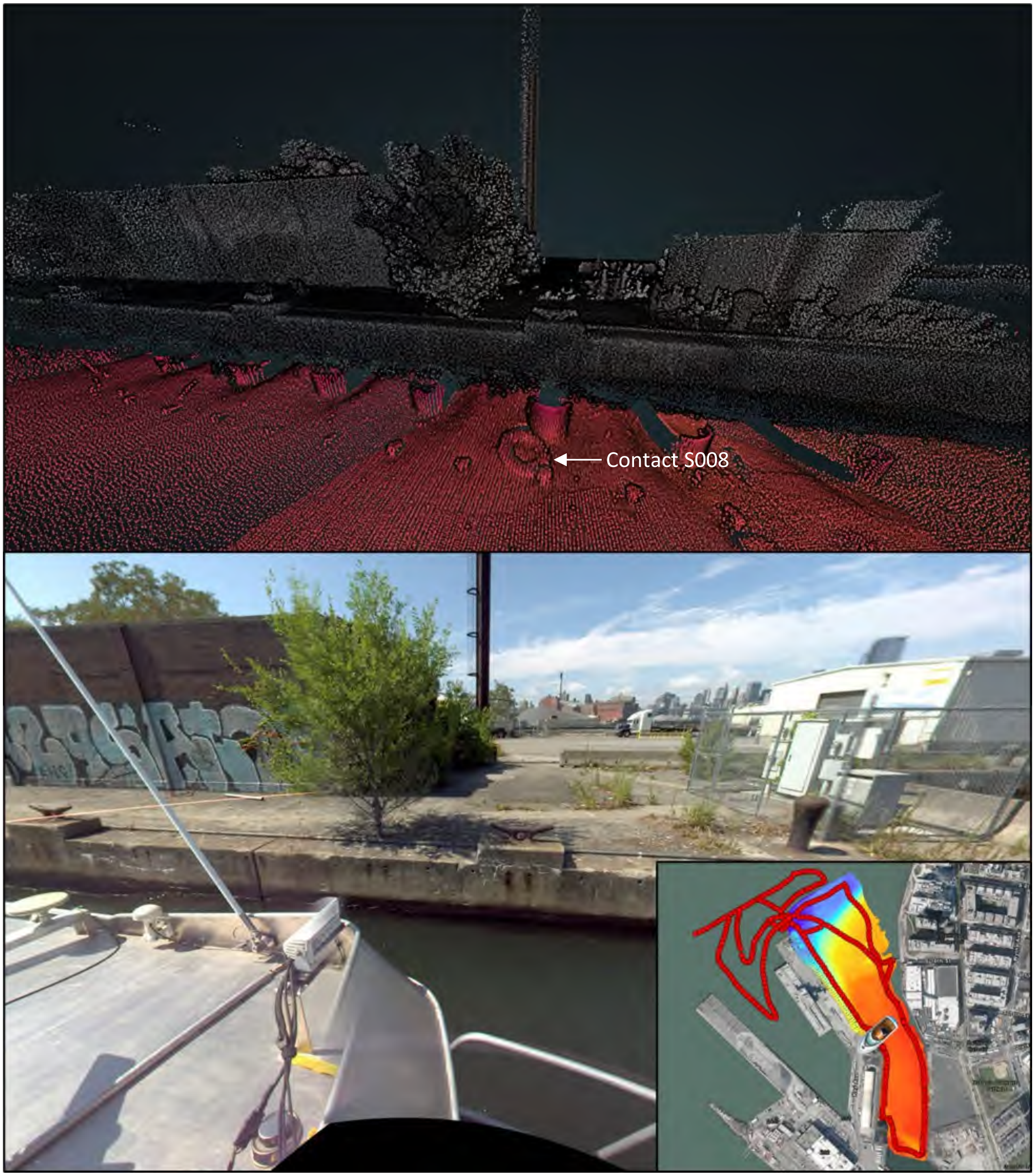
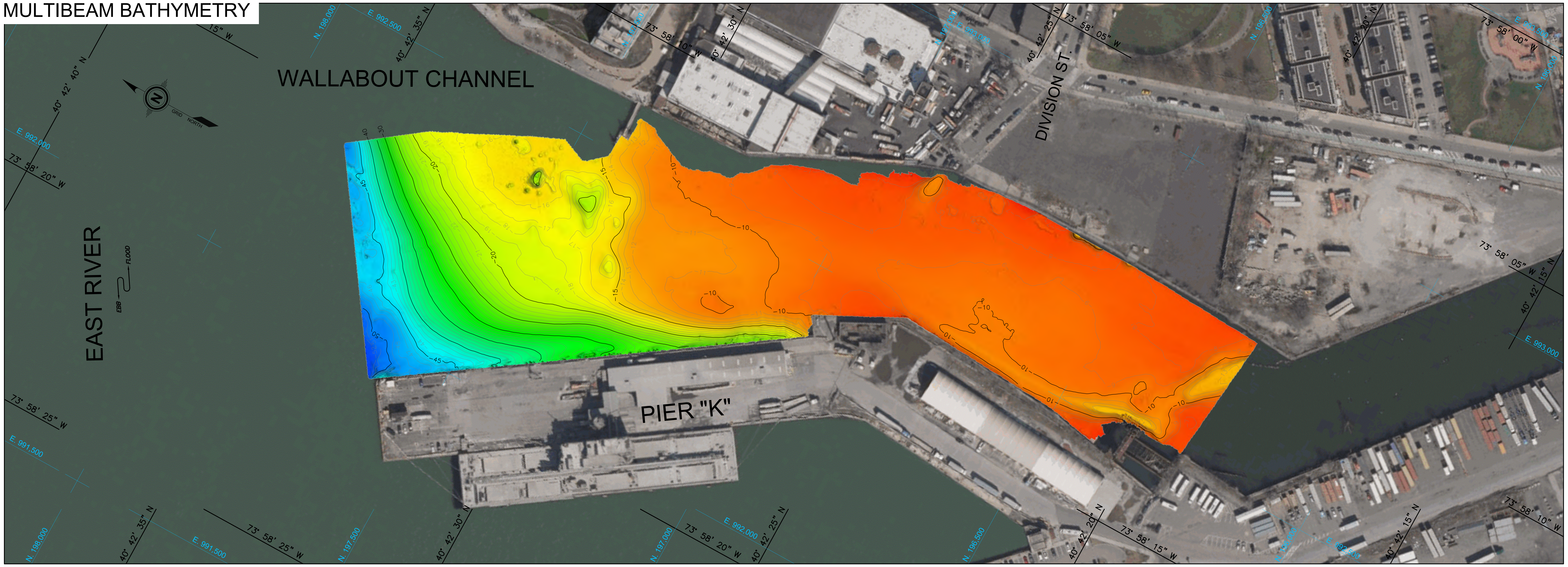
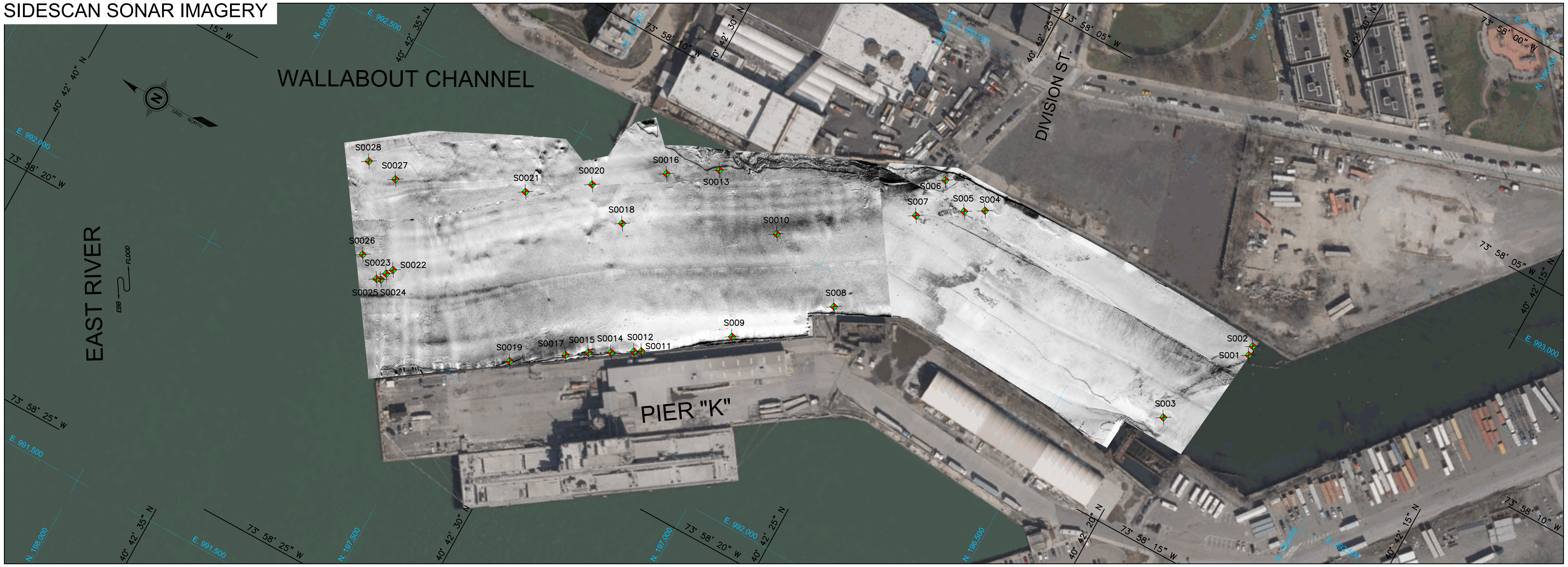


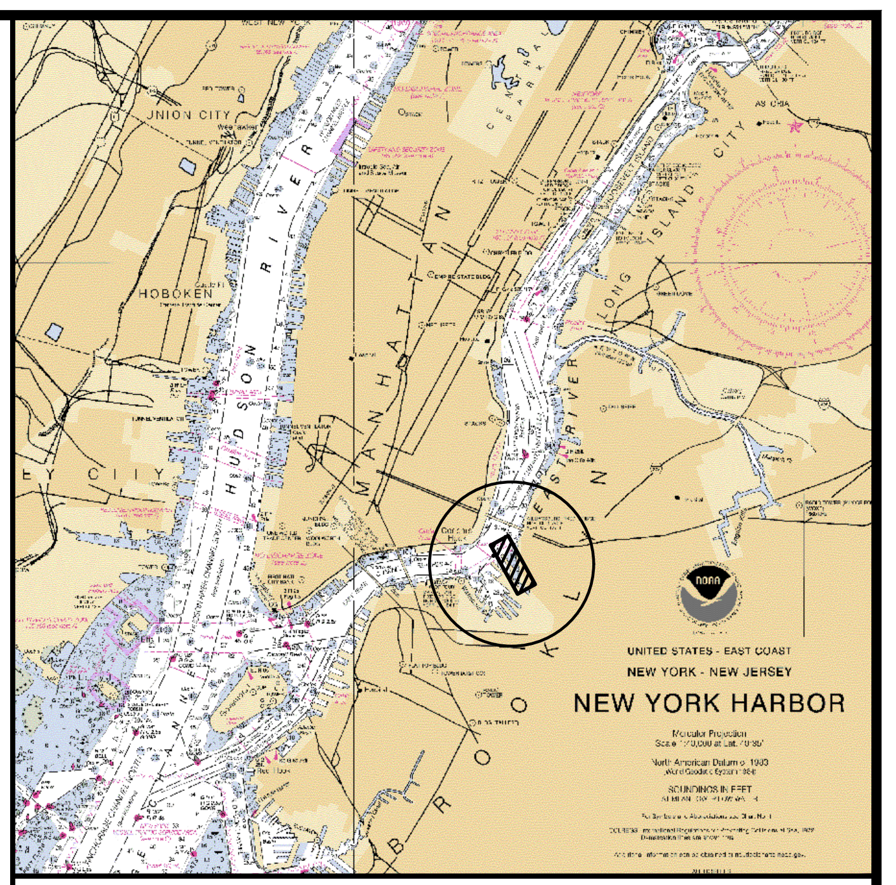
Figure 4. Vessel-based LiDAR draped with Bathymetry Point Cloud near Contact S008 (Tire)

MULTIBEAM BATHYMETRY



SIDESCAN SONAR IMAGERY





LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	NAVD 1988
GEOID MODEL	GEOID 18

ABBREVIATIONS:

CORS – CONTINUOUSLY OPERATING REFERENCE STATION
NAD – NORTH AMERICAN DATUM
NAVD – NORTH AMERICAN VERTICAL DATUM
NGS – NATIONAL GEODETIC SURVEY
NSRS – NATIONAL SPATIAL REFERENCE SYSTEM
SSS – SIDESCAN SONAR
STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (NAVD 88)

0' –10' –20' –30' –40' –50' –60'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

S000 SIDESCAN ID TAG
☒ SIDESCAN SONAR TARGET

SURVEY EQUIPMENT

TYPE	MANUFACTURER/MODEL
SIDESCAN SONAR	EDGETECH 4125 (400–900 KHZ)
MULTIBEAM ECHOSOUNDER	NORBIT WINGHEAD

GENERAL NOTES

1. ELEVATIONS ARE IN FEET AND REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) .
2. NAVIGATION CORRECTIONS PROVIDED BY SMARTNET REAL-TIME SERVICE AND POST-PROCESSED USING APPLANIX POSPAC SMARTBASE SOLUTION. HORIZONTAL AND VERTICAL POSITIONS ARE REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) AS PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
3. BACKGROUND IMAGES OBTAINED FROM 2020 NY STATE ORTHO IMAGERY DATABASE AND SHOW APPROXIMATE SHORELINE LOCATION FOR REFERENCE ONLY.
4. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF GEOPHYSICAL SURVEYS PERFORMED BY S.T. HUDSON ENGINEERS, INC. IN AUGUST 2022, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO STHE.
5. SOME INFORMATION PRESENTED IN THIS DRAWING ARE THE RESULT OF GEOPHYSICAL INTERPRETATION AND ANALYSIS. INCLUSION OF REPRESENTATIONS OF THOSE ANOMALIES (DEBRIS, TIRES, PIPE FRAGMENTS, ETC.) AT A SPECIFIC LOCATION DOES NOT INDICATE OR SUGGEST THE ABSENCE OF HAZARDS, ANOMALIES, INFRASTRUCTURE, APPURTENANCES, AND OTHER OBJECTS ON OR BENEATH THE SEABED IN ANY OTHER LOCATION.

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

SCALE: 1' = 100'

100' 0' 100' 200' 300'

CHECK GRAPHIC SCALE BEFORE USING

PREPARED BY:

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900 DUDLEY AVENUE
CHERRY HILL, NJ 08002
WWW.STHE.COM

PREPARED FOR:

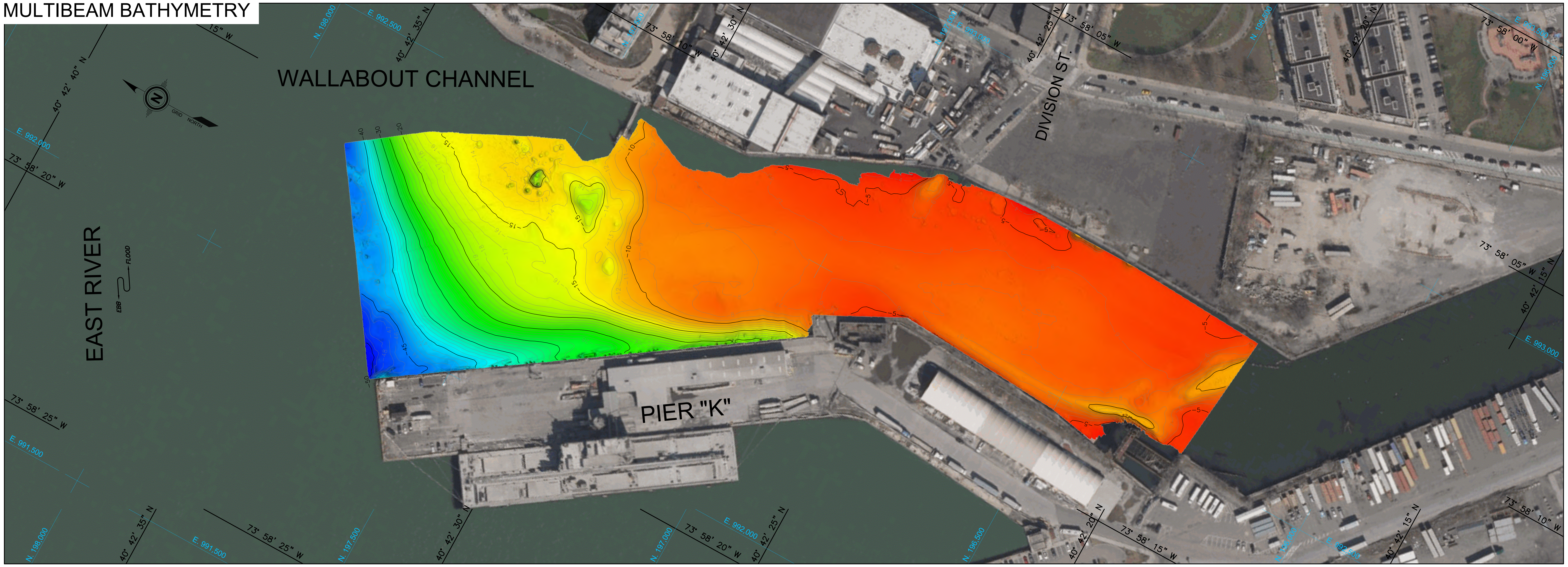
HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
HALMARINTERNATIONAL.COM

BATHYMETRIC AND SIDESCAN SONAR

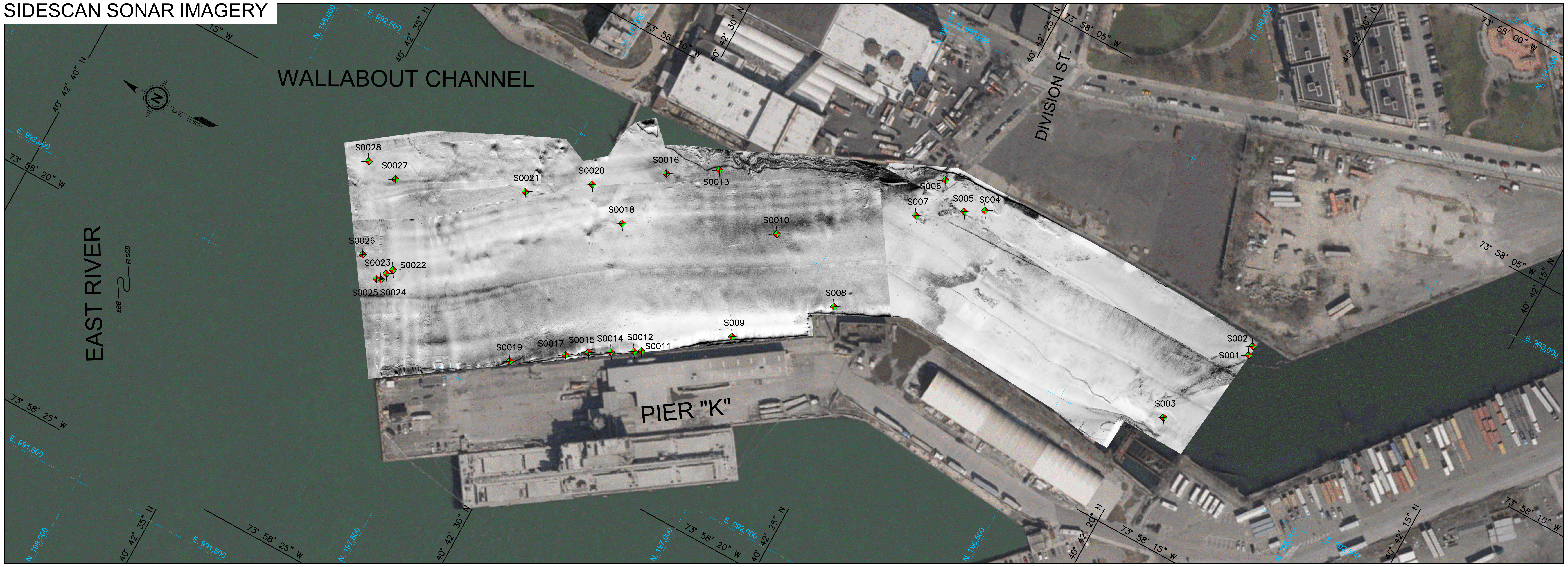
GEOPHYSICAL SURVEY OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

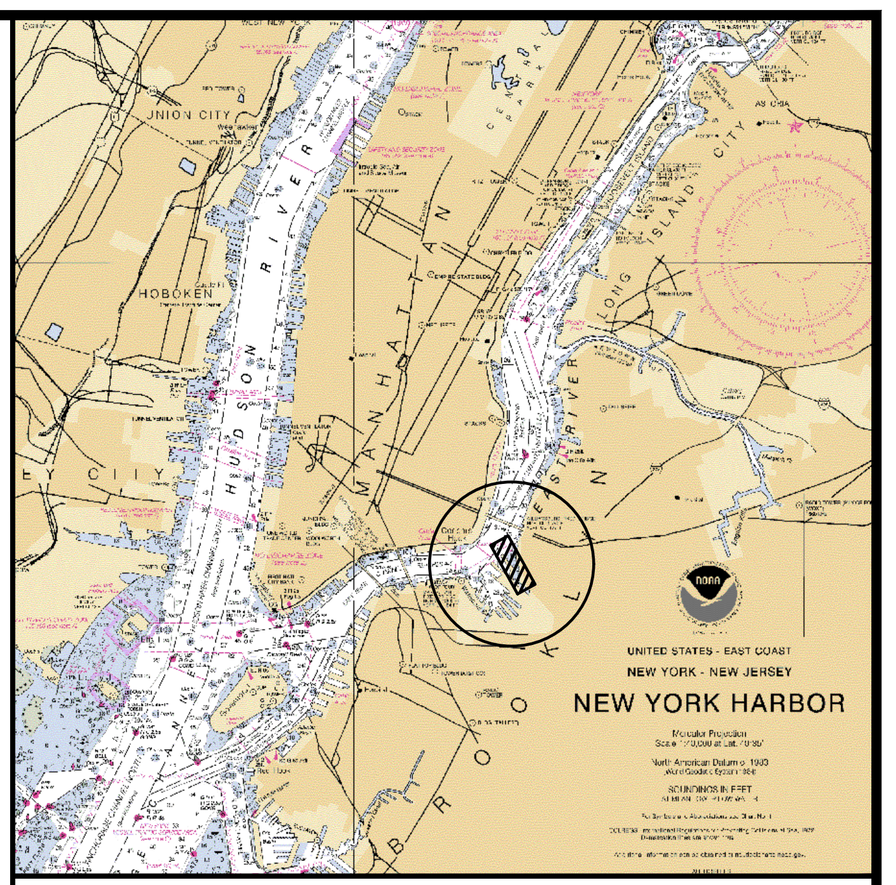
PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022.DWG	
DRAFTED BY: PAS	DRAWING DATE: SEPTEMBER 21 2022	STHE PROJ. #: 22–135	SHEET: 1 OF 1

MULTIBEAM BATHYMETRY



SIDESCAN SONAR IMAGERY





LOCALITY PLAN

GEODETIC PARAMETERS

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LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (MLW)

–5' –10' –15' –20' –25' –30' –35' –40' –45' –50'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

S000 SIDESCAN ID TAG
☒ SIDESCAN SONAR TARGET

SURVEY EQUIPMENT

TYPE	MANUFACTURER/MODEL
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MULTIBEAM ECHOSOUNDER	NORBIT WINGHEAD

GENERAL NOTES

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REVISION	DATE	DESCRIPTION
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100' 0' 100' 200' 300'

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PREPARED FOR:

HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
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BATHYMETRIC AND SIDESCAN SONAR

GEOPHYSICAL SURVEY OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: PAS	DRAWING DATE: SEPTEMBER 22 2022	STHE PROJ. # 22–135	SHEET: 1 OF 1

ENCLOSURE 4

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Dredge Team, Region 2
47-40 21st Street, Long Island City, NY 11101
P: (718) 482-4076 • r2dredge@dec.ny.gov
www.dec.ny.gov

April 7, 2023

Christy Stoll
AKRF, Inc.
7250 Parkway Drive, Suite 210
Hanover, MD 21076

RE: Sediment Sampling Plan - Floating Energy Storage System (FESS) Project

Dear Christy Stoll,

This letter has been prepared in response to your request for a Sediment Sampling and Analysis Plan (SSAP) on Jan 27, 2023. This SSAP applies to the Floating Energy Storage System (FESS) Project, which would involve dredging in Wallabout Channel in Brooklyn, NY. The proposed project depth is 21 ft below mean low water (MLW), which includes 1 foot of overdredge. The dredge area encompasses 25,087 sq yards and will require the removal of approximately 81,510 cubic yards of dredged material. The final placement of the dredge material has yet to be determined.

NYSDEC has determined that 24 sediment sampling locations are sufficient to cover the scope of the project. NYSDEC approves the submitted sediment sampling plan entitled "Floating Energy Storage System (FESS) Project Dredging in Wallabout Channel, Brooklyn Navy Yard NYC Energy LLC Sediment Sampling Plan" dated March 2023 and received by NYSDEC on April 5, 2023, with sampling locations identified in Figure 3**.**

Physical Sampling and Analysis

Cores shall be driven to 22 ft below MLW and separated into two segments, a segment homogenized over the project depth (21 ft below MLW) and a segment representing the next six inches to be exposed after dredging (21.0 to 21.5 feet below MLW). The remainder of the core can be excluded from the analysis. Do not homogenize individual cores if color, odor, grain size, total organic carbon (TOC), or likelihood of contamination based on core lithology or known contamination history differs among horizons. If homogenization is not appropriate, sample and analyze horizons separately. Analyze each core for grain size, TOC, and percent moisture. Field logs, including photographs, should be kept of each core, along with additional information on the physical characteristics observed in the field. If grain size analysis indicates that any individual core sample is greater than 90% sand (i.e., less than 10% of particles pass through a number 200 sieve) and contains less than 0.5% TOC, then no further testing is required on that core sample; however, NYSDEC should be notified before proceeding with the compositing scheme described below. If cores are not greater than 90% sand and/or less than 0.5% TOC, follow the chemical sampling procedures and compositing scheme outlined below.

Chemical Sampling and Analysis

Core samples with less than 90% sand and/or more than 0.5% TOC require additional chemical analyses. Core segments may be composited for chemical analyses according to the table below without further guidance if they have similar characteristics (e.g., grain size, TOC, color, etc.) and a similar likelihood of contamination based on core lithology or known contamination history. If core segments do not share similar characteristics as described above, analyze individual cores separately. Composites should consist of equal amounts of each individual homogenized core.

Dredge Sediment Composite (surface to proposed dredging depth)	**Station Identification Number**
Sample FESS/C1A	Location 1, Location 2, and Location 19
Sample FESS/C2A	Location 4, Location 20, and Location 21
Sample FESS/C3A	Location 3, Location 5, and Location 22
Sample FESS/C4A	Location 6, Location 7, and Location 23
Sample FESS/C5A	Location 8, Location 9, and Location 10
Sample FESS/C6A	Location 11, Location 13, and Location 14
Sample FESS/C7A	Location 12, Location 15, and Location 16
Sample FESS/C8A	Location 17, Location 18, and Location 24
Exposed Sediment Composite (0“-6” below post-dredge bottom)	**Station Identification Number**
Sample FESS/C1B	Location 1, Location 2, and Location 19
Sample FESS/C2B	Location 4, Location 20, and Location 21
Sample FESS/C3B	Location 3, Location 5, and Location 22
Sample FESS/C4B	Location 6, Location 7, and Location 23
Sample FESS/C5B	Location 8, Location 9, and Location 10
Sample FESS/C6B	Location 11, Location 13, and Location 14
Sample FESS/C7B	Location 12, Location 15, and Location 16
Sample FESS/C8B	Location 17, Location 18, and Location 24

This SSAP is designed to provide NYSDEC with the information needed to determine potential environmental impacts on natural resources and allow the project sponsor to identify potential upland placement locations if needed. Each raw sediment sample must be tested for the analytes listed in Table 2 of the NYSDEC Technical & Operational Guidance Series (TOGS) 5.1.9. In addition, if the disposal methods for this material include upland placement of amended dredge material product in New York or New Jersey, then measurements must also be made on raw sediment and amended dredge material product that includes all the analytes listed in Table 6.8 of 6 NYCRR Part 375 and in the New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standards and Screening Levels (revised 09-18-2017) (See Attachment 2 for protocols for testing processed dredged materials). The three referenced tables of required analytes are available at:

https://www.dec.ny.gov/docs/water_pdf/togs519.pdf
https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375.pdf
https://www.nj.gov/dep/rules/rules/njac7_26d.pdf

Note that analyses of dredge material for upland placement should also include hexavalent and trivalent chromium, dioxins, and furans.

Please ensure the contract laboratory is aware of changes to the list of target analytes and analytical requirements. Laboratories used to perform the testing required herein must be certified by the State of New Jersey and the State of New York for the particular analytical method. Both states recommend verifying the volumes required for the tests with the laboratories prior to sampling. Any data package submitted to either NJDEP or NYSDEC shall comply with the QA/QC requirements outlined in Appendix B of the NJDEP technical manual entitled “The Management and Regulation of Dredging Activities and Dredged Material in New Jersey’s Tidal Waters” (October 1997).

If the material will be placed upland, the analytical package submitted must include a description of the recipe (i.e., types of additives and proportion) used to prepare the amended dredge material product. The amended dredge material product must also be pulverized and subjected to a Synthetic Precipitation Leaching Procedure (SPLP) using the USEPA Method 1312.

All sediment analyses should be provided to the NYSDEC/NJDEP in the form of a technical report that includes an excel spreadsheet summarizing the results and highlighting threshold exceedances of TOGS 5.1.9 Table 2, 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives, and NJDEP's Soil Remediation Standards and Screening Levels.

The technical report should include the results of physical and chemical analyses of the raw sediment. If upland placement is required, the report should also include the results of chemical analyses on the amended dredge material product. These results should be submitted in three summary data tables:

1. Raw sediment, bulk sediment chemistry
2. Amended dredge material product, bulk sediment chemistry
3. Dredged material product, SPLP results

Each placement location has its unique sampling requirements. The project sponsor is encouraged to contact potential placement locations to learn whether additional testing beyond those outlined here will be required.

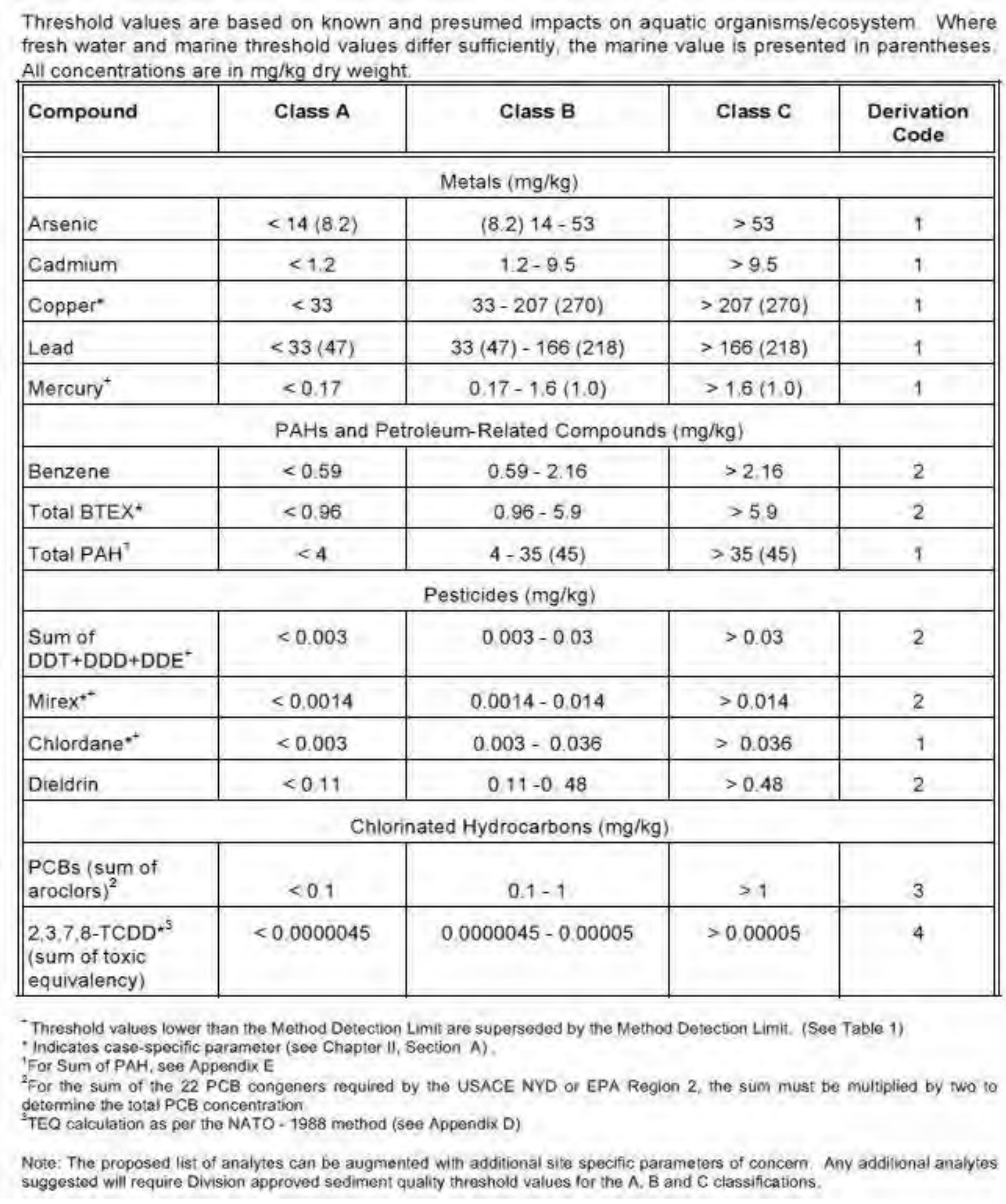
If you have any questions regarding the SSAP, please feel free to contact Meaghan McCormack at meaghan.mccormack@dec.ny.gov

Sincerely,

Meaghan McCormack

Meaghan McCormack, Ph.D.
Division of Marine Resources
NYSDEC

ATTACHMENT 1: Table 2 of the NYSDEC Technical & Operational Guidance Series (TOGS) 5.1.9



Threshold values are based on known and presumed impacts on aquatic organisms/ecosystem. Where fresh water and marine threshold values differ sufficiently, the marine value is presented in parentheses. All concentrations are in mg/kg dry weight.

Compound	Class A	Class B	Class C	Derivation Code
Metals (mg/kg)				
Arsenic	< 14 (8.2)	(8.2) 14 - 53	> 53	1
Cadmium	< 1.2	1.2 - 9.5	> 9.5	1
Copper[*]	< 33	33 - 207 (270)	> 207 (270)	1
Lead	< 33 (47)	33 (47) - 166 (218)	> 166 (218)	1
Mercury[+]	< 0.17	0.17 - 1.6 (1.0)	> 1.6 (1.0)	1
PAHs and Petroleum-Related Compounds (mg/kg)				
Benzene	< 0.59	0.59 - 2.16	> 2.16	2
Total BTEX[*]	< 0.96	0.96 - 5.9	> 5.9	2
Total PAH[1]	< 4	4 - 35 (45)	> 35 (45)	1
Pesticides (mg/kg)				
Sum of DDT+DDD+DDE[+]	< 0.003	0.003 - 0.03	> 0.03	2
Mirex[*+]	< 0.0014	0.0014 - 0.014	> 0.014	2
Chlordane[*+]	< 0.003	0.003 - 0.036	> 0.036	1
Dieldrin	< 0.11	0.11 -0. 48	> 0.48	2
Chlorinated Hydrocarbons (mg/kg)				
PCBs (sum of aroclors)[2]	< 0.1	0.1 - 1	> 1	3
2,3,7,8-TCDD[*3] (sum of toxic equivalency)	< 0.0000045	0.0000045 - 0.00005	> 0.00005	4

[+] Threshold values lower than the Method Detection Limit are superseded by the Method Detection Limit. (See Table 1)

[*] Indicates case-specific parameter (see Chapter II, Section A) .

[1] For Sum of PAH, see Appendix E

[2] For the sum of the 22 PCB congeners required by the USACE NYD or EPA Region 2, the sum must be multiplied by two to determine the total PCB concentration

[3] TEQ calculation as per the NATO - 1988 method (see Appendix D)

Note: The proposed list of analytes can be augmented with additional site specific parameters of concern. Any additional analytes suggested will require Division approved sediment quality threshold values for the A, B and C classifications.

ATTACHMENT 2: PROTOCOL FOR THE TESTING OF PROCESSED DREDGED MATERIAL FOR USE AS STRUCTURAL FILL

Revision (10/08)

The analytes which must be tested for are listed in the tables found at:

- https://www.nj.gov/dep/rules/rules/njac7_26d.pdf
  (For reuse of processed dredged material in the State of New Jersey)
- Hexavalent and Trivalent Chromium- recent literature http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf (Table 11-2, Restricted Use Soil Cleanup Objectives for reuse of processed dredged material in the State of New York, page 349).

The specific sampling plan will identify the pollutants that are to be analyzed for the dredging project.

Since the dredged material will be treated with other materials that will alter its physical and chemical composition, additional tests must be performed on the end product. The required tests are as follows:

- Bulk sediment chemistry, grain size, total organic carbon, and percent moisture analyses must be performed on each raw sediment composite/core sample or vertically stratified sample. Any water which separates from the raw sediment sample during transport/storage (i.e., porewater) must be re-mixed with the solid components of the sediments prior to forming the core or composite samples; this porewater must not be decanted from the sediment sample.

- For each core/composite sample/vertically stratified sample, a sample of the processed dredged material product will be created by combining measured amounts of proposed additive with a pre-weighed sample of the sediments to be dredged. The mixing time will, to the greatest extent possible, replicate the residence time in the blending facility/operation to be used in the actual full-scale project. The ratio of proposed additive to composite sediment sample, by weight, will be recorded. The dredged material product to be tested will be formed using the “recipe” (proportions of dredged material and proposed additive) which replicates the actual dredged material product to be used as structural fill on the site. The dredged material product will be pulverized, and each composite sample will be subjected to bulk sediment analyses.

- The dredged material product samples will be pulverized, and each sample subjected to a Synthetic Precipitation Leaching Procedure (SPLP) using the USEPA Method 1312.

A final report, including the results of the raw sediment and dredged material product testing, will be submitted to the Department in a series of three (3) summary data tables:

- Raw sediment bulk sediment chemistry
- Dredged material product bulk sediment chemistry
- Dredged material product SPLP results

ATTACHMENT 3: TABLE 375-6.8(B): RESTRICTED USE SOIL CLEAN UP OBJECTIVES

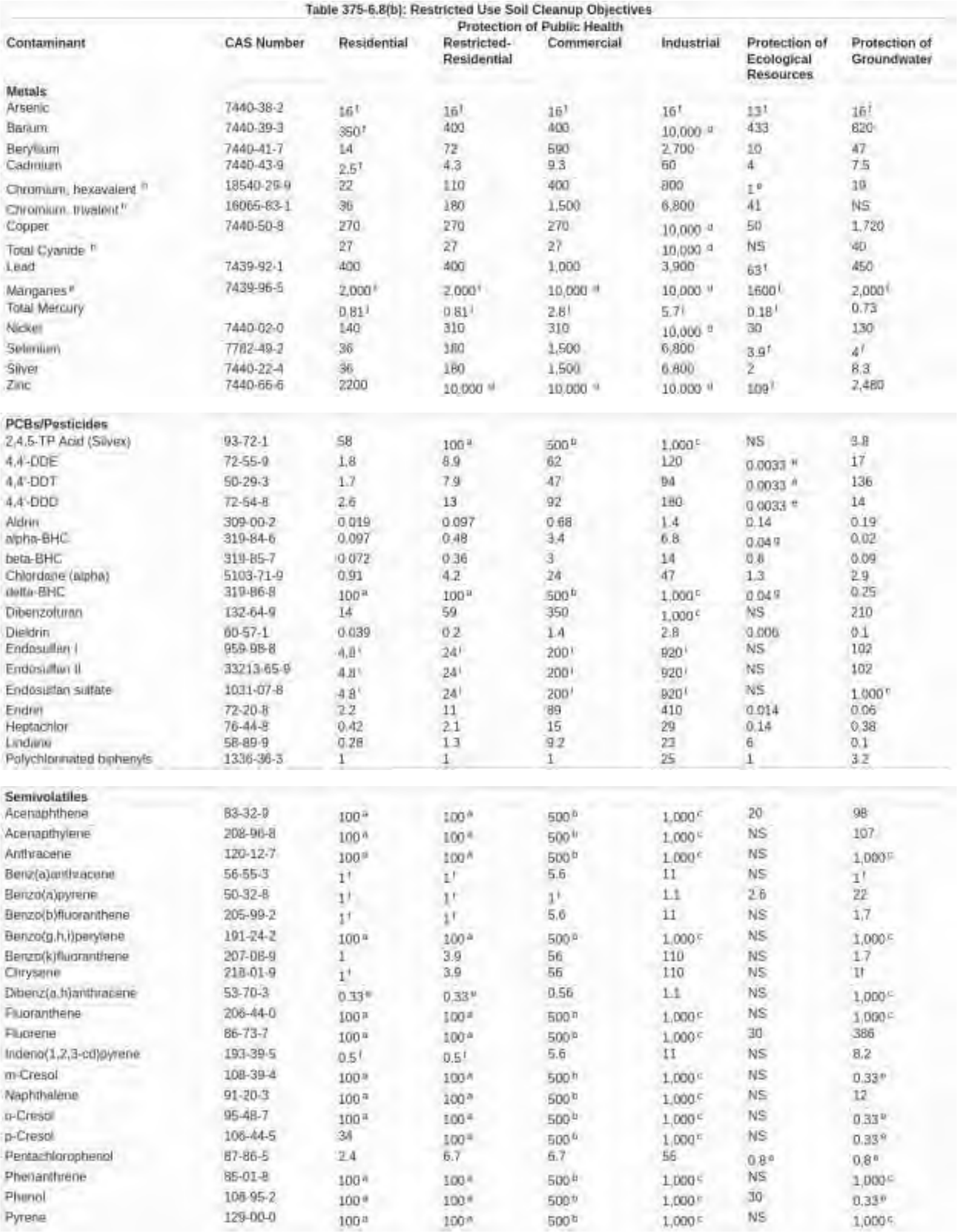
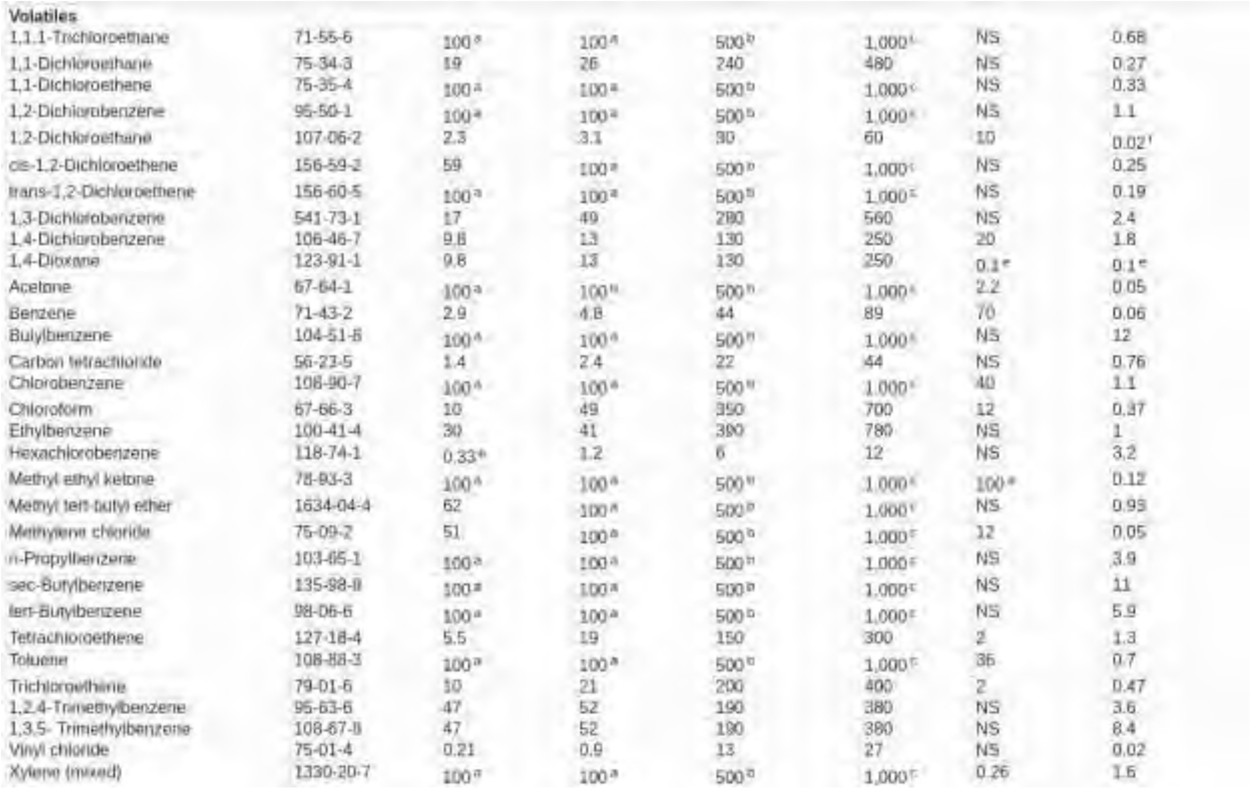


Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Groundwater
		Residential	Restricted-Residential	Commercial	Industrial		
Metals							
Arsenic	7440-38-2	16^{f}	16^{f}	16^{f}	16^{f}	13^{f}	16^{f}
Barium	7440-39-3	350^{f}	400	400	10,000 ^{d}	433	820
Beryllium	7440-41-7	14	72	590	2,700	10	47
Cadmium	7440-43-9	2.5^{f}	4.3	9.3	60	4	7.5
Chromium, hexavalent ^{h}	18540-29-9	22	110	400	800	1^{e}	19
Chromium, trivalent ^{h}	16065-83-1	36	180	1,500	6,800	41	NS
Copper	7440-50-8	270	270	270	10,000 ^{d}	50	1,720
Total Cyanide ^{h}		27	27	27	10,000 ^{d}	NS	40
Lead	7439-92-1	400	400	1,000	3,900	63^{f}	450
Manganese	7439-96-5	2,000^{f}	2,000^{f}	10,000 ^{d}	10,000 ^{d}	1600^{f}	2,000^{f}
Total Mercury		0.81^{j}	0.81^{j}	2.8^{j}	5.7^{j}	0.18^{f}	0.73
Nickel	7440-02-0	140	310	310	10,000 ^{d}	30	130
Selenium	7782-49-2	36	180	1,500	6,800	3.9^{f}	4^{f}
Silver	7440-22-4	36	180	1,500	6,800	2	8.3
Zinc	7440-66-6	2200	10,000 ^{d}	10,000 ^{d}	10,000 ^{d}	109^{f}	2,480
PCBs/Pesticides							
2,4,5-TP Acid (Silvex)	93-72-1	58	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 ^{e}	17
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 ^{e}	136
4,4'-DDD	72-54-8	2.6	13	92	180	0.0033 ^{e}	14
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04^{g}	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71-9	0.91	4.2	24	47	1.3	2.9
delta-BHC	319-86-8	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	0.04^{g}	0.25
Dibenzofuran	132-64-9	14	59	350	1,000 ^{c}	NS	210
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I	959-98-8	4.8^{i}	24^{i}	200^{i}	920^{i}	NS	102
Endosulfan II	33213-65-9	4.8^{i}	24^{i}	200^{i}	920^{i}	NS	102
Endosulfan sulfate	1031-07-8	4.8^{i}	24^{i}	200^{i}	920^{i}	NS	1,000 ^{c}
Endrin	72-20-8	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1
Polychlorinated biphenyls	1336-36-3	1	1	1	25	1	3.2
Semivolatiles							
Acenaphthene	83-32-9	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	20	98
Acenapthylene	208-96-8	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	107
Anthracene	120-12-7	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	1,000 ^{c}
Benz(a)anthracene	56-55-3	1^{f}	1^{f}	5.6	11	NS	1^{f}
Benzo(a)pyrene	50-32-8	1^{f}	1^{f}	1^{f}	1.1	2.6	22
Benzo(b)fluoranthene	205-99-2	1^{f}	1^{f}	5.6	11	NS	1.7
Benzo(g,h,i)perylene	191-24-2	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	1,000 ^{c}
Benzo(k)fluoranthene	207-08-9	1	3.9	56	110	NS	1.7
Chrysene	218-01-9	1^{f}	3.9	56	110	NS	1^{f}
Dibenz(a,h)anthracene	53-70-3	0.33 ^{e}	0.33 ^{e}	0.56	1.1	NS	1,000 ^{c}
Fluoranthene	206-44-0	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	1,000 ^{c}
Fluorene	86-73-7	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	30	386
Indeno(1,2,3-cd)pyrene	193-39-5	0.5^{f}	0.5^{f}	5.6	11	NS	8.2
m-Cresol	108-39-4	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	0.33 ^{e}
Naphthalene	91-20-3	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	12
o-Cresol	95-48-7	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	0.33 ^{e}
p-Cresol	106-44-5	34	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	0.33 ^{e}
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8 ^{e}	0.8 ^{e}
Phenanthrene	85-01-8	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	1,000 ^{c}
Phenol	108-95-2	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	30	0.33 ^{e}
Pyrene	129-00-0	100 ^{a}	100 ^{a}	500 ^{b}	1,000 ^{c}	NS	1,000 ^{c}

NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives



Volatiles							
1,1,1-Trichloroethane	71-55-6	100^a	100^a	500^b	$1,000^c$	NS	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27
1,1-Dichloroethene	75-35-4	100^a	100^a	500^b	$1,000^c$	NS	0.33
1,2-Dichlorobenzene	95-50-1	100^a	100^a	500^b	$1,000^c$	NS	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02^f
cis-1,2-Dichloroethene	156-59-2	59	100^a	500^b	$1,000^c$	NS	0.25
trans-1,2-Dichloroethene	156-60-5	100^a	100^a	500^b	$1,000^c$	NS	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1^e	0.1^e
Acetone	67-64-1	100^a	100^b	500^b	$1,000^c$	2.2	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06
Butylbenzene	104-51-8	100^a	100^a	500^b	$1,000^c$	NS	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	100^a	100^a	500^b	$1,000^c$	40	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1
Hexachlorobenzene	118-74-1	0.33^e	1.2	6	12	NS	3.2
Methyl ethyl ketone	78-93-3	100^a	100^a	500^b	$1,000^c$	100^a	0.12
Methyl tert-butyl ether	1634-04-4	62	100^a	500^b	$1,000^c$	NS	0.93
Methylene chloride	75-09-2	51	100^a	500^b	$1,000^c$	12	0.05
n-Propylbenzene	103-65-1	100^a	100^a	500^b	$1,000^c$	NS	3.9
sec-Butylbenzene	135-98-8	100^a	100^a	500^b	$1,000^c$	NS	11
tert-Butylbenzene	98-06-6	100^a	100^a	500^b	$1,000^c$	NS	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3
Toluene	108-88-3	100^a	100^a	500^b	$1,000^c$	36	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6
1,3,5- Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20-7	100^a	100^a	500^b	$1,000^c$	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).

