

Environmental, Planning, and Engineering Consultants

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November 3, 2023

Chris Minck U.S. Army Corps of Engineers Regulatory Branch, New York District 26 Federal Plaza, Room 1937 New York, NY 10278

Consistency Review Unit New York State Department of State Office of Planning and Development One Commerce Place, Suite 1010 99 Washington Avenue Albany, NY 12231 Jamie Lacko NY State Department of Environmental Conservation Bureau of Energy Project Management 625 Broadway Albany, NY 12233

New York City Department of City Planning Waterfront and Open Space Planning 120 Broadway, 31st Floor New York, NY 10271

Re: Joint Application for Permit – Floating Energy Storage System Project

Wallabout Channel, Brooklyn Navy Yard, Brooklyn NY

To Mr. Minck, Ms. Lacko, Consistency Review Unit, and Department of City Planning:

NYC Energy LLC (NYC Energy) is submitting this Joint Application requesting authorization from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act 14, and from the New York State Department of Environmental Conservation (NYSDEC) under Articles 15 and 25 of the New York Environmental Conservation Law for the development of a utility-scale floating energy storage system (FESS) in the Wallabout Channel in Brooklyn, New York (the Project). This application also requires review by the New York State Department of State (NYSDOS) for consistency with the New York State Coastal Management Program and by the New York City Department of City Planning (DCP) for consistency with the NYC Waterfront Revitalization Program.

The FESS will provide up to 300 megawatts (MW)/1,200 megawatt hours (MWh) of storage capacity using stacked energy storage containers and associated equipment and will interconnect to the New York Independent System Operator (NYISO)-controlled New York State Transmission System. The Project is intended to integrate clean, renewable energy alternatives into New York's electric transmission grid and allow New York City to meet peak power needs without relying on its oldest peaker plants. The Project will further New York State's climate goals under the 2019 Climate Leadership and Community Protection Act which established a target for the development of 6,000 megawatts (MW) of battery energy storage capacity in the state by 2030.

Please feel free to contact me at AKRF (646-388-9657 or <a href="mailto:scollins@akrf.com">scollins@akrf.com</a>) should you have any questions regarding this Joint Application or require additional information.

Sincerely,

Sandy Collins

Senior Vice President, AKRF

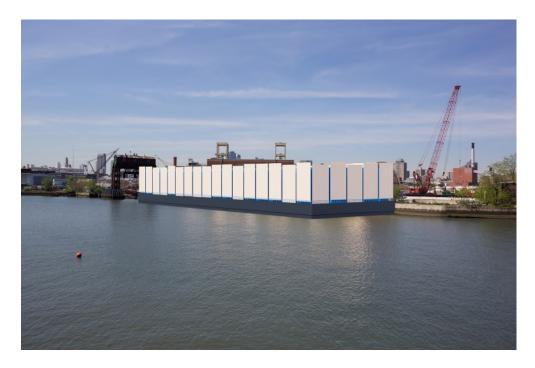
Sandre & Callins

cc: Steve Watts, NYSDEC

David Oster, U.S. Department of Energy Robert Lanza, ICF International, Inc. Ed Seaman, NYC Energy LLC Ryan Maheux, NYC Energy LLC

Kevin Maher, AKRF

# Floating Energy Storage System Project



**Joint Application for Permits** 

## **Applicant:**

NYC Energy, LLC

Borough of Brooklyn, Kings County

November 2023

# JOINT APPLICATION FOR PERMIT FLOATING ENERGY STORAGE SYSTEM PROJECT BROOKLYN, NEW YORK TABLE OF CONTENTS

#### Joint Application Form

- Figure 1: Project Location
- Figure 2: Environmental Resource Mapper

Water Quality Certification Supplement

Docking and Mooring Supplement

**Environmental Questionnaire** 

Attachment 1: Project Description

Attachment 2: Representative Photographs

Attachment 3: Environmental Review

- Attachment 3a: SEQRA Full Environmental Assessment Form
- Attachment 3b: NEPA Environmental Assessment [PLACEHOLDER]

Attachment 4: Sediment Sampling Results

Attachment 5: Engineering Drawings

- Attachment 5a: BlueShore Engineering Drawings
- Attachment 5b: McLaren and RST Barge Arrangement Drawings

Attachment 6: Section 408 Submittal Package

Attachment 7: NMFS Essential Fish Habitat Consultation

Attachment 8: NMFS Threatened and Endangered Species Consultation

Attachment 9: SAAF and SHPO Consultation

Attachment 10: Coastal Zone Consistency Assessment

- Federal Consistency Assessment Form
- NYC WRP Consistency Assessment Form and Policy Discussions

Attachment 11: CLCPA and CRRA Compliance



#### **JOINT APPLICATION FORM**

For Permits for activities activities affecting streams, waterways, waterbodies, wetlands, coastal areas, sources of water, and endangered and threatened species.

You must separately apply for and obtain Permits from each involved agency before starting work. Please read all instructions.

Applications To:     NYS Department of Environmental Conservation	Check here to confirm you sent this form to NYSDEC.			
>NYS Department of Environmental Conservation  Check all permits that apply: Dams and Impoundment Stream Disturbance ment Structures  Excavation and Fill in A01 Water Quality Certification*  Docks, Moorings or Platforms  >US Army Corps of Engineers  Check all permits that apply: Section 404 Clean Wals the project Federally funded? Yes No  If yes, name of Federal Agency:  General Permit Type(s), if known:	Tidal Wetlands  Wild, Scenic and Recreational Rivers  Coastal Erosion Management  * See Instructions (page 3)  Water Withdrawal  Long Island Well  Incidental Take of Endangered / Threatened Species  * See Instructions (page 3)			
Preconstruction Notification: Yes No				
>NYS Office of General Services  Check here to confirm you sent this form to NYSOGS.  Check all permits that apply:  State Owned Lands Under Water  Utility Easement (pipelines, conduits, cables, etc.)  NYC Energy has informed OGS about this Project, which will be partially over state-owned lands underwater, and submitted of this application. OGS does not object but does not sign Joint Applications as Owner.  >NYS Department of State  Check here to confirm you sent this form to NYSDOS.  Check if this applies:  Check here to confirm you sent this form to NYSDOS.				
2. Name of Applicant  Mailing Address  Telephone Email Applicant Must be (check all that apply): Owner	Taxpayer ID (if applicant is NOT an individual)  Post Office / City  State Zip  Operator  Lessee			
3. Name of Property Owner (if different than Applicant)				
Mailing Address  Telephone Email	Post Office / City State Zip			
·				
For Agency Use Only Agency Application Number:				

**JOINT APPLICATION FORM –** Continued. Submit this completed page as part of your Application.

4. Name of Contact / Agent	1
Mailing Address	Post Office / City State Zip
Telephone Email	
Telephone Email	
5. Project / Facility Name	Property Tax Map Section / Block / Lot Number:
Project Street Address, if applicable	Post Office / City State Zip
Project Street Address, if applicable	NY
Duraida dinastina and distance to made international but	due and badies of water
Provide directions and distances to roads, intersections, bri	ages and bodies of water
☐ Town ☐ Village ☐ City County	Stream/Waterbody Name
Project Location Coordinates: Enter Latitude and Longitude	in degrees, minutes, seconds:
Latitude: ""	Longitude: " "
<ol><li>Project Description: Provide the following information a any additional information on other pages. <u>Attach plans or</u></li></ol>	
a. Purpose of the proposed project:	
a. Tarpose of the proposed project.	
b. Description of current site conditions:	
c. Proposed site changes:	
<ul> <li>d. Type of structures and fill materials to be installed, and coverage, cubic yards of fill material, structures below of</li> </ul>	
	. ,
e. Area of excavation or dredging, volume of material to be	e removed, location of dredged material placement:
f. Is tree cutting or clearing proposed?  Timing of the proposed cutting or clearing (month/year	∕es, explain below.
	)·

**JOINT APPLICATION FORM –** Continued. Submit this completed page as part of your Application.

g. Work methods and type of equipment to be used:
h. Describe the planned sequence of activities:
Pollution control methods and other actions proposed to mitigate environmental impacts:
j. Erosion and silt control methods that will be used to prevent water quality impacts:
k. Alternatives considered to avoid regulated areas. If no feasible alternatives exist, explain how the project will
minimize impacts:
I. Proposed use: Private Dublic Commercial
m. Proposed Start Date: Estimated Completion Date:
n. Has work begun on project?
o. Will project occupy Federal, State, or Municipal Land? Yes If Yes, explain below.
Vini project occupy i ederal, etate, or internolpar curia:
p. List any previous DEC, USACE, OGS or DOS Permit / Application numbers for activities at this location:
Military and Associated Pictural Folders Obstantial Control of the
q. Will this project require additional Federal, State, or Local authorizations, including zoning changes?
Yes If Yes, list below.

**JOINT APPLICATION FORM –** Continued. Submit this completed page as part of your Application.

#### 7. Signatures.

Applicant and Owner (If different) must sign the application. If the applicant is the landowner, the **landowner attestation form** can be used as an electronic signature as an alternative to the signature below, if necessary. Append additional pages of this Signature section if there are multiple Applicants, Owners or Contact/Agents.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief.

Permission to Inspect - I hereby consent to Agency inspection of the project site and adjacent property areas. Agency staff may enter the property without notice between 7:00 am and 7:00 pm, Monday - Friday. Inspection may occur without the owner, applicant or agent present. If the property is posted with "keep out" signs or fenced with an unlocked gate, Agency staff may still enter the property. Agency staff may take measurements, analyze site physical characteristics, take soil and vegetation samples, sketch and photograph the site. I understand that failure to give this consent may result in denial of the permit(s) sought by this application.

False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the NYS Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than \$10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

material fact; or knowingly makes or uses a false, fictitious or fraudule	ent statement.
Signature of Applicant	Date
Ed Seaman	
Applicant Must be (check all that apply): Owner Oper	ator Lessee
Printed Name	Title
Signature of Owner (if different than Applicant)	Date
Printed Name	Title
Signature of Contact / Agent	Date
Sandra & Caelina	
Sandra & Caelina  Printed Name	Title
	Title
	Title
Printed Name  For Agency Use Only  DETERMINATION OF NO PERMI Agency Application Num	T REQUIRED mber
Printed Name  For Agency Use Only  DETERMINATION OF NO PERMI Agency Application Num  (Agency	T REQUIRED  mber y Name) has determined that No Permit is
Printed Name  For Agency Use Only  DETERMINATION OF NO PERMI  Agency Application Num  (Agency required from this Agency for the project described in this application	T REQUIRED  mber y Name) has determined that No Permit is
Printed Name  For Agency Use Only  DETERMINATION OF NO PERMI Agency Application Num  (Agency	T REQUIRED  mber y Name) has determined that No Permit is
Printed Name  For Agency Use Only  DETERMINATION OF NO PERMI  Agency Application Num  (Agency Agency for the project described in this application Agency Representative:	T REQUIRED mber y Name) has determined that No Permit is n.

JOINT APPLICATION FORM - Continued. Submit this completed page as part of your Application.