NS = Not specified. See Technical Support Document (TSD).

[a] The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

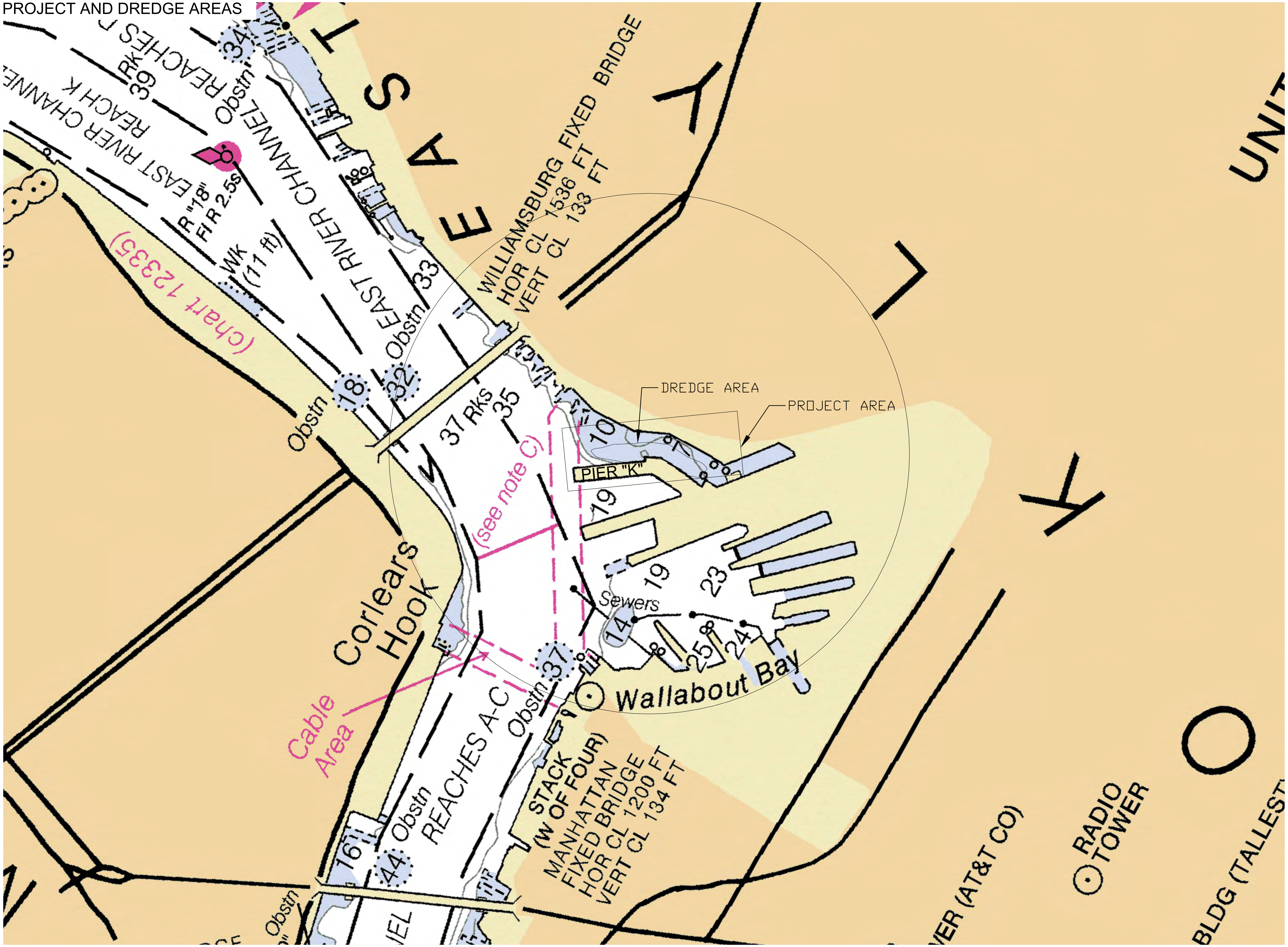
[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

PROJECT AND DREDGE AREAS



LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	MEAN LOW WATER (MLW)
GEOID MODEL	GEOID 18

ABBREVIATIONS:

CORS – CONTINUOUSLY OPERATING REFERENCE STATION
MLW – MEAN LOW WATER
NAD – NORTH AMERICAN DATUM
NGS – NATIONAL GEODETIC SURVEY
NSRS – NATIONAL SPATIAL REFERENCE SYSTEM
SSS – SIDESCAN SONAR
STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

SCALE: 1' = 500'

N

SURVEY EQUIPMENT

TYPE	MANUFACTURER/MODEL
SIDESCAN SONAR	EDGETECH 4125 (400–900 KHZ)
MULTIBEAM ECHOSOUNDER	NORBIT WINGHEAD

GENERAL NOTES

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

PREPARED BY:

S.T. HUDSON ENGINEERS INC.
900 DUDLEY AVENUE
CHERRY HILL, NJ 08002
WWW.STHE.COM

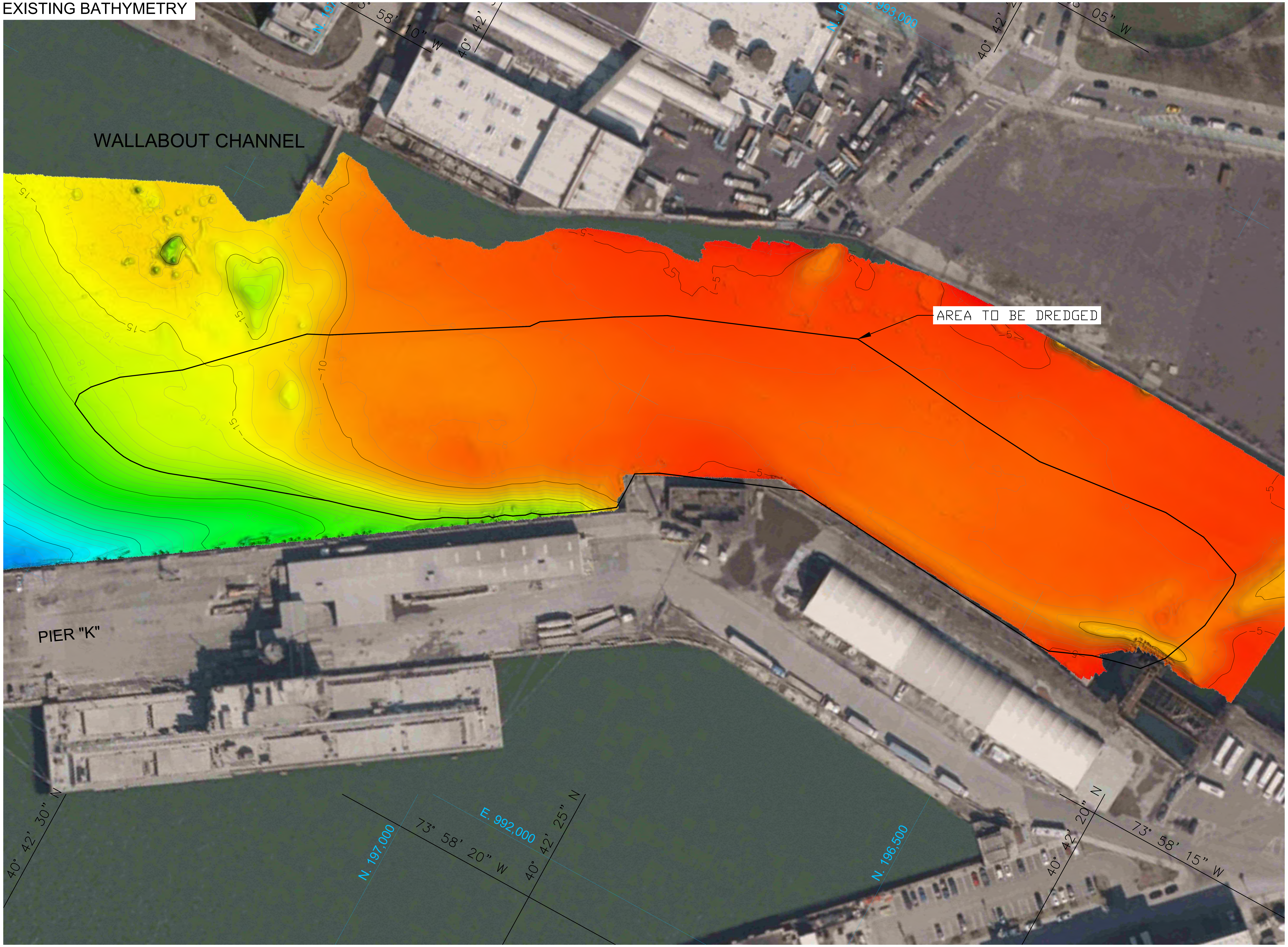
PREPARED FOR:

HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
HALMARINTERNATIONAL.COM

FIGURE 1 - PROJECT AREA

SEDIMENT SAMPLING OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: ALF	DRAWING DATE: February 24, 2023	STHE PROJ. # 22–135	SHEET: 1 OF X



LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	MEAN LOW WATER (MLW)
GEOID MODEL	GEOID 18

ABBREVIATIONS:

CORS – CONTINUOUSLY OPERATING REFERENCE STATION
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NSRS – NATIONAL SPATIAL REFERENCE SYSTEM
SSS – SIDESCAN SONAR
STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

SCALE: 1' = 50'

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (MLW)

–5' –10' –15' –20' –25' –30' –35' –40' –45' –50'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

N

GENERAL NOTES

1. ELEVATIONS ARE IN FEET AND REFERENCED TO MEAN LOW WATER (MLW) .
2. NAVIGATION CORRECTIONS PROVIDED BY SMARTNET REAL-TIME SERVICE AND POST-PROCESSED USING APPLANIX POSPAC SMARTBASE SOLUTION. HORIZONTAL AND VERTICAL POSITIONS ARE REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) AS PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
3. BACKGROUND IMAGES OBTAINED FROM 2020 NY STATE ORTHO IMAGERY DATABASE AND SHOW APPROXIMATE SHORELINE LOCATION FOR REFERENCE ONLY.
4. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF GEOPHYSICAL SURVEYS PERFORMED BY S.T. HUDSON ENGINEERS, INC. IN AUGUST 2022, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO STHE.
5. SOME INFORMATION PRESENTED IN THIS DRAWING ARE THE RESULT OF GEOPHYSICAL INTERPRETATION AND ANALYSIS. INCLUSION OF REPRESENTATIONS OF THOSE ANOMALIES (DEBRIS, TIRES, PIPE FRAGMENTS, ETC.) AT A SPECIFIC LOCATION DOES NOT INDICATE OR SUGGEST THE ABSENCE OF HAZARDS, ANOMALIES, INFRASTRUCTURE, APPURTENANCES, AND OTHER OBJECTS ON OR BENEATH THE SEABED IN ANY OTHER LOCATION.
6. ONE-TIME MAINTENANCE DREDGING OF APPROXIMATELY 81,510 CUBIC YARDS (CY) FROM AN APPROXIMATELY 225,784 SQUARE FOOT AREA (APPROXIMATELY 5.18 ACRES) WITHIN THE EXISTING BOAT BASIN TO A DEPTH OF -21-FEET BELOW MEAN LOW WATER, WHICH INCLUDES 1-FOOT OF ALLOWABLE OVER-DREDGE, WITH UPLAND PLACEMENT AND NO RETURN FLOW TO THE WATERWAY.

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

PREPARED BY:
S.T. HUDSON ENGINEERS INC.
900 DUDLEY AVENUE
CHERRY HILL, NJ 08002
WWW.STHE.COM

PREPARED FOR:
HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
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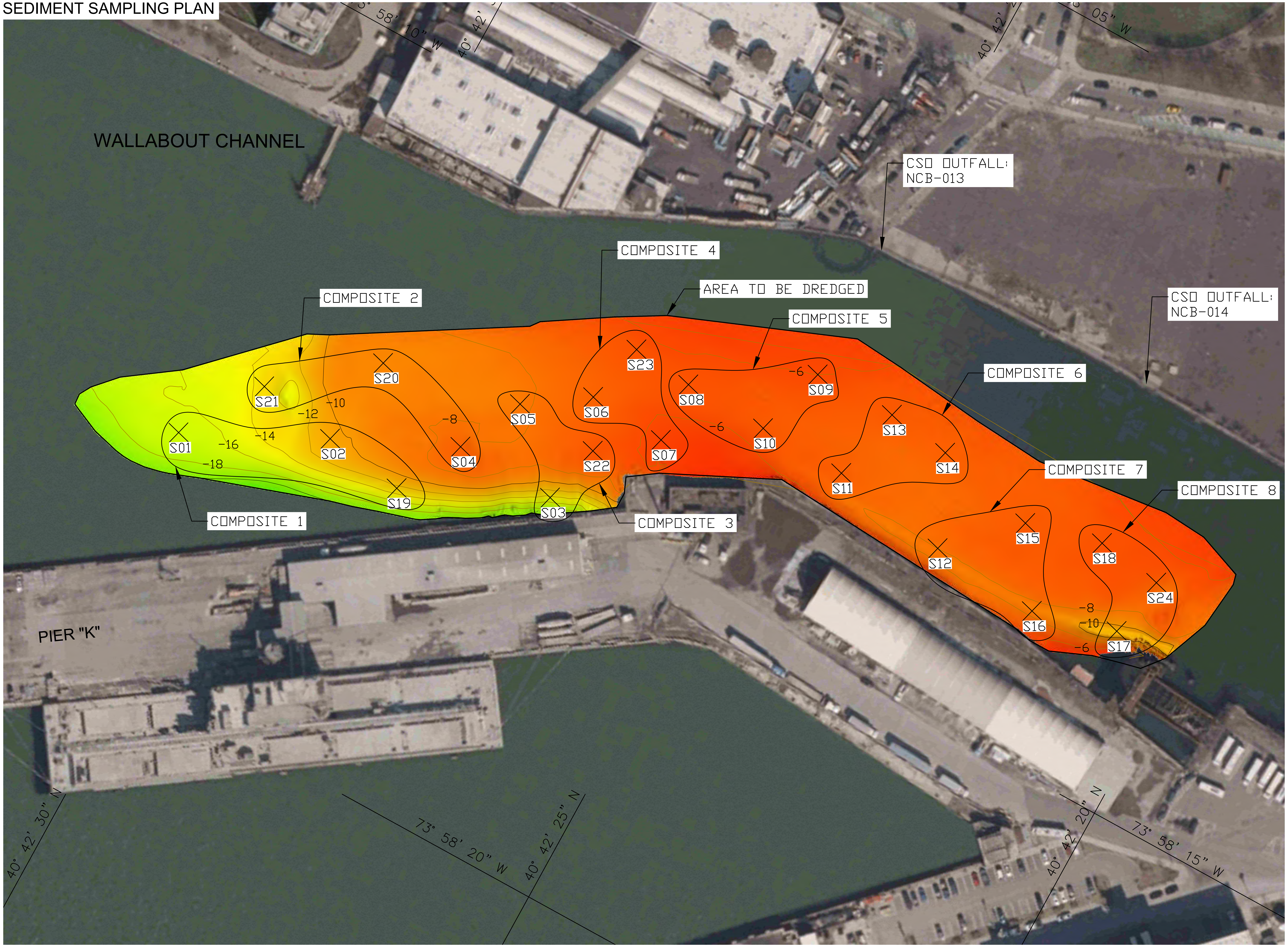
FIGURE 2 - EXISTING BATHYMETRY

SEDIMENT SAMPLING OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: ALF	DRAWING DATE: February 24, 2023	STHE PROJ. # 22–135	SHEET: 1 OF X

SEDIMENT SAMPLING PLAN



LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	MEAN LOW WATER (MLW)
GEOID MODEL	GEOID 18

ABBREVIATIONS:

CORS – CONTINUOUSLY OPERATING REFERENCE STATION
MLW – MEAN LOW WATER
NAD – NORTH AMERICAN DATUM
NGS – NATIONAL GEODETIC SURVEY
NSRS – NATIONAL SPATIAL REFERENCE SYSTEM
SSS – SIDESCAN SONAR
STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

SCALE: 1' = 50'

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (MLW)

–5' –10' –15' –20' –25' –30' –35' –40' –45' –50'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

S00 SEDIMENT SAMPLE POINT

GENERAL NOTES

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FIGURE 3 - SEDIMENT SAMPLING LOCATIONS

SEDIMENT SAMPLING OF A PORTION OF WALLABOUT CHANNEL BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: ALF	DRAWING DATE: February 27, 2023	STHE PROJ. # 22–135	SHEET: 1 OF X

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

July 25, 2023

David Oster
Environmental Protection Specialist
U.S. Department of Energy
Washington, DC 20585

Re: NOAA Essential Fish Habitat Review of Floating Energy Storage System Project; Department of Energy Title XVII Innovative Energy Loan Guarantee Program

Dear Mr. Oster:

We have reviewed the essential fish habitat assessment (EFH) for the Floating Battery Storage System (Project) in Brooklyn, Kings County, New York. Empower Brooklyn, LLC (The Applicant), on behalf of NYC Energy, LLC has proposed the development of a 300-megawatt (MW) floating energy storage system (FESS) that will incorporate stacking energy storage containers and associated equipment on three barges to be moored in Wallabout Channel adjacent to Berth 20 of Pier K within the Brooklyn Navy Yard. The project is to be funded through a loan guarantee pursuant to the U.S. Department of Energy's (DOE) Renewable Energy and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by the Energy Policy Act (EPAct), Renewable Energy and Efficient Energy (REEE) Projects. The DOE is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and is the lead federal representative for the purposes of environmental review of this project, including consultation with us under the Magnuson Stevens Fishery Conservation and Management Act (MSA).

The project includes dredging 1.92 acres of the channel to the federally authorized depth of 20 feet (ft.) at mean low water (MLW), and the installation of six 18-inch diameter steel pipe piles to permanently anchor a three 146-ft by 130-ft barges, with an estimated draft of 16- to 18-ft. The stated purpose of the FESS is to integrate clean energy into the grid (e.g., offshore wind) to achieve clean energy mandates and climate goals the state of New York passed under the Climate Leadership and Community Protection Act (CLCPA). It is anticipated that the project will temporarily disturb 1.92 acres of the sediment substrate through dredging and permanently disturb 1.31 acres of tidal open waters due to shading without proposed mitigation. Project activities are also anticipated to take 12 months and the FESS is to remain in place for the 30-year term of the lease until it is decommissioned and removed.

Because these construction activities will adversely affect EFH, we offer the following information to further avoid, minimize, or otherwise offset impacts to our trust resources.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act (FWCA) require federal agencies to consult with one another on projects such as this that may adversely affect EFH and other aquatic resources. In turn, we must provide recommendations to conserve EFH. These recommendations may include measures to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from actions or proposed actions authorized, funded, or undertaken by that agency. This process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in this consultation procedure.

The project area has been designated as EFH under the MSA for a number of federally managed species such as winter flounder (*Pseudopleuronectes americanus*), windowpane flounder (*Scophthalmus aquosus*), Atlantic herring (*Clupea harengus*), bluefish (*Pomatomus saltatrix*), Atlantic butterfish (Peprilus triacanthus), summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops*), several species of skates, and others. The East River is also a migratory corridor for anadromous fishes such as alewife (*Alosa pseudoharengus*), and blueback herring (*Alosa aestivalis*) (collectively, river herring). Anadromous fishes such as these serve as prey for federally managed species. As a result, adverse effects to their migration and spawning can be considered an adverse effect on EFH.

We have reviewed the EFH assessment and although we agree with your conclusion that the adverse effects of this project on EFH will not be substantial, measures to mitigate, or otherwise offset proposed adverse impacts to EFH and other aquatic resources should be incorporated into the project planning and design. We appreciate that project activities have been designed to avoid and minimize impacts as practical, which includes best management practices (BMPs) that reduce turbidity and noise. Such BMPs include the use of a vibratory hammer or impact hammer with a wood cushion block and soft start technique, a full-length turbidity barrier surrounding the work areas, the use of an environmental dredge bucket, and ensuring vessels float during all stages of the tide. Additionally, the construction schedule anticipates limiting in water work to avoid spawning winter flounder and their early life stages (January 1 through May 31), migratory diadromous fish (March 31 through June 30), and overwintering species such as winter flounder and striped bass (November 15 through April 15). However, we disagree that compensatory mitigation is not necessary to offset the permanent impacts from shading.

The EFH assessment describes 1.31 acres of continuous shading of aquatic habitat associated with the floating barges. Shading results from the attenuation, interference or blocking of sunlight. Reduced light levels can affect primary production, which may adversely affect patterns of invertebrate abundance, diversity, and species composition (Nightingale and Simenstad, 200l). Structures that attenuate light may also adversely affect food webs by reducing macrophyte growth, soil organic carbon and by altering the density, diversity, and composition of benthic invertebrates that are prey for numerous fishery species (Alexander and Robinson, 2006; Whitcraft and Levin, 2007). Shading from over-water structures can adversely affect migratory fish by degrading habitat quality in, and near, the shadow cast by the structure and by altering behavior and predator-prey interactions (Nightingale and Simenstad, 2001; Hanson et al., 2003). The shadow cast by a structure may also increase predation on species by creating a light-dark interface that allows ambush predators to remain in darkened areas and wait for prey to swim by against an illuminated background, resulting in high contrast and high visibility (Helfman, 1981). Prey species moving around the structure may be unable to see predators in the dark area under the structure or have decreased predator reaction distances and times, thus making them more susceptible to predation (Helfman, 1981; Bash et al., 2001). The reduced-light conditions found under overwater structures limit the ability of fishes, especially juveniles and larvae, to perform these essential prey capture and predator avoidance activities (Johnson et al., 2008). Overall, it appears that overwater structures that create dark environments can reduce localized habitat value by impairing visual tasks (e.g., feeding, predator vigilance), reducing prey availability, and limiting habitat connectivity by constraining movements along shorelines (Munsch et al., 2017).

Because of the adverse effects that result from the shading of aquatic habitat from pile supported structures, these structures should be used only for water-dependent activities and limited in size to the minimum necessary. The FESS, while not water dependent, has been designed to minimize over water coverage through the stacking design of the energy storage units. The project also requires access to an existing electrical substation to provide for interconnection to the grid and must be within an industrial zoned location. According to the alternatives analysis, the next closest substation is over 10 miles away, has no headroom to support the project, and is zoned for commercial and residential use. The FESS has been designed to be constructed in an industrial use area located in close proximity to the Hudson Avenue 138 kV Substation. Upland storage was considered, but was not available in the vicinity of the approved substation due to the lack of space.

Although the project minimized the amount of overwater storage through stacking, compensatory mitigation should be provided to offset the impact to fish habitat from the 1.31 acres of continuous shading. A compensatory mitigation plan in accordance with the 2008 Compensatory Mitigation for Losses of Aquatic Resources Final Rule and NOAA's Mitigation Policy for Trust Resources, should be developed and provided to us for review. HESD staff are available to discuss options for compensatory mitigation. The Hudson-Raritan Estuary Comprehensive Restoration Plan may also offer some possible mitigation opportunities.

Essential Fish Habitat Conservation Recommendations

Pursuant to Section 305(b)(4)(A) of the MSA we recommend that you adopt the following EFH conservation recommendations to minimize or offset adverse impacts on EFH:

1) Continue to avoid in water work associated with dredging and installation of piles between November 15 through June 30, protective of overwintering winter flounder and striped bass (11/15-4/15), spawning winter flounder and their early life stages (1/1-5/31) and migrating diadromous fish (3/15-6/30).
2) Develop a compensatory mitigation plan to mitigate in accordance with the 2008 Final Mitigation Rule and NOAA's Mitigation Policy for Trust Resources for the 1.31 acres permanently impacted by shading. This plan should be provided to us for review and acceptance prior to finalizing the Environmental Assessment for the project.

Please note that Section 305(b)(4)(B) of the MSA requires you to provide us with a detailed written response to these EFH conservation recommendations, including a description of measures adopted by you for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with our recommendations, Section 305(b)(4)(B) of the MSA also indicates that you must explain your reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with us over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects pursuant to 50 CFR 600.920(k). This response must be provided within 30 days after receiving our EFH conservation recommendations and at least 10 days prior to final approval of this action. Please also note that further EFH consultation must be reinitiated pursuant to 50 CFR 600.920(j) if new information becomes available, or if the project is revised in such a manner that affects the basis for the above determination.

Endangered Species Act

Federally listed species may be present in the project area. Consultation, pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, may be necessary. The DOE will be responsible for determining whether the proposed action is likely to affect listed species. The determination of effects from the project along with justification for the determination, and a request for concurrence should be submitted to nmfs.gar.esa.section7@noaa.gov. After reviewing this information, our Protected Resources Division would then be able to conduct a consultation under Section 7 of the ESA if appropriate.

Conclusion

As always, we are available to coordinate with your staff so that this project can move forward efficiently and expeditiously as possible while still meeting our joint responsibilities to protect and conserve aquatic resources. If you have any questions or need additional information, please contact Jessie Murray in our Highlands, New Jersey field office at 732-872-3116 or Jessie.Murray@noaa.gov. Should you have any questions about the Section 7 consultation process in general, please contact Edith Carson-Supino at 978-282-8490 Edith.Carson-Supino@noaa.gov.

Sincerely,

Louis A. Chiarella
Assistant Regional Administrator
for Habitat and Ecosystem Services

cc:

NY District – S. Ryba
GARFO HESD – K. Greene
GARFO PRD – E. Carson-Supino
NYDEC – J. Socrates, C. Bauer
FWS –R. Connover, M. Ciappi
EPA – M. Finocchiaro
MAFMC – C. Moore
NEFMC – T. Nies, C. O’Keefe
ASFMC – R. Beal

References Cited

Alexander, C. R. and Robinson, H.M. 2006. Quantifying the Ecological Significance of Marsh Shading: The Impact of Private Recreational Docks in Coastal Georgia. Final Report prepared for Coastal Resources Division, Georgia Department of Natural Resources. 47 p.

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APPENDIX B-6 Consultation with NMFS Office of Protected Resources Section 7 of Endangered Species Act

Department of Energy
Washington, DC 20585

May 9, 2023

Ms. Jennifer Anderson
Assistant Regional Administrator for Protected Resources
Greater Atlantic Regional Fisheries Office
NOAA Fisheries
Via email: jennifer.anderson@noaa.gov

Re: NOAA Section 7 ESA Review of Floating Energy Storage System Project; Department of Energy Title XVII Innovative Energy Loan Guarantee Program

Dear Ms. Anderson:

Title XVII of the Energy Policy Act of 2005 (EPAct) established a Federal loan guarantee program for certain projects that employ innovative technologies and authorizes the Secretary of Energy to make loan guarantees available for those projects. NYC Energy LLC has applied for a loan guarantee pursuant to the U.S. DOE's Renewable Energy and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by EPAct, (REEE Projects). DOE is evaluating whether to provide a federal loan guarantee to NYC Energy LLC to support the development of the proposed Floating Battery Storage System (FESS) in Brooklyn, New York (the project). DOE is evaluating the project in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021).

In 2019, New York passed the Climate Leadership and Community Protection Act (CLCPA), which codified some of the most aggressive energy and climate goals in the country. The CLCPA establishes goals to reach net zero emissions in New York State. The act sets the goals to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030 and then to 85 percent below 1990 levels by 2050. Additional goals established by the act include that 70 percent of electric demand within the state is provided by renewable electricity by 2030 and 100 percent zero emission electricity by 2040. Energy storage will play a crucial role in meeting the climate goals established by the CLCPA. To that end, in January 2022 New York State doubled the state's 2030 energy storage deployment target from 3000 MW of storage to 6000 MW of storage by 2030. Energy storage will help to integrate clean energy into the grid that is generated by solar and onshore and offshore wind projects throughout the state.

The FESS would facilitate New York City's plans to decarbonize electricity generation and meet its clean energy mandates, including the retirement of fossil fuel-fired urban peaker plants. As part of these goals, the FESS would facilitate the delivery of new offshore wind generation directly to New York City. The project site in Wallabout Channel was chosen for its zoning designation (M3-1 for heavy industrial uses), its proximity to existing electrical infrastructure, and the consistency of the FESS with existing uses within the Brooklyn Navy Yard. The entire Brooklyn Navy Yard property is zoned for industrial use, including energy production or storage, and the FESS would be able to connect to the Hudson East Substation through existing rights-of-way, limiting the need for disturbance to public or private property.

The purpose of this letter is to submit a Biological Assessment for the Project to the National Oceanic and Atmospheric Administration (NOAA) Fisheries Greater Atlantic Regional Fisheries Office to document compliance with the Endangered Species Act of 1973, as amended (ESA). In accordance with Section 7 of the ESA, DOE has made the determination that the project being evaluated in the EA *may affect, but is not likely to adversely affect*, species listed as threatened or endangered by NOAA Fisheries. More information about the project and supporting analysis for this determination are provided below.

PROJECT DESCRIPTION

The proposed project would place three barges, each measuring 146 feet long by 130 feet wide (56,940 square feet total) and equipped with pre-installed battery energy storage containers and associated equipment within Wallabout Channel (**Enclosure 1**). Each barge would have a 100 MW capacity, for a total of 300 MW capacity for the Project. When fully loaded, the barges would have an estimated draft of 16 to 18 feet and would require dredging of the channel to the USACE authorized depth of 20 feet at mean low water (MLW) according to the U.S. Army Corps of Engineers 2004 Controlling Depth Report.[1] The channel was last surveyed in 2003. The barges would accommodate three levels of battery storage units and each barge would have a total height of approximately 65 to 67 feet above the main barge deck. The barges would be moored using up to twelve 24-inch diameter steel pipe piles spaced approximately 25 feet apart and installed in Wallabout Channel off Berth 20 of Pier K at the Brooklyn Navy Yard. The piles would anchor the barges in place but allow for vertical movement with the tide. In-water construction would include the dredging, pile installation, and mooring of the barges and would be completed over a period of approximately 12 months. Dredging is anticipated to occur over four to six weeks, pile driving over two to three weeks, and mooring the barges over 2 weeks. These in-water activities would be completed in accordance with all regulatory restrictions for in-water construction, including no in-water work from January 15 through May 31 to protect spawning winter flounder, no sediment disturbing activities from March 1 through June 30 to protect anadromous species, and no dredging from November 15 through May 20 to protect overwintering striped bass.

PROPOSED CONSTRUCTION ACTIVITIES

In-water construction activities include dredging of the project site in Wallabout Channel and installation of the mooring piles off Berth 20 of Pier K. Dredging is anticipated to be completed using a barge and two scows, and pile installation would be conducted using barge-based equipment. The FESS itself would be prepared and assembled in the Gulf of Mexico (exact location depends on the selected manufacturer) and would travel up the east coast and into the New York Harbor using established shipping channels. Some final assembly would take place when the barges arrive in Wallabout Channel. The barges would be maneuvered into position in Wallabout Channel once the piles are installed. Project activities that would be conducted on land include: installation of transformers and GIS breakers, trenching for the transmission line through NYC DOT right-of-way, repair of the bulkhead cap on Pier K, and construction of an emergency access road within the Brooklyn Navy Yard. The following sections describe these activities in detail.

DREDGING

Dredging would be conducted within about 5.2 acres in Wallabout Channel to the USACE authorized depth of 20 feet at MLW. During dredging, it is anticipated that one deck barge and two scows would be used to support equipment, storage of dredge materials, and transportation of materials for upland disposal at a licensed facility. A crew vessel may also be used to transport personnel to and from the barges. According to the most recent USACE Controlling Depth Report from 2004, water depths in 2003 ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location. A hydrographic survey was conducted in August 2022 to provide updated

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[1] https://www.nan.usace.army.mil/Portals/37/docs/civilworks/ConDep03-04/Wallabout%20Channel,%20NY.pdf?ver=2013-01-31-184500-830

bathymetry for Wallabout Channel that will be used to refine the dredging area for the Project (**Enclosure 2**). The survey identified water depths ranging from close to 0 feet at MLW near the head of the Channel to about 50 feet at its mouth. Within the presumed dredging area, water depths currently range from about 8 to 20 feet at MLW, potentially with localized shallower waters close to the bulkhead. To accommodate the 16 to 18-foot barge draft, approximately 81,500 cubic yards of sediment would be removed from the 5.2-acre dredge area within the Channel. Dredging would be conducted using an environmental bucket[2] with no barge overflow. Any debris encountered during dredging would be removed using the environmental bucket and separated from the dredged material onboard a deck barge via mechanical raking. Sediment sampling would be conducted in advance of any dredging required for the project in accordance with the April 7, 2023 New York State Department of Environmental Conservation Sediment Sampling Plan (**Enclosure 3**) to determine the proper treatment and disposal requirements for the material. Bottom sediments and debris would be transported for upland disposal at a licensed facility meeting these requirements. All dredging activities would be surrounded by a full-length weighted turbidity curtain[3] and would be conducted within seasonal work windows. The turbidity curtain would be secured at either end so it does not move significantly during the in-water work. Dredging would likely take about 4 to 6 weeks to complete. There would be no discharge of the dredged material into waters of the United States.

PILE INSTALLATION

The FESS would be moored in place using up to twelve 24-inch diameter steel pipe piles installed close to the Brooklyn Navy Yard shoreline which would anchor the barges in place but allow for vertical movement with the tide. The piles would be hollow and topped with a concrete cap. Installation of the piles would be conducted using a barge-based vibratory hammer once dredging is complete. If necessary, limited use of an impact hammer to seat the piles would be conducted using a cushion block and soft start. Overall, pile installation would be completed over approximately 2 to 3 weeks and would occur intermittently over the course of a workday. The piles would have a footprint of approximately 37.7 square feet on the bottom. Following pile installation, the 56,940-square foot (1.3-acre) FESS would be maneuvered into place and moored at the shoreline for the duration of NYC Energy's 30-year lease.

LAND-BASED ACTIVITIES

Landside modifications would be made at the Project Site to Berth 20 of Pier K within the Brooklyn Navy Yard to accommodate the moored FESS and to the Hudson Avenue East Substation in Vinegar Hill. A new electrical interconnection consisting of two 138 kV cables would be installed to connect the FESS to the substation. Modifications to Pier K to accommodate the moored FESS would include the demolition of a small existing structure on the pier that formerly housed an unrelated substation, installation of electrical connections to the barges and switching equipment on the pier, grading and repairing of the bulkhead cap where the barges would be moored and construction of an emergency access road and security fencing around the Project Site. Following pile installation and connection of the piles to the shoreline, the bulkhead cap would be graded and repaired using land-based equipment over approximately 475 linear feet of the shoreline. The transformers and breakers would each be installed on a concrete foundation pad supported by 2 or 4 pipe piles driven into the soil. Measures would be implemented during these modifications to Pier K to minimize loss of debris to Wallabout Channel. The transmission line would be contained within 2 to 10-inch PVC conduits and would run from the substation through the Brooklyn Navy Yard and city streets over approximately 9,250 linear feet, primarily adjacent to existing utilities within the streetbed. The route would be established using a backhoe and dump trucks to remove and restore the trenched areas. A total of

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[2] An environmental bucket is similar to a conventional clamshell dredge but has additional features that typically include a combination of covers, exterior pulleys, and sealed joints intended to reduce the amount of sediments that can spill or flow out of the bucket during dredging activities (Wang et al. 2022).

[3] The turbidity curtain would likely be a Type III turbidity curtain or silt curtain, which is intended to control sediment and runoff in moving waters and moderate wind and wave conditions. Examples of Type I, Type II, and Type III turbidity curtains can be found at https://pipefloat.com/turbidity-curtains.

10 to 12 manholes would be added along the route for access. These land-based construction activities would not result in impacts to aquatic resources, including the bulkhead repair which would not extend beyond the surface.

BEST MANAGEMENT PRACTICES AND MINIMIZATION MEASURES

The project would incorporate Best Management Practices (BMPs) to avoid and minimize to the greatest extent possible any potential direct and indirect impacts to federally listed species. BMPs would be required as a condition of any permits authorizing the project, and the BMPs described below have been incorporated into the evaluations below under "Effects Evaluation" for shortnose sturgeon, Atlantic sturgeon, and sea turtles. Consistent with NOAA Fisheries and Federal Highway Administration (FHWA) guidance (NMFS and FHWA 2018), NYC Energy is proposing the following measures to avoid and minimize potential direct and indirect effects to sturgeon and sea turtles resulting from: underwater noise during pile installation, turbidity and sedimentation, reduced water quality, vessel interaction, and habitat alteration.

Pile Installation

Components of the project that would result in increased underwater noise include vibratory and impact pile driving during installation of the mooring piles. A vibratory hammer would be used to the extent possible, and an impact hammer would only be used for the last few feet to seat the piles at their final depth. Pile installation would be subject to the following avoidance and minimization measures:

- Use of a vibratory hammer to the extent possible;
- Use of a soft start such as pile tapping prior to full energy impact hammering; and
- Use of a cushion block when impact hammering.

Turbidity and Sediment Resuspension

Sediment disturbing activities associated with the project, including dredging and pile installation, would be subject to the following avoidance and minimization measures:

- Use of a full-length turbidity curtain during all dredging and construction activities;
- Use of posted lookouts and measures to identify and remove any observed sturgeon from within the deployed turbidity curtain;
- Dredging only where needed within the project site to minimize the area affected;
- Dredging would take place within the extent of the turbidity curtain to the extent practicable;
- Use of an environmental bucket and reduced lift speeds[4] during dredging to minimize overflow of sediment into the water while the bucket is being lifted to the scow;
- Dredged sediments would be placed in a scow, dewatered on the scow such that there is no overflow back into the waterbody, and transported offsite for disposal;
- Any debris encountered during dredging would be separated from dredged sediments onboard the barge and transported offsite for disposal;
- Following construction, the mooring piles would not alter the natural sediment accretion rates or patterns within the Wallabout Channel or East River when compared to the existing characteristics of the site.

Vessel Movement

During all dredging and construction activities for the project, the use of construction vessels, including barges, tugs, and crew vessels, would be subject to the following avoidance and minimization measures:

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[4] Reducing the lift speed is an operational modification that limits the potential for sediment to escape the bucket as it is being lifted through the water column.

- Number of vessels would be limited to approximately 1 crew boats, 2 scows, and 1 deck barge at any given time during construction;
- All construction vessels would be shallow draft (5 to 10 feet) and would maintain low speeds (less than 5 knots for push boats and tugs, and less than 10 knots for crew boats); and
- Use of posted lookouts and measures to slow down and avoid any observed sturgeon when operating project vessels in areas where they may be present.

Habitat Alteration

Installation of the mooring piles, use of barges, and shading from the project could result in temporary and permanent habitat alteration. These activities would be subject to the following avoidance and minimization measures:

- Sturgeon would be prevented from entering areas within the turbidity curtain temporarily deployed around the project site, but the turbidity curtain would be installed only around the immediate project site to minimize this area;
- Dredged area beneath the FESS would create deeper waters and additional foraging habitat that could be used by sturgeon migrating through the action area;
- Shading by the project would be limited to the area beneath the barges, which would continue to allow light to penetrate the water column along the barge edge at certain times of day; and
- Artificial lighting on the barges, as needed, would be oriented to avoid illumination of the surrounding waters at night to the greatest extent practicable, with the exception of any navigational lighting required by the U.S. Coast Guard.

DESCRIPTION OF THE ACTION AREA

The action area for purposes of ESA Section 7 review and consultation is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR §402.02). The action area within Wallabout Channel is the 5.2 acres being dredged, the center of which is located approximately at 40.706525N -73.970176W, and the mooring location of the barges within the dredged area. For this project, the action area includes the Wallabout Channel within the 5.2-acre area that would be dredged and the removal of up to 81,500 CY of sediment; the 37.7 square feet of benthic habitat occupied by the new piles; the 1.3-acre area of aquatic habitat that would be shaded by the FESS; and the area within the turbidity curtain deployed during dredging. The action area also includes the 100-meter (328-foot) radius to account for the maximum distance of behavioral impacts on protected species due to sound from the pile driving activities. The contractor would conduct dredging activities within a full-length turbidity curtain, which would contain sediment plumes resulting from dredging, estimated at approximately 2,400 feet based on NMFS resources. The action area includes all routes that would be traversed by vessels necessary to construct the project, the longest of which would likely comprise the waters between the project area and the upland dredged material disposal location within the New York metropolitan area. For the most part, vessels would remain in the immediate project area during construction and would only move across the New York Harbor to dispose of dredge spoils. Wallabout Channel is in a heavily industrialized part of New York City off the East River, and the portion of the East River where it is located is heavily used by recreational vessels, ferries, and commercial shipping operations. The adjacent Brooklyn Navy Yard is also occupied by various large vessels the move in and out of the area.

HABITAT CHARACTERISTICS IN THE ACTION AREA

The project site is in Wallabout Channel, a manmade inlet in the lower East River about 2 miles upstream of the Battery in Manhattan. Wallabout Channel is on the northeast boundary of the Brooklyn Navy Yard which historically was a naval shipbuilding facility and now supports a variety of industrial and commercial uses. The action area is located within a highly developed section of New York City where the shoreline is bulkheaded or otherwise composed of solid man-made shoreline protection structures. The Channel is approximately 280 feet wide at the project site, and the mooring location of the barges is located about 900 feet from the confluence of the Channel with the East River. Wallabout Channel is navigable under USACE regulations and has an authorized depth of 20 feet at MLW but has not had a controlled depth report by the USACE since 2004. The USACE last surveyed the channel in 2003. At the time of the 2004 Controlled Depth Report, water depths in Wallabout Channel ranged from about 20 feet at MLW at the mouth of the channel and decreased to between 7 and 15 feet in the vicinity of the proposed mooring location. Average salinity in this area of the East River is about 23 psu and depends on the tidal direction and amount of freshwater inflow. Surface temperatures range from 32°F to 80°F. The substrate comprises primarily silt and clay with pockets of sand in the Channel, and the East River beyond the project site provides some areas of gravel substrate.

NMFS LISTED SPECIES AND CRITICAL HABITAT IN THE ACTION AREA

According to the NOAA Fisheries Section 7 website, there are two species of fish and four species of sea turtle listed under the ESA that occur or have the potential to occur in the action area and may be affected by the project. ESA species include:

- Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) – Endangered except for Gulf of Maine Distinct Population Segment (DPS), which is Threatened (77 FR 5880 and 77 FR 5914)
- Shortnose sturgeon (*Acipenser brevirostrum*) – Endangered (32 FR 4001, Recovery Plan: NMFS & USFWS 1998)
- Green sea turtle (*Chelonia mydas*) – Threatened (81 FR 20057, Recovery Plan: NMFS and USFWS 1991)
- Kemp’s ridley sea turtle (*Lepidochelys kempii*) – Endangered (35 FR 18319, Recovery Plan: NMFS et al. 2011)
- Leatherback sea turtle (*Dermochelys coriacea*) – Endangered (35 FR 8491, Recovery Plan: NMFS and USFWS 1992)
- Loggerhead sea turtle (*Caretta caretta*) – Threatened (76 FR 58868, Recovery Plan: NMFS and USFWS 2008)

Atlantic Sturgeon

There are five DPSs of Atlantic sturgeon listed as threatened or endangered. Atlantic sturgeon originating from the New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs are listed as endangered; the Gulf of Maine DPS is listed as threatened. The marine range of all five DPSs extends along the Atlantic coast from Canada to Cape Canaveral, Florida. Therefore, Atlantic sturgeon from any DPS could be present in the action area.

Atlantic sturgeon are anadromous bottom-feeding fish that spawn in freshwater sections of the Hudson River and overwinter throughout the New York Bight, off the south shore of Long Island, and throughout Long Island Sound (Waldman et al. 1996, Bain 1997, Savoy and Pacileo 2003). Adults migrate from the ocean upriver to spawn in fresh water above the salt front in the Hudson River from late April to August (Dovel and Berggren 1983). The primary spawning area for Atlantic sturgeon is near Hyde Park, New York (river mile 83) in the Hudson River (NMFS 2013). Females migrate from the river back to marine waters following spawning, but males may remain in the river until October or November. Early life stages (i.e., eggs, larvae, and young-of-year) are intolerant of salinity and occur primarily in freshwater habitats; young-of-year Atlantic sturgeon exhibit poor survival at salinities ranging from 5 to 10 ppt, and older juveniles may tolerate salinities up to 12 ppt (Kynard and Horgan 2002, ASMFC 2012). Juveniles may forage throughout the river during most of the year and can be found as far upriver as the Troy Dam, with the exception of the winter months when they migrate to marine overwintering areas (Dovel and Berggren 1983). According to surveys conducted by NMFS and multiple state agencies in the region, the majority of

Atlantic sturgeon occurred in waters between 10 and 15 meters (32 and 49 feet) in depth (Dunton et al. 2010).

Atlantic sturgeon migrate through the East River and Upper Bay, as these waterbodies connect the Hudson River to marine waters in the Atlantic Ocean and Long Island Sound (Savoy and Pacileo 2003, Tomichek et al. 2014). Based on the spatial distributions and seasonal movement patterns within the New York Harbor and Hudson River, Atlantic sturgeon adults and subadults could occur at the project site year-round as they migrate and opportunistically forage in the waters of the East River and connected inlets like the Wallabout Channel. Non-spawning Atlantic sturgeon prefer deeper, open marine waters (Hatin et al. 2002, Hatin et al. 2007, Savoy and Pacileo 2003, Dadswell et al. 1984) and as such, do not overwinter or otherwise spend prolonged periods of time in the East River or connected waterbodies. Juveniles, larval stages, and eggs require lower salinity waters and do not occur in the East River. Therefore, these life stages are not expected to be present at the project site or in surrounding waters.

Shortnose Sturgeon

Shortnose sturgeon are anadromous bottom-feeding fish that can be found throughout the Hudson River from the Battery at the mouth of the river to the Federal Dam at Troy. Spawning occurs from late March to mid-May in the region from the Federal Dam downstream to Coxsackie, NY (between river miles 152 and 118) in the Hudson River (Dovel at al. 1992, Bain 1997). Early life stages from eggs to post yolk-sac larvae remain near the spawning grounds for approximately eight weeks post-spawn (Buckley and Kynard 1981) and larvae are most commonly concentrated in deeper channel waters where the current is stronger (Hoff et al. 1988, Dovel et al. 1992). Juveniles in the Hudson River are distributed throughout the mid-river region during summer and are found in the Kingston and Haverstraw Bay regions by late fall and early winter (Dovel et al. 1992, Bain et al. 1998, Geoghegan et al. 1992). Adult shortnose sturgeon range between river miles 23 and 110 during the summer months, and then congregate in overwintering areas at specific locations within that range (NMFS 2013). The New York Harbor, including the East River and connected waterbodies, is at the extreme southern limit of this population's overwintering range due to the intolerance of shortnose sturgeon to high salinity levels (Dadswell et al. 1984, Jenkins et al. 1993). Occasionally, shortnose sturgeon adults and subadults will move between spawning and overwintering habitats in the Hudson River and Connecticut River (SSSRT 2010), which are connected by the East River and Long Island Sound.