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Signature of Applicant	Date
Applicant Must be (check all that apply	y): Owner Operator Lessee
Printed Name	Title
Ed Seaman, NYC Energy LLC	Managing Director of Energy Group
Signature of Owner (if different than App	plicant) Date
Faul Jell	11/1/2023
Printed Name	Title
Paul Kelly, Brooklyn Navy Yard Development Corpora	ation General Counsel & EVP, Legal
Signature of Contact / Agent	Date
Printed Name	Title
Sandy Collins, AKRF	Senior Vice President
For Agency Use Only DETER	RMINATION OF NO PERMIT REQUIRED
For Agency Use Only DETER	Agency Application Number
	Agency Application Number (Agency Name) has determined that No Permit is
required from this Agency for the project	Agency Application Number (Agency Name) has determined that No Permit is
required from this Agency for the project	Agency Application Number (Agency Name) has determined that No Permit is t described in this application.
	Agency Application Number (Agency Name) has determined that No Permit is



**Project Location** 

## **Environmental Resource Mapper**



The coordinates of the point you clicked on are:

**UTM 18 Easting:** 586970.4280300646 **Northing:** 4506711.07017967

**Longitude/Latitude Longitude:** -73.97044754028269 **Latitude:** 40.70673183621992

## The approximate address of the point you clicked on is:

Kay Ave, Brooklyn, New York, 11251

County: Kings, New York

City: New York

**USGS Quad: BROOKLYN** 

#### **Waterbody Classifications for Lakes**

Regulation: 890-53

Standard: | Classification: |

#### **303D Estuary Construction**

Waterbody Name: East River, Lower

**PWL ID:** 1702-0011

Basin: Atlan c-Long Island Sound

**Description:** river from Ba ery to Hells Gate

#### Base Flood Elevation Plus 72/75 Inches Sea-level Rise

This area is projected to be inundated during a 100-year flood with 72/75 inches of sea-level rise.

#### **National Wetands Inventory**

**Attribute:** E1UBLx

Type: Estuarine and Marine Deepwater

Acres: 8.866433461

Attribute: E1UBL

Type: Estuarine and Marine Deepwater

Acres: 882496.413449186

For more informa on about the Na onal Wetands Inventory wetlands visit <a href="http://www.fws.gov/wetlands/">http://www.fws.gov/wetlands/</a>

If your project or ac on is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the ac on may be harmful to the species or its habitat.

If your project or ac on is within or near an area with rare plants and/or significant natural communi es, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a NYS DEC permit. Readers are advised, however, that there is the chance that a unique feature may also show in another data layer (ie. a wetland) and thus be subject to permit jurisdic on.

Please refer to the "Need a Permit?" tab for permit informa on or other authoriza ons regarding these natural resources.

**Disclaimer:** If you are considering a project or ac on in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recrea onal Rivers, are currently not included on the maps.

Print Preview



## APPLICATION FOR PERMIT FOR SECTION 401 STATE WATER QUALITY CERTIFICATION

#### **Supplement WQC-1**

## DEC ID (if known):

Applicant Information:

Name of Applicant (from Joint Application Form):					
Email:		Phone:			
Mailing Address: Street:	City:	State:	Zip:		
Project Location (from Joint Application Form):					
Town (where property taxes paid): County:					
Street Address: City: State: NY Zip:					

	pply for New York State Section 401 Water Quality Certification, all items below must be pleted and the applicant must sign page 2 of this form.
1.	By signing this form, the applicant affirms that the project proponent(s) and a point of contact were accurately identified in the Joint Application for Permit provided with this supplement.
2.	By signing this form, the applicant affirms that the proposed project is accurately and completely identified in the Joint Application for Permit provided with this supplement, and in any supporting plans, photos, reports or other project information.
3.	Identify here the applicable federal license or permit for this request:  If this request relates to a Section 404 Nationwide Permit administered by the US Army Corps of Engineers, please identify the appropriate Nationwide Permit number(s):
4.	Please identify the location and nature of any potential discharge that may result from the proposed project and the location of receiving waters (attached additional information as needed):
5.	Please provide a description of any methods and means proposed to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge (attach additional information as needed):

6.	Please provide a list of all other federal, interstate, tribal, state, territorial, or local agency authorizations required for the proposed project, including all approvals or denials already received:

#### **Certification:**

In addition to the Joint Application Form provided with this supplement, I hereby submit this form and the attachments indicated to request a Section 401 Water Quality Certification from DEC. The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

	Ed Seaman	10/27/2023	
·	Project Applicant/Proponent Signature	Date	



#### **APPLICATION FOR PERMIT**

FOR THE CONSTRUCTION, RECONSTRUCTION OR EXPANSION OF DOCKING AND MOORING FACILITIES (Including Platforms and Breakwaters)

FOR AGENCY USE ONLY
DEC APPLICATION NUMBER:

Supplement D-2

	Please read all instructions on the following page.		
		U.S. ARMY CORPS OF ENGINEERS APPLICATION NUMBER:	
PF	OJECT CONSTRUCTION DESCRIPTION:		
1.	TYPE OF ACTIVITY:		
	New Facility Construction Substantial Reconstruction Expansion	Change in Use	
2.	CAPACITY OF DOCKING FACILITY OR MOORING AREA:		
	Maximum number of boats to be docked:		
	Maximum number of boats to be moored:		
	Boat type and size ranges to be served:		
	Total surface area of facility perimeter: square feet		
3.	IDENTIFY STRUCTURE TYPES AND THE USE OF SUCH STRUCTURES, INCLUDE SIZE, TYPE OF CONSTRUBENTAL SUBSTANTIAL RECONSTRUCTION IS REQUIRED, EXPLAIN EXTENT OF ACTIVITY INCLUDING PERCENTAL AFFECTED.  (continue on attached sheet if necessary)	RUCTION AND MATERIALS TO BE USED, IF AGE OF THE TOTAL STRUCTURE SIZE	
4.	FOR NEW FACILITY, EXPANSION OF EXISTING FACILITY OR CHANGE IN USE, CHECK APPROPRIATE ITE PROVIDED:	MS AND DESCRIBE THE SERVICES TO BE	
	Water Supply:		
	Sewage Disposal:		
	Electrical Supply:		
	Gas Supply:		
	Gasoline/Oil Supply:		
	Other:		
	(continue on attached sheet if necessary)		
5.	SIGNATURE: Ed Seaman	DATE:	

#### **APPLICABILITY**

- 1. The construction, reconstruction or expansion of docking or mooring facilities on, in or above state-owned lands under water requires authorization from the New York State Office of General Services. For application requirements contact: New York State Office of General Services, Division of Real Property Planning, Bureau of Land Management, Empire State Plaza, Corning Tower, 26<sup>th</sup> Floor, Albany, NY 12242. A permit pursuant to Article 15, Title 5 of the Environmental Conservation Law may not be required from the Department of Environmental Conservation in these circumstances.
- 2. The determination that no permit is required from the New York State Department of Environmental Conservation does not necessarily mean that no permit is required from the Unites States Army Corps of Engineers. All parties considering constructing projects within the navigable waters of the State should consult directly with the United States Army Corps of Engineers to accurately determine what requirements apply.

#### INSTRUCTIONS

- 1. Application shall include four (4) copies of this form, a map showing the facility location, scaled plans, cross-sections and specifications depicting all major structures and the delineated facility perimeters that include a reference point tied to a permanent structure or significant natural features.
- 2. This application must be accompanied by a New York State Department of Environmental Conservation JOINT APPLICATION FOR PERMIT (95-19-3).
- 3. Applications shall be submitted to the Regional Permit Administrator at the appropriate office of the Department, as indicated on the JOINT APPLICATION FOR PERMIT.
- 4. Construction, reconstruction or installation of docking and mooring structures shall NOT be started until a permit authorizing such activity has been issued by the New York State Department of Environmental Conservation.
- 5. The following definitions as listed in 6 NYCRR Part 608.1 apply.

Docking Facility means any marine, boat basin, marine terminal, and any other areas on navigable waters containing a single structure or a collection of related structures, such as docks, piers, platforms, bulkheads, breakwaters, and pilings, used for the reception, securing, and protection of boats, ships, barges or other water craft.

Mooring means a float, buoy, chain, cable, rope, pile, spar, dolphin or any other device or combination of devices that are anchored or fixed in navigable waters of the state to which a vessel can be made fast.

Mooring Area means a collection of individual moorings located within a definable area of navigable waters of the state and under single private ownership or control.

Perimeter means a boundary of a docking facility or mooring area consisting of a series of connected imaginary lines on a plan or map, encompassing all related structures such as docks, bulkheads, breakwaters, pilings, piers, platforms or moorings and the travel lanes and berthing areas that function together to create a facility or area at which vessels may be docked or moored.

*Platform* means a generally horizontal, flat surface located in, on or over a waterbody, on which structures can be constructed or any activities can be conducted.

Substantial reconstruction of structures means restoration or rebuilding, involving fifty percent (50%) or more of an existing fixed structure's surface area.

#### ENVIRONMENTAL QUESTIONNAIRE

This is intended to supplement ENG Form 4345, Application for Department of the Army Permit, or the Joint Application for Permit used in the State of New York. Please provide complete answers to all questions below which are relevant to your project. Any answers may be continued on separate sheet(s) of paper to be attached to this form.

#### PRIVACY ACT STATEMENT

The purpose of this form is to provide the Corps of Engineers with basic information regarding your project. This information will be used to facilitate evaluation of your permit application and for public dissemination as required by regulation. Failure to provide complete information may result in your application being declared incomplete for processing, thereby delaying processing of your application.

#### **GENERAL--APPLICABLE TO ALL PROJECTS**

1. Explain the need for, and purpose of, the proposed work.

This Joint Application requests authorization for NYC Energy LLC's (NYC Energy) development of a utility-scale floating energy storage system (FESS) in the Wallabout Channel in Brooklyn, Kings County, NY (the Project). The Project has been determined eligible to apply for a loan guarantee from the U.S. Department of Energy (DOE) under Title XVII of the Energy Policy Act of 2005 (EPAct), which requires demonstration by the applicant that the project is innovative and uses new or improved technologies as compared to traditional methods currently in service, and has been invited to due diligence as part of the loan process. The Project will use stacked energy storage containers and associated equipment on three side-by-side barges moored in the Wallabout Channel off Berth 20 of Pier K within the Brooklyn Navy Yard, in Brooklyn, NY. Attachment 1 provides a detailed description of the Project and the construction means and methods.

Energy storage will play a crucial role in meeting New York State's aggressive clean energy goals and objectives. The project is intended to assist in the integration of clean, renewable energy alternatives (primarily wind and solar generation) into New York's electric transmission grid and allow New York City to meet peak power needs without relying on its oldest peaker plants. This reduces dependency on fossil fuel generation, which will reduce local air emissions, benefit local air quality, and prepare the New York electric grid for energy generated by new renewable energy facilities onshore and offshore. Successful deployment of the proposed 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 further development of alternative renewable energy systems. The FESS concept could be replicated throughout the country, including potentially at the existing 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.

2. Provide the names and addresses of property owners adjacent to your work site (if not shown on the application form or project drawings)

**Adjacent Property Owners** 

				1 1
Block Lot		Owner Name	Address	Zip Code
2023	NYC Department of Small Business Services		652 Kent Avenue	11251
2023 150 Brooklyn Navy Yard Development Corporation 2		22 Flushing Avenue	11205	
2023	10	500 Kent LLC	492 Kent Avenue	11249
2134	1	470 Kent Ave Associates LLC	Kent Avenue	11249
2134	150	470 Kent Ave Associates LLC	Kent Avenue	11249

(Please note that depending upon the nature and extent of your project, you may be requested to provide the names and addresses of additional property owners proximate to your project site to ensure proper coordination.)