Based on the spatial distributions and seasonal movement patterns within the region, transient adult and subadult shortnose sturgeon could occur in the East River from April through November as they move between the Hudson River and Connecticut River. These individuals may opportunistically forage in the East River or Wallabout Channel as they migrate but are not expected to remain in the area for any prolonged period. Juveniles, larval stages, and eggs require lower salinity waters and do not occur in the East River. Therefore, these life stages are not expected to be present at the project site or in surrounding waters.

Sea Turtles

New York and New Jersey waters may be warm enough to support juvenile Kemp's ridley sea turtles and adult and juvenile green, leatherback, and loggerhead sea turtles from May through November (NMFS 2022). Loggerhead and green sea turtles feed on benthic invertebrates and aquatic vegetation; Kemp's ridleys feed on benthic invertebrates in coastal areas; and leatherback sea turtles primarily prey on jellyfish in offshore habitats. Leatherback sea turtles tend to remain off the coast in deeper pelagic waters of the Atlantic Ocean and are unlikely to occur in the East River or Wallabout Channel at any time of year (USACE 2001, NYSDOS 2013). The other three species can be found in the New York Bight and waters off Long Island during the warmer months of summer and fall and have the potential to occur in the East River and connected waterbodies during these times of year. However, these turtles show a strong preference for bays and other sheltered areas off eastern Long Island that provide rich food sources (Standora et al. 1989, Morreale and Standora 1998), far from the project site. When leaving Long Island Sound for the Atlantic Ocean in the winter, they usually do so by heading east rather than traveling west down the East River and through the New York Harbor (Standora et al. 1990). The East River is considered to be of marginal or lower quality sea turtle habitat, and evidence of sea turtles frequenting the area is scarce despite extensive monitoring and sampling efforts (Ruben and Morreale 1999, USACE 2001). Any occurrence of sea turtles near the project site in Wallabout Channel would be limited to rare and brief exploration by transient individuals. Sea turtles do not breed in these waterbodies or reside there year-round.

EFFECTS DETERMINATION

The effects or stressors of the project that could potentially have an effect on threatened or endangered species include vessel traffic, sediment resuspension, underwater noise during pile driving, temporary loss of foraging habitat within the turbidity curtain and ensonified areas, habitat modification in the dredge area, and permanent loss of habitat in the footprint of the piles and from shading by the FESS.

VESSEL TRAFFIC

The analysis considered three elements: 1) the existing baseline conditions, 2) the action and what it adds to existing baseline conditions, and 3) new baseline conditions (the existing baseline conditions and the action together). DOE has determined that vessel traffic added to baseline conditions as a result of the project would be unlikely to adversely affect ESA-listed species for the following reasons.

Adding vessels necessary to construct the project to the existing baseline would not increase the risk that any vessel in the area would strike an individual or would increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured or detected. The baseline risk of a vessel strike within the lower East River is unknown. Existing maritime traffic on the river in the project area includes freight and barge traffic, and other commercial and recreational boats. Wallabout Channel itself does not currently accommodate large vessels due to its limited water depths, but recreational vessels may occasionally use the channel. For the project, only three side by side barges would be permanently added to the waterway and they would remain moored at the shoreline unless they need to be moved in an emergency. The addition of the barges would not result in increased risk of a vessel strike because it would not regularly move within the action area.

As discussed above under the description of the project, a minimal number of vessels would be added to the baseline during dredging activities: one crew boat each day, two scows, and one deck barge. The location of the construction vessels would depend on the contractor selected for the work, but they would most likely originate from an existing homeport located in New York City, New Jersey, or Connecticut. Pile installation would require the use of one barge. All vessels would be in Wallabout Channel during construction with the exception of the scows that would transport dredged material to the upland disposal facility within the New York metropolitan region. This represents a small increase in vessel activity in addition to the baseline for similar vessels. Movement of vessels necessary to complete the project would largely be limited to the Channel and areas just outside the Channel in the East River, and vessel speeds would be relatively slow (i.e., less than 5 knots for larger vessels and less than 10 knots for smaller crew boats). During dredging activities, the scows would make periodic trips to the upland disposal facility such as Claremont Clean Earth, a licensed facility located in Jersey City, New Jersey, located approximately 4 miles from the project site. Drafts would likely range from 5 to 10 feet across vessel types, which would provide at least 10 feet of clearance from the bottom at MLLW once the area is dredged. The addition of construction vessels would also be intermittent, temporary, and restricted to a small portion of the overall action area on any given day. After dredging is complete, only one barge would need to be in the action area for the duration of pile installation. As such, any increased risk of a vessel strike caused by the project would be too small to be meaningfully measured or detected. As a result, the effect of the action on the risk of a vessel strike in the action area would be insignificant.

SEDIMENT RESUSPENSION

Dredging and pile installation for the project have the potential to result in sediment resuspension and increased turbidity within the action area. The use of a full-length turbidity curtain around the project site would minimize the potential effects of sediment resuspension and increased turbidity in the waterway. Sediment disturbance associated with installation of the mooring piles would result in minor, short-term increases in total suspended sediment (TSS) of between 5 to 10 mg/L within approximately 300 feet of the pile being driven (FHWA 2012), and re-deposition of sediments. Pile installation would be conducted intermittently over the course of a workday, rather than continuously throughout the construction duration, which would allow resuspended sediments to dissipate as the work is conducted. The use of a turbidity curtain during pile installation would further minimize the potential for adverse effects from sediment resuspension associated with the piles. The turbidity curtain would also prevent sturgeon and sea turtles from entering the area, minimizing their potential exposure to the sediment plumes. Resuspended sediments from pile installation would not result in long-term effects to any of these species. The TSS concentrations expected for pile driving (5 to 10 mg/L) are below levels shown to have adverse effects on estuarine species, typically up to 1,000 mg/L, and the small resulting sediment plume, which would be contained within the turbidity curtain, would settle out of the water column within a few hours. Based on information from NMFS, specific data regarding the effects of TSS on juvenile and adult sea turtles is not available. While a temporary increase in TSS levels may cause sea turtles to alter their normal movements, these movements would be minor and would be too small to be meaningfully measured or detected.

Dredging of 5.2 acres within the Channel would result in resuspended sediment and elevated turbidity concentrations within the action area. Based on information from NMFS, TSS concentrations associated with mechanical clamshell bucket dredging operations have been shown to range from 105 mg/L in the middle of the water column to 445 mg/L near the bottom (USACE 2001). The project would use an environmental bucket for dredging, which would minimize the amount of sediment released from the bucket as it is raised through the water column for placement in the scow. Plumes associated with dredging have been shown to dissipate to background levels within 600 feet of the source in the upper water column and 2,400 feet in the lower water column, regardless of the type or size of the bucket used. Based on this information, turbidity would be highest in the immediate vicinity of the bucket and would dissipate within a 2,400-foot radius of the dredge location. The northern extent of the dredging area is within 2,400 feet of the western shoreline of the East River. However, it is extremely unlikely that the sediment plume would ever reach the opposite shoreline, given the use of a turbidity curtain during dredging and the speed of currents in the East River, which are approximately 4.5 to 5 feet per second near Wallabout Channel (NOAA 2021). The East River currents would result in rapid dissipation of suspended sediments should the plume extend outside Wallabout Channel at any time. The TSS concentrations expected for mechanical dredging (up to 445 mg/L) are below levels shown to have adverse effects on fish, typically up to 1,000 mg/L, and the sediment plume would settle out of the water column within a few hours. The temporary nature of elevated TSS would result in minor alterations in the movements of sea turtles if they are present in the area. Additionally, dredging would be conducted within a full-length turbidity curtain to the extent practicable, and visible sediment plumes would be allowed to settle before moving the curtain to allow scows to enter or exit the project site. Any sediment resuspended during these activities would be contained within the perimeter of the turbidity curtain and would settle out of the water column within a few hours while the turbidity curtain remains deployed.

Sediment resuspension resulting from pile installation or dredging would have insignificant effects on water depth, water flow, dissolved oxygen levels, salinity, temperature, or the ability for sturgeon or sea turtles to migrate in the action area. Any sediment plume resulting from project activities would be contained within the turbidity curtain and would not be expected to reach the East River when the curtain is moved to allow scows to enter or exit the project site. Adult and subadult sturgeon and adult or juvenile sea turtles that could be present in the action area would be able to swim away from areas temporarily affected by sediment resuspension and would be expected to remain in the East River rather than entering Wallabout Channel at these times. The turbidity curtain would also prevent sturgeon and sea turtles from entering the project site, and thus would prevent them from being exposed to the highest levels of turbidity produced during pile installation and removal at the end of the lease, debris removal, and dredging activities. Given that increases in suspended sediment would be temporary, minimal, localized to the vicinity of construction activities, and contained within a full-length turbidity curtain, and given that sturgeon and sea turtles would be able to easily move away from the project site, any effects would be too small to be meaningfully measured or detected. Additionally, sediment disturbing activities would be conducted outside the seasonal work windows to minimize potential impacts to winter flounder (January 15 through May 31), overwintering striped bass (November 15 through May 20), and migrating anadromous species (March 1 through June 30), which would also provide protection for ESA species during these windows. As a result, the effect of sediment resuspension on ESA species would be insignificant.

UNDERWATER NOISE

The greatest potential for underwater noise impacts to shortnose or Atlantic sturgeon or sea turtles from the project would be associated with vibratory and potential impact hammering during installation of the mooring piles. They would be installed using a vibratory hammer to the extent possible and using a soft start and cushion block if impact hammering is required. All pile installation would be completed within a full-length turbidity curtain surrounding the project site.

As described in detail below, for this project, the distance to the 187 dB cSEL (or 150 dB sSEL)[5] isopleth associated with vibratory or cushioned impact hammering is no greater than 63.3 meters (208 feet) for sturgeon. Underwater noise levels would not reach the 226 or 232 dB Peak levels that could result in injury to sea turtles. To be exposed to potentially injurious levels of noise during pile driving, a sturgeon would need to be within 70 meters of the pile being driven to be exposed to this noise for any prolonged time period. This would be extremely unlikely to occur as it is expected that sturgeon would modify their behavior at 106.7 meters and quickly move away from the area before cumulative injury levels are reached (**Table 3**). Sea turtles would modify their behavior at a maximum distance of 23.3 meters from the pile being driven (**Table 4**). The turbidity curtain would provide additional protection, as it would prevent sturgeon and sea turtles from getting close to the pile driving activities where the noise levels would be highest. Given the small distance individuals would need to move to avoid the disturbance levels of noise, any effects would not be able to be meaningfully measured or detected. Therefore, the effects of noise on sturgeon and sea turtles would be insignificant.

As recommended by NMFS, a vibratory hammer would be used to the extent feasible, and the minimal impact hammering that would be required to seat the piles would be conducted using a cushion block to minimize underwater noise impacts. Pile tapping just prior to cushioned impact hammering would deter fish and sea turtles from the immediate vicinity of pile driving, outside the turbidity curtain. The projected noise at the source and distance to relevant thresholds for species in the action area was determined based on the NMFS Greater Atlantic Regional Fisheries Office (GARFO) Acoustic Tool spreadsheet (version updated September 14, 2020). The estimated sound levels and distances to species injury and behavioral thresholds associated with the project are presented in Tables 1 through 3. Pile installation would be limited to periods outside the in-water construction restricted windows (November 15 through June 30) to avoid impacts to spawning winter flounder, overwintering striped bass, and migrating anadromous species, which would also avoid impacts to sturgeon and sea turtles in the action area.

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[5] Cumulative sound exposure level, or cSEL, refers to the energy accumulated over multiple strikes or continuous vibration over a period of time. The single strike SEL, or sSEL is the amount of energy in one strike of a pile.

Table 1
Proxy Projects for Estimating Underwater Noise

Project Location	Water Depth (m)	Pile Size (inches)	Pile Type	Hammer Type	Attenuation Rate (dB/10m)
Rodeo, CA – San Francisco Bay, CA	5	24”	Steel Pipe	Vibratory	3
Rodeo, CA – San Francisco Bay, CA	5	24”	Steel Pipe	Cushioned Impact	3

Table 2
Proxy-Based Estimates for Underwater Noise

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB_{Peak})	Estimated Pressure Level (dB_{RMS})	Estimated Single Strike Sound Exposure Level (dB_{sSEL})
24” Steel Pipe	Vibratory	193	179	168
24” Steel Pipe	Cushioned Impact	192	178	167

Table 3
Estimated Distances to Sturgeon/Salmon Injury and Behavioral Thresholds

Type of Pile	Hammer Type	Distance (m) to 206dB_{Peak} (injury)	Distance (m) to sSEL of 150 dB (surrogate for 187 dBcSEL injury)	Distance (m) to Behavioral Disturbance Threshold (150 dB_{RMS})
24” Steel Pipe	Vibratory	NA	70.0	106.7
24” Steel Pipe	Cushioned Impact	NA	66.7	103.3

Table 4
Estimated Distances to Sea Turtle Injury and Behavioral Thresholds

Type of Pile	Hammer Type	Distance (m) to Sea Turtle TTS (SEL weighted) 189 dB_{RMS}	Distance (m) to Sea Turtle TTS (Peak SPL) 226 dB_{Peak}	Distance (m) to Sea Turtle PTS (SEL weighted) 204 dB_{SEL}	Distance (m) to Sea Turtle PTS (Peak SPL) 232 dB_{Peak}	Distance (m) to Sea Turtle Behavioral Threshold 175 dB_{RMS}
24” Steel Pipe	Vibratory	NA	NA	NA	NA	23.3
24” Steel Pipe	Cushioned Impact	NA	NA	NA	NA	20.0

Exposure to underwater noise levels of 206 dB Peak and 187 dB cSEL can result in injury to sturgeon, and exposure to noise levels of 226 or 232 dB Peak can result in injury to sea turtles. In addition to the “peak” exposure criteria which relates to the energy received from a single pile strike, the potential for injury to sturgeon exists for multiple exposures to noise over a period of time; this is accounted for in the cSEL threshold for sturgeon. The cSEL is not an instantaneous maximum noise level but is a measure of the accumulated energy over a specific period of time (e.g., the period of time it takes to install a pile). While it is not possible to accurately calculate the distance to the 187 dB cSEL isopleth, we calculate the distance to the 150 sSEL isopleth. The further away a fish is from the pile being driven, the more strikes it must be exposed to in order to accumulate enough energy to result in injury. At some distance from the pile, a fish is far enough away that, regardless of the number of strikes it is exposed to, the energy accumulated is low enough that there is no potential for injury.

Behavioral effects, such as avoidance or disruption of foraging activities, may occur in sturgeon exposed to noise levels above 150 dB RMS or sea turtles exposed to noise levels above 175 dB RMS. With the pile driving activities, it is expected that underwater noise levels would be below 150 dB RMS at distances beyond a maximum of 106.7 meters (350 feet) and below 175 dB RMS at distances beyond a maximum of 23.3 meters (76 feet) from the pile being installed. It is reasonable to assume that a sturgeon or sea turtle, upon detecting underwater noise levels at or above the behavioral thresholds, would modify their behavior such that it redirects its course of movement away from the ensonified area surrounding the project site. If any movements away from the ensonified area do occur, it is extremely unlikely that this avoidance will affect essential behaviors, as the East River is sufficiently wide (over 2,200 feet) outside the Wallabout Channel where the pile installation would occur to allow fish to avoid the ensonified area and continue to forage and migrate. While the majority of the width of Wallabout Channel, which is approximately 300 feet wide, would be exposed to elevated noise levels during pile driving, pile tapping and/or slow start techniques would deter fish and sea turtles from the immediate vicinity, and individuals would likely avoid entering Wallabout Channel once pile installation is occurring at full strength. The turbidity curtain would further exclude sturgeon and sea turtles from the immediate area of pile driving during installation. Therefore, the effect of underwater noise on ESA species would be insignificant.

HABITAT MODIFICATION

Shading by construction vessels and the FESS that would be moored to the shoreline would not significantly affect benthic habitat, as light would still penetrate most of the Channel over the course of the day, and similar habitat would continue to be available in the vicinity. Mooring the FESS would result in a 56,940-square foot (1.3-acre) increase in overwater coverage compared to the existing conditions in the Channel, which would not have a significant adverse impact on sturgeon or sea turtles in the action area. Sturgeon and sea turtles that forage and/or migrate through the action area would most likely occur in deeper waters towards the beginning of Wallabout Channel or in the East River, which would not be affected by construction vessels or the FESS. The construction vessels would be moved periodically during construction, so the area occupied by the vessels would change frequently and habitat would only be shaded for short durations. Installation of the mooring piles would result in a 37.7-square foot decrease in benthic habitat, which would not represent a substantial reduction in foraging opportunities for sturgeon or sea turtles, and foraging habitat would continue to be available within the action area. Because the mooring piles would occupy a very small area in the Channel next to the bulkhead, they would not result in changes to sediment accretion rates or patterns of deposition within the project site. Therefore, the effects of habitat modification from overwater coverage and pile installation would be insignificant.

Dredging in Wallabout Channel would result in the modification of approximately 5.2 acres of shallow water habitat within the action area. Current depths within the Channel range from about 20 feet at MLW at the mouth but decrease shortly thereafter to 7 to 14 feet at MLW, which does not represent optimal habitat for shortnose or Atlantic sturgeon or sea turtles. This area would be deepened to the authorized depth of 20 feet at MLW. Dredging would not alter the substrate within the Channel, which comprises silt and clay sediments with pockets of sand. Removal of the surface sediments would expose deeper subsurface sediments, which would be sampled prior to dredging to determine levels of contamination, if present. Dredging would be conducted in accordance with the measures specified in permits issued by the USACE and NYSDEC to minimize impacts to aquatic life due to contaminant concentrations in the exposed sediment, if applicable. The dredged area would undergo some natural deposition of sediments over time, and the deeper waters would allow flushing to occur such that the exposed sediments would not have a long-term impact on water quality in the action area. The dredging would create deeper water habitat of up to 20 feet deep at MLW over soft substrate which would be suitable for sturgeon and sea turtles that opportunistically forage in shallower nearshore waters while migrating through the East River. The sediment plume associated with dredging activities would not alter substrate characteristics outside the dredged area, as resuspended sediments would be contained within the turbidity curtain during construction. Any sediment resuspended during dredging would be expected to settle relatively quickly over similar substrate within Wallabout Channel. Benthic organisms would be expected to quickly recolonize the dredged area, as similar habitat is present in the surrounding area that would be unaffected or minimally affected by the project activities and would serve as the source of colonizing invertebrates. In the time between dredging and recolonization, sturgeon and sea turtles would be able to forage in similar habitat nearby. Therefore, the effects of habitat modification from dredging on sturgeon and sea turtles would be insignificant.

CONCLUSIONS

Based on the analysis that all effects of the project when added to the baseline would be insignificant and/or discountable, DOE has determined that the project is not likely to adversely affect any listed species or critical habitat under NOAA Fisheries' jurisdiction. We certify that we have used the best scientific and commercial data available to complete this analysis.

Sincerely,

David Oster
Environmental Protection Specialist
U.S. Department of Energy

Encl: 1 – Project Location Map
2 – August 2022 Wallabout Channel Hydrographic Survey
3 – NYSDEC Sediment Sampling Plan

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ENCLOSURE 1

Project Location

Figure 1

NYC ENERGY 300 MW FLOATING BESS

ENCLOSURE 2

S. T. HUDSON ENGINEERS, INC.
PROFESSIONAL ENGINEERS & CONSULTANTS

Halmar – Wallabout Channel

Bathymetric & Geophysical Survey - Final Memo

Survey Date:

September 2022

Project:

22-135

Report for:

HALMAR
International

Submitted by:

S. T. Hudson Engineers, Inc.
900 Dudley Avenue
Cherry Hill, New Jersey 08002
Phone: +1 856.342.6600
Email: info@sthe.com

Report Authorization and Distribution

Authored: L. Andrews & L. Quas

Approved: S. MacDonald

Date	Rev	Description
21-Sept-2022	0	Issued for Initial Comment
22-Sept-2022	1	SSS Contact Table Added
23-Sept-2022	2	Reference NAVD88 to MLW Added

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1 Project Summary

1.1 Introduction

S. T. Hudson Engineers, Inc. (Hudson) was contracted by Halmar International, LLC (Halmar) to perform bathymetric and geophysical survey services within Wallabout Channel, New York (Figure 1). The goal of the survey was to provide accurate bathymetry and location of potential seafloor hazards to support future dredging operations in the area. Data collection included the following sensors: a multibeam echosounder (MBES), a side scan sonar (SSS), and a vessel-based LiDAR system.

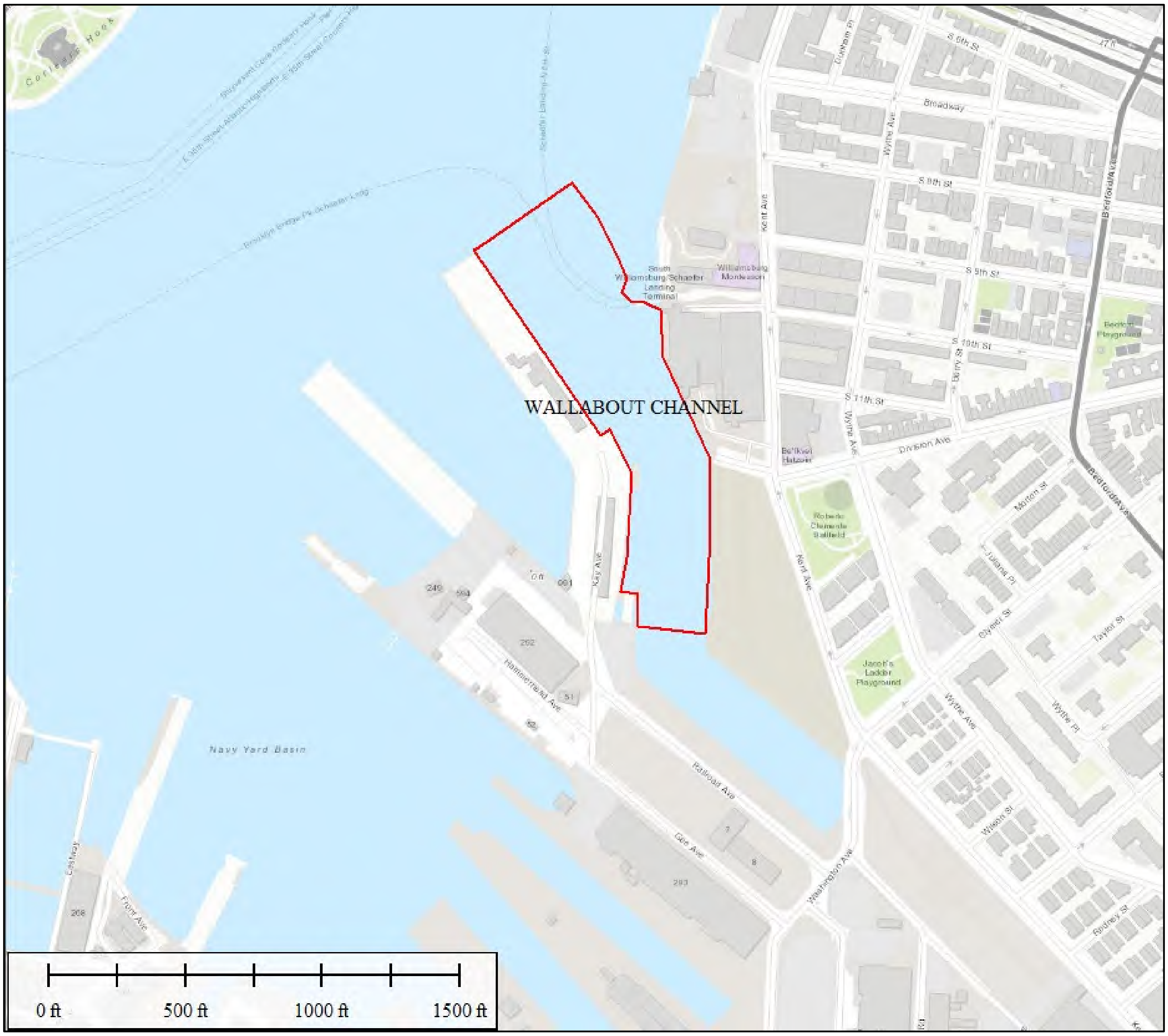


Figure 1. Survey Area in Wallabout Channel

MBES data, using a Norbit iWBMS, were acquired to obtain accurate depths of the seafloor and provide positional QC on any noted seafloor contacts. SSS data, using an EdgeTech 4125, were acquired to detect objects on the bottom that could pose a hazard to planned construction actions. LiDAR data, using a Carlson Merlin, were acquired at both high and low tide to obtain adequate coverage and overlap with the MBES dataset.

All geophysical and hydrographic survey equipment was mobilized and operated aboard the M/V *Yeti*. Navigation was provided at a fixed point on the survey vessel; known, measured offsets were applied to the reference point of each sensor to correctly place the geophysical and hydrographic data within the project coordinate system. MBES and SSS equipment were concurrently operated aboard the vessel. The MBES was mounted to the vessel, while the SSS was bow-towed.

The horizontal reference system for the project was NAD83 2011 US State Plane New York Long Island, US survey feet. The primary vertical reference for the MBES dataset was North American Vertical Datum of 1988 (NAVD88). Data were also supplied in Mean Low Water (MLW), which was applied using NOAA's VDatum for an offset of 2.49 ft from NAVD88.

Field operations on board the M/V Yeti began on the 29th of August 2022 and concluded on the 30th of August 2022. Quality assurance and control (QAQC) of data were performed onboard in real-time; data were then taken ashore and processed at the Hudson office in Cherry Hill, NJ for further QAQC and coverage checks.

2 Data Processing

Data processing was done off site from the project location in the Cherry Hill, NJ office. Data collected on the vessel was copied to an external hard drive at the end of each survey day. Data was uploaded overnight to the office for quality control analysis and verification.

2.1 GPS Processing

Post-processed Kinematic (PPK) records were recorded from the raw POSMV WaveMaster II system in *.000 file format and were processed in POSPac Version 8.6 software. These data were output as *.SBET files and applied to the multibeam bathymetry for a better motion and positioning results product. Before applying the SBET to any MBES datasets, the processor reviewed the Display Plots to QC the results. These plots included the Estimated Position Accuracies, PDOP (Position Dilution of Precision), Processing Mode, Lever Arm Figure of Merit, etc.

2.2 MBES Processing

Bathymetric records were imported and processed with QPS Qimera Version 2.4.8. Multibeam files were cleaned of noise and spurious data; GPS tides, SBETs and sound velocity profiles were applied before being delivered as a final data set. After all processing was completed, the surface was exported from Qimera and loaded in Global Mapper for final QAQC. Contours were also produced using these final surfaces.

2.3 SSS Processing

Side scan sonar records in native *.JSF files were imported into SonarWiz 7.07.07. Side scan files were bottom tracked and adjusted for cable out, catenary corrections. Identified targets were compared positionally from line to line for consistency and data were compared to other concurrently collected data for precision among sensors. Time Variant Gain was applied to visually normalize the data and increase usefulness for analysis. Lines were ordered to produce an aesthetically pleasing final mosaic. Primary contact picking was performed using the EdgeTech 4125 files and confirmed with the MBES grid. In Global Mapper, the final SSS mosaic was compared to the MBES to ensure gain adjustments were consistent and was compared to the MBES surface for final positional checks.

3 Survey Results

The section below shows the results of the bathymetric and geophysical survey performed in Wallabout Channel in August 2022. All survey results are valid for the time of data acquisition.

The bathymetry grid showed seafloor elevations of -5 to -53.5 ft NAVD88 (-2.51 to -51.01 ft MLW), as shown in Figure 2 below. Depths decreased from north to south down the channel. The seabed in this area had numerous depression scours, most notably along the eastern and southern extents of the MBES data coverage. A total of twenty-eight (28) contacts were picked from the SSS (Figure 3, Table 1). These were generally small objects which appeared geologic in nature (small rocks/boulders). Contacts picked along the northwestern edge of the site were likely debris and objects such as tires, shown in Figure 4.

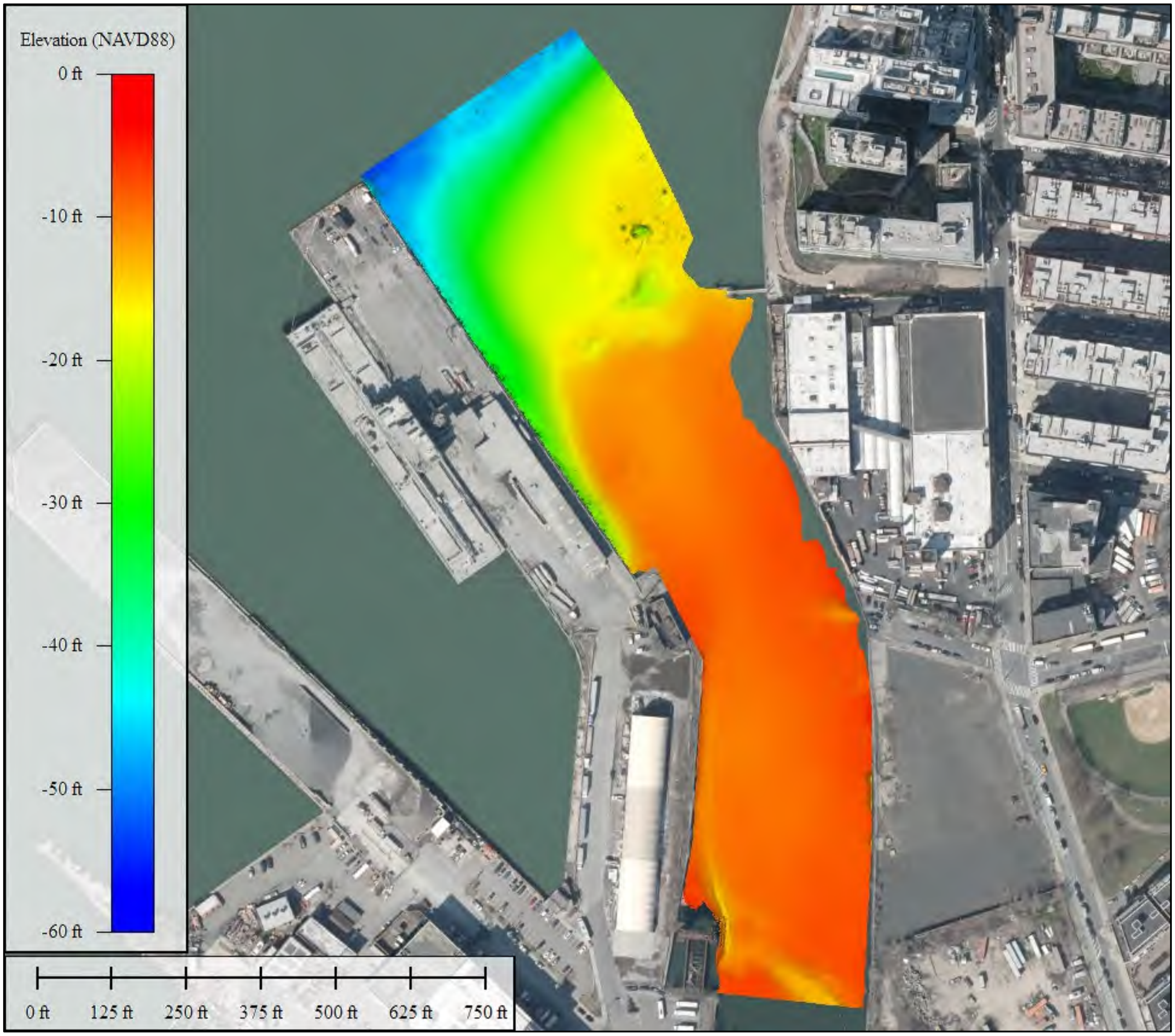


Figure 2. Bathymetry Grid in Wallabout Channel (0.8ft resolution, NAVD88)

Figure 3. Side Scan Mosaic in Wallabout Channel (0.5ft resolution) with Contacts

Table 1. Side Scan Sonar Contacts

Name	Description	Length	Width	Height	X	Y	Latitude	Longitude
S001	Possible Debris	7.38	1.06	0.18	992734.77	196235.55	40.70529391	-73.96939767
S002	Possible Debris	7.31	5.99	0.76	992752.43	196237.06	40.70529805	-73.96933395
S003	Possible Debris	3.40	1.20	0.60	992559.56	196317.26	40.70551835	-73.97002950
S004	Possible Debris	3.09	1.23	0.31	992733.18	196785.25	40.70680270	-73.96940270
S005	Possible Debris	2.08	1.59	0.43	992713.48	196817.81	40.70689210	-73.96947372
S006	Possible Debris	3.07	1.03	0.53	992747.07	196875.52	40.70705047	-73.96935248
S007	Possible Linear Debris	10.33	1.54	0.37	992664.45	196891.51	40.70709443	-73.96965046
S008	Possible Debris	7.43	2.89	0.92	992446.26	196942.30	40.70723404	-73.97043736
S009	Possible Debris	5.22	2.49	1.24	992308.35	197078.98	40.70760932	-73.97093462
S010	Possible Debris	4.27	2.25	0.56	992512.18	197097.71	40.70766056	-73.97019940
S011	Possible Debris	3.59	1.51	1.32	992205.02	197211.18	40.70797226	-73.97130716

Name	Description	Length	Width	Height	X	Y	Latitude	Longitude
S012	Possible Debris	1.72	2.06	1.44	992198.27	197222.87	40.70800436	-73.97133150
S013	Possible Debris	1.42	1.16	0.40	992563.82	197246.13	40.70806787	-73.97001297
S014	Possible Debris	4.97	2.44	1.61	992176.45	197258.86	40.70810317	-73.97141018
S015	Possible Debris	18.17	2.04	0.50	992156.01	197294.84	40.70820196	-73.97148384
S016	Possible Debris	4.70	1.38	0.83	992511.37	197327.54	40.70829137	-73.97020204
S017	Possible Linear Debris	12.57	0.33	0.18	992132.04	197329.25	40.70829640	-73.97157028
S018	Possible Debris	5.73	5.40	0.33	992392.57	197354.81	40.70836634	-73.97063051
S019	Possible Linear Debris	20.66	1.25	0.64	992072.79	197413.14	40.70852672	-73.97178389
S020	Possible Debris	2.80	3.25	6.01	992428.56	197437.15	40.70859230	-73.97050062
S021	Possible Debris	4.08	3.36	3.22	992358.02	197537.40	40.70886754	-73.97075491
S022	Possible Debris	4.73	4.57	0.98	992115.86	197680.40	40.70926025	-73.97162822
S023	Possible Debris	3.17	3.51	0.90	992103.81	197688.02	40.70928118	-73.97167166
S024	Possible Debris	5.27	7.82	1.84	992089.90	197691.75	40.70929142	-73.97172182
S025	Possible Debris	4.20	3.66	1.39	992087.21	197699.00	40.70931132	-73.97173154
S026	Possible Debris	9.54	6.44	0.17	992113.81	197742.72	40.70943131	-73.97163553
S027	Possible Debris	2.43	1.24	2.47	992263.20	197756.62	40.70946934	-73.97109667
S028	Possible Linear Debris	11.54	0.65	0.77	992268.59	197815.16	40.70963000	-73.97107717

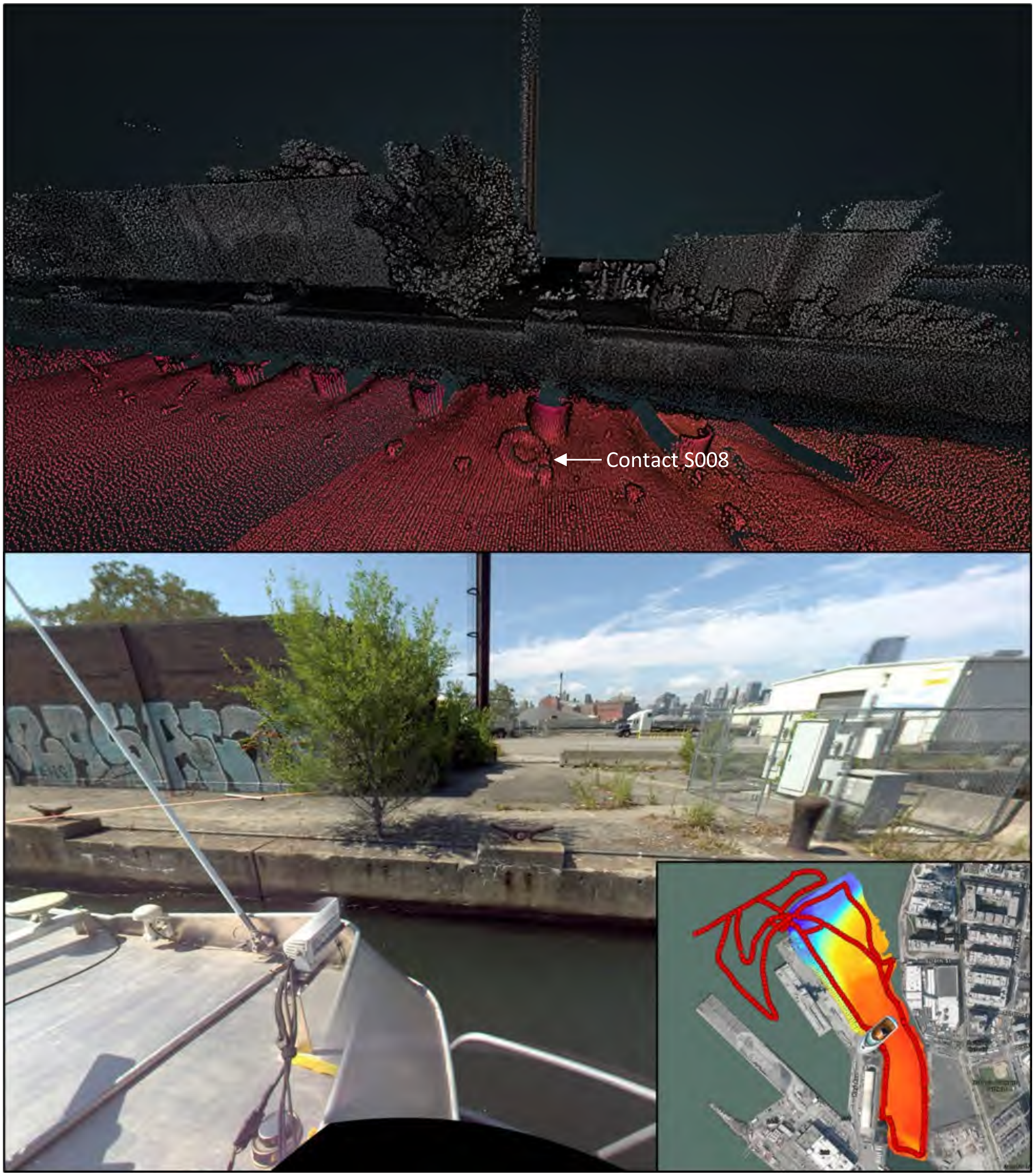
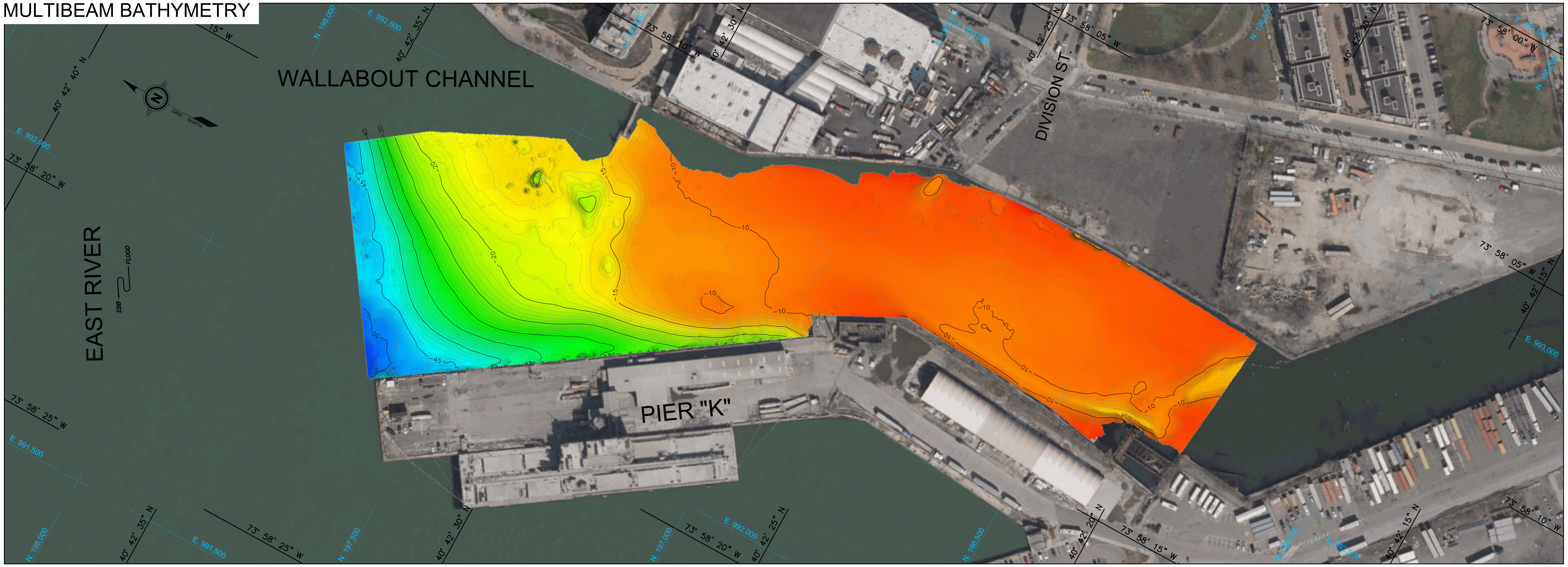
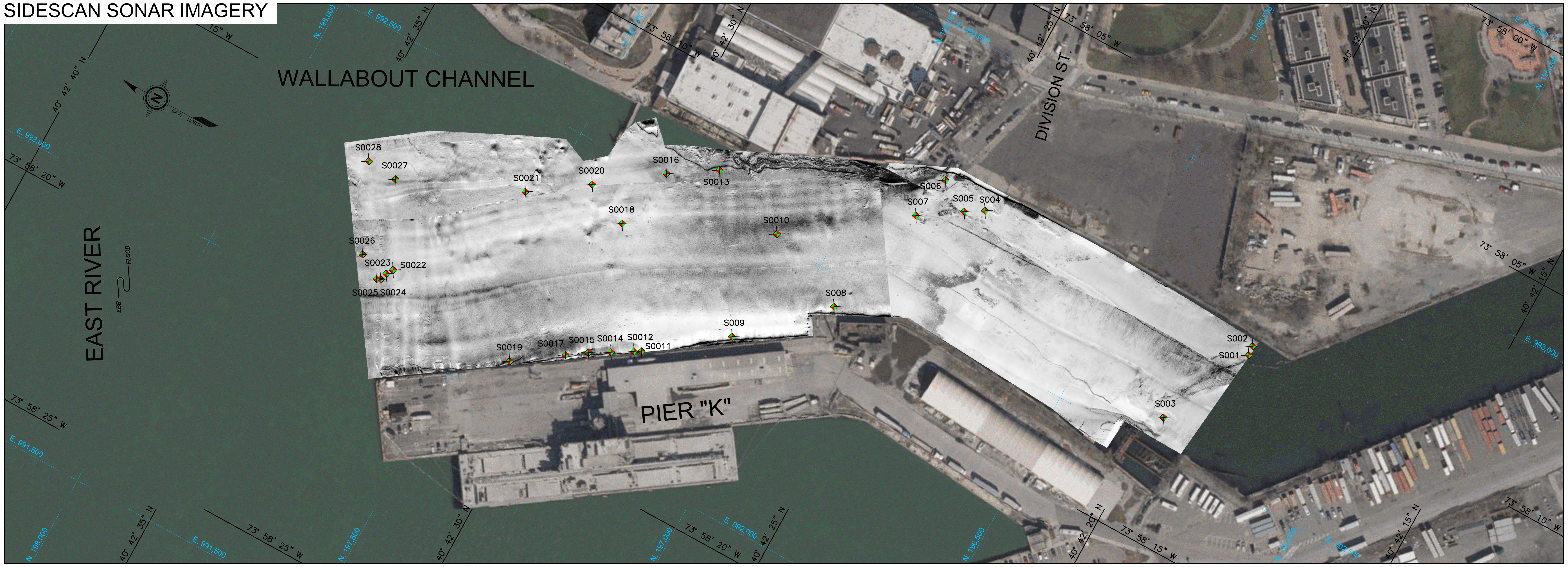


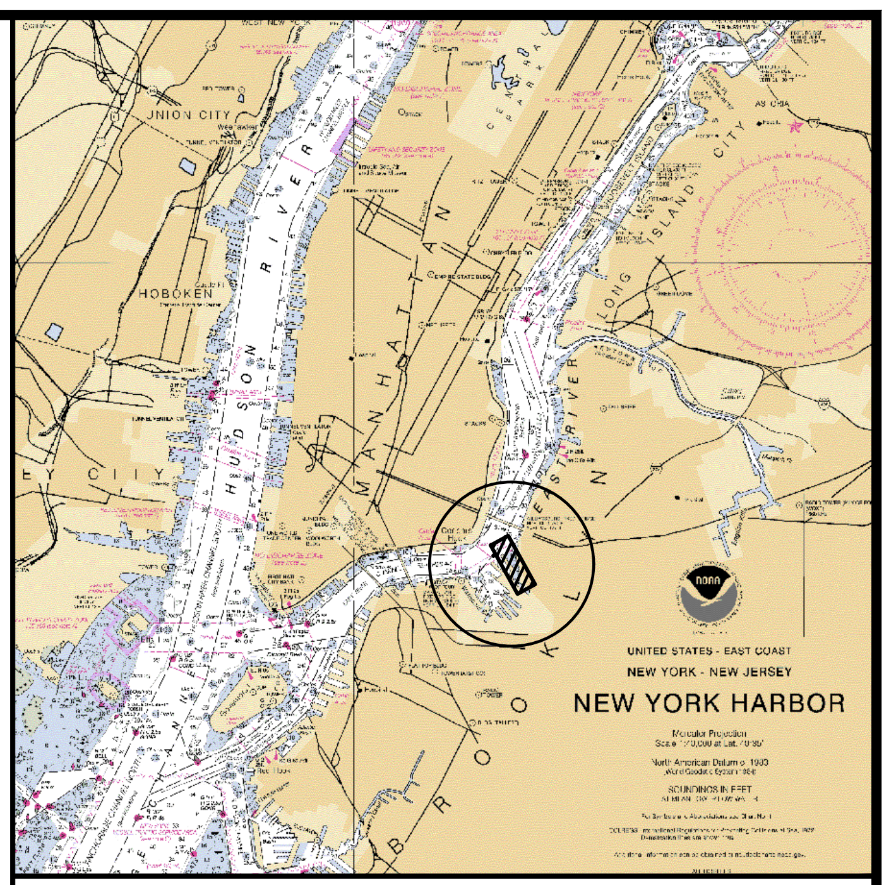
Figure 4. Vessel-based LiDAR draped with Bathymetry Point Cloud near Contact S008 (Tire)

MULTIBEAM BATHYMETRY



SIDESCAN SONAR IMAGERY





LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	NAVD 1988
GEOID MODEL	GEOID 18

ABBREVIATIONS:

CORS	CONTINUOUSLY OPERATING REFERENCE STATION
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NGS	NATIONAL GEODETIC SURVEY
NSRS	NATIONAL SPATIAL REFERENCE SYSTEM
SSS	SIDESCAN SONAR
STHE	S. T. HUDSON ENGINEERS
SPCS	STATE PLANE COORDINATE SYSTEM

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (NAVD 88)

0' −10' −20' −30' −40' −50' −60'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

S000 SIDESCAN ID TAG
SIDESCAN SONAR TARGET

SURVEY EQUIPMENT

TYPE	MANUFACTURER/MODEL
SIDESCAN SONAR	EDGETECH 4125 (400–900 KHZ)
MULTIBEAM ECHOSOUNDER	NORBIT WINGHEAD

GENERAL NOTES

1. ELEVATIONS ARE IN FEET AND REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) .
2. NAVIGATION CORRECTIONS PROVIDED BY SMARTNET REAL-TIME SERVICE AND POST-PROCESSED USING APPLANIX POSPAC SMARTBASE SOLUTION. HORIZONTAL AND VERTICAL POSITIONS ARE REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) AS PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
3. BACKGROUND IMAGES OBTAINED FROM 2020 NY STATE ORTHO IMAGERY DATABASE AND SHOW APPROXIMATE SHORELINE LOCATION FOR REFERENCE ONLY.
4. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF GEOPHYSICAL SURVEYS PERFORMED BY S.T. HUDSON ENGINEERS, INC. IN AUGUST 2022, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO STHE.
5. SOME INFORMATION PRESENTED IN THIS DRAWING ARE THE RESULT OF GEOPHYSICAL INTERPRETATION AND ANALYSIS. INCLUSION OF REPRESENTATIONS OF THOSE ANOMALIES (DEBRIS, TIRES, PIPE FRAGMENTS, ETC.) AT A SPECIFIC LOCATION DOES NOT INDICATE OR SUGGEST THE ABSENCE OF HAZARDS, ANOMALIES, INFRASTRUCTURE, APPURTENANCES, AND OTHER OBJECTS ON OR BENEATH THE SEABED IN ANY OTHER LOCATION.