3. Photographs of the project site should be submitted. For projects in tidal areas, photographs of the waterway vicinity should be taken at low tide. Using a separate copy of your plan view, indicate the location and direction of each photograph as well as the date and time at which the photograph was taken. Provide a sufficient number of photographs so as to provide a clear understanding of conditions on and proximate to your project site.

#### Attachment 2 provides photographs of the Project site.

4. Provide a copy of any environmental impact statement, or any other environmental report which was prepared for your project.

A SEQRA Full Environmental Assessment Form (FEAF) is provided as Attachment 3 to this application. The U.S. Department of Energy (DOE) is preparing a NEPA EA concurrently with this Joint Application. The Draft EA will be provided to USACE and NYSDEC when DOE has released it for public review. The Finding of No Significant Impact (FONSI) for the NEPA EA will also be provided to USACE and NYSDEC when it becomes available.

5. Provide a thorough discussion of alternatives to your proposal. This discussion should include, but not necessarily be limited to, the "no action" alternative and alternative(s) resulting in less disturbance to waters of the United States. For filling projects in waters of the United States, including wetlands, your alternatives discussion should demonstrate that there are no practicable alternatives to your proposed filling and that your project meets with current mitigation policy (i.e. avoidance, minimization and compensation).

Installation of three side-by-side barges, each accommodating up to three levels of pre-installed battery energy storage containers with a 100 MW/400 MWh capacity, at Berth 20 of Pier K in the Brooklyn Navy Yard was selected as the alternative most practicable and consistent with the Project's purpose and need, while minimizing potential impacts to aquatic resources. The Project will result in dredging of approximately 81,500 cubic yards of sediment over approximately 5.2 acres within Wallabout Channel, the permanent loss 58.9 square feet of benthic habitat in the footprint of 12 30-inch diameter piles, and 1.3 acres of shading from the barges. Dredging would be required for any alternative that proposes a floating energy storage system at the Project site.

Enclosure 1 provides an overview of the site and design constraints for the Project along with an evaluation of alternative upland siting and several in-water design alternatives. As described in Enclosure 1, the FESS Project requires a unique set of site characteristics, an area zoned for heavy industrial use, proximity to the Hudson Avenue Substation to allow for interconnection to Con Edison's transmission system, and design components that meet the eligibility requirements for the EPAct loan guarantee. Enclosure 1 does not include a discussion of a No Action Alternative, which would not meet the purpose and need of the Project. A No Action Alternative would not support New York State's climate goals under the 2019 Climate Leadership and Community Protection Act (CLCPA) which include a target development of 6,000 MW of battery energy storage capacity in New York by 2030. The FESS Project is directly related to the achievement of this goal.

#### DREDGING PROJECTS

Answer the following if your project involves dredging.

1. Indicate the estimated volume of material to be dredged and the depth (below mean low water) to which dredging would occur. Would there be overdepth dredging?

Dredging will be conducted within about 5.2 acres in Wallabout Channel to the USACE authorized depth of 20 feet at MLW with 1 foot of allowable overdredge. To accommodate the 16- to 18-foot draft of the FESS barges, approximately 81,500 cubic yards of sediment will be removed from the 5.2-acre dredge area within the Channel.

2. You can apply for a ten-year permit for maintenance dredging. If you wish to apply for a ten-year permit, please provide the number of additional dredging events during the ten-year life of the permit and the amount of material to be removed during future events.

NYC Energy wishes to apply for a ten-year maintenance dredging permit. We expect one maintenance dredging event to be conducted in the 10 years following completion of the Project, along with the potential for a post-storm dredging event if needed. Maintenance dredging will occur when the barges can no longer maintain sufficient clearance from the channel bottom such that they can get underway as required by the U.S. Coast Guard. Maintenance dredging would be conducted in the same manner as the initial dredging for the Project.

3. Indicate of your drawings the dewatering area (if applicable) and disposal site for the dredged material (except landfill sites). Submit a sufficient number of photographs of the dewatering and disposal sites as applicable so as to provide a clear indication of existing conditions. For ten-year maintenance dredging permits, indicate the dewatering/disposal sites for future dredging events, if known.

Dredged material will be placed on a scow, dewatered, and transported offsite for upland disposal at a licensed facility in accordance with applicable regulations. Dredged materials will be transported offsite for upland disposal at a licensed facility. Water recovered during dewatering will be treated as necessary (e.g., sediments allowed to settle) prior to discharge back into the Wallabout Channel. Containment, transport, and disposal of the material removed during maintenance dredging will be conducted in the same manner.

4. Describe the method of dredging (i.e. clamshell, dragline, etc.) and the expected duration of dredging.

Dredging will be conducted from a deck barge 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 the deck barge via mechanical raking. Dredged material will then be placed on a scow and dewatered. Dredging is expected to occur over 4 to 6 weeks and 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.

5. Indicate the physical nature of the material to be dredged (i.e. sand, silt, clay, etc.) and provide estimated percentages of the various constituents if available. For beach nourishment projects, grain size analysis data is required.

Based on sediment sampling conducted in the summer of 2023, the dredged material comprises mainly silt and clay, ranging from approximately 72 to 99 percent, and pockets of fine sand. The sediment sampling results are included as Attachment 4 to the Joint Application.

6. Describe the method of dredged material containment (i.e. hay bales, embankment, bulkhead, etc.) and whether return flow from the dewatering/disposal site would reenter any waterway. Also indicate if there would be any barge overflow.

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. 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. The dredged material will be dewatered on the barge, and

suspended materials will be allowed to settle before the water is returned to Wallabout Channel. Dredged material will be contained within a scow with no barge overflow, and there will be no discharge of the dredged material into waters of the U.S. All dredging activities will be surrounded by a full-length weighted turbidity curtain. Dredged sediment and debris will be transported for upland disposal at a licensed facility or facilities.