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

SCALE: 1' = 100'

100' 0' 100' 200' 300'

CHECK GRAPHIC SCALE BEFORE USING

PREPARED BY:

S.T. HUDSON ENGINEERS INC.
900 DUDLEY AVENUE
CHERRY HILL, NJ 08002
WWW.STHE.COM

PREPARED FOR:

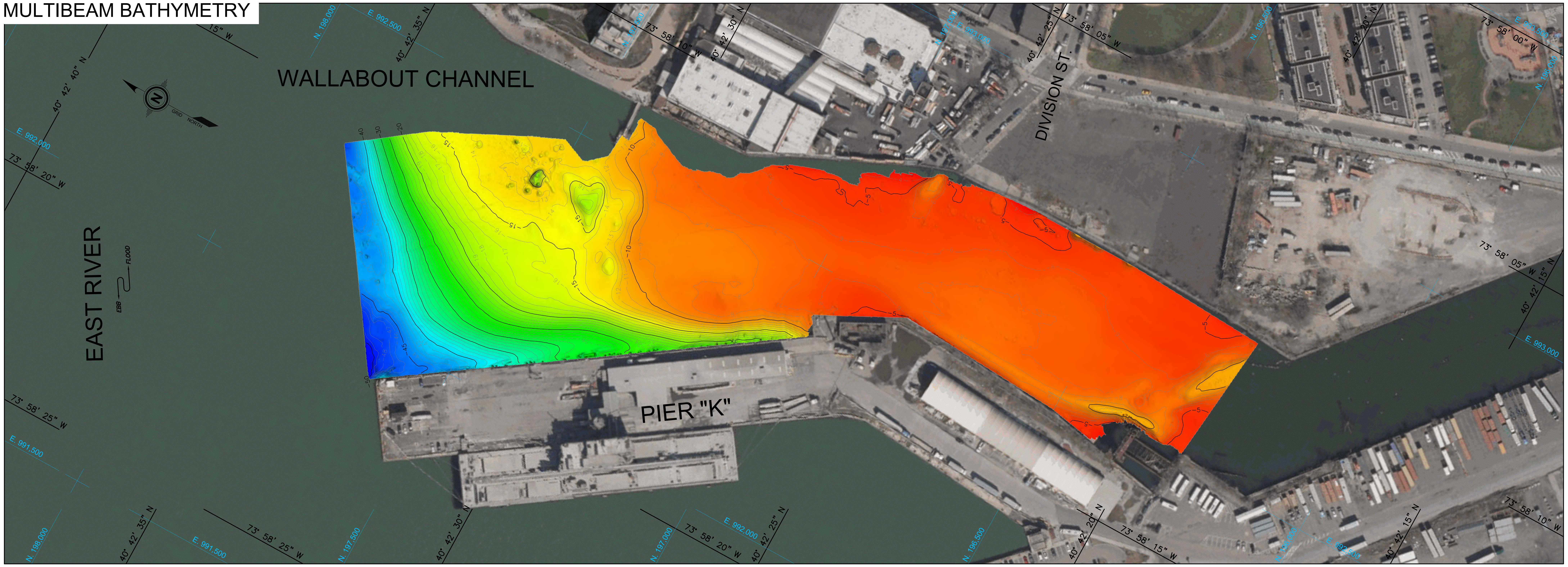
HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
HALMARINTERNATIONAL.COM

BATHYMETRIC AND SIDESCAN SONAR

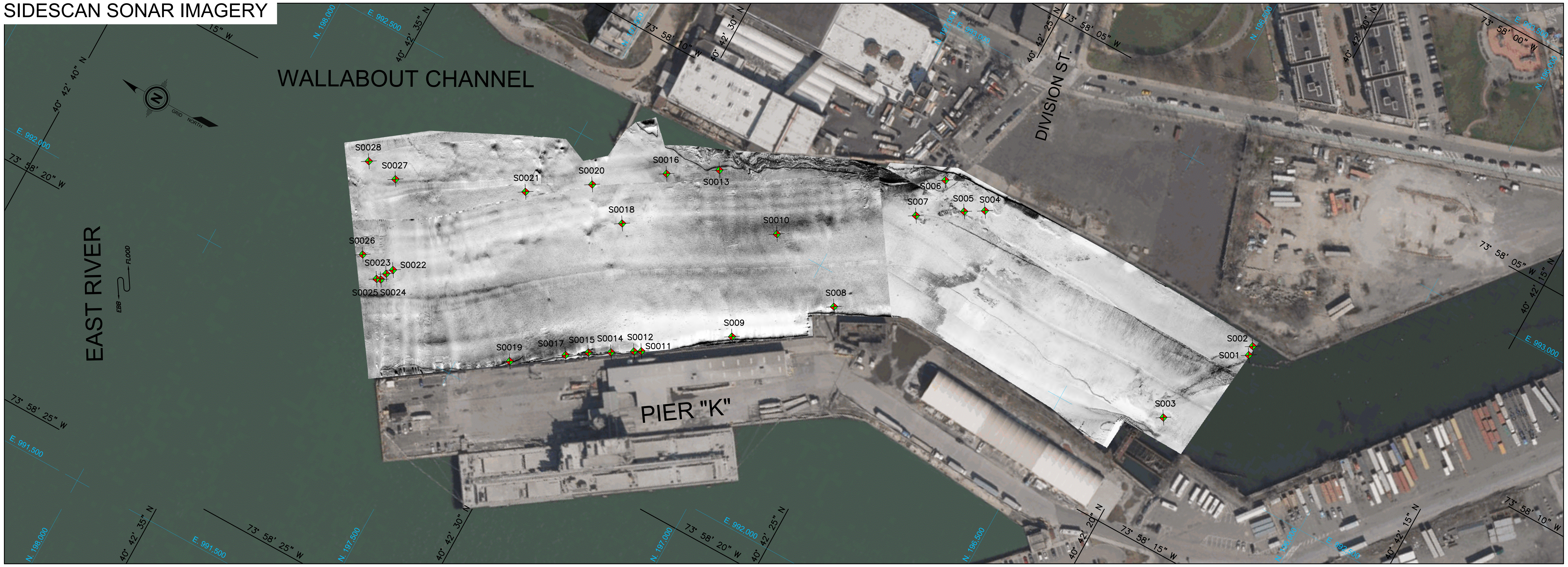
GEOPHYSICAL SURVEY OF A PORTION OF WALLABOUT CHANNEL BROOKLYN, KINGS COUNTY, NEW YORK

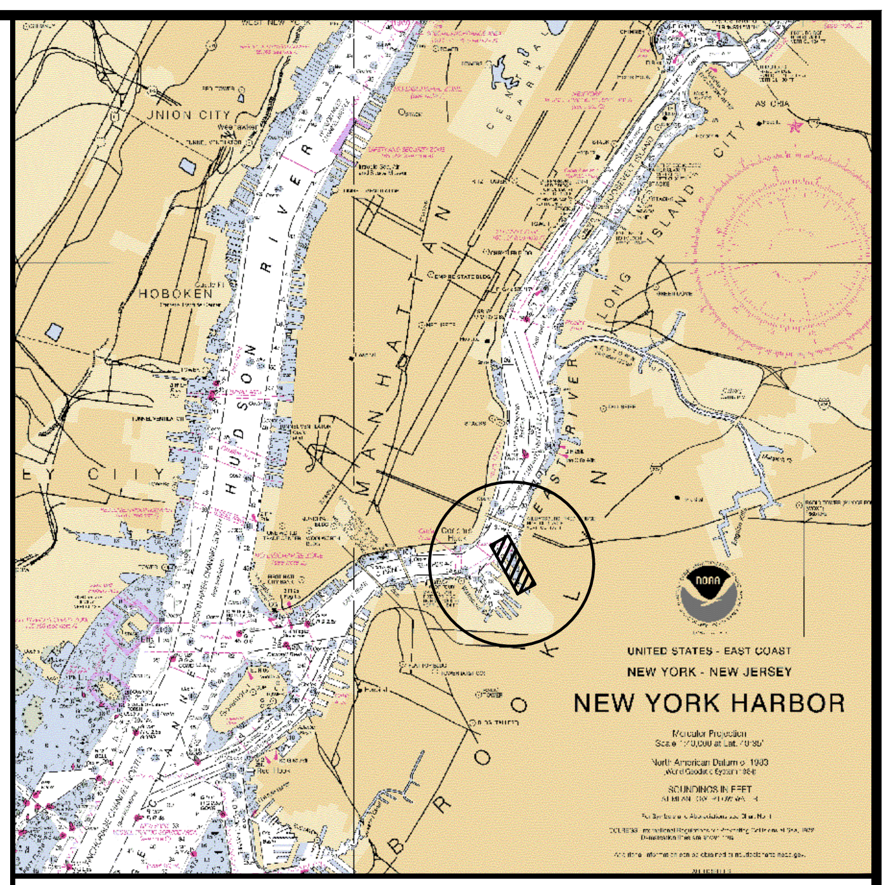
PROJECT MANAGER:	SURVEY DATE:	DRAWING:	
SJM	AUGUST 30 2022	22–135_HALMAR–WALLABOUT_2022.DWG	
DRAFTED BY:	DRAWING DATE:	STHE PROJ. #	SHEET:
PAS	SEPTEMBER 21 2022	22–135	1 OF 1

MULTIBEAM BATHYMETRY



SIDESCAN SONAR IMAGERY





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STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (MLW)

–5' –10' –15' –20' –25' –30' –35' –40' –45' –50'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

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SIDESCAN SONAR TARGET

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TYPE	MANUFACTURER/MODEL
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MULTIBEAM ECHOSOUNDER	NORBIT WINGHEAD

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2. NAVIGATION CORRECTIONS PROVIDED BY SMARTNET REAL-TIME SERVICE AND POST-PROCESSED USING APPLANIX POSPAC SMARTBASE SOLUTION. HORIZONTAL AND VERTICAL POSITIONS ARE REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) AS PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
3. BACKGROUND IMAGES OBTAINED FROM 2020 NY STATE ORTHO IMAGERY DATABASE AND SHOW APPROXIMATE SHORELINE LOCATION FOR REFERENCE ONLY.
4. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF GEOPHYSICAL SURVEYS PERFORMED BY S.T. HUDSON ENGINEERS, INC. IN AUGUST 2022, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO STHE.
5. SOME INFORMATION PRESENTED IN THIS DRAWING ARE THE RESULT OF GEOPHYSICAL INTERPRETATION AND ANALYSIS. INCLUSION OF REPRESENTATIONS OF THOSE ANOMALIES (DEBRIS, TIRES, PIPE FRAGMENTS, ETC.) AT A SPECIFIC LOCATION DOES NOT INDICATE OR SUGGEST THE ABSENCE OF HAZARDS, ANOMALIES, INFRASTRUCTURE, APPURTENANCES, AND OTHER OBJECTS ON OR BENEATH THE SEABED IN ANY OTHER LOCATION.

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

SCALE: 1' = 100'
100' 0' 100' 200' 300'
CHECK GRAPHIC SCALE BEFORE USING

PREPARED BY:
S.T. HUDSON ENGINEERS INC.
900 DUDLEY AVENUE
CHERRY HILL, NJ 08002
WWW.STHE.COM

PREPARED FOR:
HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
HALMARINTERNATIONAL.COM

BATHYMETRIC AND SIDESCAN SONAR

GEOPHYSICAL SURVEY OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: PAS	DRAWING DATE: SEPTEMBER 22 2022	STHE PROJ. # 22–135	SHEET: 1 OF 1

ENCLOSURE 3

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Dredge Team, Region 2
47-40 21st Street, Long Island City, NY 11101
P: (718) 482-4076 • r2dredge@dec.ny.gov
www.dec.ny.gov

April 7, 2023

Christy Stoll
AKRF, Inc.
7250 Parkway Drive, Suite 210
Hanover, MD 21076

RE: Sediment Sampling Plan - Floating Energy Storage System (FESS) Project

Dear Christy Stoll,

This letter has been prepared in response to your request for a Sediment Sampling and Analysis Plan (SSAP) on Jan 27, 2023. This SSAP applies to the Floating Energy Storage System (FESS) Project, which would involve dredging in Wallabout Channel in Brooklyn, NY. The proposed project depth is 21 ft below mean low water (MLW), which includes 1 foot of overdredge. The dredge area encompasses 25,087 sq yards and will require the removal of approximately 81,510 cubic yards of dredged material. The final placement of the dredge material has yet to be determined.

NYSDEC has determined that 24 sediment sampling locations are sufficient to cover the scope of the project. NYSDEC approves the submitted sediment sampling plan entitled "Floating Energy Storage System (FESS) Project Dredging in Wallabout Channel, Brooklyn Navy Yard NYC Energy LLC Sediment Sampling Plan" dated March 2023 and received by NYSDEC on April 5, 2023, with sampling locations identified in Figure 3.

Physical Sampling and Analysis

Cores shall be driven to 22 ft below MLW and separated into two segments, a segment homogenized over the project depth (21 ft below MLW) and a segment representing the next six inches to be exposed after dredging (21.0 to 21.5 feet below MLW). The remainder of the core can be excluded from the analysis. Do not homogenize individual cores if color, odor, grain size, total organic carbon (TOC), or likelihood of contamination based on core lithology or known contamination history differs among horizons. If homogenization is not appropriate, sample and analyze horizons separately. Analyze each core for grain size, TOC, and percent moisture. Field logs, including photographs, should be kept of each core, along with additional information on the physical characteristics observed in the field. If grain size analysis indicates that any individual core sample is greater than 90% sand (i.e., less than 10% of particles pass through a number 200 sieve) and contains less than 0.5% TOC, then no further testing is required on that core sample; however, NYSDEC should be notified before proceeding with the compositing scheme described below. If cores are not greater than 90% sand and/or less than 0.5% TOC, follow the chemical sampling procedures and compositing scheme outlined below.

Chemical Sampling and Analysis

Core samples with less than 90% sand and/or more than 0.5% TOC require additional chemical analyses. Core segments may be composited for chemical analyses according to the table below without further guidance if they have similar characteristics (e.g., grain size, TOC, color, etc.) and a similar likelihood of contamination based on core lithology or known contamination history. If core segments do not share similar characteristics as described above, analyze individual cores separately. Composites should consist of equal amounts of each individual homogenized core.

Dredge Sediment Composite (surface to proposed dredging depth)	**Station Identification Number**
Sample FESS/C1A	Location 1, Location 2, and Location 19
Sample FESS/C2A	Location 4, Location 20, and Location 21
Sample FESS/C3A	Location 3, Location 5, and Location 22
Sample FESS/C4A	Location 6, Location 7, and Location 23
Sample FESS/C5A	Location 8, Location 9, and Location 10
Sample FESS/C6A	Location 11, Location 13, and Location 14
Sample FESS/C7A	Location 12, Location 15, and Location 16
Sample FESS/C8A	Location 17, Location 18, and Location 24
Exposed Sediment Composite (0“-6” below post-dredge bottom)	**Station Identification Number**
Sample FESS/C1B	Location 1, Location 2, and Location 19
Sample FESS/C2B	Location 4, Location 20, and Location 21
Sample FESS/C3B	Location 3, Location 5, and Location 22
Sample FESS/C4B	Location 6, Location 7, and Location 23
Sample FESS/C5B	Location 8, Location 9, and Location 10
Sample FESS/C6B	Location 11, Location 13, and Location 14
Sample FESS/C7B	Location 12, Location 15, and Location 16
Sample FESS/C8B	Location 17, Location 18, and Location 24

This SSAP is designed to provide NYSDEC with the information needed to determine potential environmental impacts on natural resources and allow the project sponsor to identify potential upland placement locations if needed. Each raw sediment sample must be tested for the analytes listed in Table 2 of the NYSDEC Technical & Operational Guidance Series (TOGS) 5.1.9. In addition, if the disposal methods for this material include upland placement of amended dredge material product in New York or New Jersey, then measurements must also be made on raw sediment and amended dredge material product that includes all the analytes listed in Table 6.8 of 6 NYCRR Part 375 and in the New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standards and Screening Levels (revised 09-18-2017) (See Attachment 2 for protocols for testing processed dredged materials). The three referenced tables of required analytes are available at:

https://www.dec.ny.gov/docs/water_pdf/togs519.pdf
https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375.pdf
https://www.nj.gov/dep/rules/rules/njac7_26d.pdf

Note that analyses of dredge material for upland placement should also include hexavalent and trivalent chromium, dioxins, and furans.

Please ensure the contract laboratory is aware of changes to the list of target analytes and analytical requirements. Laboratories used to perform the testing required herein must be certified by the State of New Jersey and the State of New York for the particular analytical method. Both states recommend verifying the volumes required for the tests with the laboratories prior to sampling. Any data package submitted to either NJDEP or NYSDEC shall comply with the QA/QC requirements outlined in Appendix B of the NJDEP technical manual entitled “The Management and Regulation of Dredging Activities and Dredged Material in New Jersey’s Tidal Waters” (October 1997).

If the material will be placed upland, the analytical package submitted must include a description of the recipe (i.e., types of additives and proportion) used to prepare the amended dredge material product. The amended dredge material product must also be pulverized and subjected to a Synthetic Precipitation Leaching Procedure (SPLP) using the USEPA Method 1312.

All sediment analyses should be provided to the NYSDEC/NJDEP in the form of a technical report that includes an excel spreadsheet summarizing the results and highlighting threshold exceedances of TOGS 5.1.9 Table 2, 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives, and NJDEP's Soil Remediation Standards and Screening Levels.

The technical report should include the results of physical and chemical analyses of the raw sediment. If upland placement is required, the report should also include the results of chemical analyses on the amended dredge material product. These results should be submitted in three summary data tables:

1. Raw sediment, bulk sediment chemistry
2. Amended dredge material product, bulk sediment chemistry
3. Dredged material product, SPLP results

Each placement location has its unique sampling requirements. The project sponsor is encouraged to contact potential placement locations to learn whether additional testing beyond those outlined here will be required.

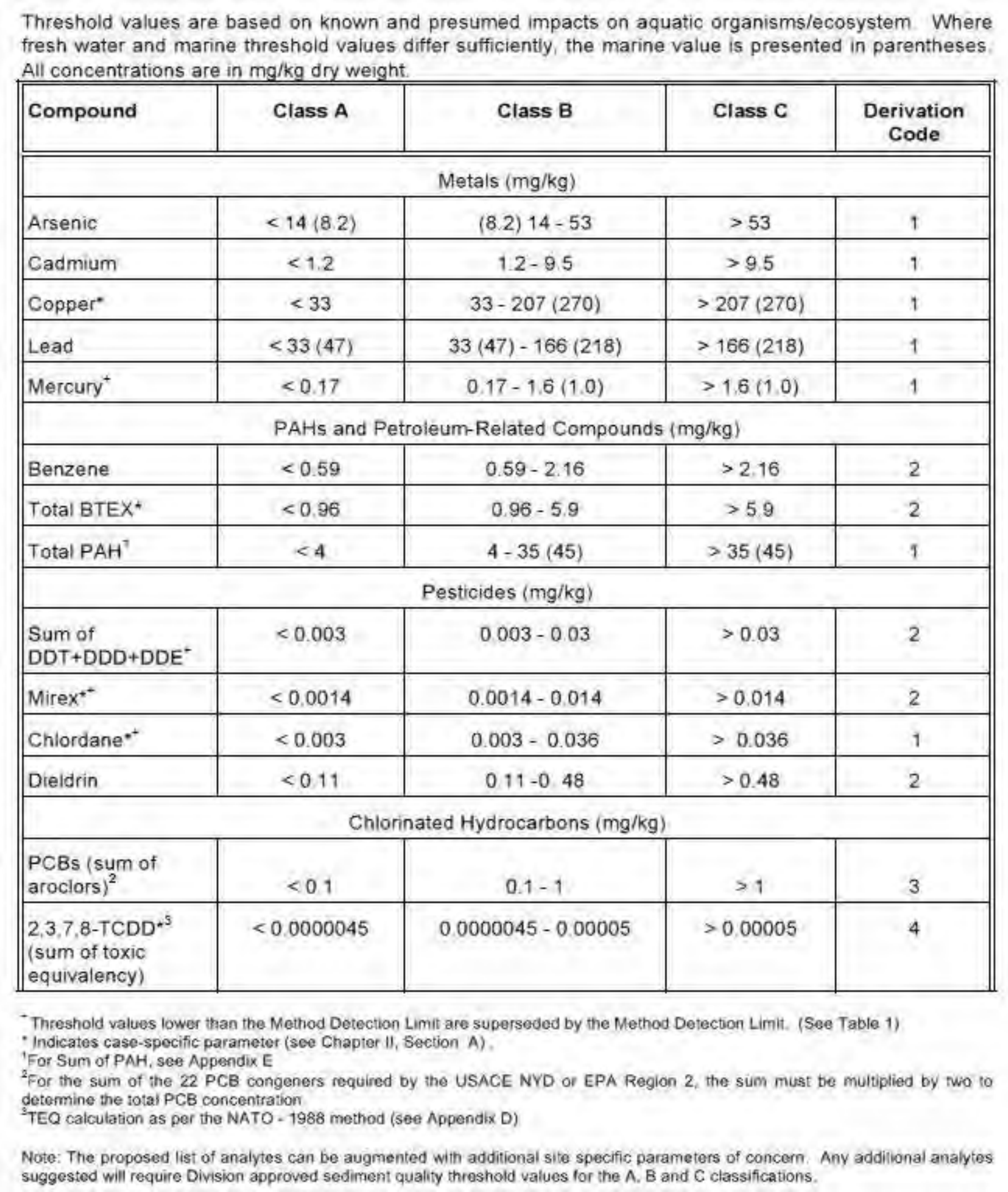
If you have any questions regarding the SSAP, please feel free to contact Meaghan McCormack at meaghan.mccormack@dec.ny.gov

Sincerely,

Meaghan McCormack

Meaghan McCormack, Ph.D.
Division of Marine Resources
NYSDEC

ATTACHMENT 1: Table 2 of the NYSDEC Technical & Operational Guidance Series (TOGS) 5.1.9



Threshold values are based on known and presumed impacts on aquatic organisms/ecosystem. Where fresh water and marine threshold values differ sufficiently, the marine value is presented in parentheses. All concentrations are in mg/kg dry weight.

Compound	Class A	Class B	Class C	Derivation Code
Metals (mg/kg)				
Arsenic	< 14 (8.2)	(8.2) 14 - 53	> 53	1
Cadmium	< 1.2	1.2 - 9.5	> 9.5	1
Copper*	< 33	33 - 207 (270)	> 207 (270)	1
Lead	< 33 (47)	33 (47) - 166 (218)	> 166 (218)	1
Mercury[+]	< 0.17	0.17 - 1.6 (1.0)	> 1.6 (1.0)	1
PAHs and Petroleum-Related Compounds (mg/kg)				
Benzene	< 0.59	0.59 - 2.16	> 2.16	2
Total BTEX*	< 0.96	0.96 - 5.9	> 5.9	2
Total PAH[1]	< 4	4 - 35 (45)	> 35 (45)	1
Pesticides (mg/kg)				
Sum of DDT+DDD+DDE[+]	< 0.003	0.003 - 0.03	> 0.03	2
Mirex*[+]	< 0.0014	0.0014 - 0.014	> 0.014	2
Chlordane*[+]	< 0.003	0.003 - 0.036	> 0.036	1
Dieldrin	< 0.11	0.11 -0. 48	> 0.48	2
Chlorinated Hydrocarbons (mg/kg)				
PCBs (sum of aroclors)[2]	< 0.1	0.1 - 1	> 1	3
2,3,7,8-TCDD*[3] (sum of toxic equivalency)	< 0.0000045	0.0000045 - 0.00005	> 0.00005	4

[+] Threshold values lower than the Method Detection Limit are superseded by the Method Detection Limit. (See Table 1)

* Indicates case-specific parameter (see Chapter II, Section A).

[1] For Sum of PAH, see Appendix E

[2] For the sum of the 22 PCB congeners required by the USACE NYD or EPA Region 2, the sum must be multiplied by two to determine the total PCB concentration

[3] TEQ calculation as per the NATO - 1988 method (see Appendix D)

Note: The proposed list of analytes can be augmented with additional site specific parameters of concern. Any additional analytes suggested will require Division approved sediment quality threshold values for the A, B and C classifications.

ATTACHMENT 2: PROTOCOL FOR THE TESTING OF PROCESSED DREDGED MATERIAL FOR USE AS STRUCTURAL FILL

Revision (10/08)

The analytes which must be tested for are listed in the tables found at:

- https://www.nj.gov/dep/rules/rules/njac7_26d.pdf
  (For reuse of processed dredged material in the State of New Jersey)
- Hexavalent and Trivalent Chromium- recent literature
  http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf (Table 11-2, Restricted Use Soil Cleanup Objectives for reuse of processed dredged material in the State of New York, page 349).

The specific sampling plan will identify the pollutants that are to be analyzed for the dredging project.

Since the dredged material will be treated with other materials that will alter its physical and chemical composition, additional tests must be performed on the end product. The required tests are as follows:

- Bulk sediment chemistry, grain size, total organic carbon, and percent moisture analyses must be performed on each raw sediment composite/core sample or vertically stratified sample. Any water which separates from the raw sediment sample during transport/storage (i.e., porewater) must be re-mixed with the solid components of the sediments prior to forming the core or composite samples; this porewater must not be decanted from the sediment sample.

- For each core/composite sample/vertically stratified sample, a sample of the processed dredged material product will be created by combining measured amounts of proposed additive with a pre-weighed sample of the sediments to be dredged. The mixing time will, to the greatest extent possible, replicate the residence time in the blending facility/operation to be used in the actual full-scale project. The ratio of proposed additive to composite sediment sample, by weight, will be recorded. The dredged material product to be tested will be formed using the “recipe” (proportions of dredged material and proposed additive) which replicates the actual dredged material product to be used as structural fill on the site. The dredged material product will be pulverized, and each composite sample will be subjected to bulk sediment analyses.

- The dredged material product samples will be pulverized, and each sample subjected to a Synthetic Precipitation Leaching Procedure (SPLP) using the USEPA Method 1312.

A final report, including the results of the raw sediment and dredged material product testing, will be submitted to the Department in a series of three (3) summary data tables:

- Raw sediment bulk sediment chemistry
- Dredged material product bulk sediment chemistry
- Dredged material product SPLP results

ATTACHMENT 3: TABLE 375-6.8(B): RESTRICTED USE SOIL CLEAN UP OBJECTIVES

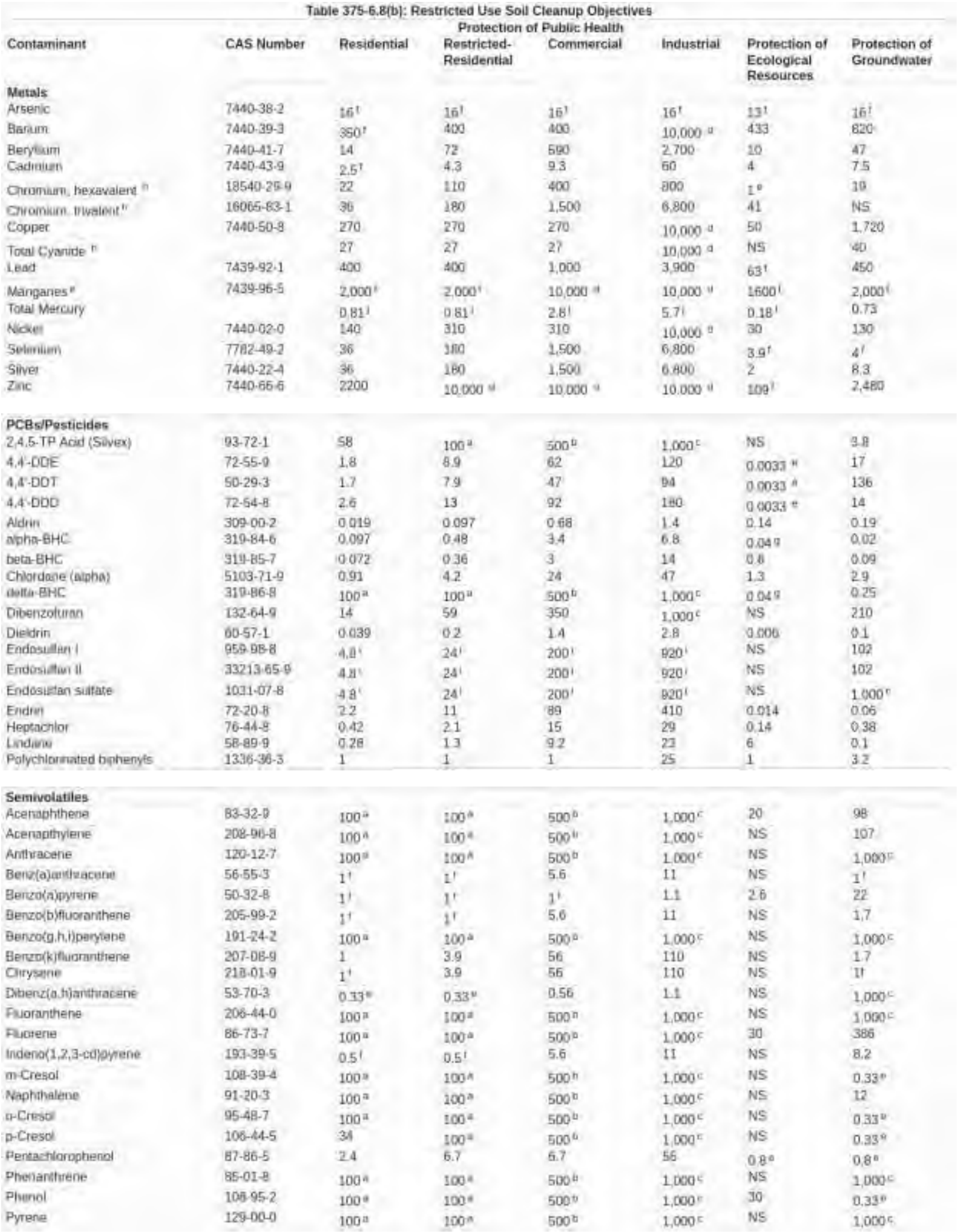
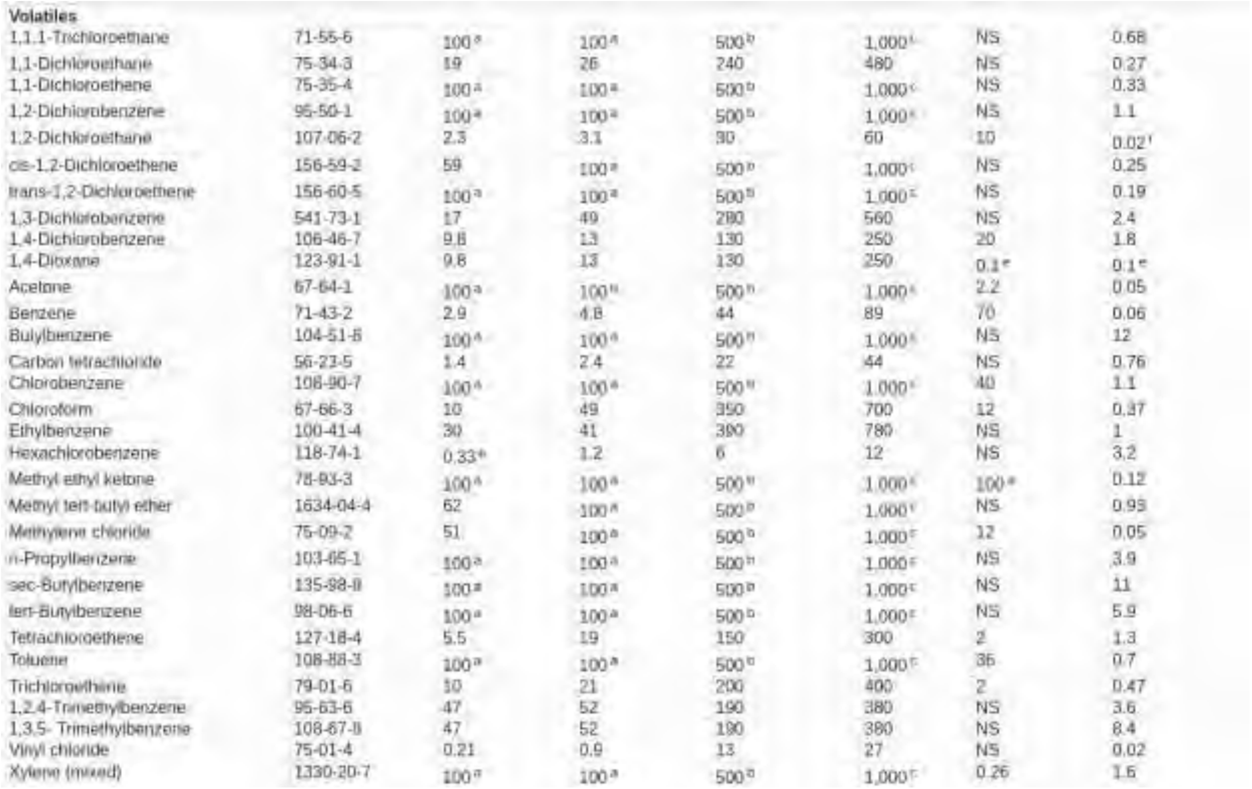


Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

		Protection of Public Health					
Contaminant	CAS Number	Residential	Restricted-Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Groundwater
Metals							
Arsenic	7440-38-2	16[f]	16[f]	16[f]	16[f]	13[f]	16[f]
Barium	7440-39-3	350[f]	400	400	10,000[d]	433	820
Beryllium	7440-41-7	14	72	590	2,700	10	47
Cadmium	7440-43-9	2.5[f]	4.3	9.3	60	4	7.5
Chromium, hexavalent[h]	18540-29-9	22	110	400	800	1[e]	19
Chromium, trivalent[h]	16065-83-1	36	180	1,500	6,800	41	NS
Copper	7440-50-8	270	270	270	10,000[d]	50	1,720
Total Cyanide[h]		27	27	27	10,000[d]	NS	40
Lead	7439-92-1	400	400	1,000	3,900	63[f]	450
Manganese[g]	7439-96-5	2,000[f]	2,000[f]	10,000[d]	10,000[d]	1600[f]	2,000[f]
Total Mercury		0.81[j]	0.81[j]	2.8[j]	5.7[j]	0.18[f]	0.73
Nickel	7440-02-0	140	310	310	10,000[d]	30	130
Selenium	7782-49-2	36	180	1,500	6,800	3.9[f]	4[f]
Silver	7440-22-4	36	180	1,500	6,800	2	8.3
Zinc	7440-66-6	2200	10,000[d]	10,000[d]	10,000[d]	109[f]	2,480
PCBs/Pesticides							
2,4,5-TP Acid (Silvex)	93-72-1	58	100[a]	500[b]	1,000[c]	NS	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033[e]	17
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033[e]	136
4,4'-DDD	72-54-8	2.6	13	92	180	0.0033[e]	14
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04[g]	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71-9	0.91	4.2	24	47	1.3	2.9
delta-BHC	319-86-8	100[a]	100[a]	500[b]	1,000[c]	0.04[g]	0.25
Dibenzofuran	132-64-9	14	59	350	1,000[c]	NS	210
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I	959-98-8	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan II	33213-65-9	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan sulfate	1031-07-8	4.8[i]	24[i]	200[i]	920[i]	NS	1,000[c]
Endrin	72-20-8	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1
Polychlorinated biphenyls	1336-36-3	1	1	1	25	1	3.2
Semivolatiles							
Acenaphthene	83-32-9	100[a]	100[a]	500[b]	1,000[c]	20	98
Acenapthylene	208-96-8	100[a]	100[a]	500[b]	1,000[c]	NS	107
Anthracene	120-12-7	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benz(a)anthracene	56-55-3	1[f]	1[f]	5.6	11	NS	1[f]
Benzo(a)pyrene	50-32-8	1[f]	1[f]	1[f]	1.1	2.6	22
Benzo(b)fluoranthene	205-99-2	1[f]	1[f]	5.6	11	NS	1.7
Benzo(g,h,i)perylene	191-24-2	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benzo(k)fluoranthene	207-08-9	1	3.9	56	110	NS	1.7
Chrysene	218-01-9	1[f]	3.9	56	110	NS	1[f]
Dibenz(a,h)anthracene	53-70-3	0.33[e]	0.33[e]	0.56	1.1	NS	1,000[c]
Fluoranthene	206-44-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Fluorene	86-73-7	100[a]	100[a]	500[b]	1,000[c]	30	386
Indeno(1,2,3-cd)pyrene	193-39-5	0.5[f]	0.5[f]	5.6	11	NS	8.2
m-Cresol	108-39-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
Naphthalene	91-20-3	100[a]	100[a]	500[b]	1,000[c]	NS	12
o-Cresol	95-48-7	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
p-Cresol	106-44-5	34	100[a]	500[b]	1,000[c]	NS	0.33[e]
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8[e]	0.8[e]
Phenanthrene	85-01-8	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Phenol	108-95-2	100[a]	100[a]	500[b]	1,000[c]	30	0.33[e]
Pyrene	129-00-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]

NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives



Volatiles							
1,1,1-Trichloroethane	71-55-6	100[a]	100[a]	500[b]	1,000[c]	NS	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27
1,1-Dichloroethene	75-35-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33
1,2-Dichlorobenzene	95-50-1	100[a]	100[a]	500[b]	1,000[c]	NS	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02[f]
cis-1,2-Dichloroethene	156-59-2	59	100[a]	500[b]	1,000[c]	NS	0.25
trans-1,2-Dichloroethene	156-60-5	100[a]	100[a]	500[b]	1,000[c]	NS	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1[e]	0.1[e]
Acetone	67-64-1	100[a]	100[b]	500[b]	1,000[c]	2.2	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06
Butylbenzene	104-51-8	100[a]	100[a]	500[b]	1,000[c]	NS	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	100[a]	100[a]	500[b]	1,000[c]	40	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1
Hexachlorobenzene	118-74-1	0.33[e]	1.2	6	12	NS	3.2
Methyl ethyl ketone	78-93-3	100[a]	100[a]	500[b]	1,000[c]	100[a]	0.12
Methyl tert-butyl ether	1634-04-4	62	100[a]	500[b]	1,000[c]	NS	0.93
Methylene chloride	75-09-2	51	100[a]	500[b]	1,000[c]	12	0.05
n-Propylbenzene	103-65-1	100[a]	100[a]	500[b]	1,000[c]	NS	3.9
sec-Butylbenzene	135-98-8	100[a]	100[a]	500[b]	1,000[c]	NS	11
tert-Butylbenzene	98-06-6	100[a]	100[a]	500[b]	1,000[c]	NS	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3
Toluene	108-88-3	100[a]	100[a]	500[b]	1,000[c]	36	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6
1,3,5- Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20-7	100[a]	100[a]	500[b]	1,000[c]	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).

NS = Not specified. See Technical Support Document (TSD).

[a] The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

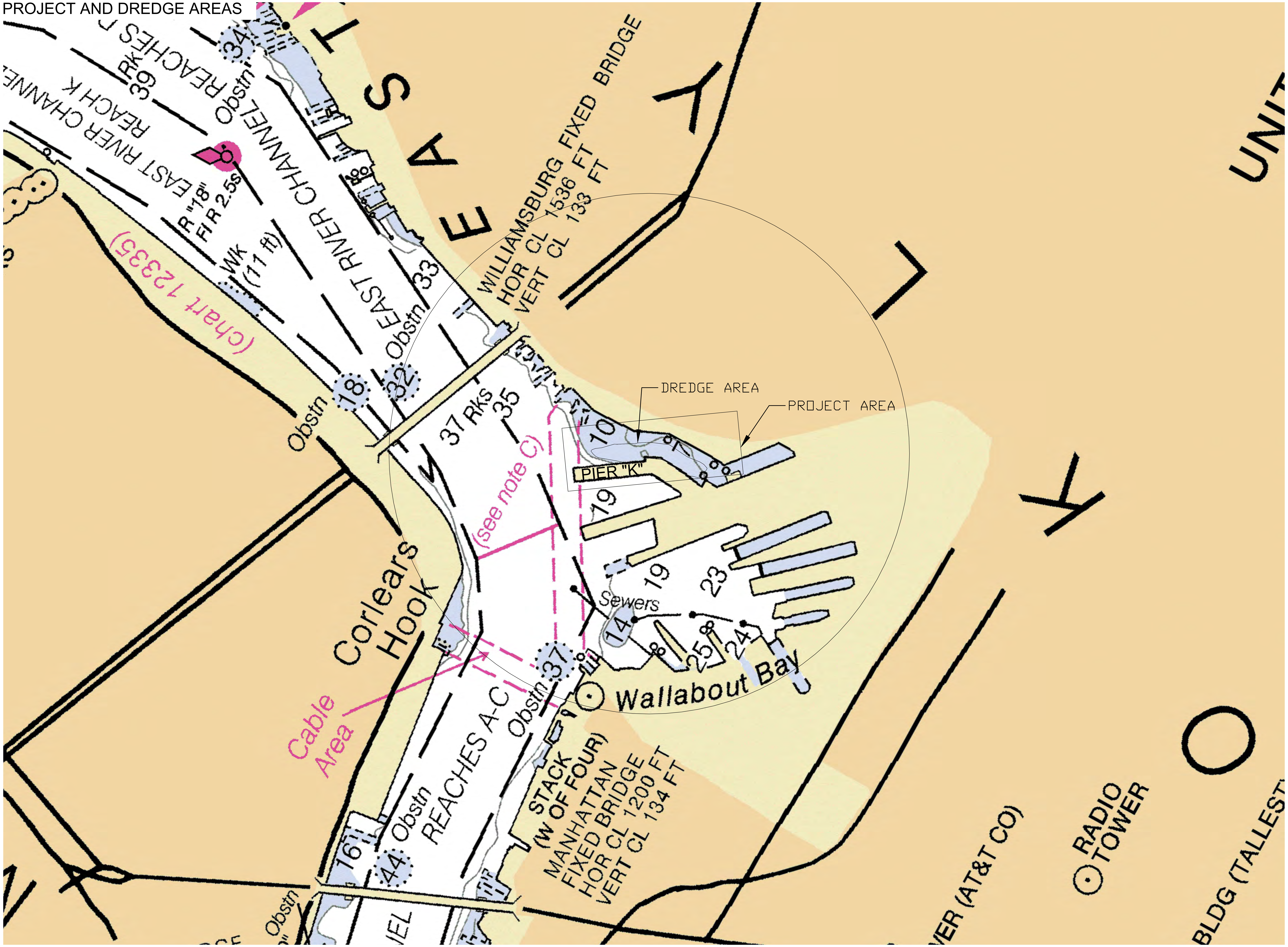
[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

PROJECT AND DREDGE AREAS



LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	MEAN LOW WATER (MLW)
GEOID MODEL	GEOID 18

ABBREVIATIONS:

CORS – CONTINUOUSLY OPERATING REFERENCE STATION
MLW – MEAN LOW WATER
NAD – NORTH AMERICAN DATUM
NGS – NATIONAL GEODETIC SURVEY
NSRS – NATIONAL SPATIAL REFERENCE SYSTEM
SSS – SIDESCAN SONAR
STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

SCALE: 1' = 500'

N

SURVEY EQUIPMENT

TYPE	MANUFACTURER/MODEL
SIDESCAN SONAR	EDGETECH 4125 (400–900 KHZ)
MULTIBEAM ECHOSOUNDER	NORBIT WINGHEAD

GENERAL NOTES

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

PREPARED BY:

S.T. HUDSON ENGINEERS INC.
900 DUDLEY AVENUE
CHERRY HILL, NJ 08002
WWW.STHE.COM

PREPARED FOR:

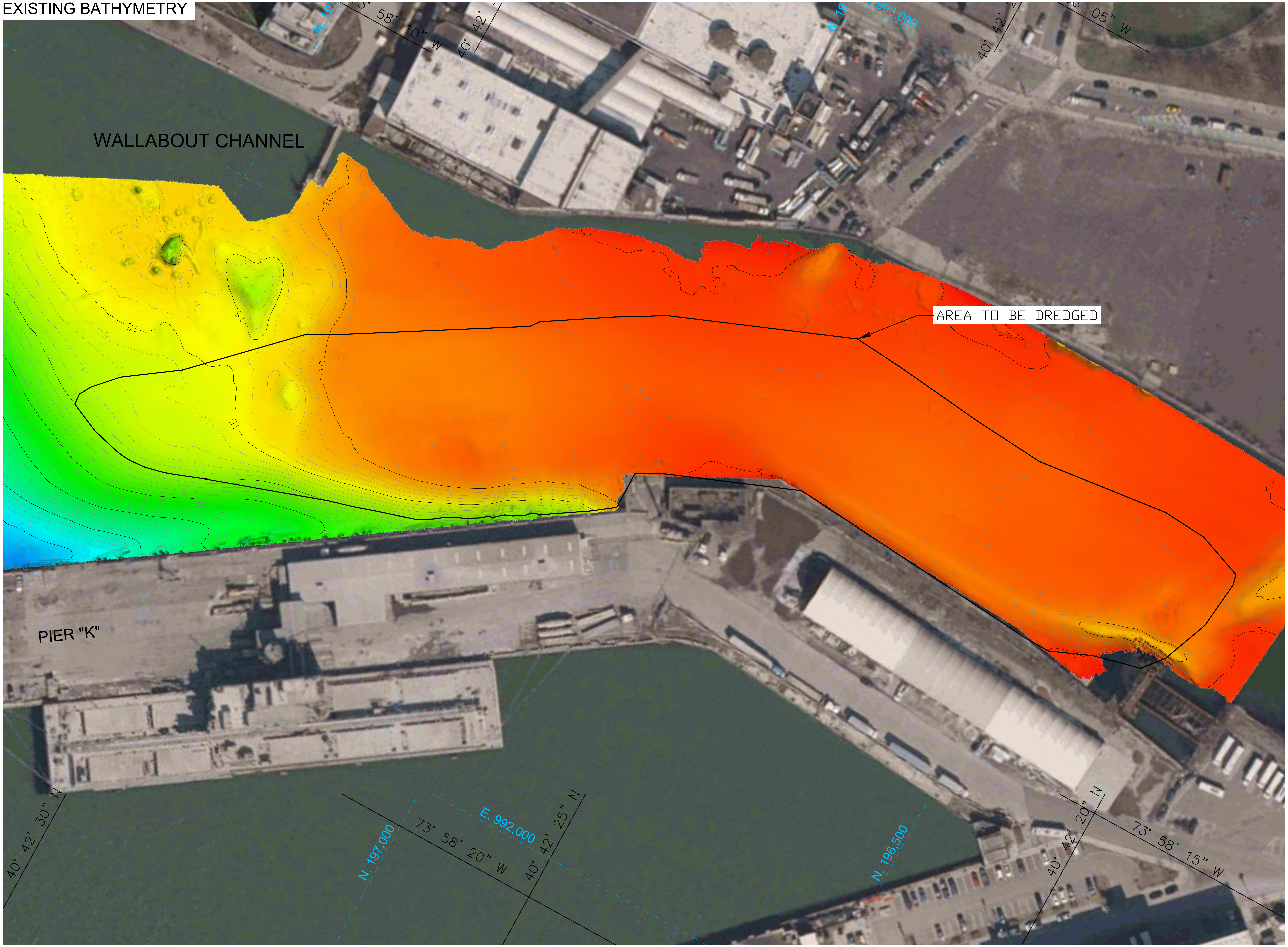
HALMAR INTERNATIONAL
421 EAST ROUTE 59
NANUET, NEW YORK 10954
HALMARINTERNATIONAL.COM

FIGURE 1 - PROJECT AREA

SEDIMENT SAMPLING OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: ALF	DRAWING DATE: February 24, 2023	STHE PROJ. # 22–135	SHEET: 1 OF X

EXISTING BATHYMETRY



LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
ELLIPSOID	GRS80
UNITS	U.S. SURVEY FOOT
VERTICAL DATUM	MEAN LOW WATER (MLW)
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SSS – SIDESCAN SONAR
STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

SCALE: 1' = 50'

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (MLW)

–5' –10' –15' –20' –25' –30' –35' –40' –45' –50'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)

N

GENERAL NOTES

1. ELEVATIONS ARE IN FEET AND REFERENCED TO MEAN LOW WATER (MLW) .
2. NAVIGATION CORRECTIONS PROVIDED BY SMARTNET REAL-TIME SERVICE AND POST-PROCESSED USING APPLANIX POSPAC SMARTBASE SOLUTION. HORIZONTAL AND VERTICAL POSITIONS ARE REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) AS PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
3. BACKGROUND IMAGES OBTAINED FROM 2020 NY STATE ORTHO IMAGERY DATABASE AND SHOW APPROXIMATE SHORELINE LOCATION FOR REFERENCE ONLY.
4. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF GEOPHYSICAL SURVEYS PERFORMED BY S.T. HUDSON ENGINEERS, INC. IN AUGUST 2022, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO STHE.
5. SOME INFORMATION PRESENTED IN THIS DRAWING ARE THE RESULT OF GEOPHYSICAL INTERPRETATION AND ANALYSIS. INCLUSION OF REPRESENTATIONS OF THOSE ANOMALIES (DEBRIS, TIRES, PIPE FRAGMENTS, ETC.) AT A SPECIFIC LOCATION DOES NOT INDICATE OR SUGGEST THE ABSENCE OF HAZARDS, ANOMALIES, INFRASTRUCTURE, APPURTENANCES, AND OTHER OBJECTS ON OR BENEATH THE SEABED IN ANY OTHER LOCATION.
6. ONE-TIME MAINTENANCE DREDGING OF APPROXIMATELY 81,510 CUBIC YARDS (CY) FROM AN APPROXIMATELY 225,784 SQUARE FOOT AREA (APPROXIMATELY 5.18 ACRES) WITHIN THE EXISTING BOAT BASIN TO A DEPTH OF -21-FEET BELOW MEAN LOW WATER, WHICH INCLUDES 1-FOOT OF ALLOWABLE OVER-DREDGE, WITH UPLAND PLACEMENT AND NO RETURN FLOW TO THE WATERWAY.