#### **MOORING FACILITIES**

Answer the following if your project includes the construction or rehabilitation of recreational mooring facilities.

1. It is generally recommended that any fixed piers and walk ramps be limited to four feet in width, and that floats be limited to eight feet in width and rest at least two feet above the waterway bottom at mean low water. Terminal floats at private, non-commercial facilities should be limited to 20 feet in length. If you do not believe your proposal can meet with these recommendations, please provide the reason(s).

The Project will moor three side-by-side barges, each measuring approximately 146 feet by 130 feet (see Drawings SK-1, and R-16.0 – R-19.0 in Attachment 5). The barges will accommodate the energy storage units and will not be used as floats for access from the water. A 4-foot wide deployable gangway will provide access from Pier K to each barge. The Project does not include any fixed piers, floats, or walk ramps.

2. Using your plan view, show to scale the location(s), position(s) and size(s) (including length, beam and draft) of vessel(s) to be moored at the proposed facility, including those of transient vessel(s) if known.

The Project will moor three side-by-side barges, each measuring approximately 146 feet by 130 feet (see Drawings SK-1, and R-16.0 – R-19.0 in Attachment 5). The barges will remain permanently moored for the 30-year duration of the NYC Energy's lease agreement with Brooklyn Navy Yard, but can be moved if necessary. The Project will not develop mooring facilities for transient vessels.

3. For commercial mooring sites such as marinas, indicate the capacity of the facility and indicate on the plan view the location(s) of any proposed fueling and/or sewage pumpout facilities. If pumpout facilities are not planned, please discuss the rationale below and indicate the distance to the nearest available pumpout station.

Not applicable. The Project will not be used as a commercial mooring site.

4. Indicate on your plan view the distance to adjacent marine structures, if any are proximate and show the locations and dimensions of such structures.

Not applicable. There are no proximate marine structures.

5. Discuss the need for wave protection at the proposed facility. Please be advised that if a permit is issued, you would be required to recognize that the mooring facility may be subject to wave action from wakes of passing vessels, whose operations would not be required to be modified. Issuance of a permit would not relieve you of ensuring the integrity of the authorized structure(s) and the United States would not be held responsible for damages to the structure(s) and vessel(s) moored thereto from wakes from passing vessels.

The barges are designed to withstand storm-induced wave action, and the top of the mooring piles will be above the current and projected flood elevations. The energy storage units and all associated equipment on the FESS will be secured to the barges and will not be at risk of detachment from boat wakes or storm conditions.

#### BULKHEADING/BANK STABILIZATION/FILLING ACTIVITIES

Answer the following if your project includes construction of bulkheading (also retaining walls and seawalls) with backfill, filling of waters/wetlands, or any other bank stabilization fills such as riprap, revetments, gabions, etc.

1. Indicate the total volume of fill (including backfill behind a structure such as a bulkhead) as well as the volume of fill to be placed into waters of the United States. The amount of fill in waters of the United States can be determined by calculating the amount of fill to be placed below the plane of spring high tide in tidal areas and below ordinary high water in non-tidal areas.

Placement of approximately 33.5 cubic yards of flowable concrete fill below mean high water (MHW) and spring high water (SHW) within the steel pipe piles.

2. Indicate the source(s) and type(s) of fill material.

Fill will comprise flowable concrete and will be contained within the piles.

3. Indicate the method of fill placement (i.e. by hand, bulldozer, crane, etc.). Would any temporary fills be required in waterways or wetlands to provide access for construction equipment? If so, please indicate the area of such waters and/or wetlands to be filled, and show on the plan and sectional views.

No temporary fills are required. Flowable concrete fill will be installed using handheld tools positioned on a construction barge or on the pier and will not come into contact with the water column.

The foregoing requests basic information on the most common types of projects requiring Department of the Army permits. It is intended to obviate or reduce the need for requesting additional information; however, additional information may be requested above and beyond what is requested in this form.

Please feel free to add any additional information regarding your project which you believe may facilitate our review.



#### Environmental, Planning, and Engineering Consultants

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#### **Draft Memorandum**

To: David Oster, DOE

From: Sandy Collins, AKRF

**Date:** June 26, 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 / 1200 MW(hr) of energy 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 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. This memorandum summarizes the alternatives evaluated with respect to site location and alternative in-water designs for the FESS Project. In evaluating these alternatives, consideration was given to site and design requirements including:

- interconnection to an existing substation,
- consistency with the New York City Zoning Resolution and established Zoning Districts,
- spatial requirements, and
- the innovative nature of the Project and loan eligibility.

#### 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

D. Oster, DOE 2 June 26, 2023

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, 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 Agreement. 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 2023 under the 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 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 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

D. Oster, DOE 3 June 26, 2023

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<sup>1</sup>. 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 or construction.

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)<sup>2</sup>" 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 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 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 fire and safety issues associated with utility-scale battery energy storage systems also need to be considered.

<sup>&</sup>lt;sup>1</sup> Use Group 18, https://zr.planning.nyc.gov/article-iv/chapter-2#42-15

<sup>&</sup>lt;sup>2</sup> https://zr.planning.nyc.gov/article-xiv/chapter-4#144-00

D. Oster, DOE 4 June 26, 2023

#### **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 granted 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.