REVISION	DATE	DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW

PREPARED BY:

S.T. HUDSON ENGINEERS INC.
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PREPARED FOR:

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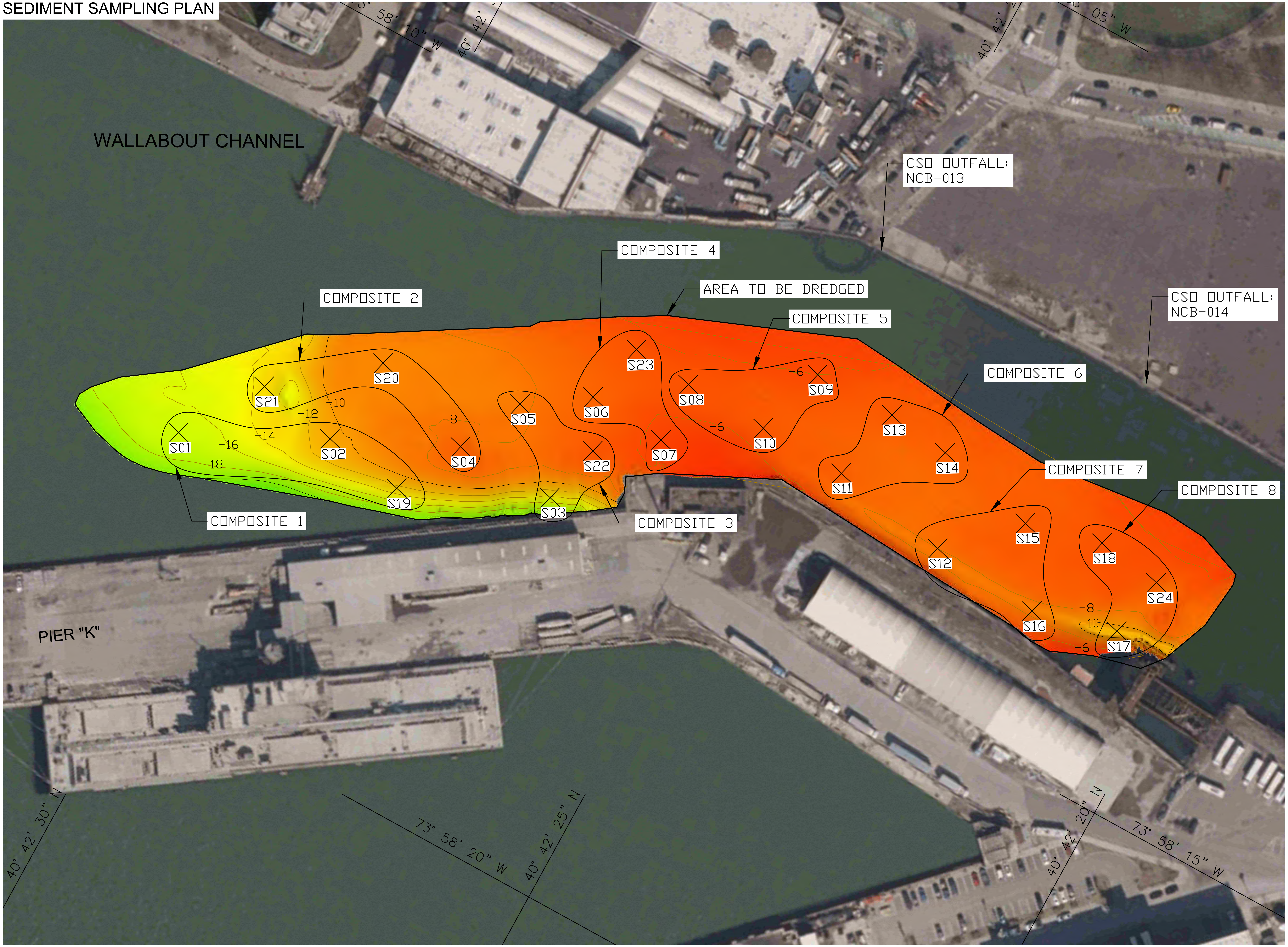
421 EAST ROUTE 59
NANUET, NEW YORK 10954
HALMARINTERNATIONAL.COM

FIGURE 2 - EXISTING BATHYMETRY

SEDIMENT SAMPLING OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: ALF	DRAWING DATE: February 24, 2023	STHE PROJ. # 22–135	SHEET: 1 OF X

SEDIMENT SAMPLING PLAN



LOCALITY PLAN

GEODETIC PARAMETERS

GRID PROJECTION	SPCS NY LONG ISLAND (3104)
HORIZONTAL DATUM	NAD83 (2011) 2010.00 EPOCH
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STHE – S. T. HUDSON ENGINEERS
SPCS – STATE PLANE COORDINATE SYSTEM

SCALE: 1' = 50'

LEGEND:

BATHYMETRY COLOR MAP – ELEVATION IN FEET (MLW)

–5' –10' –15' –20' –25' –30' –35' –40' –45' –50'

MAJOR CONTOURS (5' INTERVAL)
MINOR CONTOURS (1' INTERVAL)
S00 SEDIMENT SAMPLE POINT

GENERAL NOTES

1. ELEVATIONS ARE IN FEET AND REFERENCED TO MEAN LOW WATER (MLW) .
2. NAVIGATION CORRECTIONS PROVIDED BY SMARTNET REAL-TIME SERVICE AND POST-PROCESSED USING APPLANIX POSPAC SMARTBASE SOLUTION. HORIZONTAL AND VERTICAL POSITIONS ARE REFERENCED TO THE NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) AS PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
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FIGURE 3 - SEDIMENT SAMPLING LOCATIONS

SEDIMENT SAMPLING OF A
PORTION OF WALLABOUT CHANNEL
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT MANAGER: SJM	SURVEY DATE: AUGUST 30 2022	DRAWING: 22–135_HALMAR–WALLABOUT_2022_MLW.DWG	
DRAFTED BY: ALF	DRAWING DATE: February 27, 2023	STHE PROJ. # 22–135	SHEET: 1 OF X

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

May 25, 2023

David Oster
Loan Programs Office
U.S. Department of Energy
1000 Independence Avenue, SW
Washington D.C. 20585

Re: Floating Energy Storage System Project; Department of Energy Title XVII Innovative Energy Loan Guarantee Program

Dear Mr. Oster:

We have completed our consultation under section 7 of the Endangered Species Act (ESA) in response to your letter received May 9, 2023, regarding the above-referenced proposed project. It is our understanding that NYC Energy, LLC is the Department of Energy's designated non-Federal representative for this informal section 7 consultation. We reviewed your consultation request document and related materials. Based on our knowledge, expertise, and your materials, we concur with your conclusion that the proposed action is not likely to adversely affect (NLAA) any NMFS ESA-listed species under our jurisdiction. Therefore, no further consultation pursuant to section 7 of the ESA is required.

We agree with the rationale you provided to support your determination that the proposed action is not likely to adversely affect listed species. Specifically, we agree with your project description and the description of the action area. The necessary components of your submitted materials provided adequate information to support the NLAA determinations. We agree with your description of listed species, life stages, and behaviors in the action area. We agree that the effects, which you analyzed, constitute all of the effects of the action. We agree with your application of the term "discountable" (i.e., effects are discountable when they are extremely unlikely to occur) to each of the effects analyzed, and that your analysis of the effects of the action when added to baseline conditions supports your "not likely to adversely affect" determination for ESA-listed species. Finally, we agree that you based your determinations on the best available scientific and commercial information.

Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this consultation; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action.

No take is anticipated or exempted. If there is any incidental take of a listed species, reinitiation would be required.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. As a result, the 2019 regulations are once again in effect, and we are applying the 2019 regulations here. For purposes of this consultation, we considered whether the substantive analysis and conclusions articulated in the letter of concurrence would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Should you have any questions about this correspondence, please contact Jolvan Morris of my staff at (978) 282-8429 or by email at Jolvan.Morris@noaa.gov. For questions related to essential fish habitat, please contact Jessie Murray in our New Jersey field office at (732) 872-3116 (jessie.murray@noaa.gov).

Sincerely,

Jennifer Anderson

Jennifer Anderson
Assistant Regional Administrator
for Protected Resources

APPENDIX C PERMITS AND APPROVALS

Table C-1. Floating Battery Energy Storage System (FESS) Project, Brooklyn, New York Required Permits and Approvals

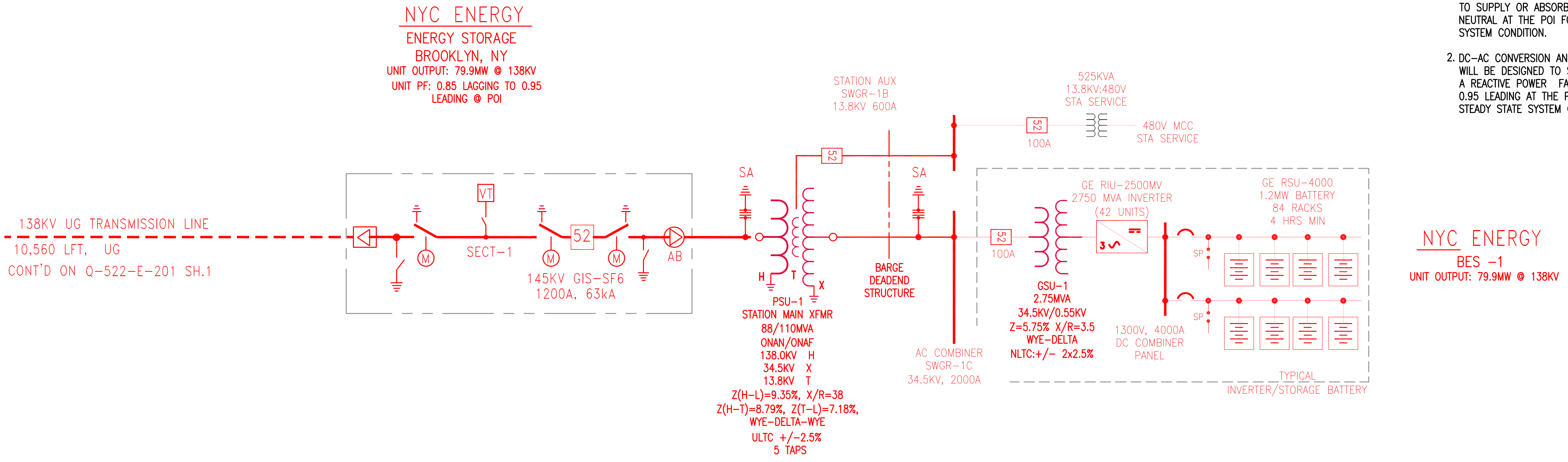
Permit/Approval	Submission Date	Review by Authorities	Approval Date	Approval Authority
Preconstruction Phase Approvals				
Section 106 Consultation	1/17/2023	Completed	3/16/2023	NYSHPO
Endangered Species Consultation	10/13/2023	Completed	10/13/2023	USFWS
Endangered Species Consultation	5/8/2023	Completed	5/25/2023	NOAA Fisheries
Essential Fish Habitat Consultation	5/9/2023	Ongoing	Pending	NOAA Fisheries
Clean Water Act Section 404 Permit	11/3/2023	Ongoing	Pending	USACE
Rivers and Harbors Act Section 10 Permit	11/3/2023	Ongoing	Pending	USACE
Section 408 Letter of Permission	11/3/2023	Ongoing	Pending	USACE
Water Quality Certification (Clean Water Act Section 401)	11/3/2023	Ongoing	Pending	NYSDEC
Article 25 Tidal Wetlands Permit	11/3/2023	Ongoing	Pending	NYSDEC
Article 15 Protection of Waters Permit	11/3/2023	Ongoing	Pending	NYSDEC
Coastal Zone Consistency Determination (for DOE Loan Guarantee)	6/2/2023	Ongoing	Pending	NYSDOS
Coastal Zone Consistency Determination (for USACE and NYSDEC permit authorizations)	11/3/2023	Ongoing	Pending	NYSDOS
Public Service Law § 68 Certificate of Public Convenience and Necessity (discretionary approval)	Anticipated following EA Publication	Not Initiated	Not Initiated	NYS Public Service Commission
Construction Phase Approvals				
NYC SBS Waterfront Permit	Anticipated following State and Federal Permit Issuance	Not Initiated	Not Initiated	NYC SBS (in coordination with NYCDOB Office of Technical Certification and Research)
FDNY Letter of Approval	TM-1 Application for preliminary project design review submitted May 10, 2024	Ongoing	Pending	FDNY
Private Aids to Navigation (PATON)	Anticipated following State and Federal Permit Issuance	Not Initiated	Not Initiated	USCG
Revocable Consent	11/23/2020	Ongoing	Pending	NYC DOT

APPENDIX D SITE PLANS

APPENDIX D-1a DOE Exhibit E3-4 SH.2 - GIS Staging

NOTES:

1. BES AND TRANSMISSION FACILITIES WILL BE DESIGNED TO SUPPLY OR ABSORB REACTIVE POWER TO BE NEUTRAL AT THE POI FOR NORMAL AND STEADY STATE SYSTEM CONDITION.
2. DC-AC CONVERSION AND TRANSMISSION FACILITIES WILL BE DESIGNED TO SUPPORT GRID OPERATION WITH A REACTIVE POWER FACTOR OF 0.85 LAGGING OR 0.95 LEADING AT THE POI UNDER NORMAL AND STEADY STATE SYSTEM CONDITION.



STEP-5 WORKSCOPE

1. INSTALL BES EQUIPMENT
2. COMMISION AND COMPLETE CONNECTION AT HUDSON AVE RING BUS
3. COMMISION 138KV TRANSMISSION LINE AND REVENUE METERING

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
PT	POTENTIAL TRANSFORMER
POI	POINT OF INTERCONNECTION
RM	REVENUE METERING
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
▷	GIS BOUNDARY - AIR BUSHING (GIB)
▷	GIS BOUNDARY - UG CABLE GAS TERMINATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

DOE EXHIBIT E3-4

NO	DATE	DESCRIPTION	DWN	CKD	APD
0	06-04-21	NY ISO/CONED REVW - GIS STAGING	JG	RL	RT

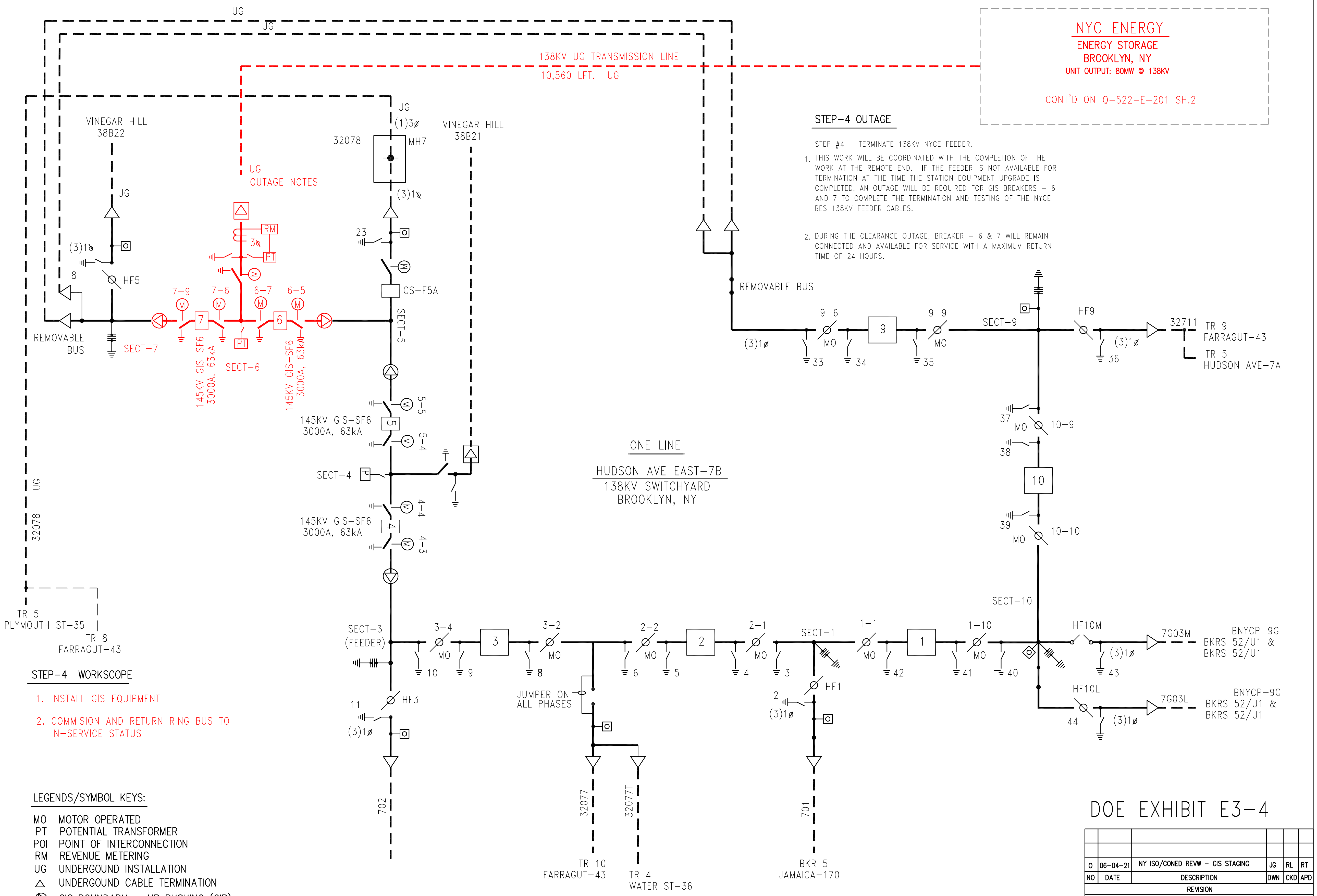
REVISION

PROJECT ENGINEER:
RST Technical Services, LLC
101 FELLOWSHIP ROAD, UNIT 43
UWCHLAND, PA 19480

NYC ENERGY LLC
c/o SEF INDUSTRIES INC.
217 EAST 70th STREET, NEW YORK , NY

Q-522-E-201 SH.2 | 0

APPENDIX D-1b DOE Exhibit E3-4 SH.1 - GIS Staging



ONE LINE

HUDSON AVE EAST-7B
138KV SWITCHYARD
BROOKLYN, NY

STEP-4 OUTAGE

STEP #4 – TERMINATE 138KV NYCE FEEDER.

1. THIS WORK WILL BE COORDINATED WITH THE COMPLETION OF THE WORK AT THE REMOTE END. IF THE FEEDER IS NOT AVAILABLE FOR TERMINATION AT THE TIME THE STATION EQUIPMENT UPGRADE IS COMPLETED, AN OUTAGE WILL BE REQUIRED FOR GIS BREAKERS – 6 AND 7 TO COMPLETE THE TERMINATION AND TESTING OF THE NYCE BES 138KV FEEDER CABLES.

2. DURING THE CLEARANCE OUTAGE, BREAKER – 6 & 7 WILL REMAIN CONNECTED AND AVAILABLE FOR SERVICE WITH A MAXIMUM RETURN TIME OF 24 HOURS.

STEP-4 WORKSCOPE

1. INSTALL GIS EQUIPMENT
2. COMMISION AND RETURN RING BUS TO IN-SERVICE STATUS

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
PT	POTENTIAL TRANSFORMER
POI	POINT OF INTERCONNECTION
RM	REVENUE METERING
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
⊳	GIS BOUNDARY – AIR BUSHING (GIB)
▷	GIS BOUNDARY – UG CABLE GAS TERMINATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

DOE EXHIBIT E3–4

0	06-04-21	NY ISO/CONED REVW – GIS STAGING	JG	RL	RT
NO	DATE	DESCRIPTION	DWN	CKD	APD

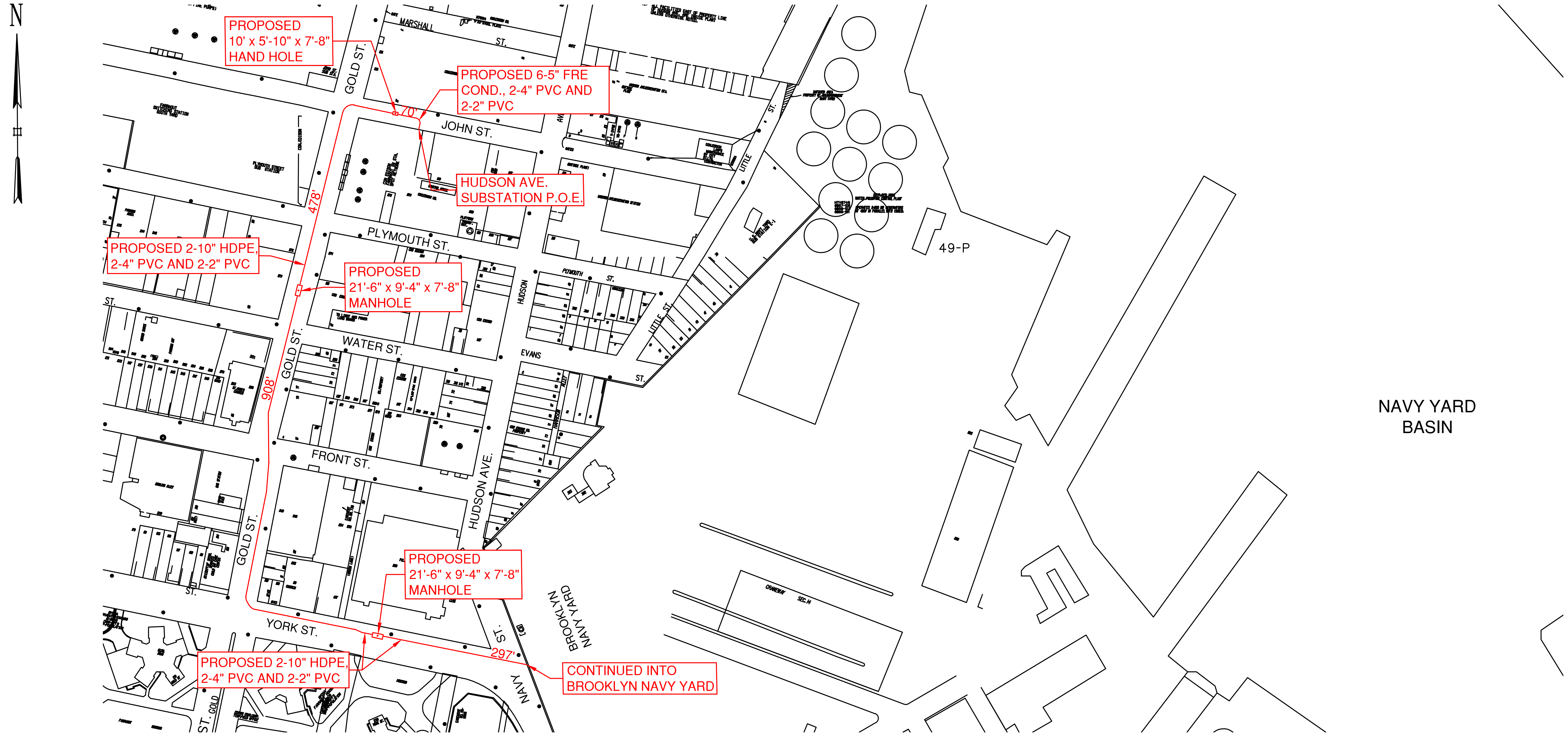
REVISION

PROJECT ENGINEER:
RST Technical Services, LLC
101 FELLOWSHIP ROAD, UNIT 43
UWCHLAND, PA 19480

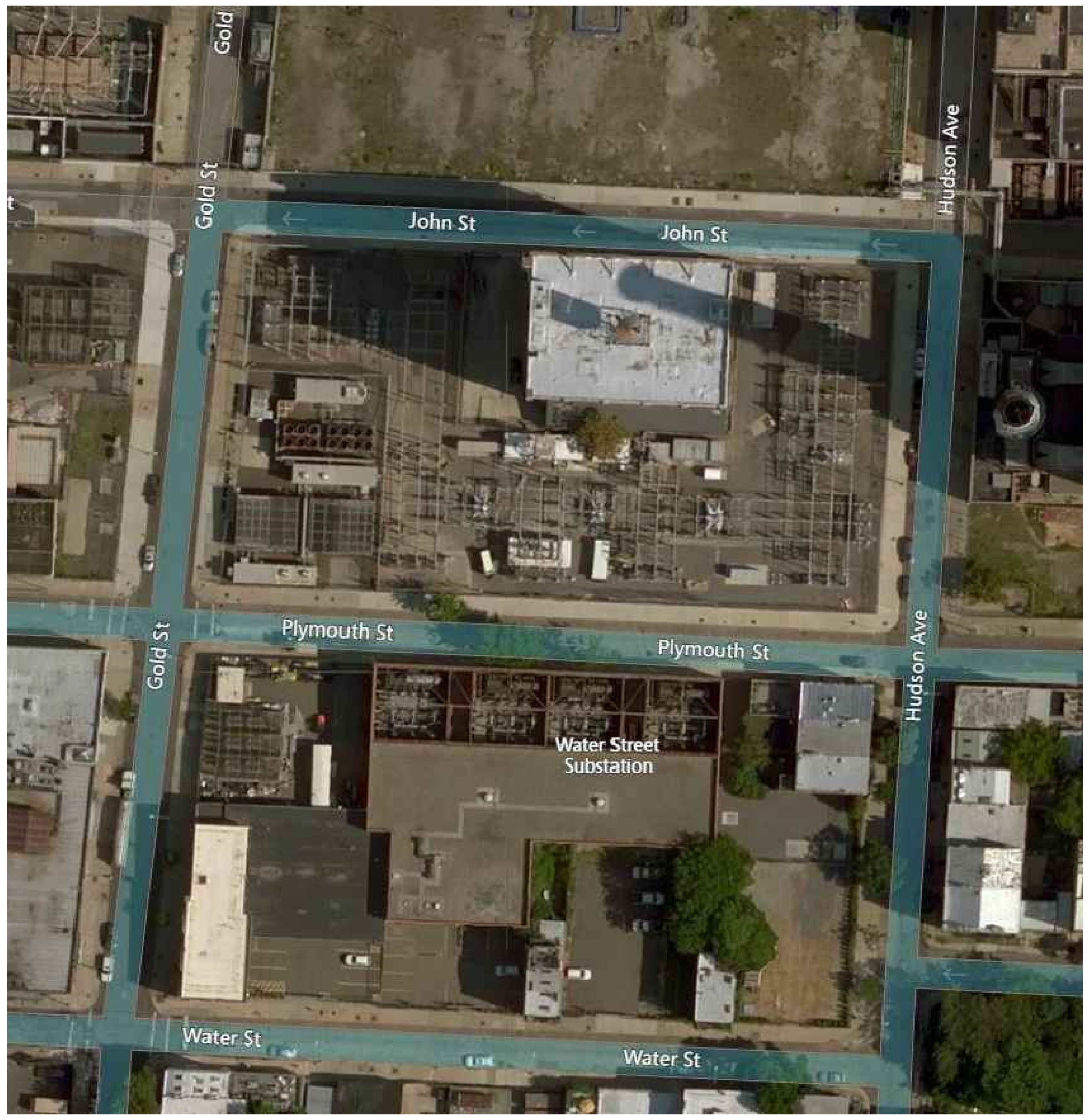
NYC ENERGY LLC
c/o SEF INDUSTRIES INC.
217 EAST 70th STREET, NEW YORK , NY

Q–522–E–201 SH.1 | 1

APPENDIX D-2 NYC DOT Revocable Consent Package 138kV Interconnect Infrastructure



LOCATION PLAN
Scale= NTS



1. SITE PHOTOGRAPH

2. SITE PHOTOGRAPH

PLAN
SHOWING LOCATION OF
138KV INTERCONNECT INFRASTRUCTURE

TO BE LOCATED AT
[ADDRESS IMPROVEMENT IS ADJACENT TO]

BOROUGH OF BROOKLYN

TO ACCOMPANY APPLICATION
SEPTEMBER 8th, 2020
OF
NYC ENERGY LLC
TO THE
DEPARTMENT OF TRANSPORTATION
CITY OF NEW YORK

NYC ENERGY LLC

BY ___________________
Ed Seaman, Energy Program Manager

ZONING INFORMATION:
BLOCK: JOHN ST. 12 & 22, GOLD ST. 21 & 22, 32 & 33, 42 & 43, 55 & 56, YORK ST. 56 & 71
LOT(S): N/A
ZONING DISTRICT: R6, R6A, R6B, M1-2, M3-1
ZONING MAP: 12d

CHARACTER OF MATERIALS:

(2) PRE-CAST MANHOLES (21'-6" x 9'-4" x 7'-8")
(1) PRE-CAST HAND HOLE (10' x 5'-10" x 7'-8")
3,366 FT OF 1-10" HDPE
432 FT OF 6-5" FRE CONDUIT
3,514 FT OF 1-4" PVC, 3,514 FT OF 1-2" PVC
10,662 FT OF 138KV POWER CABLE
3,554 FT OF FIBER OPTIC CABLE
3,554 FT OF 500KCM GROUND CABLE
THERMAL SAND BACKFILL

COST OF INSTALLATION: $1,450,000
COST OF REMOVAL AND RESTORATION: $400,000
NOTE: PROPOSED IMPROVEMENTS SHOWN IN RED

RST Technical Services, LLC

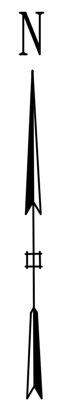
REVISIONS

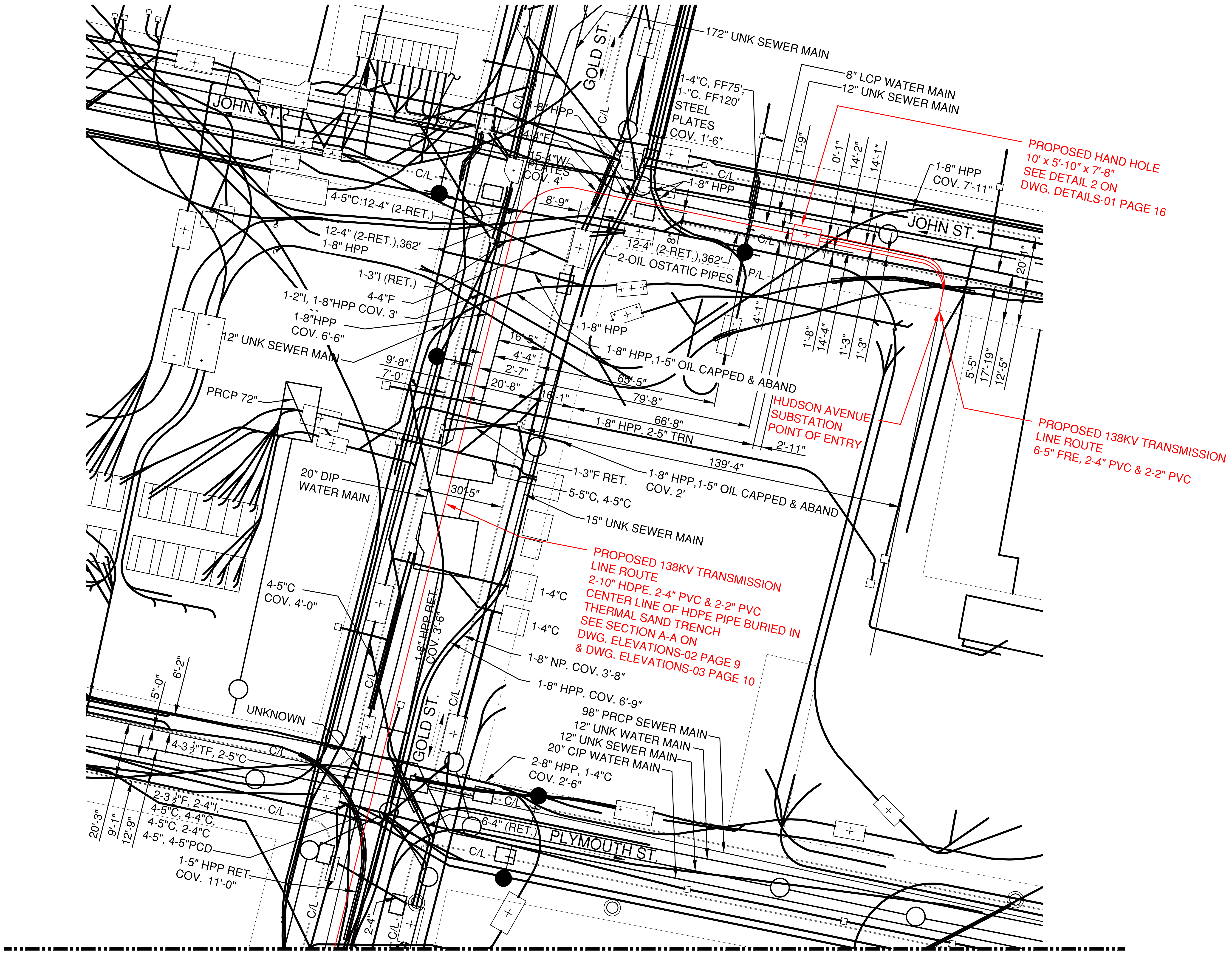
REV	DATE	DESCRIPTION	DRN	CKD	APPD
0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

SEAL:
JOHN M COCKROFT
057452

TITLE:
NYC ENERGY LLC
138KV INTERCONNECT
INFRASTRUCTURE
COVER SHEET

DRAWING NUMBER: COVER-01
PAGE: 1





MATCHLINE FOR CONTINUATION SEE DRAWING PLAN-02 PAGE 3

INFRASTRUCTURE PLAN

SCALE: 1/32"=1'-0"

KEY PLAN

SCALE: 1"=200'

LEGEND

- ● STANDARD FIRE HYDRANT
- -●- BREAKAWAY FIRE HYDRANT
- ○ SEWER MANHOLE
- ◎ STREET LIGHT
- ▭ SEWER CATCH BASIN
- □ SEWER CHAMBER

PIPE MATERIAL

LCP - LINED CAST IRON PIPE
DIP - DUCTILE IRON PIPE
CIP - CAST IRON PIPE
PRCP - PRECAST REINFORCED CONCRETE PIPE
CP - CLAY PIPE
ESVP - EXTRA STRENGTH VITRIFIED CLAY PIPE
RC - REINFORCED CONCRETE

RST Technical Services, LLC

REVISIONS

REV	DATE	DESCRIPTION	DRN	CKD	APPD
0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

SEAL:

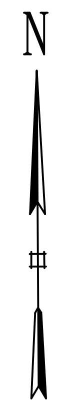
STATE OF NEW YORK
JOHN M COCKROFT
057452
LICENSED PROFESSIONAL ENGINEER

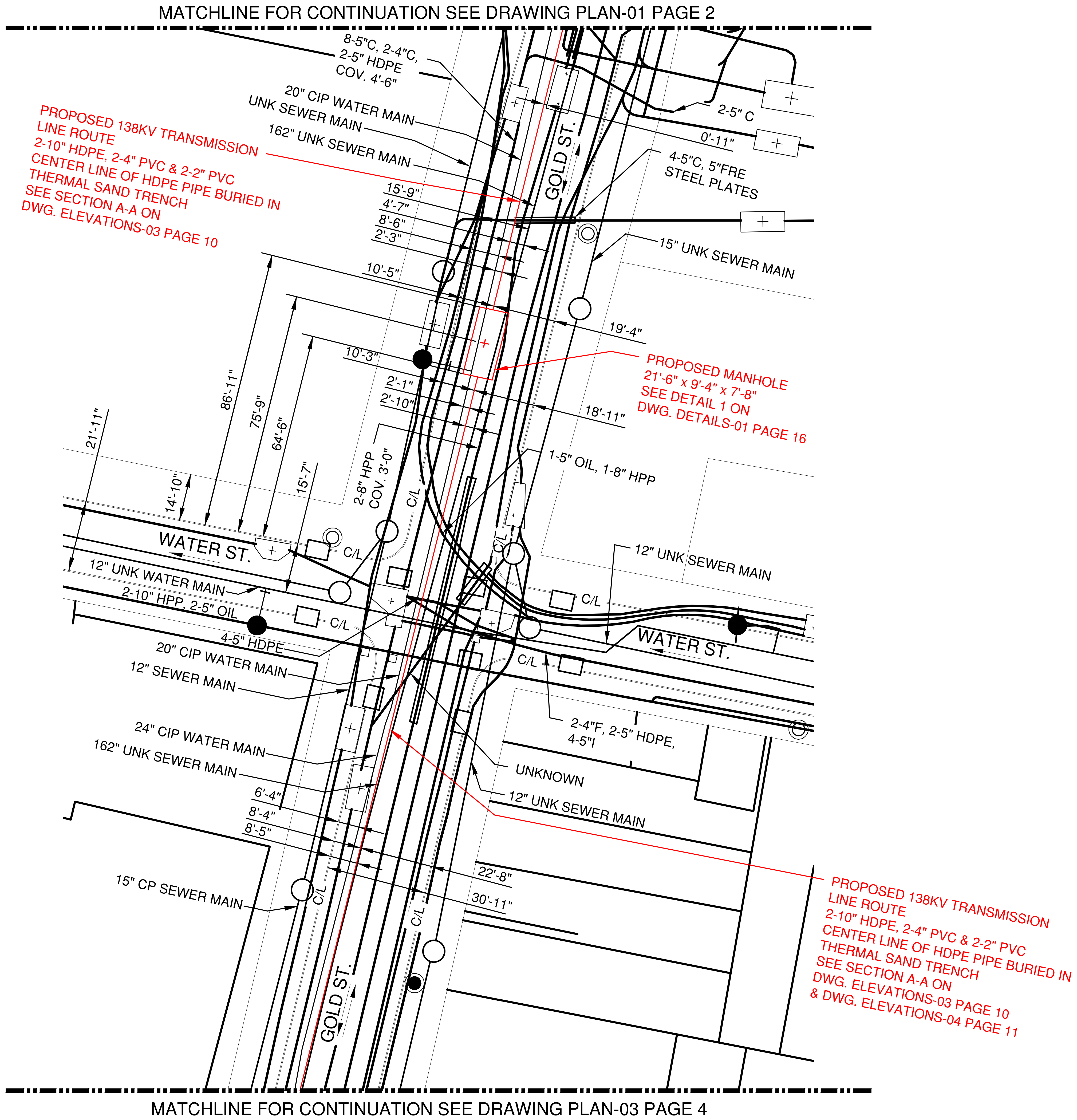
TITLE:

NYC ENERGY LLC
138KV INFRASTRUCTURE
PLAN

DRAWING NUMBER: PLAN-01

PAGE: 2





INFRASTRUCTURE PLAN

SCALE: 1/32"=1'-0"

KEY PLAN

SCALE: 1"=200'

LEGEND

- ● STANDARD FIRE HYDRANT
- ● BREAKAWAY FIRE HYDRANT
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RST Technical Services, LLC

REVISIONS

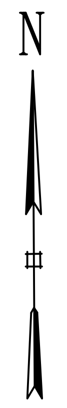
REV	DATE	DESCRIPTION	DRN	CKD	APPD
0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

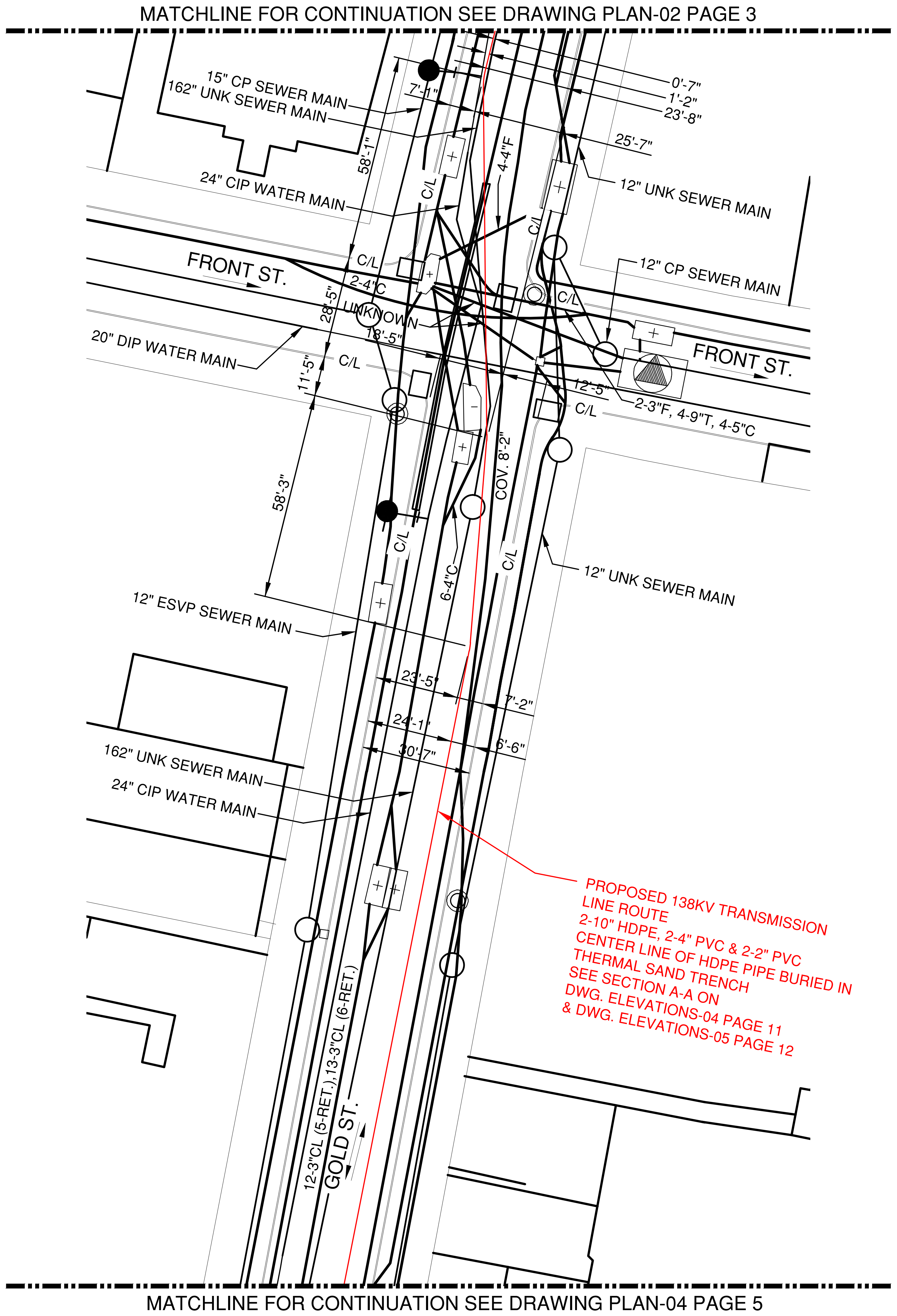
SEAL:
JOHN M COCKROFT
057452

TITLE:
NYC ENERGY LLC
138KV INFRASTRUCTURE
PLAN

DRAWING NUMBER: PLAN-02

PAGE: 3





INFRASTRUCTURE PLAN

SCALE: 1/32"=1'-0"

KEY PLAN

SCALE: 1"=200'

LEGEND

●	STANDARD FIRE HYDRANT
-●-	BREAKAWAY FIRE HYDRANT
○	SEWER MANHOLE
◎	STREET LIGHT
▭	SEWER CATCH BASIN
□	SEWER CHAMBER

PIPE MATERIAL

LCP - LINED CAST IRON PIPE
DIP - DUCTILE IRON PIPE
CIP - CAST IRON PIPE
PRCP - PRECAST REINFORCED CONCRETE PIPE
CP - CLAY PIPE
ESVP - EXTRA STRENGTH VITRIFIED CLAY PIPE
RC - REINFORCED CONCRETE

RST Technical Services, LLC

REVISIONS

REV	DATE	DESCRIPTION	DRN	CKD	APPD
0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

SEAL:
STATE OF NEW YORK
JOHN M COCKROFT
057452
LICENSED PROFESSIONAL ENGINEER

TITLE:

NYC ENERGY LLC
138KV INFRASTRUCTURE
PLAN

DRAWING NUMBER: PLAN-03

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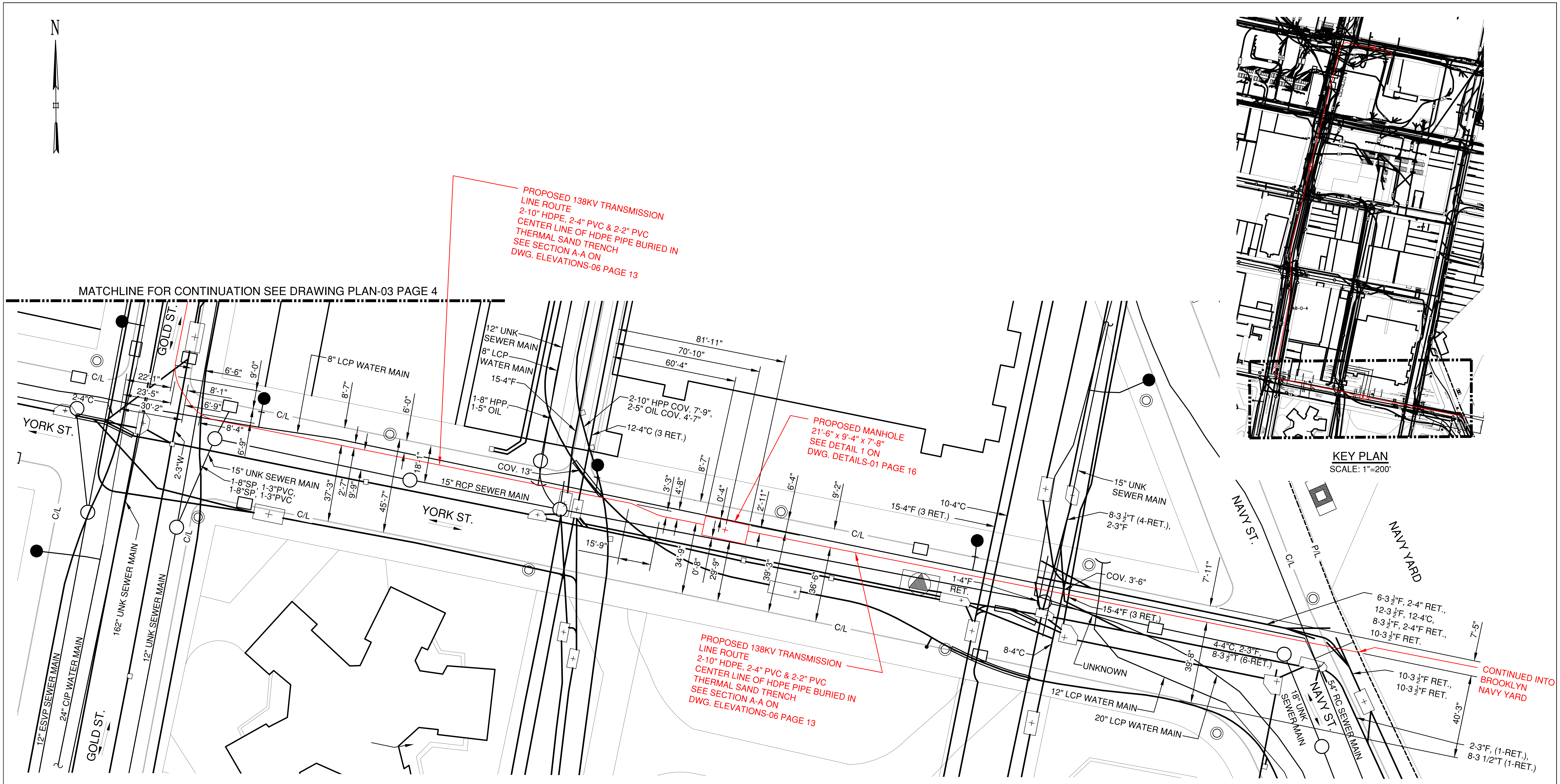