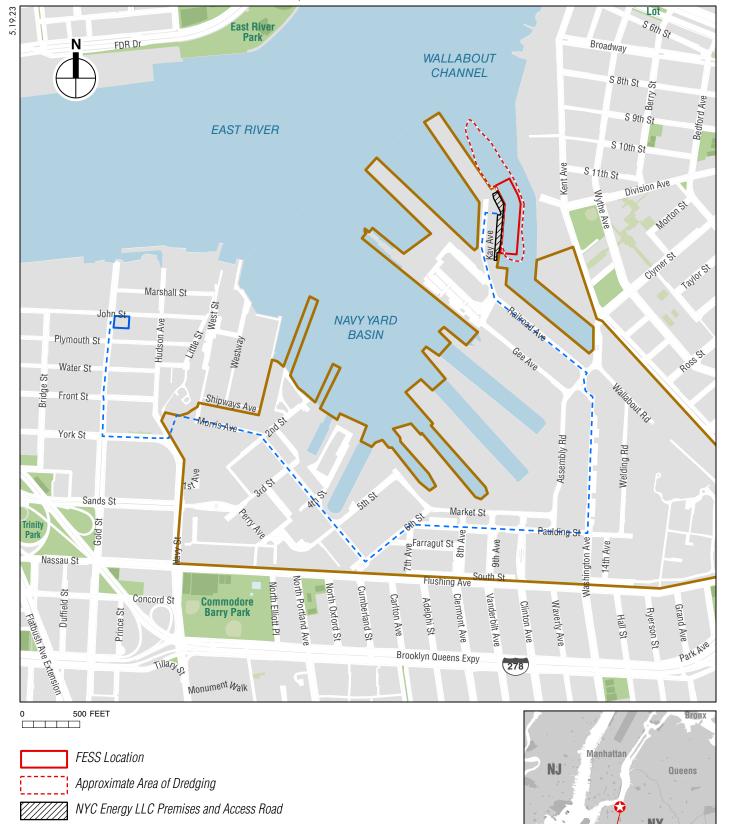
#### Second Barge or Full Build-Out

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 a minimum of 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.

D. Oster, DOE 5 June 26, 2023

#### **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 been granted a 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 asof-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.



**Project Location** 

Brooklyn

Staten

Interconnection Route

Brooklyn Navy Yard Boundary

Location of Substation Modifications



FESS Location

Approximate Area of Dredging

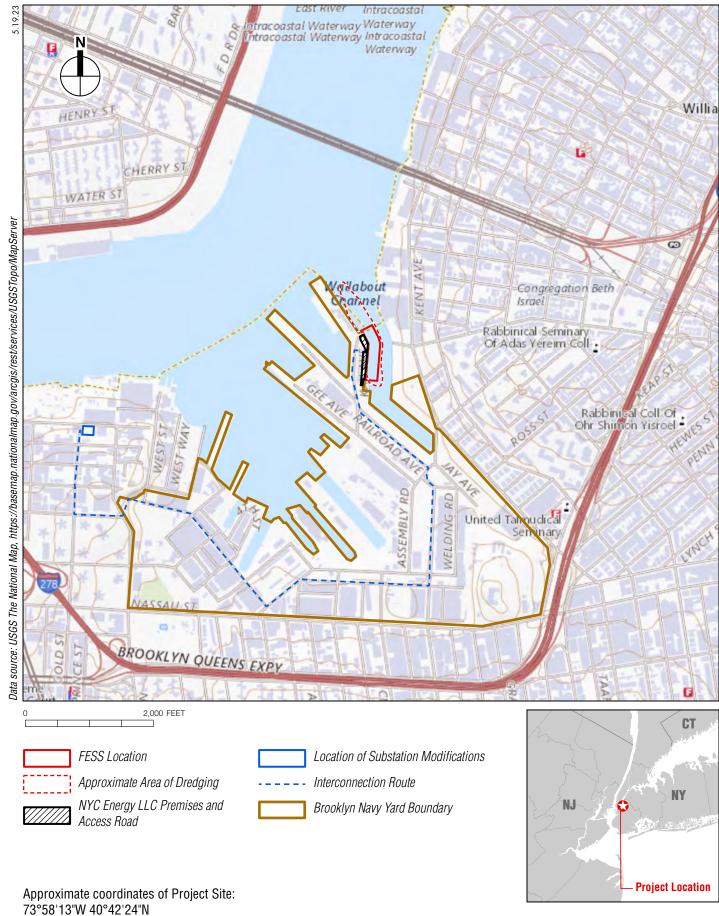
NYC Energy LLC Premises and Access Road

Location of Substation Modifications

Interconnection Route

Brooklyn Navy Yard Boundary

Aerial



USGS Topographic Map - Brooklyn Quadrangle

## Attachment 1

Floating Energy Storage System Project

**Project Description** 

#### A. INTRODUCTION

This Joint Application requests authorization for NYC Energy LLC's (NYC Energy) development of 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 138 kV Substation in Brooklyn, which is owned and operated by the Consolidated Edison Company of New York, Inc. (Con Edison). 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.

#### **PURPOSE AND NEED**

The purpose of the Project is to integrate clean, renewable energy into New York City's electric grid to further NY State's climate goals under the 2019 Climate Leadership and Community Protection Act which established a target for the development of 6,000 MW of battery energy storage capacity in the state by 2030. Energy storage will play a crucial role in meeting New York 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 New York City to meet peak power needs without relying on its oldest peaker plants. This reduces dependency on fossil fuel generation, which would reduce local air emissions, resulting in an overall benefit to air quality in NYC, and prepare the New York electric grid for energy generated by new renewable energy facilities onshore and offshore. Successful deployment of the proposed FESS, which represents a scalable modular design solution for utilityscale battery energy storage systems that can be adapted to a variety of locations, will facilitate the further development of alternative renewable energy systems. The FESS concept could be replicated throughout the country, including potentially at the existing 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.