INFRASTRUCTURE PLAN
SCALE: 1/32"=1'-0"

LEGEND

●	STANDARD FIRE HYDRANT
-●-	BREAKAWAY FIRE HYDRANT
○	SEWER MANHOLE
◎	STREET LIGHT
▭	SEWER CATCH BASIN
□	SEWER CHAMBER

PIPE MATERIAL

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138KV INFRASTRUCTURE
PLAN

DRAWING NUMBER: PLAN-04

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EXISTING CONDITIONS
Scale= 1" = 100'

LEGEND

● STANDARD FIRE HYDRANT
●- BREAKAWAY FIRE HYDRANT
○ SEWER MANHOLE
◎ STREET LIGHT
▭ SEWER CATCH BASIN
☐ SEWER CHAMBER

PIPE MATERIAL

LCP - LINED CAST IRON PIPE
DIP - DUCTILE IRON PIPE
CIP - CAST IRON PIPE
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CP - CLAY PIPE
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138KV INFRASTRUCTURE
EXISTING CONDITIONS

DRAWING NUMBER: EXISTING-01

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PROPOSED CONDITIONS
Scale= 1" = 100'

LEGEND

● STANDARD FIRE HYDRANT
-●- BREAKAWAY FIRE HYDRANT
○ SEWER MANHOLE
◎ STREET LIGHT
▭ SEWER CATCH BASIN
□ SEWER CHAMBER

PIPE MATERIAL

LCP - LINED CAST IRON PIPE
DIP - DUCTILE IRON PIPE
CIP - CAST IRON PIPE
PRCP - PRECAST REINFORCED CONCRETE PIPE
CP - CLAY PIPE
ESVP - EXTRA STRENGTH VITRIFIED CLAY PIPE
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138KV INFRASTRUCTURE
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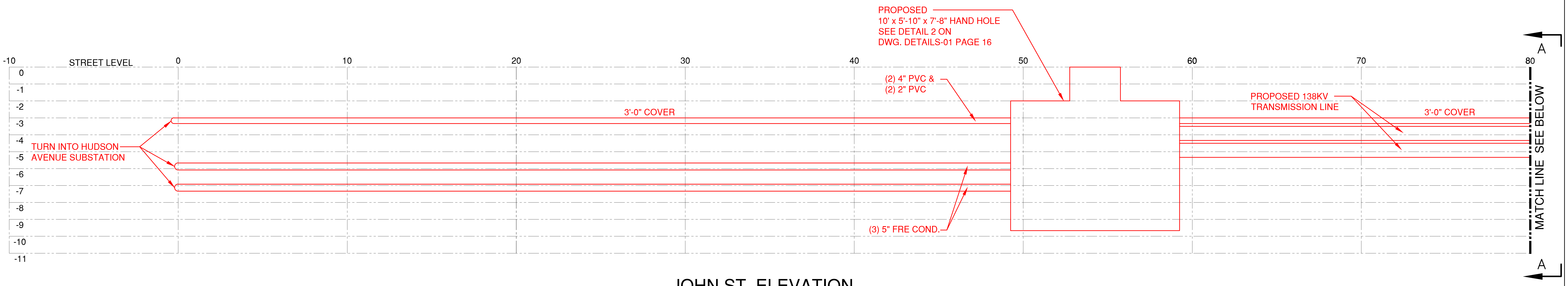

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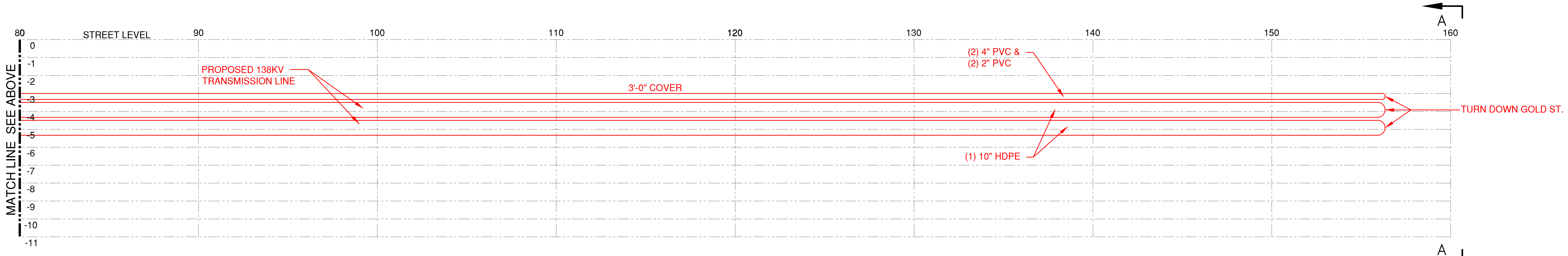

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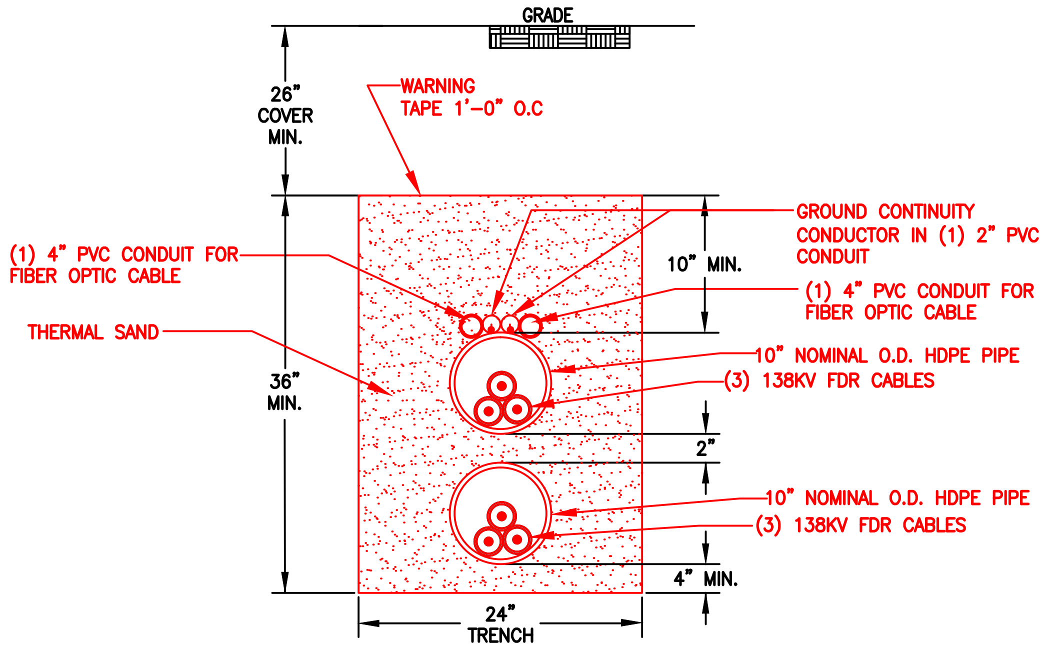

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

REVISIONS

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0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

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TITLE:

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138KV INFRASTRUCTURE
ELEVATIONS

DRAWING NUMBER:
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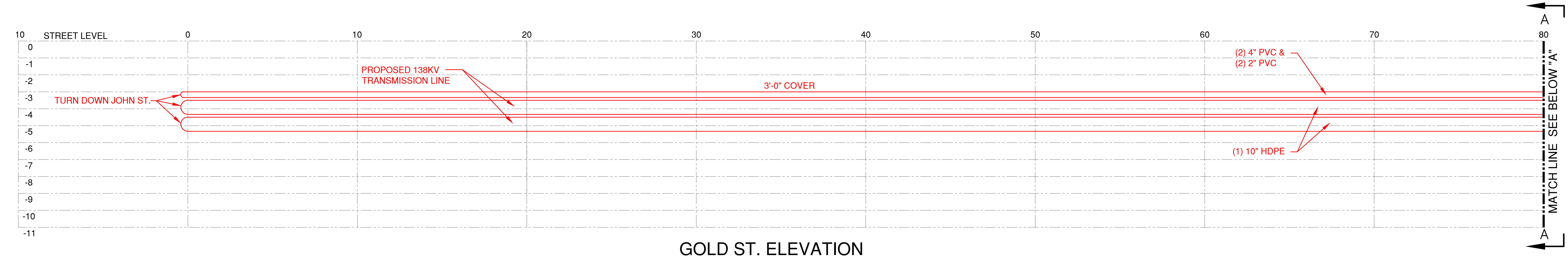

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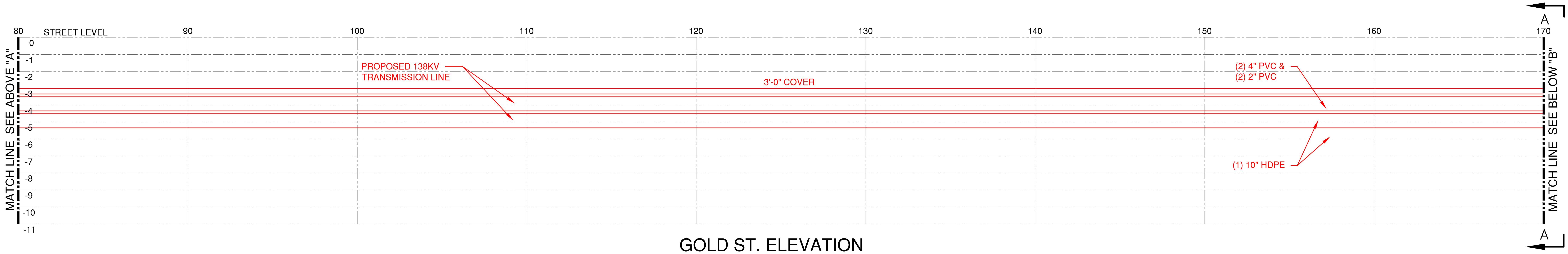

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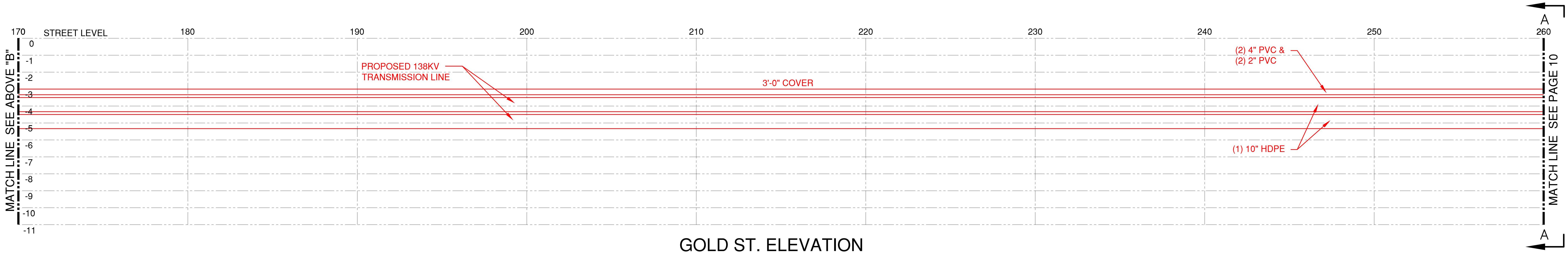

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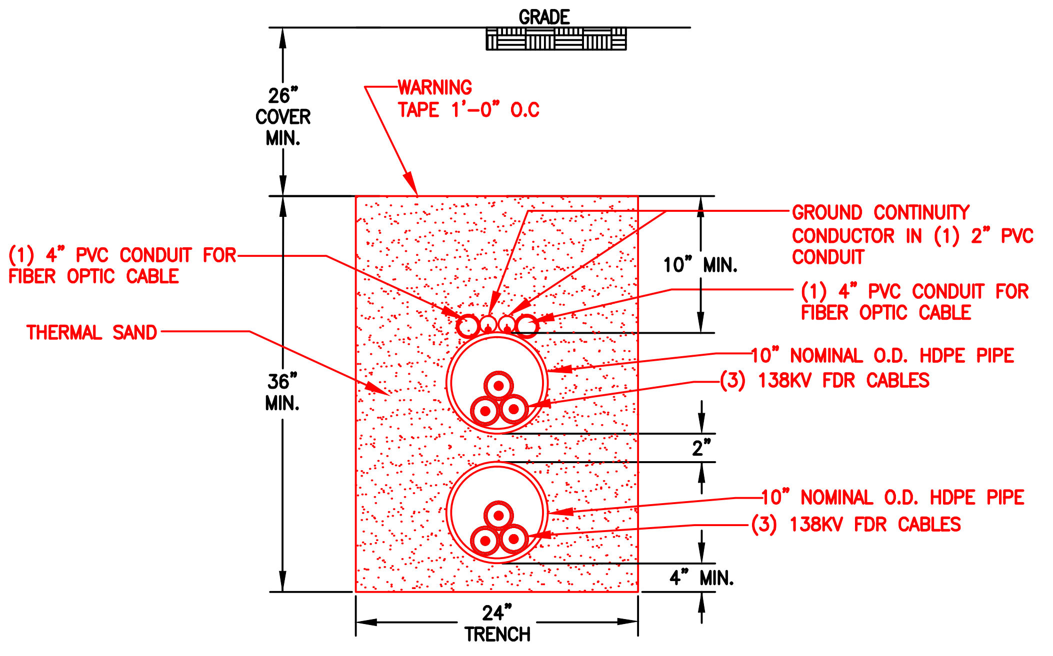

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

REVISIONS

REV	DATE	DESCRIPTION	DRN	CKD	APPD
0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

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057452

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NYC ENERGY LLC
138KV INFRASTRUCTURE
ELEVATIONS

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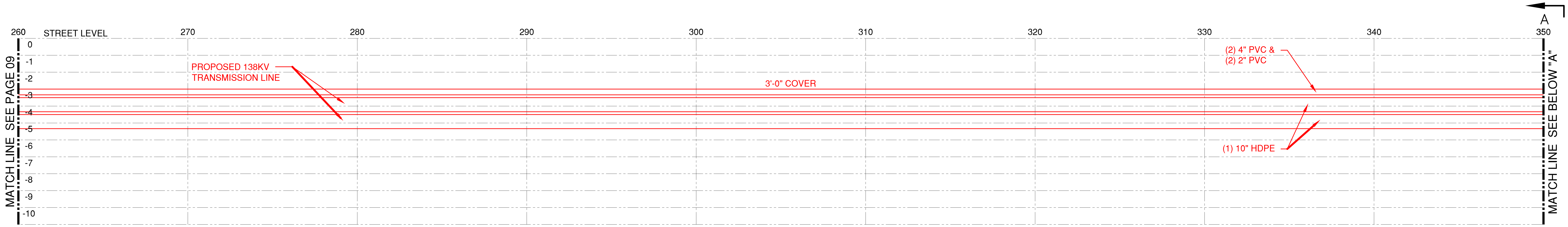

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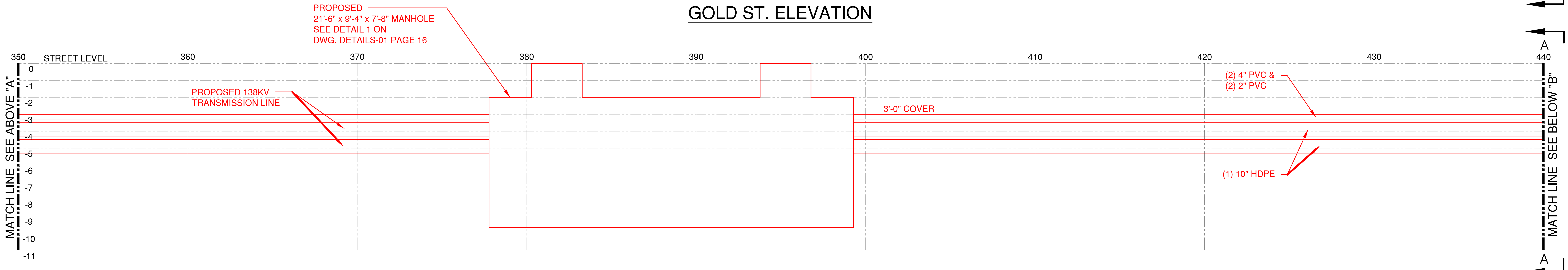

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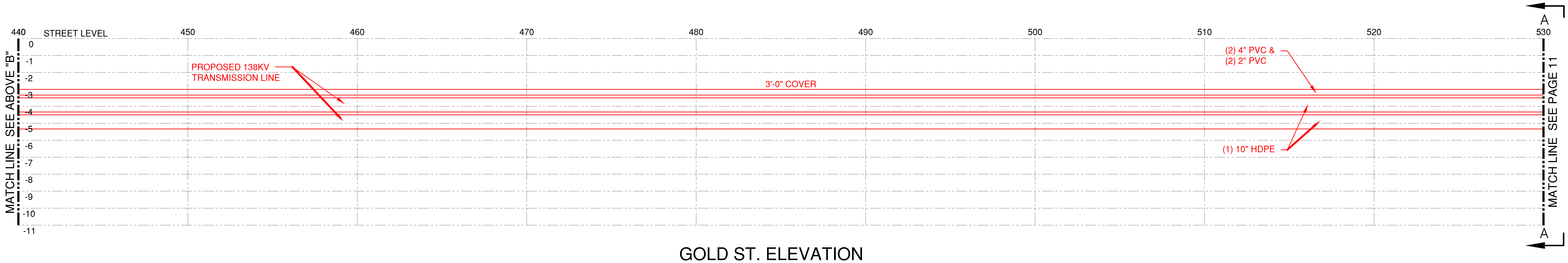

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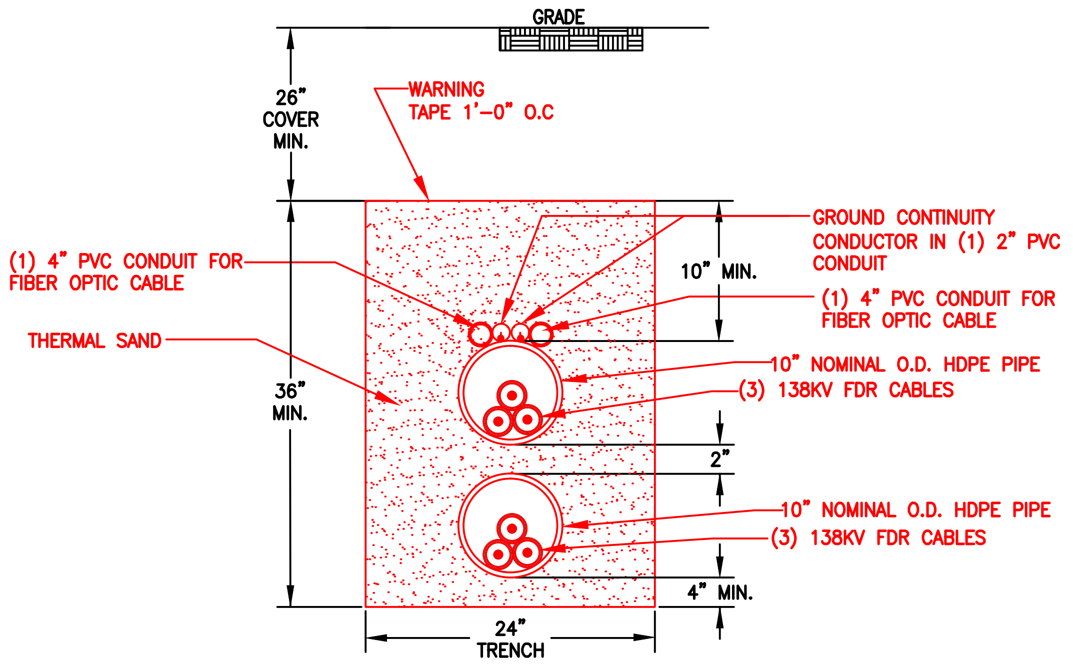

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

REVISIONS

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TITLE:

NYC ENERGY LLC
138KV INFRASTRUCTURE
ELEVATIONS

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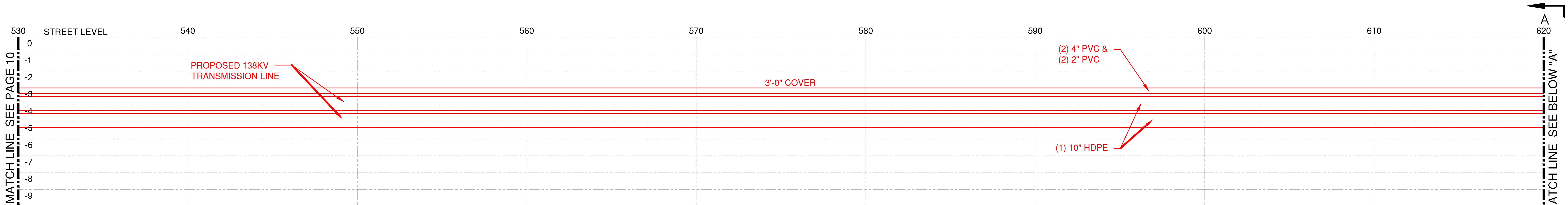

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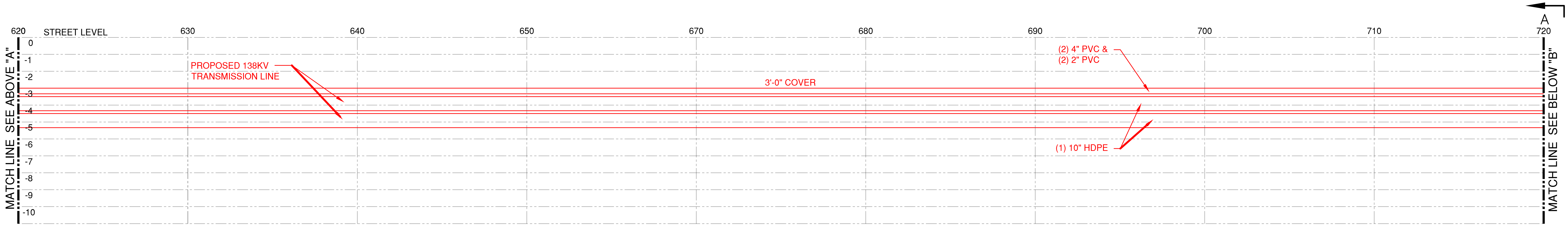

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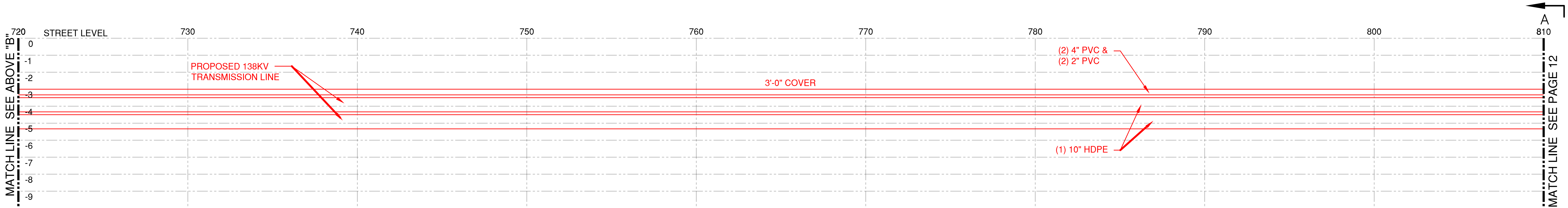

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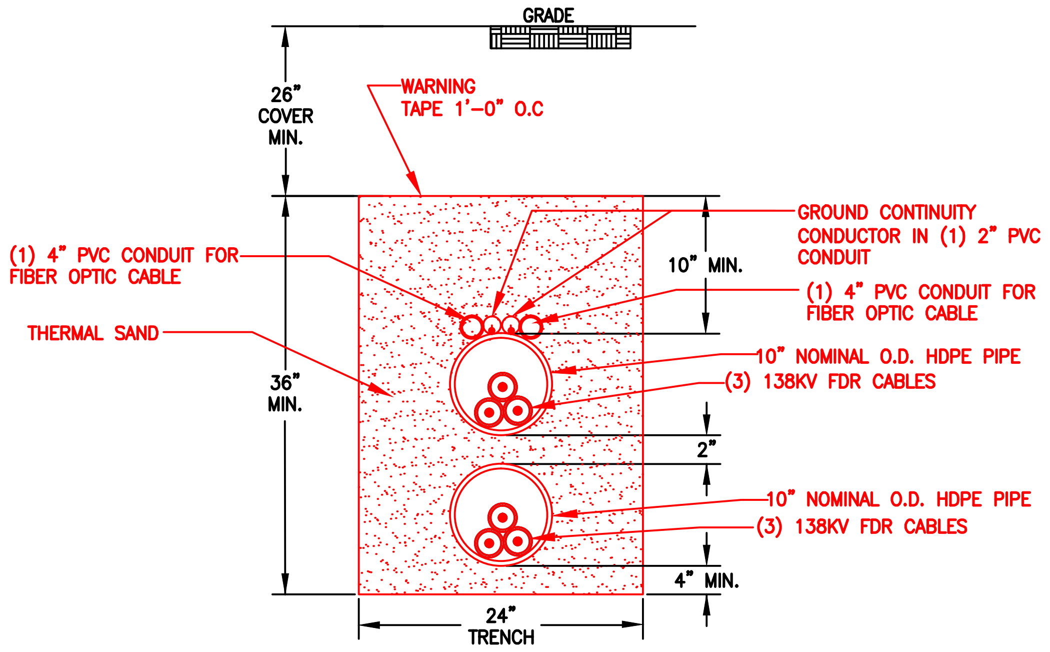

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

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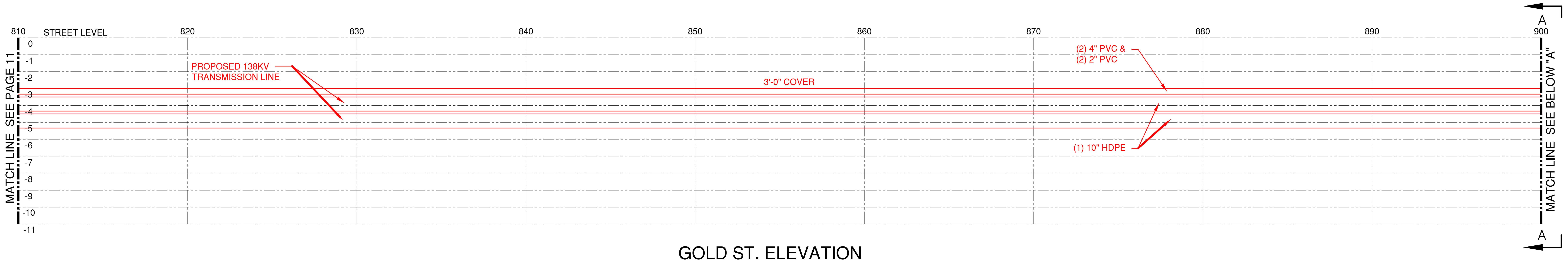

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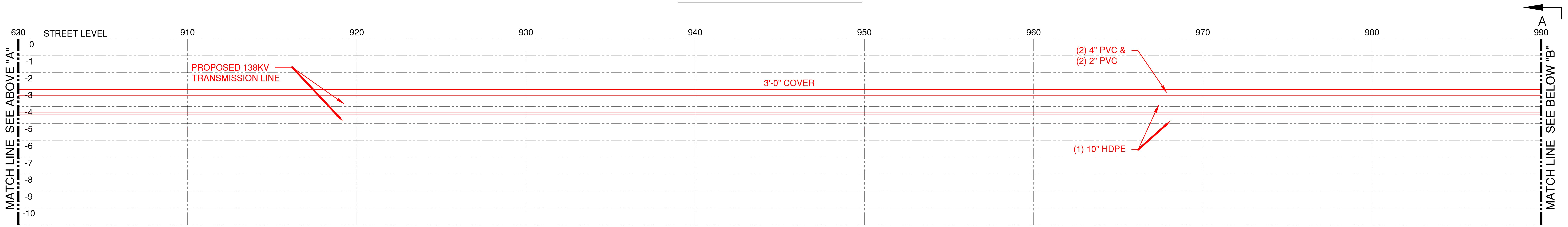

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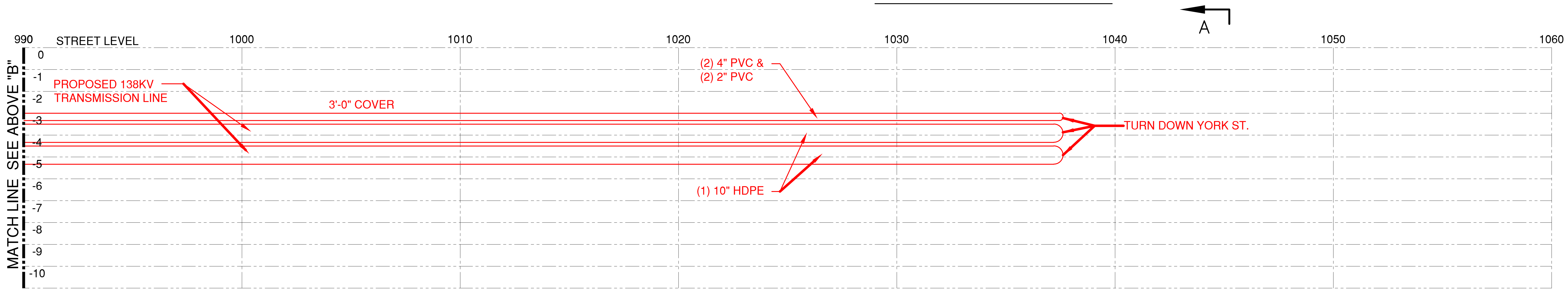

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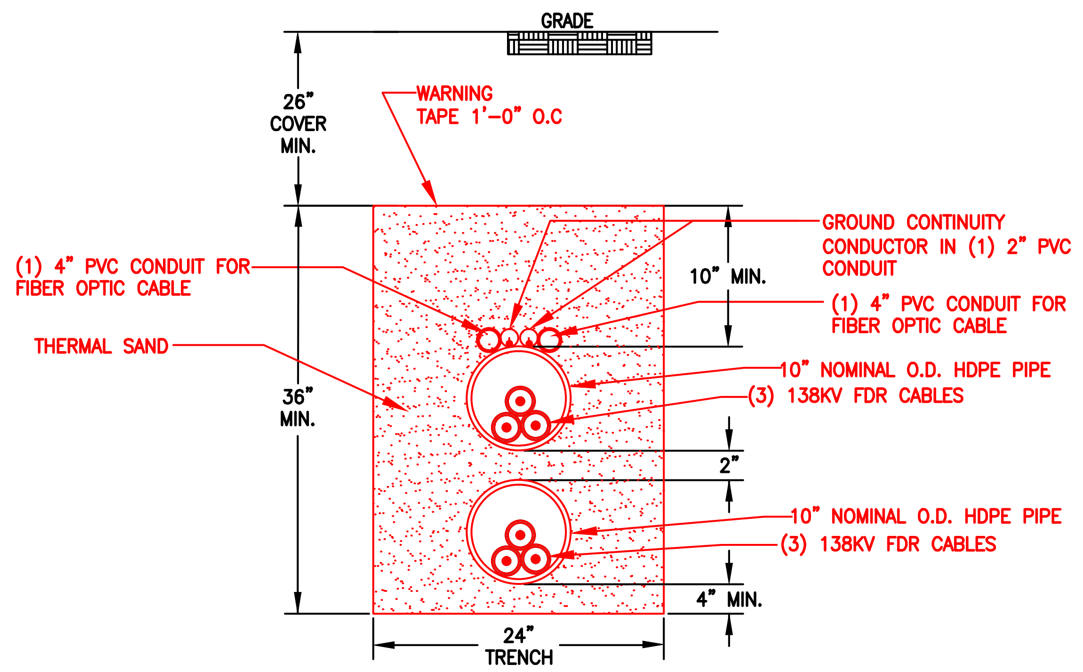

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

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057452

TITLE:

NYC ENERGY LLC
138KV INFRASTRUCTURE
ELEVATIONS

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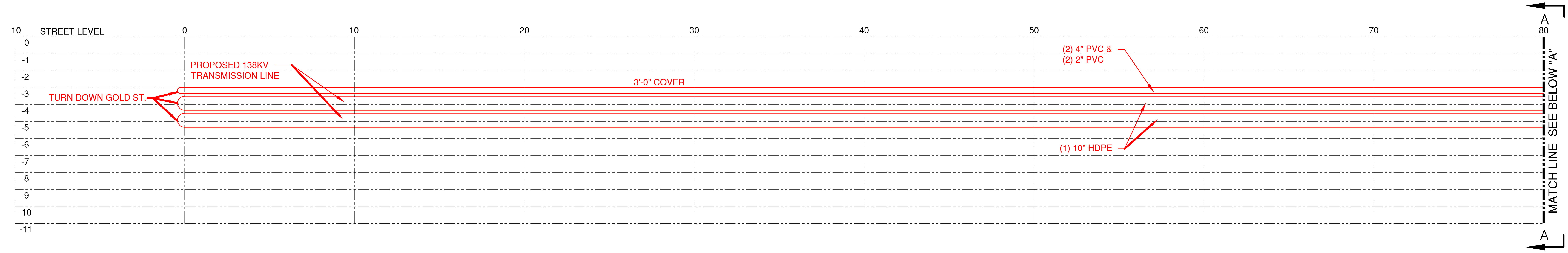

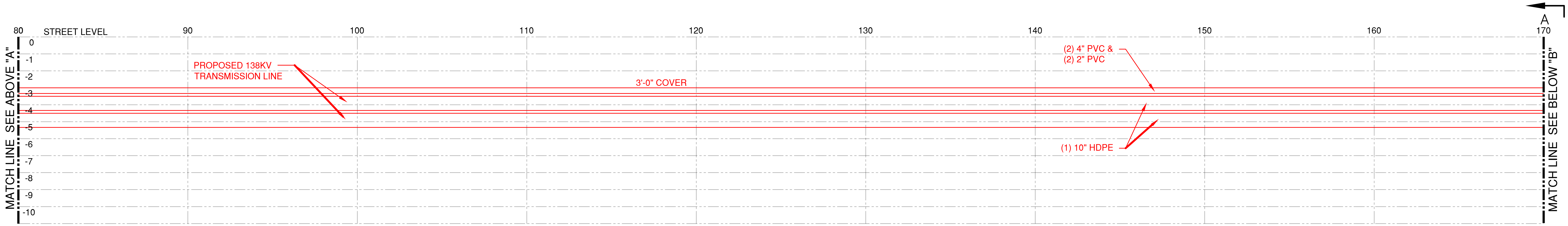

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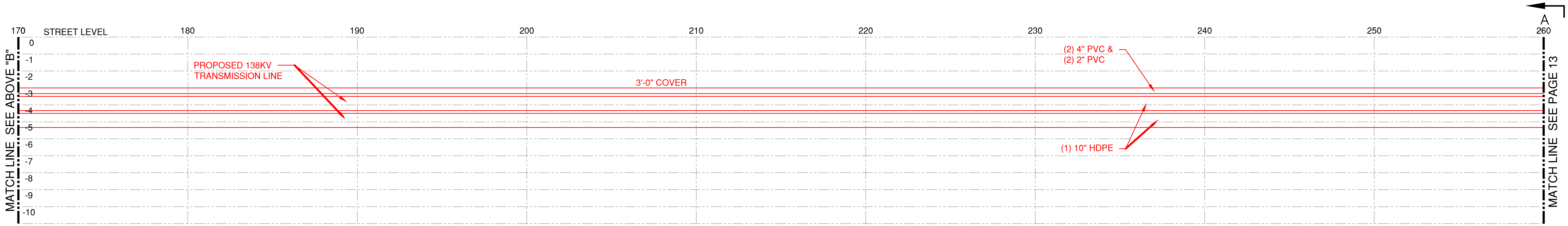

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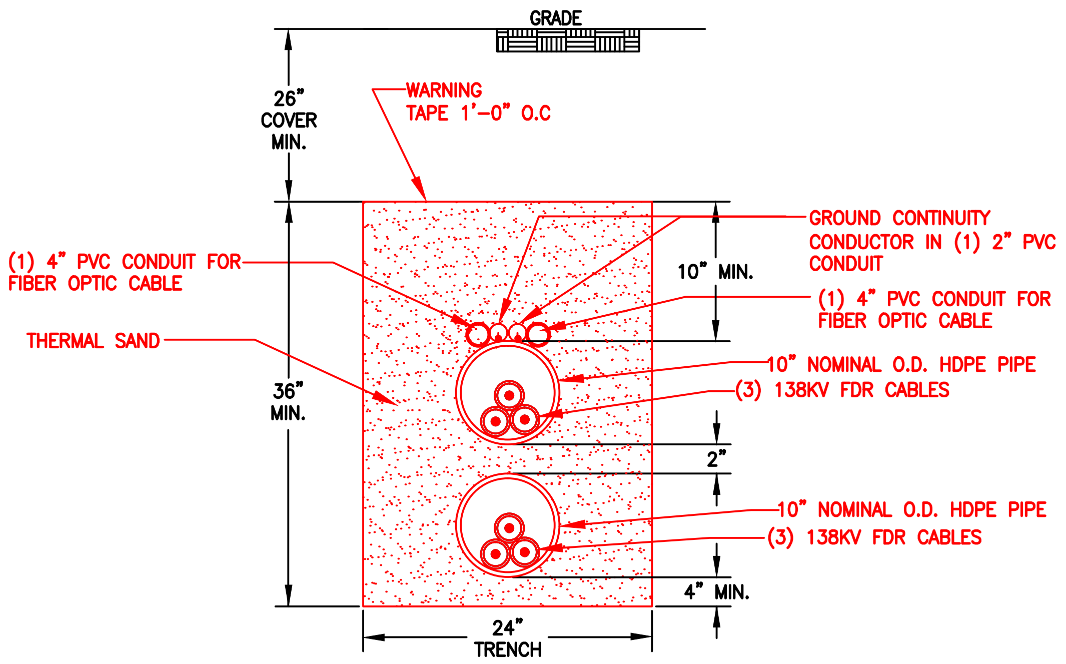

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

REVISIONS

REV	DATE	DESCRIPTION	DRN	CKD	APPD
0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

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JOHN M COCKROFT
057452
LICENSED PROFESSIONAL ENGINEER

TITLE:

NYC ENERGY LLC
138KV INFRASTRUCTURE
ELEVATIONS

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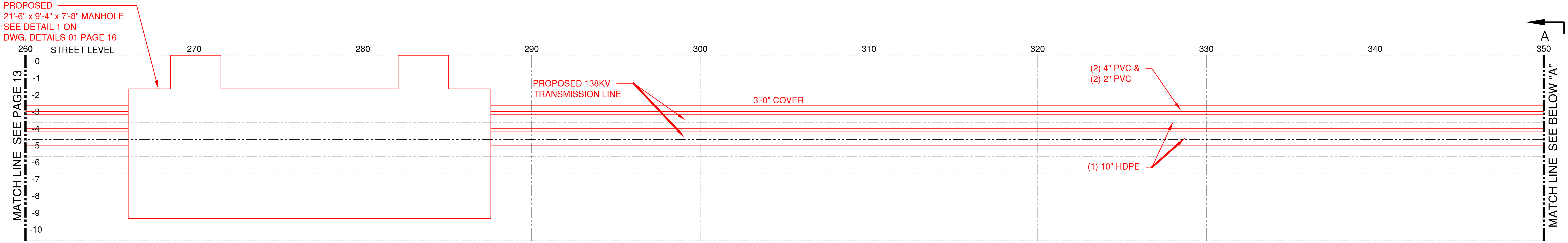

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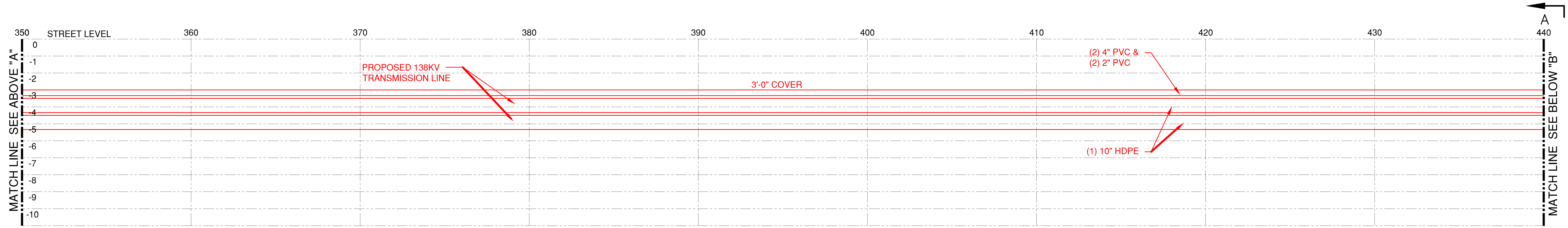

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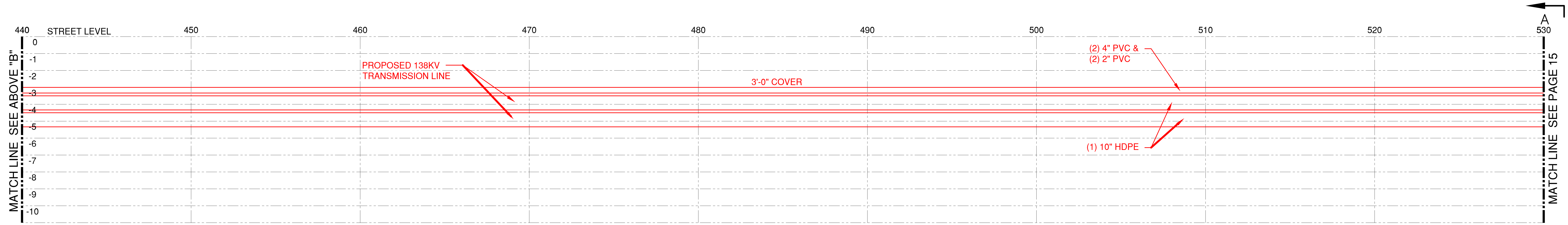

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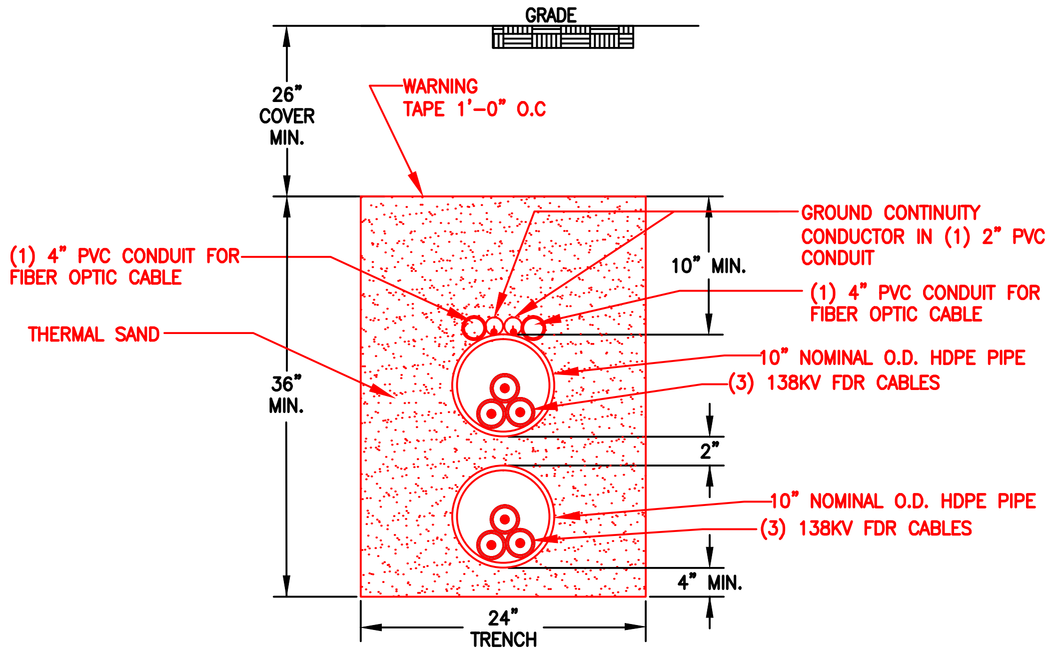

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

REVISIONS

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057452

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138KV INFRASTRUCTURE
ELEVATIONS

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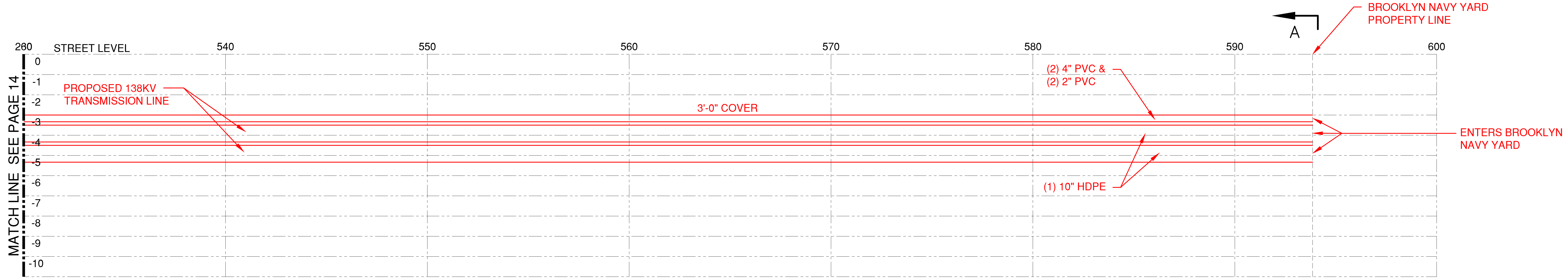

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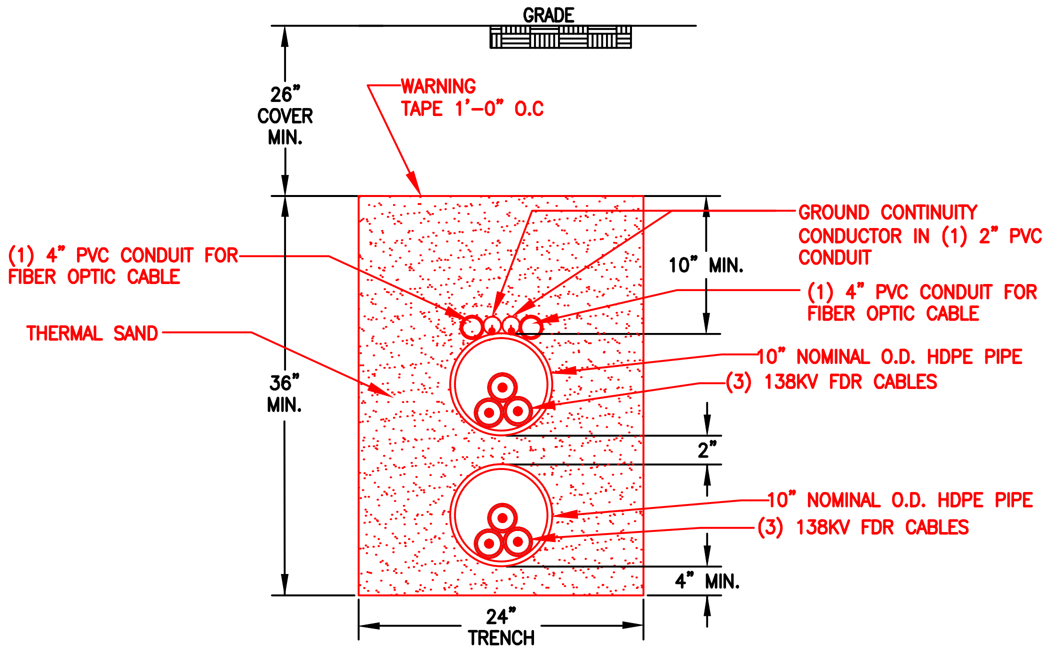

SECTION A-A

(2)10" HDPE PIPE

SCALE: NONE

RST Technical Services, LLC

REVISIONS

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057452

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138KV INFRASTRUCTURE
ELEVATIONS

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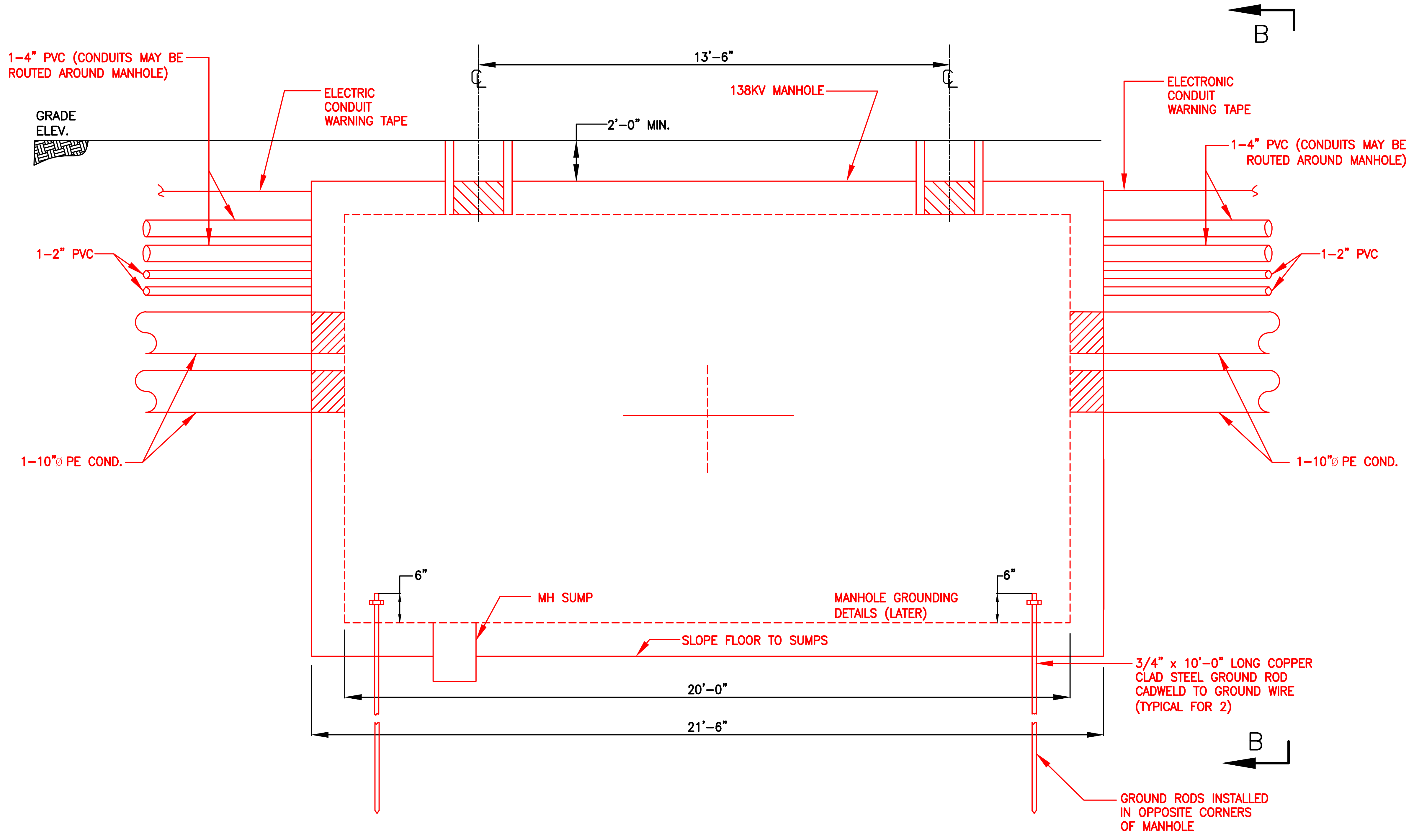
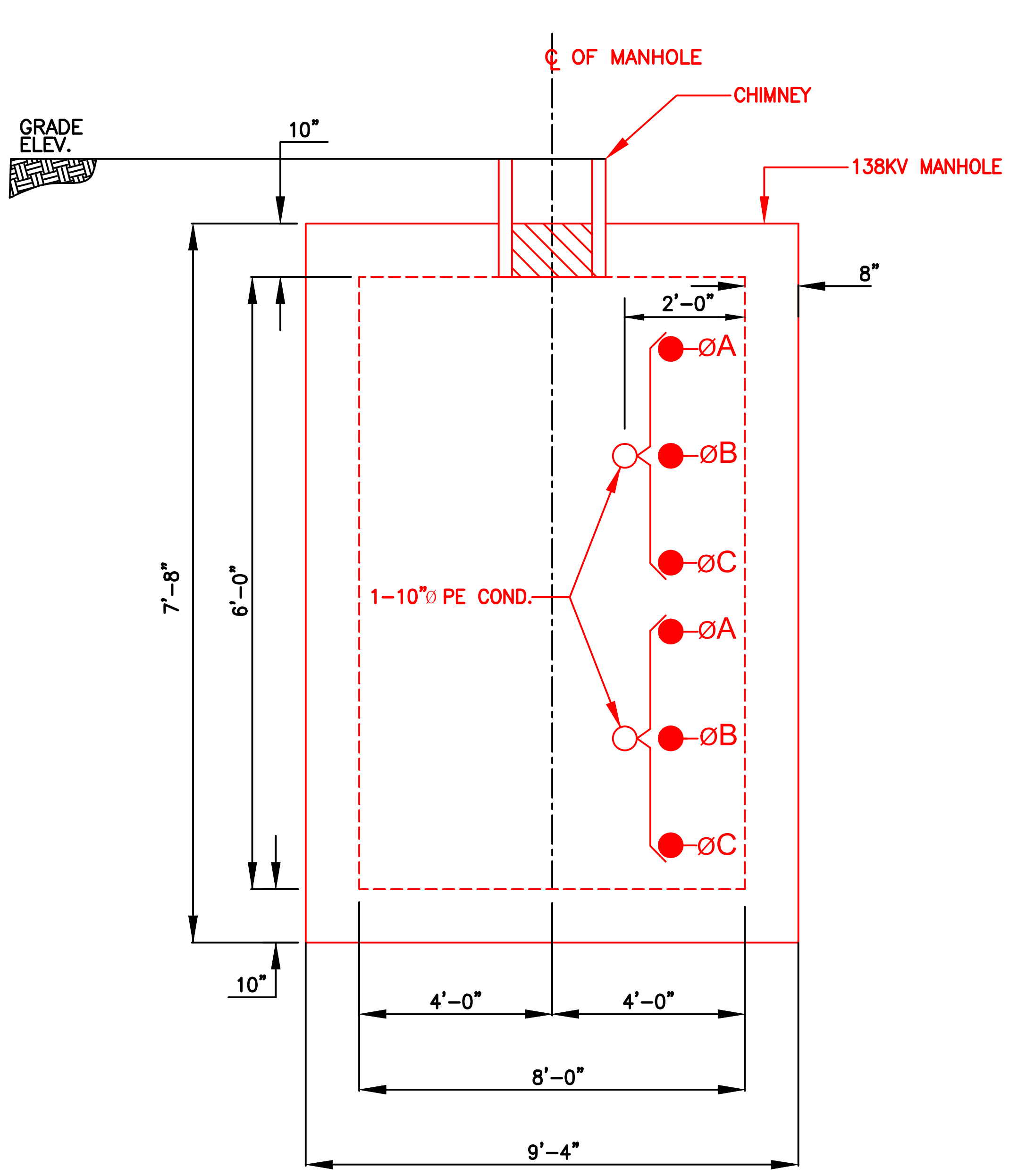


DETAIL 1
138KV MANHOLE

SCALE: NONE



SECTION B-B

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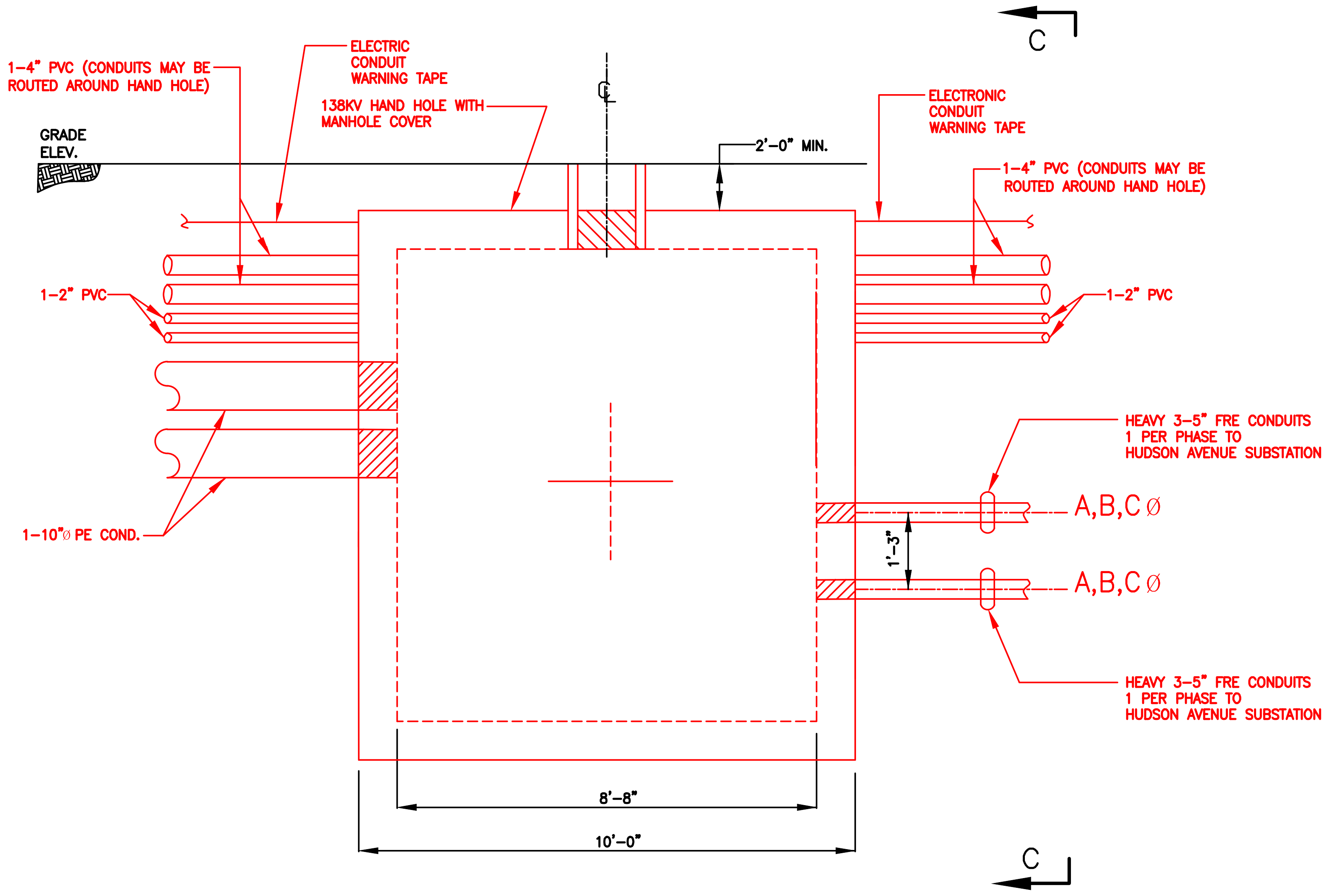
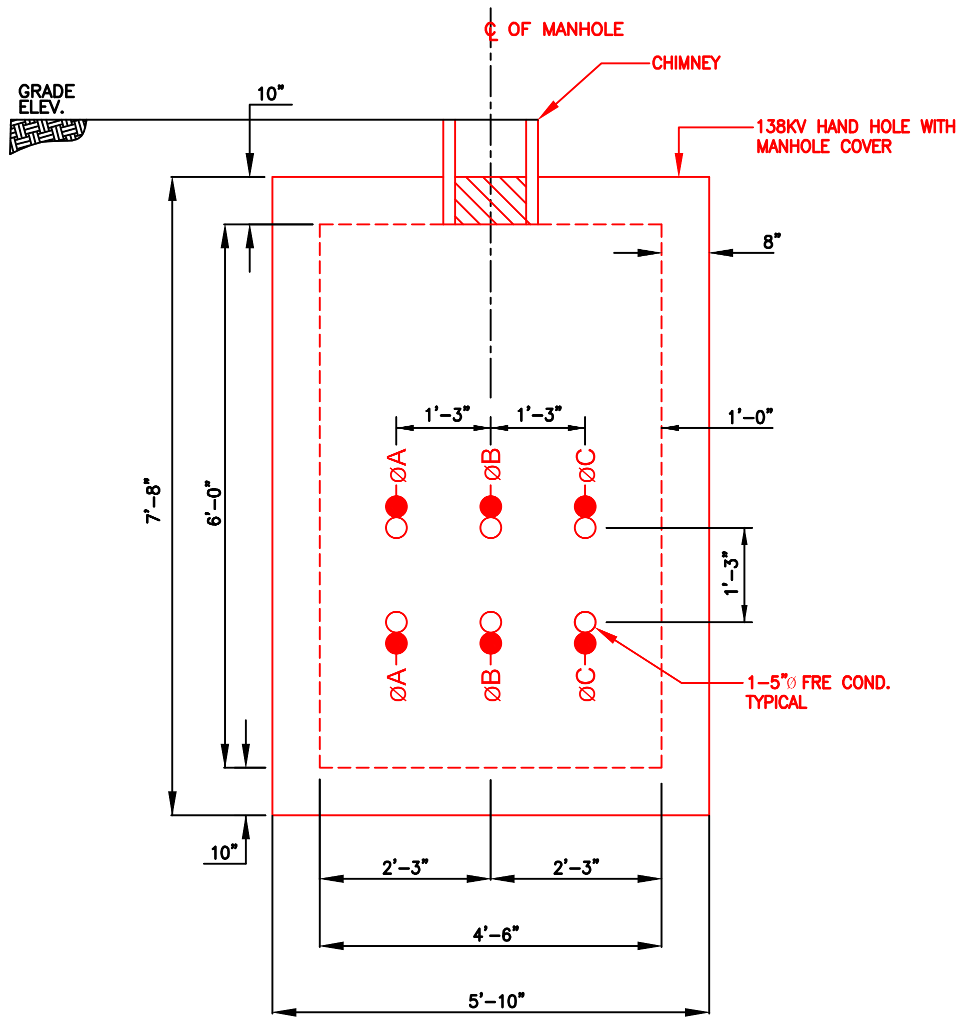


DETAIL 2
138KV HAND HOLE

SCALE: NONE



SECTION C-C

SCALE: NONE

RST Technical Services, LLC

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0	9/8/2020	DEVELOPMENT OF 138KV INFRASTRUCTURE DRAWINGS	TW	KM	JC

SEAL:

JOHN M COCKROFT
057452

TITLE:

NYC ENERGY LLC
138KV INFRASTRUCTURE
MANHOLE & HAND HOLE DETAILS

DRAWING NUMBER: DETAILS-01

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APPENDIX D-3 NYC Energy LLC
Hudson Avenue Substation Staging and Layout 6/4/2021

Q522 – NYC ENERGY BNY PHASE 1 PROJECT

NYC ENERGY LLC

c/o SEF INDUSTRIES INC.
217 EAST 70th STREET, NEW YORK , NY

INTERCONNECT AT CON EDISON'S HUDSON AVENUE SUBSTATION

PROJECT STAGING
PARTIAL ONE LINE & LAYOUT

TABLE OF CONTENTS

REVISION: 0
DATE: 06–04–2021

STEP-1 OUTAGE

STEP #1- SITE UNDERGROUND INVESTIGATION (GPR & TEST PITS).

STEP# 1A

1. TAKE CLEARANCE OUTAGE TO REMOVE SECTION 5S BUS AS REQUIRED TO PERFORM DATA COLLECTION. OPEN BREAKER #5, DISCONNECT 5-5, CS-F5A AND GROUND AS REQUIRED.
2. PERFORM INVESTIGATIVE ACTIVITY TO VERIFY LOCATION OF UNDERGROUND OBSTRUCTIONS AND INTERFERENCES IN PROXIMITY OF BUS SECTION-5.
3. AFTER COMPLETION OF PHYSICAL WORK TAKE CLEARANCE OUTAGE AND RECONNECT BUS.

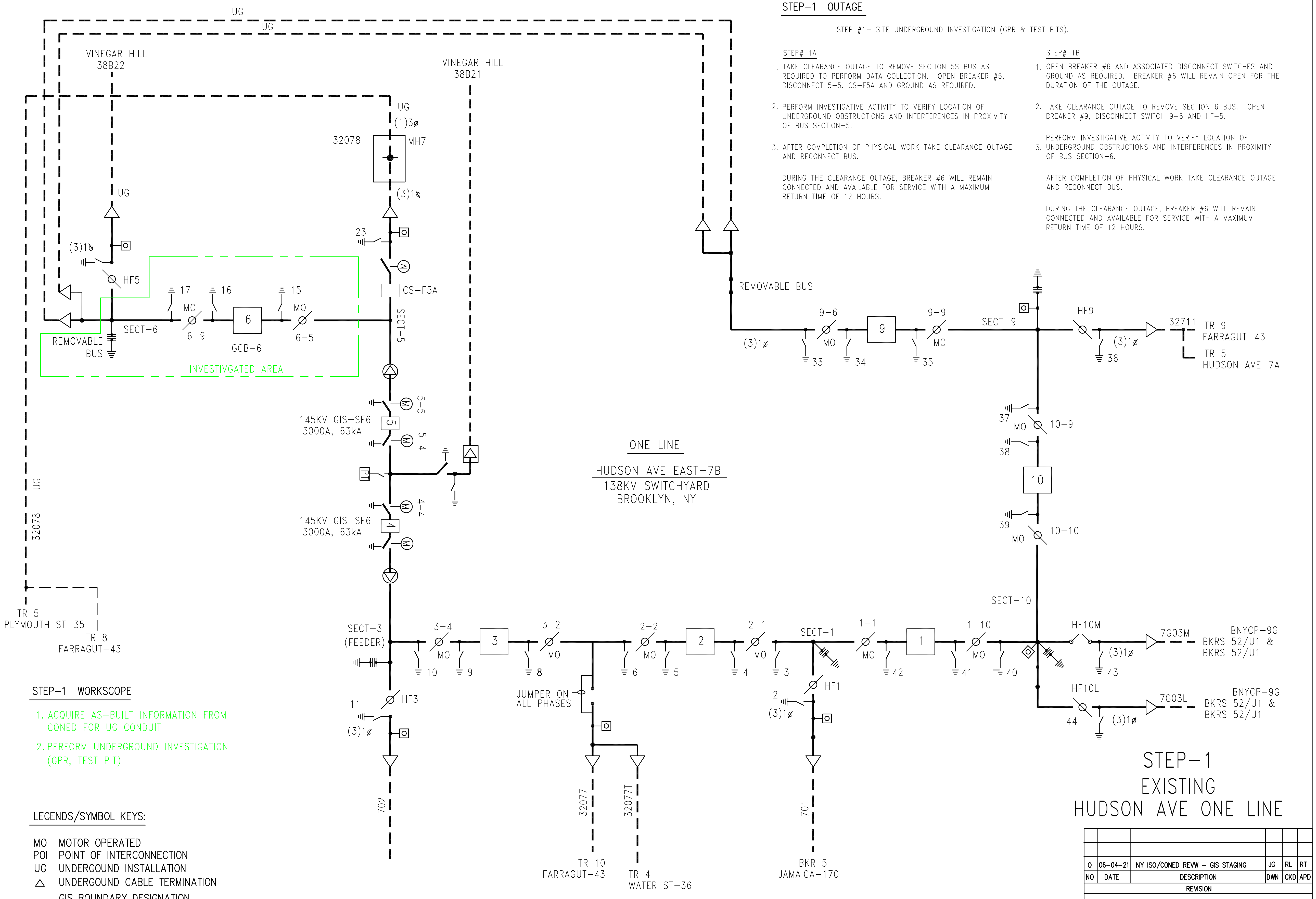
DURING THE CLEARANCE OUTAGE, BREAKER #6 WILL REMAIN CONNECTED AND AVAILABLE FOR SERVICE WITH A MAXIMUM RETURN TIME OF 12 HOURS.

STEP# 1B

1. OPEN BREAKER #6 AND ASSOCIATED DISCONNECT SWITCHES AND GROUND AS REQUIRED. BREAKER #6 WILL REMAIN OPEN FOR THE DURATION OF THE OUTAGE.
2. TAKE CLEARANCE OUTAGE TO REMOVE SECTION 6 BUS. OPEN BREAKER #9, DISCONNECT SWITCH 9-6 AND HF-5.
3. PERFORM INVESTIGATIVE ACTIVITY TO VERIFY LOCATION OF UNDERGROUND OBSTRUCTIONS AND INTERFERENCES IN PROXIMITY OF BUS SECTION-6.

AFTER COMPLETION OF PHYSICAL WORK TAKE CLEARANCE OUTAGE AND RECONNECT BUS.

DURING THE CLEARANCE OUTAGE, BREAKER #6 WILL REMAIN CONNECTED AND AVAILABLE FOR SERVICE WITH A MAXIMUM RETURN TIME OF 12 HOURS.



STEP-1 WORKSCOPE

1. ACQUIRE AS-BUILT INFORMATION FROM CONED FOR UG CONDUIT
2. PERFORM UNDERGROUND INVESTIGATION (GPR, TEST PIT)

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
POI	POINT OF INTERCONNECTION
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
—·-·—	GIS BOUNDARY DESIGNATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟩	REMOVAL OF EXISTING SWITCHYARD INFRASTRUCTURE
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

STEP-1
EXISTING
HUDSON AVE ONE LINE

0	06-04-21	NY ISO/CONED REVW – GIS STAGING	JG	RL	RT
NO	DATE	DESCRIPTION	DWN	CKD	APD
REVISION					

PROJECT ENGINEER:

RST Technical Services, LLC

101 FELLOWSHIP ROAD, UNIT 43
UWCHLAND, PA 19480

NYC ENERGY LLC
c/o SEF INDUSTRIES INC.
217 EAST 70th STREET, NEW YORK , NY

Q-522-E-201 SH.1 | 0

STEP-2 OUTAGE

STEP #2- INSTALLATION OF BUS SUPPORTS IN BUS SECTIONS #5 AND #7 FOR FUTURE GIS EQUIPMENT.

STEP# 2A

1. OPEN BREAKER #6 AND ASSOCIATED DISCONNECT SWITCHES AND GROUND AS REQUIRED. BREAKER #6 WILL REMAIN OPEN FOR THE DURATION OF THE OUTAGE.
2. TAKE CLEARANCE OUTAGE TO REMOVE SECTION 5S BUS. OPEN BREAKER #5, DISCONNECT 5-5, CS-F5A AND GROUND AS REQUIRED. AFTER BUS SUPPORT MODIFICATION RETURN EQUIPMENT TO SERVICE.
3. INSTALL SUPPORT STRUCTURES IN SECTION #5 TO FACILITATE FUTURE GIS BREAKERS 6 AND 7 INSTALL.
4. AFTER COMPLETION OF PHYSICAL WORK TAKE CLEARANCE OUTAGE (SEE STEP #2) AND RECONNECT BUS.

DURING THE CLEARANCE OUTAGE, BREAKER #6 WILL REMAIN CONNECTED AND AVAILABLE FOR SERVICE WITH A MAXIMUM 24 HOUR RETURN.

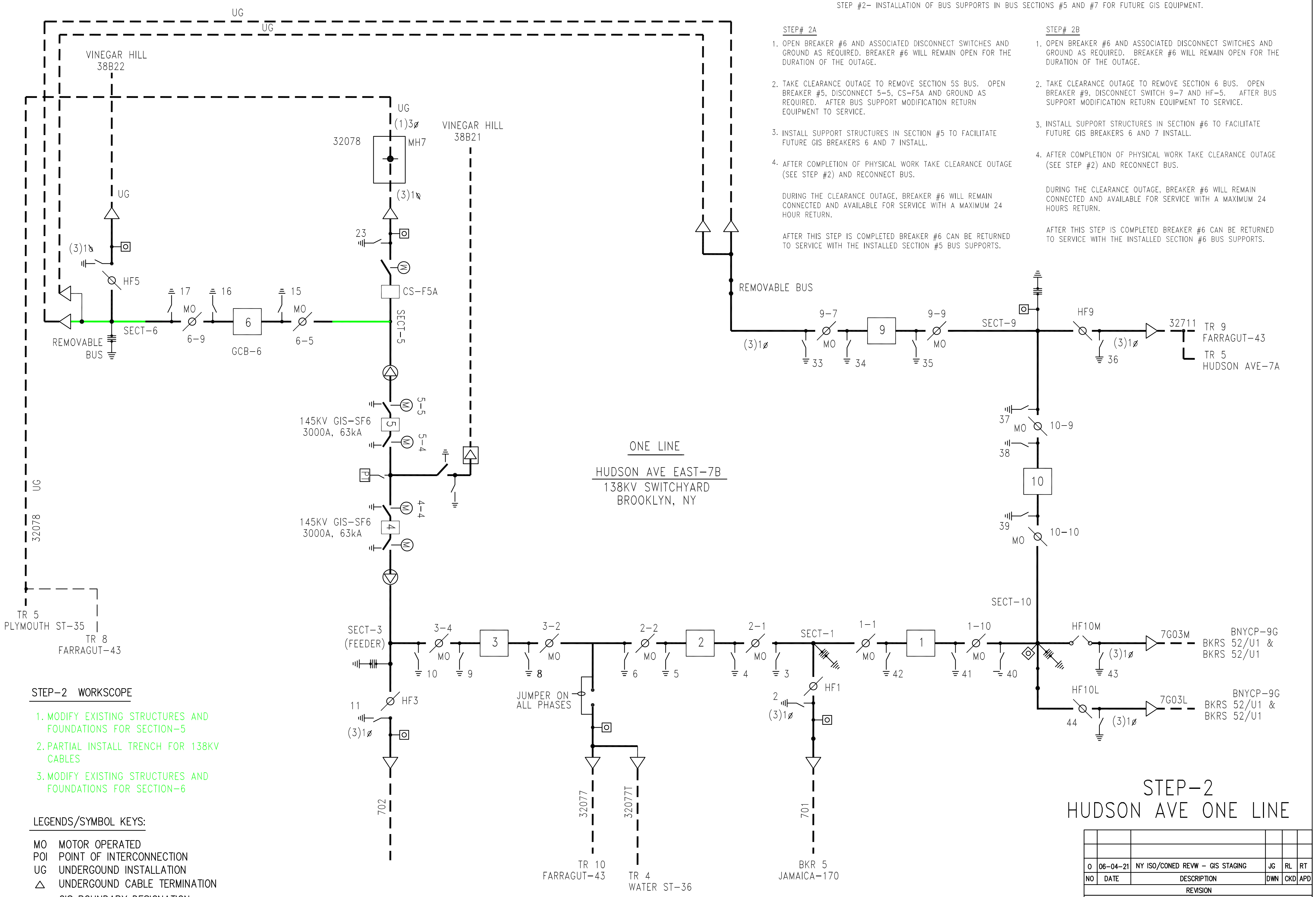
AFTER THIS STEP IS COMPLETED BREAKER #6 CAN BE RETURNED TO SERVICE WITH THE INSTALLED SECTION #5 BUS SUPPORTS.

STEP# 2B

1. OPEN BREAKER #6 AND ASSOCIATED DISCONNECT SWITCHES AND GROUND AS REQUIRED. BREAKER #6 WILL REMAIN OPEN FOR THE DURATION OF THE OUTAGE.
2. TAKE CLEARANCE OUTAGE TO REMOVE SECTION 6 BUS. OPEN BREAKER #9, DISCONNECT SWITCH 9-7 AND HF-5. AFTER BUS SUPPORT MODIFICATION RETURN EQUIPMENT TO SERVICE.
3. INSTALL SUPPORT STRUCTURES IN SECTION #6 TO FACILITATE FUTURE GIS BREAKERS 6 AND 7 INSTALL.
4. AFTER COMPLETION OF PHYSICAL WORK TAKE CLEARANCE OUTAGE (SEE STEP #2) AND RECONNECT BUS.

DURING THE CLEARANCE OUTAGE, BREAKER #6 WILL REMAIN CONNECTED AND AVAILABLE FOR SERVICE WITH A MAXIMUM 24 HOURS RETURN.

AFTER THIS STEP IS COMPLETED BREAKER #6 CAN BE RETURNED TO SERVICE WITH THE INSTALLED SECTION #6 BUS SUPPORTS.



STEP-2 WORKSCOPE

1. MODIFY EXISTING STRUCTURES AND FOUNDATIONS FOR SECTION-5
2. PARTIAL INSTALL TRENCH FOR 138KV CABLES
3. MODIFY EXISTING STRUCTURES AND FOUNDATIONS FOR SECTION-6

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
POI	POINT OF INTERCONNECTION
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
---·--	GIS BOUNDARY DESIGNATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟩	REMOVAL OF EXISTING SWITCHYARD INFRASTRUCTURE
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

STEP-2
HUDSON AVE ONE LINE

NO	DATE	DESCRIPTION	DWN	CKD	APD
0	06-04-21	NY ISO/CONED REVW - GIS STAGING	JG	RL	RT

REVISION

PROJECT ENGINEER:
RST Technical Services, LLC
101 FELLOWSHIP ROAD, UNIT 43
UWCHLAND, PA 19480

NYC ENERGY LLC
c/o SEF INDUSTRIES INC.
217 EAST 70th STREET, NEW YORK , NY

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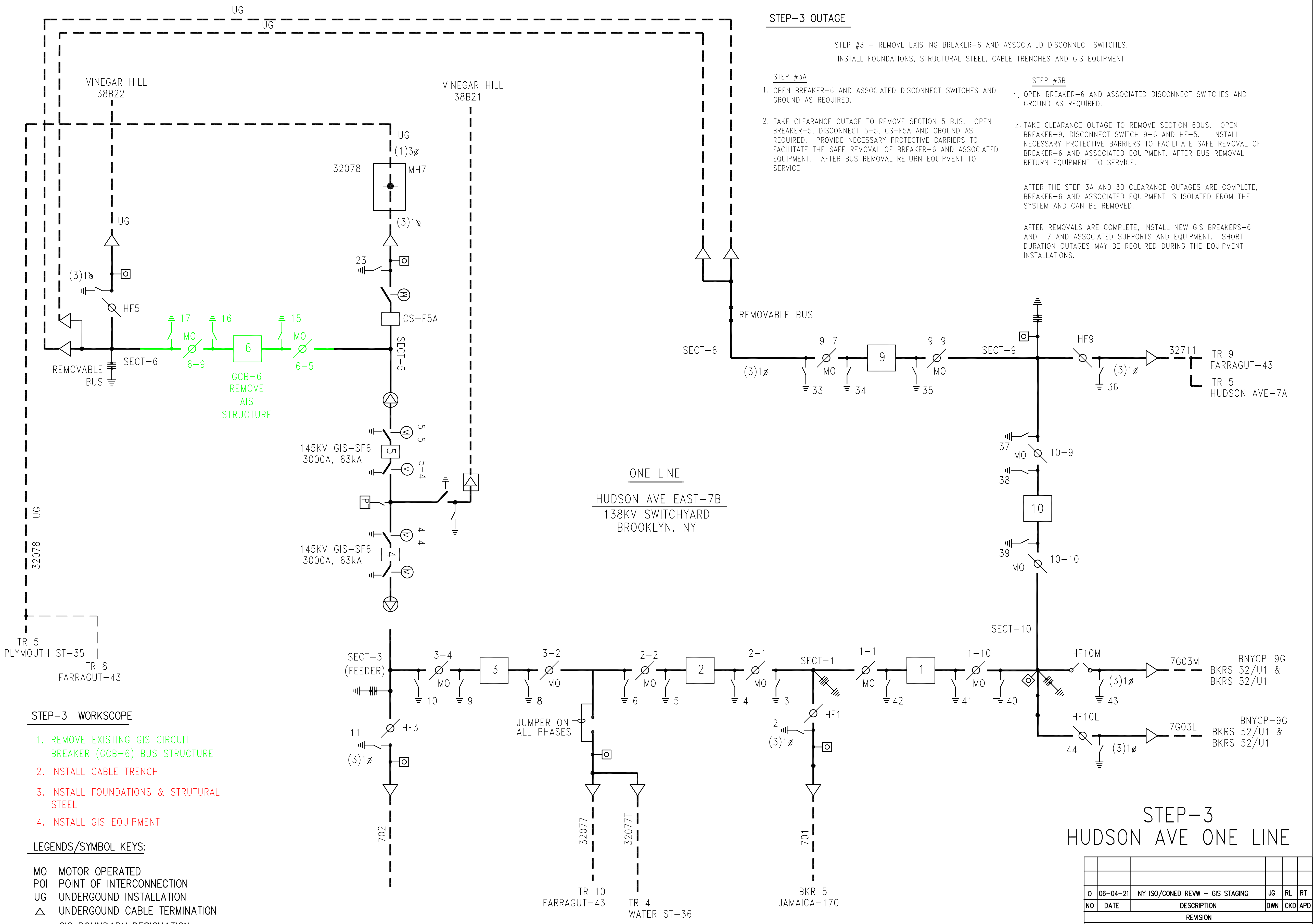

ONE LINE

HUDSON AVE EAST-7B
138KV SWITCHYARD
BROOKLYN, NY

STEP-3 OUTAGE

STEP #3 - REMOVE EXISTING BREAKER-6 AND ASSOCIATED DISCONNECT SWITCHES.
INSTALL FOUNDATIONS, STRUCTURAL STEEL, CABLE TRENCHES AND GIS EQUIPMENT

STEP #3A

1. OPEN BREAKER-6 AND ASSOCIATED DISCONNECT SWITCHES AND GROUND AS REQUIRED.
2. TAKE CLEARANCE OUTAGE TO REMOVE SECTION 5 BUS. OPEN BREAKER-5, DISCONNECT 5-5, CS-F5A AND GROUND AS REQUIRED. PROVIDE NECESSARY PROTECTIVE BARRIERS TO FACILITATE THE SAFE REMOVAL OF BREAKER-6 AND ASSOCIATED EQUIPMENT. AFTER BUS REMOVAL RETURN EQUIPMENT TO SERVICE

STEP #3B

1. OPEN BREAKER-6 AND ASSOCIATED DISCONNECT SWITCHES AND GROUND AS REQUIRED.
2. TAKE CLEARANCE OUTAGE TO REMOVE SECTION 6BUS. OPEN BREAKER-9, DISCONNECT SWITCH 9-6 AND HF-5. INSTALL NECESSARY PROTECTIVE BARRIERS TO FACILITATE SAFE REMOVAL OF BREAKER-6 AND ASSOCIATED EQUIPMENT. AFTER BUS REMOVAL RETURN EQUIPMENT TO SERVICE.

AFTER THE STEP 3A AND 3B CLEARANCE OUTAGES ARE COMPLETE, BREAKER-6 AND ASSOCIATED EQUIPMENT IS ISOLATED FROM THE SYSTEM AND CAN BE REMOVED.

AFTER REMOVALS ARE COMPLETE, INSTALL NEW GIS BREAKERS-6 AND -7 AND ASSOCIATED SUPPORTS AND EQUIPMENT. SHORT DURATION OUTAGES MAY BE REQUIRED DURING THE EQUIPMENT INSTALLATIONS.

STEP-3 WORKSCOPE

1. REMOVE EXISTING GIS CIRCUIT BREAKER (GCB-6) BUS STRUCTURE
2. INSTALL CABLE TRENCH
3. INSTALL FOUNDATIONS & STRUTURAL STEEL
4. INSTALL GIS EQUIPMENT

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
POI	POINT OF INTERCONNECTION
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
— - - —	GIS BOUNDARY DESIGNATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟩	REMOVAL OF EXISTING SWITCHYARD INFRASTRUCTURE
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

STEP-3
HUDSON AVE ONE LINE

0	06-04-21	NY ISO/CONED REVW - GIS STAGING	JG	RL	RT
NO	DATE	DESCRIPTION	DWN	CKD	APD

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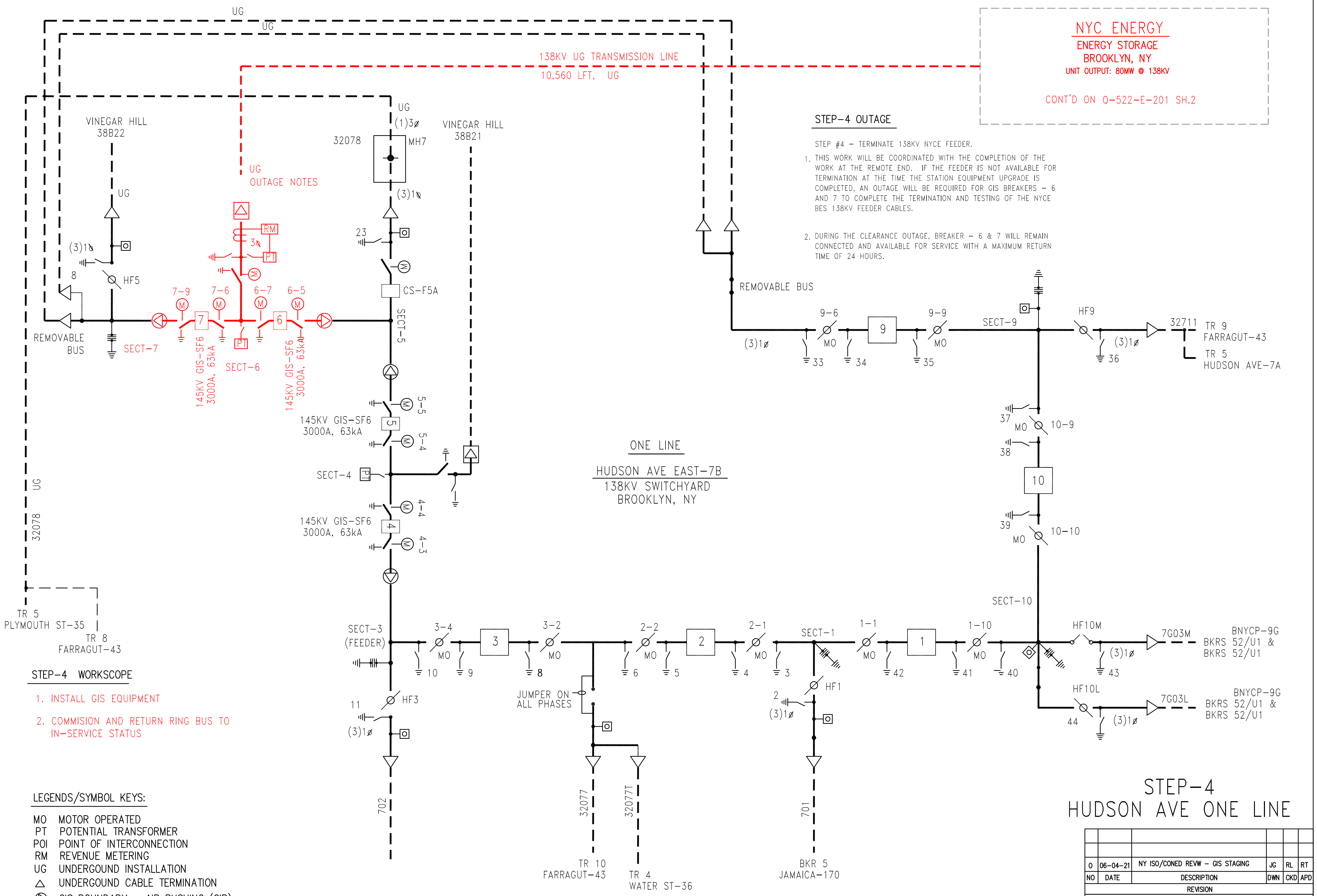

STEP-4 OUTAGE

STEP #4 – TERMINATE 138KV NYCE FEEDER.

1. THIS WORK WILL BE COORDINATED WITH THE COMPLETION OF THE WORK AT THE REMOTE END. IF THE FEEDER IS NOT AVAILABLE FOR TERMINATION AT THE TIME THE STATION EQUIPMENT UPGRADE IS COMPLETED, AN OUTAGE WILL BE REQUIRED FOR GIS BREAKERS – 6 AND 7 TO COMPLETE THE TERMINATION AND TESTING OF THE NYCE BES 138KV FEEDER CABLES.

2. DURING THE CLEARANCE OUTAGE, BREAKER – 6 & 7 WILL REMAIN CONNECTED AND AVAILABLE FOR SERVICE WITH A MAXIMUM RETURN TIME OF 24 HOURS.

STEP-4 WORKSCOPE

1. INSTALL GIS EQUIPMENT
2. COMMISION AND RETURN RING BUS TO IN-SERVICE STATUS

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
PT	POTENTIAL TRANSFORMER
POI	POINT OF INTERCONNECTION
RM	REVENUE METERING
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
⊳	GIS BOUNDARY – AIR BUSHING (GIB)
⊡	GIS BOUNDARY – UG CABLE GAS TERMINATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

STEP-4
HUDSON AVE ONE LINE

0	06-04-21	NY ISO/CONED REVW – GIS STAGING	JG	RL	RT
NO	DATE	DESCRIPTION	DWN	CKD	APD

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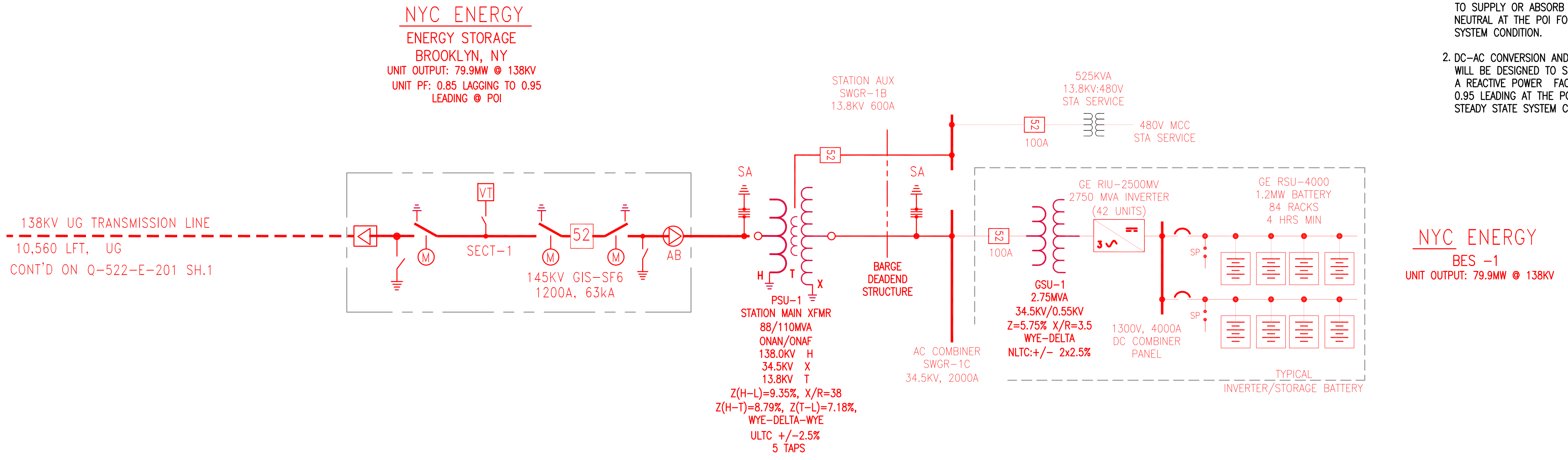

NOTES:

1. BES AND TRANSMISSION FACILITIES WILL BE DESIGNED TO SUPPLY OR ABSORB REACTIVE POWER TO BE NEUTRAL AT THE POI FOR NORMAL AND STEADY STATE SYSTEM CONDITION.

2. DC-AC CONVERSION AND TRANSMISSION FACILITIES WILL BE DESIGNED TO SUPPORT GRID OPERATION WITH A REACTIVE POWER FACTOR OF 0.95 LAGGING OR 0.95 LEADING AT THE POI UNDER NORMAL AND STEADY STATE SYSTEM CONDITION.

STEP-5 WORKSCOPE

1. INSTALL BES EQUIPMENT
2. COMMISION AND COMPLETE CONNECTION AT HUDSON AVE RING BUS
3. COMMISION 138KV TRANSMISSION LINE AND REVENUE METERING

LEGENDS/SYMBOL KEYS:

MO	MOTOR OPERATED
PT	POTENTIAL TRANSFORMER
POI	POINT OF INTERCONNECTION
RM	REVENUE METERING
UG	UNDERGOUND INSTALLATION
△	UNDERGOUND CABLE TERMINATION
⊳	GIS BOUNDARY – AIR BUSHING (GIB)
⊳	GIS BOUNDARY – UG CABLE GAS TERMINATION
■	CONED TRANSMISSION FACILITIES (EXISTING)
🟥	NYCE TRANSMISSION FACILITIES (PROPOSED)

STEP-5
NYCE BES ONE LINE

NO	DATE	DESCRIPTION	DWN	CKD	APD
0	06-04-21	NY ISO/CONED REVW – GIS STAGING	JG	RL	RT

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PROJECT ENGINEER:

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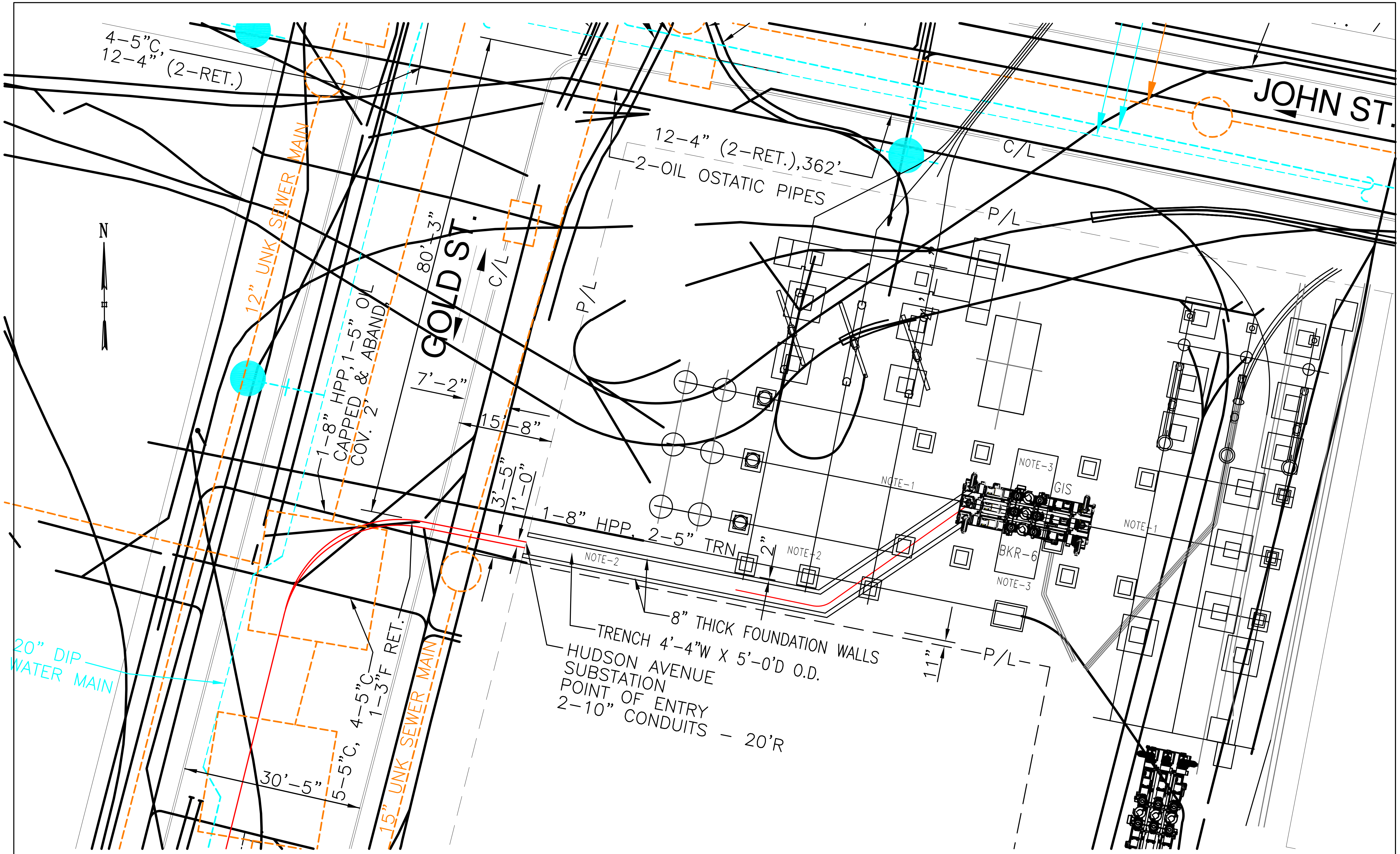

STEP– 6

PLAN

HUDSON AVE GIS LAYOUT
CONCEPTUAL

NOTES:

1. ADD FOUNDATION AND STRUCTURAL STEEL FOR BUS SUPPORTS
2. CONSTRUCT MODIFIED FOUNDATIONS AND INSTALL TRENWA CABLE TRENCH
3. ADD FOUNDATIONS TO SUPPORT THE SIX COLUMNS OF THE GIS SUPPORT STRUCTURE

NO	DATE	DESCRIPTION	DWN	CKD	APD
0	06–04–21	NY ISO/CONED REVW – GIS LAYOUT	JG		

REVISION

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APPENDIX E ENVIRONMENTAL COMPLIANCE MEASURES

APPENDIX E-1 Unanticipated Discovery Plan

NYC Energy 300 MW
Floating Battery Energy Storage System

WALLABOUT CHANNEL, BROOKLYN NAVY YARD

BROOKLYN, NEW YORK

Plan for the Unanticipated Discovery of Archaeological Resources or Human Remains During Construction

Prepared for:

NYC Energy, LLC

Prepared by:

AKRF, Inc.
440 Park Avenue South
New York, NY 10016
212-696-0670

JANUARY 2023

Draft Plan for the Unanticipated Discovery of Archaeological Resources or Human Remains During Construction

PART 1. PROJECT DESCRIPTION AND BACKGROUND

Empower Brooklyn LLC, on behalf of NYC Energy LLC, has applied for a loan guarantee pursuant to the U.S. Department of Energy's (DOE) Renewable Energy Project and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by the EPAct for the development of an innovative utility scale floating battery energy storage system (FESS) of up to 300 MW/1200 MWh of energy using innovative stacking energy storage containers and associated equipment on a barge in Wallabout Channel in Brooklyn, New York (see **Figure 1**). The Project would involve the installation of three side by side barges equipped with energy storage containers with a 100 MW capacity each. The project is subject to the National Environmental Policy Act (NEPA) and related federal environmental review requirements for the proposed project, including Section 106 of the National Historic Preservation Act. The proposed project would also require a permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. 403) from the U.S. Army Corps of Engineers (USACE). Permit application No. NAN-2015-00507-EBO dated January 15, 2016 has been submitted to USACE.

The NYC Energy 300 MW FESS Project includes the placement of a barge equipped with pre-installed battery energy storage system (BESS) containers and associated equipment within the Wallabout Channel, adjacent to a Brooklyn Navy Yard pier. Dredging of Wallabout Channel to a maximum depth of 20 feet at mean low water (MLW) will be required to allow barge access. The Project also includes excavation of a cable trench between the barge and Hudson Avenue East Substation, primarily adjacent to existing utilities within the streetbed. A trench for the transmission cables and small foundation for new equipment would be installed at the Hudson Avenue East Substation.

Construction of the FESS would occur at an off-site location and the operational plant would be floated into the proposed mooring site with all major components already installed. Each barge would measure 146 feet long by 130 feet wide, for 56,940 square feet total (reaching a height of approximately 65 to 67 feet above the main deck). The barges would be sited at an existing berth, Berth 20B (Block 2023, Lot 1) on the Wallabout Channel in the Brooklyn Navy Yard. The barges would not be moored directly to the pier, but adjacent to it by 12 24-inch diameter steel mooring spaced evenly apart and installed adjacent to the pier. There would also be an electrical connection from the barges to the pier. Some minor modifications to the pier will likely be required to accommodate the emergency access roadway. A security fence would be installed on the pier, and trenching would occur beneath the pier to accommodate the interconnection.

Adjacent to Berth 20B is a lot currently used for the storage of road salt by the New York City Department of Sanitation in an open enclosure. The Brooklyn Navy Yard is owned by New York City and managed by the Brooklyn Navy Yard Development Corporation (BNYDC). The Brooklyn Navy Yard has long been adapted to industrial uses involving the mooring and/or docking of vessels. However, the docking space at the Brooklyn Navy Yard along the Wallabout Channel has been unused for over twenty-five (25) years. Thus, this part of the Brooklyn Navy Yard waterfront is not currently productive.

To connect the system to the power grid, two 138 kV transmission cables would run approximately 9,250 feet from the pier to Con Edison's Hudson Avenue East Substation in Vinegar Hill, beneath the Brooklyn Navy Yard and public streets to the west of the FESS Site. The interconnection would be placed in a 24-inch-wide trench at a minimum depth of 36 inches with a minimum cover of 26 inches. The interconnect would go no deeper than the existing utilities. The approximate depth of each trench is expected to be approximately 5 feet with a maximum expected depth of approximately 7 feet near the substation. In some limited areas where hand excavation is needed, the maximum depth of the excavation may be approximately 9.5 feet deep.

The Hudson Avenue East Substation is located on the block bound by Hudson Ave, John Street, Gold Street, and Plymouth Street (Block 22, Lot 1). The location of the substation modifications is occupied by electrical generating infrastructure surrounded by a metal fence. The proposed changes at the substation would include: the addition of a foundation and structural steel for bus supports (a piece of electrical connecting equipment); the construction of modified foundations and installation of a cable trench; and the addition of foundations to support the six columns of the gas-insulated high-voltage switchgear (GIS) support structure. With the proposed project, equipment including a GIS breaker would be installed at the substation and older equipment would be removed to complete the grid connection. The interconnect would enter the substation from Gold Street in a concrete lined cable trench and connect to the new GIS breaker.

Finally, the proposed project would include dredging of the Wallabout Chanel to allow barge access. Dredging would occur at a maximum depth of 20 feet at MLW.

As described below, this plan outlines the protocols that are to be followed in the event that archaeological resources or human remains are unexpectedly encountered during the construction of the proposed project.

PART 2. SHPO HUMAN REMAINS DISCOVERY PROTOCOL (JANUARY 2021)

The New York State Historic Preservation Office (SHPO) issued the following protocol for the discovery of human remains in January 2021. The plan for how this protocol would be implemented within the City of New York is presented below in **Part 3: Plan For The Unanticipated Discovery Of Human Remains**.

In the event that human remains are encountered during construction or archaeological investigations, SHPO recommends that the following protocol is implemented:

- Human remains shall be treated with the utmost dignity and respect. Should human remains or suspected human remains be encountered, work in the general area of the discovery shall stop immediately and the location shall be secured and protected from damage and disturbance.
- If skeletal remains are identified and the archaeologist is not able to conclusively determine if they are human, the remains and any associated materials must be left in place. A qualified forensic anthropologist, bioarchaeologist or physical anthropologist shall assess the remains in situ to help determine if they are human.
- If the remains are determined to be human, law enforcement, the SHPO, the appropriate Indian Nations, and the involved state and federal agencies shall be notified immediately. If law enforcement determines that the burial site is not a criminal matter, no skeletal remains or associated materials shall be removed until appropriate consultation takes place.

- If human remains are determined to be Native American, they shall be left in place and protected from further disturbance until a plan for their avoidance or removal is developed. Please note that avoidance is the preferred option of the SHPO and the Indian Nations. The involved agency shall consult SHPO and the appropriate Indian Nations to develop a plan of action. Photographs of Native American human remains and associated materials should not be taken without consulting with the involved Indian Nations.
- If human remains are determined to be non-Native American, the remains shall be left in place and protected from further disturbance until a plan for their avoidance or removal is developed. Please note that avoidance is the preferred option of the SHPO. The involved agency shall consult SHPO and other appropriate parties to develop a plan of action.
- The SHPO recommends that burial information is not released to the public to protect burial sites from possible looting.

PART 3: PLAN FOR THE UNANTICIPATED DISCOVERY OF HUMAN REMAINS

In the event that human remains or suspected human remains are encountered during construction, the following plan will be implemented to ensure that the Human Remains Discovery Protocol as issued by SHPO will be implemented in compliance with New York City laws and the guidelines of the New York City Landmarks Preservation Commission (NYCLPC)—which has oversight over archaeological resources within New York City—regarding the discovery and handling of human remains.

The following procedures will be adhered to if the discovery of human remains or suspected human remains occurs during construction efforts associated with the proposed project. This plan outlines the notification procedures that will be in place to ensure that all involved parties are appropriately notified of the discovery of human remains or suspected human remains. At all times, human remains or suspected human remains must be treated with the utmost dignity and respect.

In the event of the discovery of human remains or suspected human remains:

1. The Contractor will stop work immediately in the area of the find to protect the integrity of the find. The location of the find will be flagged or fenced to ensure the safety of the human remains and to avoid potential impacts.
2. The Contractor will immediately notify DOE and Empower Brooklyn LLC. Notification will include: specific location of discovery within the disturbed area of the work site; the nature of the discovery; and the location of the find flagged/fenced to insure safety and avoidance of impacts. At all times human remains must be treated with the utmost dignity and respect. The Contractor will not restart work in the area of the find until DOE and Empower Brooklyn LLC have granted clearance.
3. The Contractor will immediately call 911 to notify both the New York City Police Department (“NYPD”) and the Office of the Chief Medical Examiner (“OCME”) of the find, and cooperate with OCME to notify, as required, any additional law enforcement agencies, as appropriate.

OCME Contact:	Dr. Bradley Adams, Forensic Anthropologist
Telephone:	Primary: 212.447.2030; Secondary: 718.804.8050
Address:	520 First Avenue, New York, New York 10016
E-mail:	badams@ocme.nyc.gov

4. The Contractor will promptly notify SHPO and NYCLPC of the find (note: OCME will typically notify NYCLPC when historical human remains are discovered in New York City).

   SHPO Contact: Timothy Lloyd, PhD; Scientist-Archaeology

   Telephone: (518) 268-2186
   Address: New York State Office of Parks, Recreation, and Historic Preservation, Division for Historic Preservation
   P. O. Box 189, Waterford, NY 12188-0189
   Express Address: Delaware Avenue, Cohoes, New York 12047
   E-mail: timothy.lloyd@parks.ny.gov

   NYCLPC Contact: Amanda Sutphin, Director of Archaeology
   Telephone: (212) 602-6353
   Address: New York City Landmarks Preservation Commission
   1 Centre Street, 9th Floor, New York, NY 10007
   E-mail: asutphin@lpc.nyc.gov

4. If OCME/NYPD determine that they have no concerns for the remains (e.g., the site is not designated a crime scene), Empower Brooklyn LLC will retain the services of an archaeological consultant (if one has not already been retained) and will direct the archaeological consultant to begin a more detailed archaeological assessment of the find's significance.

5. If it is determined that intact interments or disarticulated human remains are present and may be disturbed by continuing construction, then Empower Brooklyn LLC will contact DOE, SHPO and NYCLPC regarding additional measures to avoid or mitigate further damage. These measures may include:

   - Formal archaeological evaluation of the site;
   - Visits to the site by SHPO, NYCLPC, and other parties as necessary;
   - Preparation of a mitigation plan by Empower Brooklyn, LLC including procedures for disinterment and reinterment, for approval by SHPO and NYCLPC;
   - Implementation of the mitigation plan; and
   - Approval to resume construction following completion of the fieldwork component of the mitigation plan.

6. If the human remains are determined to be of Native American origin, all remains and any associated funerary objects will be left in place and protected from further disturbance until consultation with Indigenous Nations can be initiated (see **Addendum 1** for information on how to contact Indigenous Nations that have cultural interests in Kings County).

7. In the event that intact human remains are to be disinterred from the site, a funeral director will be retained by Empower Brooklyn LLC. As necessary and required by New York City law, the funeral director will apply for a disinterment permit from the New York City Department of Health (NYCDOH) before human remains are removed from the site pending the implementation of a mitigation plan prepared pursuant to Step 5 of this plan.

8. Empower Brooklyn LLC will then grant clearance to the Contractor to restart work following the completion of all required mitigation efforts required by DOE, SHPO, and/or NYCLPC.

PART 4: PLAN FOR THE UNANTICIPATED DISCOVERY OF PRECONTACT ARCHAEOLOGICAL RESOURCES

In the event that precontact (Native American) archaeological resources or suspected resources are unexpectedly encountered during the construction of the proposed project, the following plan will be implemented:

1. The Contractor will stop work immediately in the area of the find to protect the integrity of the find. The location of the find will be flagged or fenced to avoid potential impacts to the resources.
2. The Contractor will immediately notify DOE. Notification will include: specific location of discovery within the disturbed area of the work site; the nature of the discovery; and the location of the find flagged/fenced to insure safety and avoidance of impacts. The work stoppage will last a minimum of 48 hours and the Contractor will not restart work in the area of the find until DOE has granted clearance.
4. Empower Brooklyn LLC will promptly notify SHPO of the find.

SHPO Contact: Timothy Lloyd, PhD; Scientist-Archaeology
Telephone: (518) 268-2186
Address: New York State Office of Parks, Recreation, and Historic Preservation, Division for Historic Preservation
P. O. Box 189, Waterford, NY 12188-0189
Express Address: Delaware Avenue, Cohoes, New York 12047
E-mail: timothy.lloyd@parks.ny.gov

3. Empower Brooklyn LLC, in consultation with SHPO, will notify the state- and federally-recognized Indigenous Nations regarding the find (see **Addendum 1**).
4. Empower Brooklyn LLC and the SHPO will assess the find’s significance in consultation with Indigenous Nations.
5. Empower Brooklyn LLC, SHPO, and the consulting Indigenous Nations will determine additional archaeological measures required to avoid or mitigate further damage to archaeological resources. These measures may include:

- Formal archaeological evaluation of the site;
- Visits to the site by SHPO, the consulting Indigenous Nations, and other parties as necessary;
- Preparation of a mitigation plan by Empower Brooklyn LLC for approval by SHPO, DOE, and the Indigenous Nations;
- Implementation of the mitigation plan; and
- Approval to resume construction following completion of the fieldwork component of the mitigation plan.

6. Empower Brooklyn LLC will then grant clearance to the Contractor to restart work following the completion of all required mitigation efforts required by DOE, SHPO and/or the consulting Indigenous Nations.

ADDENDUM 1: CONTACT INFORMATION FOR STATE AND FEDERALLY-RECOGNIZED NATIVE AMERICAN NATIONS:

DELAWARE NATION

Erin Thompson-Paden
Director of Historic Preservation
Delaware Nation
P.O Box 825
Anadarko, OK 73005
Phone: (405) 247-2448, ext. 1403
Email: epaden@delawarenation.com

Deborah Dotson
President
Delaware Nation
P.O Box 825
Anadarko, OK 73005
Phone: (405) 247-2448
Email: ddotson@delawarenation-nsn.gov

DELAWARE TRIBE OF INDIANS

Larry Heady
Tribal Historic Preservation Office (THPO)
Delaware Tribe of Indians
125 Dory Lane
Grants Pass, OR 97527
Phone: (262) 825-7586
Email: lheady@delawaretribe.org

Susan Bachor
Historic Preservation Representative (East Coast)
Delaware Tribe of Indians
126 University Circle, Stroud Hall Room 437
East Stroudsburg, PA 18301
Phone (m): 610-761-7452
Email: sbachor@delawaretribe.org

Brad Killscrow
Chief, Delaware Tribe of Indians
5100 Tuxedo Boulevard
Bartlesville, OK 74006
Phone: (918) 337-6590
Email: bkillscrow@delawaretribe.org

SHINNECOCK NATION

David Martine
Tribal Historic Preservation Officer (THPO)
PO Box 5006
Southampton, NY 11969
Phone: (631) 283-6143
Email: davidmartine@shinnecock.org

Brian Polite
Trustee
PO Box 5006
Southampton, NY 11969
Phone: (631) 283-6143
Email: adminoffice@shinnecock.org

APPENDIX E-2 EFH Compensatory Mitigation Plan

Floating Energy Storage System Project
Compensatory Mitigation Plan

A. INTRODUCTION

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and is the lead federal representative for environmental review of the Floating Energy Storage System Project (the Project) being implemented by NYC Energy LLC. The Project Site is within an area designated under the Magnuson Stevens Fishery Conservation and Management Act (MSA) as Essential Fish Habitat (EFH) for federally managed species. As the lead federal agency for environmental review, DOE initiated consultation with NOAA Fisheries to evaluate the potential effects of the Project on EFH and NOAA trust resources on May 9, 2023, and concluded that the Project's effects on EFH would not be substantial. NOAA Fisheries issued a response on July 25, 2023, stating that while the adverse effects on EFH from the Project would not be substantial, the Project should incorporate measures to mitigate or offset the potential impacts to EFH. Pursuant to Section 305(b)(4)(A) of the ESA, NOAA Fisheries provided the following conservation recommendations to minimize or offset adverse impacts on EFH:

1) Continue to avoid in water work associated with dredging and installation of piles between November 15 through June 30, protective of overwintering winter flounder and striped bass (11/15-4/15), spawning winter flounder and their early life stages (1/1-5/31) and migrating diadromous fish (3/15-6/30).
2) Develop a compensatory mitigation plan to mitigate in accordance with the 2008 Final Mitigation Rule and NOAA's Mitigation Policy for Trust Resources for the 1.31 acres permanently impacted by shading. This plan should be provided to us for review and acceptance prior to finalizing the Environmental Assessment for the project.

The sections below provide a summary of the Project and its potential impacts, the avoidance and minimization measures that have been incorporated into the Project design and the construction means and methods, and a description of the compensatory mitigation plan that has been prepared in response to NOAA Fisheries' second conservation recommendation.

B. PROJECT DESCRIPTION

The Project is the development of a 300 megawatt (MW) / 1,200 megawatt-hour (MWh) floating energy storage system that will use stacked energy storage containers and associated equipment on three side-by-side barges moored in Wallabout Channel at Berth 20 of Pier K within the Brooklyn Navy Yard. When fully loaded, the barges will have an estimated draft of 16 to 18 feet and will require dredging of the channel to the USACE authorized depth[1] of 20 feet at mean low water (MLW). The barges will accommodate three levels of battery storage units and each barge will have a total height of approximately 65 to 67 feet above the main barge deck. The barges will be moored using up to twelve 30-inch diameter steel pipe piles spaced approximately 25 feet apart and installed in Wallabout Channel off Berth 20 of Pier K outside the federal navigation channel. The piles will contain a total of 33.5 cubic yards of flowable concrete below both spring high water (SHW) and mean high water (MHW). The FESS barges are anticipated to remain operational for the 30-year duration of NYC Energy's lease agreement with Brooklyn Navy Yard.

Construction for the Project is currently scheduled to begin in May 2024 and end in February 2027. In-water construction includes dredging, pile installation, and mooring of the barges, and will be completed over a period of approximately 12 months within this time period. Dredging is anticipated to occur over 4 to 6 weeks, pile driving over 2 to 3 weeks, and mooring the barges over 2 weeks. These in-water activities will be completed in accordance with all regulatory restrictions for in-water construction, including no in-water work from January 1 through May 31 to protect spawning winter flounder, no sediment disturbing activities from March 15 through June 30 to protect anadromous species, and no dredging from November 15 through April 15 to protect overwintering striped bass.

DREDGING

Dredging will be conducted within about 5.2 acres in Wallabout Channel to the federally authorized depth of 20 feet at MLW with one foot of allowable overdredge. During dredging, it is anticipated that one deck barge and two scows will be used to support equipment, storage of dredge materials, and transportation of materials for upland disposal at a licensed facility. A crew vessel may also be used to transport personnel to and from the barges. To accommodate the 16-foot to 18-foot draft of the FESS barges, up to approximately 81,500 cubic yards of sediment will be removed from the 5.2-acre dredge area within Wallabout Channel. Dredging will be conducted using an environmental bucket with no barge overflow. Any debris encountered during dredging will be removed using the environmental bucket and separated from the dredged material onboard a deck barge via mechanical raking. All dredging activities will be surrounded by a full-length weighted turbidity curtain and will be conducted within seasonal work windows, and dredged materials will be transported offsite for upland disposal at a licensed facility. Dredging will likely take about 4 to 6 weeks to complete.

The Project is applying for a 10-year maintenance dredging permit and has assumed one maintenance dredging event during that time, plus any emergency dredging that would need to be completed in the event of a storm or if it is required to maintain sufficient clearance such that the barges are able to get underway. Any maintenance dredging will be conducted in the same manner as the initial dredging for the Project.

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[1] USACE 2004 Controlling Depth Report at: https://www.nan.usace.army.mil/Portals/37/docs/civilworks/ConDep03-04/Wallabout%20Channel,%20NY.pdf?ver=2013-01-31-184500-830

PILE INSTALLATION

The FESS will be moored using up to twelve 30-inch diameter steel pipe piles installed just off Berth 20 of Pier K. The piles will contain a total of approximately 33.5 cubic yards of flowable concrete fill below SHW and MHW. The piles will anchor the barges but will allow for vertical movement with the tide and storm surges up to an elevation of +25 feet NAVD88. In this portion of Wallabout Channel, the tide changes by about 4 feet between low and high tide based on NOAA tidal data. Installation of the piles will be conducted using a vibratory hammer once dredging is complete. At this time, it is assumed that an impact hammer will not be required to install the piles. Overall, pile installation will be completed over approximately 2 to 3 weeks and will occur intermittently over the course of a workday. The piles will have a footprint of about 58.9 square feet on the bottom. Following pile installation, the FESS barges which measure a total of 56,940 square feet (1.3 acres) will be maneuvered into place and moored at Berth 20 of Pier K in accordance with NYC Energy’s 30-year lease with the Brooklyn Navy Yard.

LANDSIDE ACTIVITIES

Landside modifications will be made to Berth 20 of Pier K at the project site to accommodate the moored FESS and to allow for interconnection to Con Edison’s existing Hudson Avenue East Substation in Vinegar Hill. Modifications to Pier K to accommodate the FESS include the installation of electrical connections to the barges and switching equipment on the pier, installation of the gangway connections, and construction of an emergency access road and security fencing around the project site. The transformers and breakers will each be installed on a concrete foundation pad supported by 2 or 4 pipe piles driven into the soil. Measures will be implemented during these modifications to minimize loss of debris to Wallabout Channel (e.g., fencing, or other construction barrier along the edge of the pier). The transmission line will be contained within 2-inch to 10-inch PVC conduits and will run from the Project substation through the Brooklyn Navy Yard and city streets for approximately 9,250 linear feet. The proposed transmission line will be located within existing developed streetbeds both within and outside of the Brooklyn Navy Yard. The land-based construction activities will not result in impacts to natural resources.

C. SUMMARY OF IMPACTS

CONSTRUCTION

Construction of the Project will result in temporary impacts from vessel traffic, resuspended sediment, and underwater noise. In-water construction activities, including dredging and pile installation, will be completed outside the seasonal work windows to minimize potential impacts to winter flounder (January 1 through May 31), overwintering striped bass (November 15 through April 15), and migrating anadromous species (March 15 through June 30). Barges and crew vessels will maintain a sufficient distance above the bottom such that sediment disturbance from their movements is minimized during construction activities. The minimal increase in the number of vessels within the Project area and underwater noise associated with vessel operation is well within the typical range of vessel activity in the East River and waters of the Brooklyn Navy Yard. Thus, aquatic organisms that occur at the Project Site are likely acclimated to ambient noise levels and any periodic sediment resuspension from vessel activity.

The potential impacts of sediment disturbance during dredging and pile installation will be minimized by using a full-length turbidity curtain, which will be secured at either end, so it does not move significantly during the in-water work. During dredging, visible sediment plumes will be allowed to settle before moving the curtain to allow scows to enter or exit the Project Site. The Project will use an environmental bucket for dredging to minimize the amount of sediment released to the water column as the bucket is raised to the scow. Dredged materials and any debris found within the dredging area will be contained on the scow and transported offsite for upland disposal at a licensed facility. There will be no discharge of the dredged material into waters of the United States. Sediment resuspension resulting from pile installation will be minimal and will be contained within the turbidity curtain.

The piles will be installed using a vibratory hammer to the extent possible, and at this time, it is assumed that an impact hammer will not be required to install any of the piles. Only behavioral effects are expected to occur during vibratory hammering for fish and sea turtles. Based on the anticipated construction methods and pile type and size, it is expected that underwater noise levels reaching the behavioral threshold for fish could occur at a maximum distance of about 293 meters, and for sea turtles at a maximum distance of 6.3 meters from the pile being driven by vibratory hammer, and fish and sea turtles would avoid the ensonified area during pile driving. These movements will not affect essential behaviors because Wallabout Channel offers limited habitat, and the East River is sufficiently large enough to allow fish and any sea turtles to avoid the area while continuing to forage and migrate. The turbidity curtain will also act as a barrier to discourage fish and sea turtles from entering the Project Site during pile installation.

OPERATION

Dredging for the Project will result in the modification of approximately 5.2 acres of shallow water habitat with the removal of about 81,500 cubic yards of sediment, resulting in water depths up to the federally authorized depth of 20 feet at MLW. The dredged area will undergo some natural deposition of sediments over time, and the deeper waters will allow flushing to occur, including underneath the barges, such that subsurface sediments exposed by dredging will not have a long-term impact on water quality. Within the dredged area, the Project will result in the permanent loss of approximately 58.9 square feet of benthic habitat and non-motile benthic invertebrates in the footprint of the mooring piles and overwater coverage of approximately 56,940 square feet (1.3 acres). While the mooring of the barges along Pier K will result in alteration of aquatic habitat currently used by aquatic organisms due to shading from the overwater coverage, fish will still be able to access the water column beneath the barges and use the structured habitat created by the new piles.

D. AVOIDANCE AND MINIMIZATION MEASURES

The Project will incorporate Best Management Practices (BMPs) to avoid and minimize to the greatest extent possible any potential direct and indirect effects to EFH for federally-managed species and NOAA trust resources. During any year, no in-water construction will be conducted from January 1 through May 31 to protect spawning winter flounder, no sediment disturbing activities will be conducted from March 15 through June 30 to protect anadromous species, and no dredging will be conducted from November 15 through April 15 to protect overwintering striped bass. In addition to the time-of-year restrictions, the following BMPs have been incorporated into the Project to minimize the potential direct and indirect effects to EFH and NOAA trust resources resulting from: underwater noise during pile installation, turbidity and sedimentation, reduced water quality, vessel interaction, and habitat alteration.

PILE INSTALLATION

Components of the Project that will result in increased underwater noise include vibratory and impact pile driving during installation of the mooring piles. A vibratory hammer will be used to install the piles, and it is expected that an impact hammer will not be required. No BMPs in addition to use of a vibratory hammer are proposed for pile installation.

TURBIDITY AND SEDIMENT RESUSPENSION

Sediment disturbing activities associated with the Project, including dredging and pile installation, will be subject to the following avoidance and minimization measures:

- Use of a full-length turbidity curtain during all dredging and construction activities.
- Dredging only where needed within the Project Site to minimize the area affected.
- Dredging will take place within the extent of the turbidity curtain to the extent practicable.
- Use of an environmental bucket and reduced lift speeds during dredging to minimize overflow of sediment into the water while the bucket is being lifted to the scow.
- Dredged sediments will be placed in a scow, dewatered on the scow such that there is no overflow back into the waterbody, and transported offsite for disposal.
- Any debris encountered during dredging will be separated from dredged sediments onboard the barge and transported offsite for disposal.
- Following construction, the mooring piles will not alter the natural sediment accretion rates or patterns within the Wallabout Channel or East River when compared to the existing characteristics of the site.

VESSEL MOVEMENT

During all dredging and construction activities for the Project, the use of construction vessels, including barges, tugs, and crew vessels, will be subject to the following avoidance and minimization measures:

- Number of vessels will be limited to approximately 1 crew boat, 2 scows, and 1 deck barge at any given time during construction.
- All construction vessels will be shallow draft (5 to 10 feet) and will maintain low speeds (less than 5 knots for push boats and tugs, and less than 10 knots for crew boats).

HABITAT ALTERATION

Installation of the mooring piles, use of barges, and shading from the Project will result in temporary and permanent habitat alteration. These activities will be subject to the following avoidance and minimization measures:

- Fish will be prevented from entering areas within the turbidity curtain temporarily deployed around the Project Site, but the turbidity curtain will be installed only around the immediate work zone to minimize this area.
- Dredged area beneath the FESS will create deeper waters and additional foraging habitat that could be used by fish migrating through the area, including in areas not shaded by the barges.

- Shading by the Project will be limited to the 1.3-acre area beneath the barges, and light will be able to penetrate portions of the water column along the edge of the barges at certain times of day.
- Artificial lighting on the barges, as needed, will be oriented to avoid illumination of the surrounding waters at night to the greatest extent practicable, except for any navigational lighting required by the U.S. Coast Guard.

E. COMPENSATORY MITIGATION

In accordance with NOAA Fisheries' recommendations in its July 25, 2023, response to DOE regarding the FESS Project, NYC Energy has developed a compensatory mitigation plan to offset the impacts to EFH and NOAA-Trust Resources associated with the loss of 1.31 acres within Wallabout Channel permanently impacted by shading from the Project. NYC Energy first looked for opportunities for in-kind mitigation (i.e., removal of overwater structures) within the Brooklyn Navy Yard and in the New York Harbor and was unable to find enough structure to meet the 1.31-acre offset requirement. Due to the lack of in-kind opportunities, NYC Energy proposes to offset the permanent shading impacts through habitat enhancement in coordination with the Billion Oyster Project (BOP).

NYC Energy is coordinating with BOP to perform the installation for its planned oyster reef expansion project at Pier 4 in Brooklyn Bridge Park, for which BOP submitted a Joint Application to the USACE, NYSDEC, NYSDOS, and DCP on September 29, 2023. BOP's oyster reef expansion project will expand upon a 2021 pilot project installed at One15 Marina and Brooklyn Bridge Park, which comprised an oyster nursery with 30 SEAPA[2] cages, a field station with three removable oyster cabinets adjacent to the Pier 4 Beach and One15 Marina, and a deepwater reef of five gabions offshore from Bird Island.[3] The proposed expansion would add 240 bay balls set with 36 million juvenile oysters within a 2-acre project footprint offshore from Bird Island and adjacent to the One15 Marina and gabion reef site. NYC Energy will transport and install the bay balls for BOP.

NYC Energy will also fund a 3-year fish monitoring program (**Enclosure 1**) that will be conducted at the expanded oyster reef in coordination with BOP to characterize fish community use of the habitat provided by the bay balls. Because the oyster reef expansion project will be conducted in the summer of 2024, there is not enough time to collect a full year of site-specific pre-deployment data for the project. Instead, the monitoring plan will rely on the existing two years of sampling results collected by the NYC Economic Development Corporation (EDC) for the Financial District and Seaport Climate Resilience Master Plan. Data for the Master Plan project were collected along the Brooklyn shoreline of the East River within the same portion of the park. Post-deployment monitoring of the fish community will be conducted seasonally in the fall, spring, summer, and winter for three years using the monitoring methodology outlined in the proposed monitoring plan included as **Enclosure 1** to this mitigation plan.

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[2] SEAPA is a company that manufactures oyster cages and accessories (https://seapausa.com/).

[3] BOP's pilot project at the One15 Marina and Pier 4 was authorized under NYSDEC Permit No. 2-6500-00068/00028 and USACE NAN-2021-00432-EVI under Nationwide Permit 5.

ENCLOSURE 1
CONCEPTUAL FISH MONITORING PLAN

BROOKLYN BRIDGE PARK OYSTER RESTORATION PROJECT SITE

The Brooklyn Bridge Park Oyster Restoration Project Site (Project Site) comprises 2 acres of oyster reef habitat and deployment of 36 million oysters located within Brooklyn Bridge Park just offshore of Pier 4 and adjacent to One15 Marina and a previously permitted and installed Billion Oyster Project (BOP) pilot project. The pilot project was installed in 2021 and comprised three removable oyster cabinets adjacent to the Pier 4 beach and One15 Marina and a deepwater reef of five gabions offshore of Bird Island. In addition to this on-bottom pilot project, One15 Marina hosts a large, off-bottom oyster nursery comprising 30 SEAPA cages. Monitoring results of oyster health and wild recruitment at the pilot project and oyster nursery indicate that site conditions would support self-sustaining oyster reefs. Therefore, BOP would like to expand upon the 2021 pilot project and install 240 bay balls set with 36 million juvenile oysters within the 2-acre footprint. The bay balls would occupy 1,680 square feet, or about 2 percent of the 2-acre project site.

Water depths in the Project Area range from 8 to 22 feet (2.4 to 6.7 meters) below SHW and MHW and salinity ranges from 6 to 28 psu. Sediments in the Project Area are composed of fine silt, mud, and clays, and no SAV is present. **Table 1** lists the species for which Essential Fish Habitat (EFH) has been designated at the Project Site. Additionally, several NOAA Trust Species are known to or may occur in the Project Area (**Table 2**).

Table 1: Species with designated EFH in the Project Area

Species	**Life Stage**			
	Eggs	**Larvae**	**Juvenile**	**Adults/Spawning Adults**
Atlantic butterfish (*Peprilus triacanthus*)		X		
Atlantic herring (*Clupea harengus*)		X	X	X
Bluefish (*Pomatomus saltatrix*)			X	
Clearnose skate (*Raja eglanteria*)			X	
Little skate (*Leucoraja erinacea*)			X	X
Long-finned squid (*Doryteuthis pealeii*)	X			
Red hake (*Urophycis chuss*)	X	X	X	X
Summer flounder (*Paralichthys dentatus*)		X	X	
Windowpane flounder (*Scophthalmus aquosus*)	X	X	X	
Winter flounder (*Pseudopleuronectes americanus*)	X	X	X	X
Winter skate (*Leucoraja ocellata*)			X	

Table 2: NOAA Trust Species occurring within the Project Area

Common name	**Scientific Name**
Invertebrates	
Blue crab	*Callinectes sapidus*
Blue mussel	*Mytilus edulis*
Eastern oyster	*Crassostrea virginica*
Horseshoe crab	*Limulus polyphemus*
Quahog	*Mercenaria mercenaria*
Soft-shell clam	*Mya arenaria*
Fish	
Alewife	*Alosa pseudoharengus*
American eel	*Anguilla rostrata*
American shad	*Alosa sapidissima*
Atlantic menhaden	*Brevoortia tyrannus*
Blueback herring	*Alosa aestivalis*
Striped bass	*Morone saxatilis*

PROJECT DESIGN AND DEPLOYMENT

Oyster habitat enhancement structures will be deployed in two phases at the Project Site over a one-to-two-week period in Summer 2024. For this Project, 240 bay balls, which have been pre-seeded with approximately 36 million oyster larvae, will be deployed in a configuration of 24 evenly spaced clusters of 10 bay balls each (see **Figure 1**). Within each cluster, bay balls will be spaced approximately 3 feet apart, and all structures will be located below MLW. The bay balls will create a total on-bottom coverage of approximately 1,680 square feet within the 2-acre Project Area.

Figure 1: Project Area and Design. Light blue line denotes the approximate location of the 12-foot depth contour; areas to the left of the light blue line fall within the 13-20-foot depth stratum and areas to the right of the light blue line fall within the 8-12-foot depth stratum. Yellow stars indicate the location of the three permanent sampling locations in the 13-20-foot depth stratum and blue stars indicate the locations of the permanent sampling locations in the 8-12-foot depth stratum. Two additional randomly selected clusters will be sampled in each depth stratum during each seasonal sampling event.

MONITORING FOR FISH COMMUNITY USE

Fish monitoring will be conducted to document the use of the Project Site by the nearshore fish community. The two years of biological sampling (2021 and 2022) conducted by the NYC Economic Development Corporation within Brooklyn Bridge Park for the Financial District and Seaport Climate Resilience Master Plan[1] ("FiDi Biological Monitoring") will be used to establish a biological baseline with respect to the nearshore fish community in the Project Area. The fish sampling portion of the FiDi Biological Monitoring included sampling via traps and remote sensing, and the current Project Site is located within one of the sampling zones of that study.

Post-deployment monitoring of the fish community will be performed seasonally in fall, spring, summer, and winter for three years post-deployment. Seasonal sampling is intended to characterize the fish community present at the Project Site seasonally but will also provide information on use by anadromous fish species (e.g., clupeids and striped bass) during the spring migration period. BOP will coordinate the fish monitoring conducted for the NYC Energy project with the monitoring required as part of the US Army Corps of Engineers (USACE) Nationwide Permit 27 Aquatic Habitat Restoration, Enhancement and Establishment Activities fish monitoring program and New York State Department of Environmental Conservation (NYSDEC) Article 15 and 25 permits that will be issued for the Brooklyn Bridge Park Oyster Restoration Project.

Fish community use of the habitat provided by the bay balls will be characterized using a stratified sampling approach. Three clusters to be sampled during every seasonal sampling effort (henceforward referred to as permanent sampling locations) haven been randomly selected within each of two depth strata (8-12-foot and 13-20-foot) (**Figure 1**), and an additional two sampling locations will be randomly chosen in each stratum at each seasonal sampling event (henceforward referred to as random sampling locations), for a total of 10 clusters sampled per seasonal monitoring effort (5 sampling locations in each of the depth strata). During each seasonal monitoring effort, the fish community will be monitored using eDNA and trapping techniques. Water quality parameters (temperature, pH, salinity, dissolved oxygen, and turbidity) will also be measured using YSI EXO-2 (or similar) datasondes. Measurements will include surface and bottom water quality parameters taken at each of the sampling locations at the beginning of each day's sampling events.

eDNA

At each of the permanent and random sampling locations, water samples will be collected approximately 1 foot from the bottom sediments using a water sampler such as a Niskin bottle or horizontal water sampler that can be closed at the desired depth (**Figure 2**). Once obtained, 500mL of each sample will be decanted into a clearly labeled sterile Nalgene water sample bottle. It may be desirable to take replicate water samples at each sampling location, which can then be combined in the field, during filtering, or during laboratory analysis. Water samples should be filtered in the field if possible; however, if this is not possible, samples should be stored on ice until arrival at the lab and then immediately processed upon arrival. Samples should be processed following eDNA protocols for turbid waters (see Kumar et al. 2022) which may involve the use of filters with larger pore sizes to reduce clogging, and a PCR inhibitor removal step. Several commercial kits are available for use for the filtration and sample preparation stages of eDNA analysis (e.g., QIAshredder, DNeasy Blood and Tissue kit). Filters can then be frozen to slow DNA degradation and transported to a lab that processes eDNA. It is suggested that the eDNA be processed using

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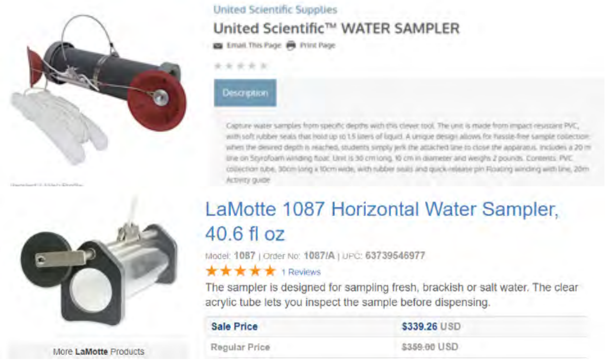
[1] https://fidiseaportclimate.nyc/

eDNA metabarcoding techniques, which will allow for the generation of a list of species whose DNA is present in each sample.



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United Scientific™ WATER SAMPLER

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Description

Capture water samples from specific depths with this clever tool. The unit is made from impact resistant PVC, with soft rubber seals that hold up to 1.5 liters of liquid. A unique design allows for hassle-free sample collection: when the desired depth is reached, students simply jerk the attached line to close the apparatus. Includes a 20 m line on Styrofoam winding float. Unit is 30 cm long, 10 cm in diameter and weighs 2 pounds. Contents: PVC collection tube, 30cm long x 10cm wide, with rubber seals and quick-release pin Floating winding with line, 20m Activity guide

LaMotte 1087 Horizontal Water Sampler, 40.6 fl oz

Model: 1087 | Order No: 1087/A | UPC: 63739546977

★★★★★ 1 Reviews

The sampler is designed for sampling fresh, brackish or salt water. The clear acrylic tube lets you inspect the sample before dispensing.

Sale Price	$339.26 USD
Regular Price	~~$359.00~~ USD

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Figure 2: Example horizontal water samplers

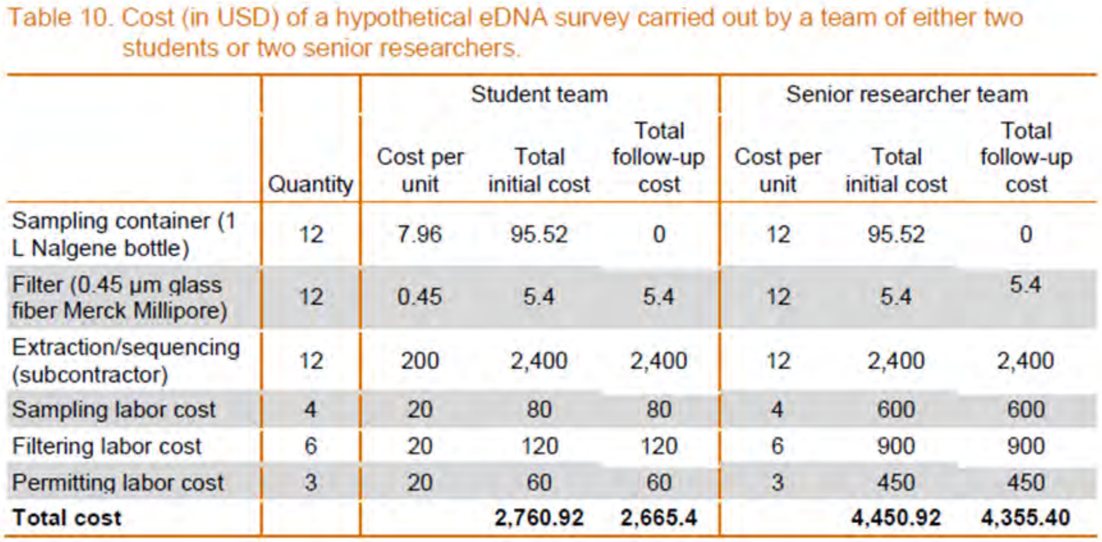

Table 10. Cost (in USD) of a hypothetical eDNA survey carried out by a team of either two students or two senior researchers.

		Student team			Senior researcher team		
	Quantity	Cost per unit	Total initial cost	Total follow-up cost	Cost per unit	Total initial cost	Total follow-up cost
Sampling container (1 L Nalgene bottle)	12	7.96	95.52	0	12	95.52	0
Filter (0.45 µm glass fiber Merck Millipore)	12	0.45	5.4	5.4	12	5.4	5.4
Extraction/sequencing (subcontractor)	12	200	2,400	2,400	12	2,400	2,400
Sampling labor cost	4	20	80	80	4	600	600
Filtering labor cost	6	20	120	120	6	900	900
Permitting labor cost	3	20	60	60	3	450	450
Total cost			**2,760.92**	**2,665.4**		**4,450.92**	**4,355.40**

Figure 3: Table 10 from Fu et al. 2021

Source: Fu et al. 2021. Statement from Fu et al. regarding these estimates: "The hypothetical surveys assumed four sites where data were collected over the course of a single day during daylight hours. The eDNA survey considered two staff (one boat operator and one water sampler). Parameters considered were the cost of supplies and labor costs to obtain necessary environmental permits, collect data in the field, and process and analyze field-collected data (including by potential subcontractors). The data processing and analyzing portion only included steps to convert raw, field-collected data (with quality control checks) and did not include statistical analyses. Labor costs incurred to projects (i.e., including overhead and other related costs) were calculated based on a nationwide average undergraduate student hourly rate ($20/hour) and a senior researcher hourly rate ($150/hour). The most common eDNA supplies and their costs were identified from the literature and cost reviews and used for the hypothetical eDNA survey in Sequim Bay. The time required for the sampling and filtering steps was estimated based on experience from subject matter experts. Labor hours for completing permitting requirements were estimated by consulting with environmental permitting experts. Due to the high cost of performing DNA extractions and sequencing in small laboratory facilities, the hypothetical survey assumed that these steps were conducted by a subcontractor charging 200 USD a sample. The cost of undertaking this hypothetical eDNA survey by teams of students (2,760 USD) and senior researchers (4,450 USD) is shown in Table 10. Because the sampling containers (e.g., Nalgene bottles) can be cleaned and sterilized between surveys, a follow-up survey would cost 2,665.40 USD for a team of students and 4,355.40 USD for a team of senior researchers." Follow-up survey assumes that researchers decided to perform a second survey and demonstrates that the sampling bottles can be reused if sterilized.

TRAP SAMPLING

For this sampling, two large sea bass traps (similar to those used in during the FiDi Biological Monitoring[1]) and two small minnow traps[2] will be placed within the footprint of the bay ball cluster at each permanent and random sampling location (**Figure 4**). The traps will remain in place for a period of 5 days[3]. After this period, each trap will be removed from the water and its contents emptied into a sorting bin for sampling processing. All fish and portunid crabs in each sample will be identified and counted, but only the first 20 randomly selected individuals of each species per trap will be measured to create a length frequency for that sample population. Fish length will be measured using total length (tip of snout to tip of caudal fin), and carapace width will be recorded for portunid crabs. Optionally, other invertebrates in each trap sample will be identified to the lowest possible taxon and counted. To avoid pseudo-replication in statistical analyses, data from the four traps at each sampling location will be pooled to represent a single sample for each cluster. All fish sampling efforts must follow approved IACUC[4] protocols and be performed under the guidance of an individual with a current IACUC certification.

STATISTICAL ANALYSIS

At the completion of each year of monitoring efforts, data will be used to compile a species list (with relative abundances from eDNA data if possible; CPUE and length distribution if trap sampling is used) for each fish species by each depth zone. Community similarity will be compared among all sampling locations and between each depth zone. Water quality data will be analyzed to determine seasonal and yearly trends in the Project Area and used to support analysis of fish community trends. As monitoring progresses through the monitoring timeframe, fish community composition, relative abundance, and community similarity will be analyzed to determine how patterns in fish usage changes with time over the age of the Project. Fish community data from the Financial District and Seaport Climate Resilience Master Plan will be compared to post-deployment monitoring to determine the effect that the addition of enhancement structures has had on the fish community in the Project Area.

Post-construction monitoring would be initially conducted for a three-year period. After this time, consultation with NOAA Fisheries would occur to determine if further monitoring and evaluation of the data set is required. If this consultation states that monitoring should be continued, then the remaining post-construction sampling will be conducted using eDNA sampling only if, after three years of post-construction monitoring, results derived from trap sampling are not statistically significantly different ($p \leq 0.05$) from results derived from eDNA sampling. If the results are statistically different, then the full monitoring plan (traps and eDNA) would be performed for the remaining post-construction monitoring.

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[1] Sea bass traps are approximately 48” long, 15” high, and 24” wide, with a mesh size of 1.5” and an opening of 12” by 10”.

[2] Minnow traps will be cylindrical or rectangular in shape and approximately 24” long, approximately 8” high, and 9” long (or 30 inches in circumference if cylindrical), with 0.25” mesh, and a funnel opening of approximately 1”.

[3] Tribecca Enhancement monitoring project within Hudson River Park currently uses 1 week time frame for duration of trap placement as specified by T. Grothues from Rutgers. Yong Chen of CUNY used a period of 2 to 3 days because numbers of fish species declined with soak time longer than 10 days.

[4] IACUC (The Institutional Animal Care and Use Committee) is established by federal mandate and ensures animal welfare regulation compliance at institutions using live vertebrates for testing, research, and teaching activities.

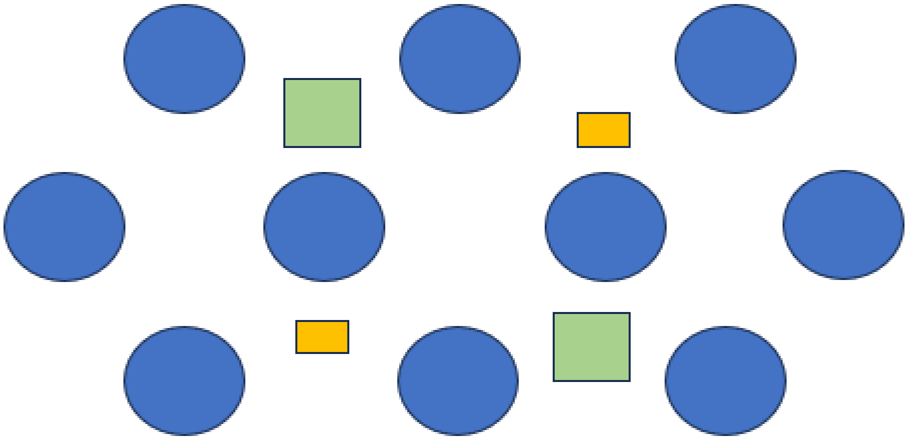

Figure 4: Trap placement in bay ball clusters. Blue circles represent bay balls in a single cluster. Green squares represent the sea bass traps and yellow rectangles represent the minnow traps. Drawing is not to scale, and locations of bay balls and traps are approximate.

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