#### **B. PROJECT SITE**

The Project Site includes the waters of Wallabout Channel, Berth 20 at Pier K, a portion of Pier K itself, and private and public rights-of-way where the underground electric interconnection cables will be installed. Pier K is a pile-supported concrete pier with several small structures including an abandoned substation that will be demolished as part of the Project. The federal navigation channel limits encompass the full width of Wallabout Channel. According to the most

recent USACE Controlling Depth Report from 2004, water depths in 2003 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. A hydrographic survey conducted in August 2022 to provide updated bathymetry for Wallabout Channel 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. **Attachment 2** provides representative photos of the project site.

#### SEDIMENT SAMPLING RESULTS

A sediment sampling plan was developed and implemented in consultation with the NYSDEC Division of Water for physical and chemical analysis of the sediments to be dredged (**Attachment 4**). Core samples were collected from 24 locations within the dredging area in June 2023 and July 2023 and each core was divided into two layers:

- The "A" layer was collected from the sediment surface to -22 feet at MLW.
- The "B" layer was material 0 to 6 inches below the proposed dredging depth.

Each sample was homogenized using a stainless-steel mixer until uniform in color and texture. Sub-samples of each individual sample and the "A" and "B" layer composites were reserved for the chemical and physical analyses. **Attachment 4** contains the detailed results of the sediment sampling, including summary tables with the results of the laboratory analyses. Sediments were mostly silt with some clay and pockets of sand. Total fines among the A and B layer 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.

As indicated in **Enclosure 1**, which provides a summary of the sampling results and tables showing the exceedances, 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. However, as shown in **Figure 1**, 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 for Composites 7 and 8, which were taken near the upstream limits of the dredging area towards the head of the channel.

Sediments from the A-layer were also analyzed and compared to the Unrestricted Use Soil Cleanup Objectives (NY 6 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)), in support of developing disposal options. Sediments from the A-layer, bulk (unamended) and amended, were also analyzed and compared to the NJDEP Residential Ingestion-Dermal Soil Remediation Standards in support of developing disposal options. Leachate from the amended sediments was

analyzed and compared to the NJDEP Migration to Ground Water Soil Leachate Remediation Standards. Individual samples were analyzed for VOCs and composite samples were analyzed for SVOCs, pesticides, PCBs, metals, and dioxin/furan. **Enclosure 1** to this Attachment provides a summary of exceedances of these cleanup objectives and remediation standards. **Attachment 4** provides Volume 1 of the *Technical Report on the Sampling and Testing of Sediment for the FESS within Wallabout Channel, Brooklyn, NY*.

#### C. WORK DESCRIPTION

The Project will place 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 (Sheet 11 in Attachment 5a and Sheet SK-1 in Attachment 5b). Each barge will have a 100 MW capacity, for a total of 300 MW/1,200 megawatt-hours (MWh) of storage capacity for the project. 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 depth¹ of 20 feet at 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 at the Brooklyn Navy Yard (Sheets 11 to 13 in Attachment 5a). The piles will be outside the federal navigation channel (Sheet 14 in Attachment 5a). 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.

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 that they can get underway in a timely manner, as described above. Because the Project will be partially within the federal navigation channel, the barges will be set up such that they can be moved out of the channel within a reasonable amount of time. In accordance with this requirement, the barges will be installed such that they can be easily disconnected from the mooring piles and interconnecting utilities will be installed with quick disconnects to allow for easy separation from land so they can be moved out of the channel in a matter of hours following the steps listed on **Sheet SK-3 in Attachment 5b**. As described on **Sheet SK-3**, the power would be turned off and the utilities and gangways disconnected from the barges. The barges would be secured together so they can be moved as a single unit by tugs or would be moved individually as required. They would be temporarily secured directly to the shore while the pile collars are disconnected, and the temporary moorings would be removed when the tugs are ready to maneuver the barges out of the Channel. The barges would remain within protected waters in the New York Harbor, likely within the Brooklyn Navy Yard, until they can be returned to the Project site.

#### **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 (Sheet 7 in

<sup>&</sup>lt;sup>1</sup> 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

Attachment 5a). 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.

#### 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 (Sheet 15 in Attachment 5a). 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 approximately 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 a distance of 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 aquatic resources.

#### **SCHEDULE**

Construction for the project is currently scheduled to begin in May 2024 and end in February 2027. In-water construction includes the 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 four to six weeks, pile driving over two to three weeks, and mooring the barges over two 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.

# D. MEASURES TO MINIMIZE POTENTIAL ENVIRONMENTAL IMPACTS

#### CONSTRUCTION

Construction of the Project has the potential to result in minimal and temporary disturbances to aquatic biota due to temporary increases in 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 15 through May 31), overwintering striped bass (November 15 through May 20), and migrating anadromous species (March 1 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 effects 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 exist 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.

As recommended by NOAA Fisheries to minimize noise impacts, the 12 30-inch diameter steel pipe piles will be installed using a vibratory hammer to the extent possible. At this time, it is assumed that an impact hammer will not be required to install any of the piles. The projected noise for vibratory hammering at the source and distance to relevant thresholds for species in the action area was determined based on the NOAA Fisheries Multi-Species Pile Driving Calculator (Version 1.2, 2022). The estimated sound levels and distances to fish and sea turtle behavioral and physiological thresholds are presented in **Table 1** for vibratory hammering.

Table 1
Distance to Underwater Noise Effects on Fish and Sea Turtles
30-inch Steel Pipe Piles, Vibratory Hammer

Species	Threshold	Meters	Feet
Sturgeon and Other Finfish	Distance to 150 dB RMS Behavioral Threshold	292.9	960.8
Osa Tsudlas	Distance to 175 RMS Behavioral Threshold	6.3	20.7
Sea Turtles	Distance to 220 SELcum Permanent Threshold Shift	3.7	12.3
O NIO A A	Fisheries Multi Cresies Bile D	-ii	: 4.0.0000)

**Sources:** NOAA Fisheries Multi-Species Pile Driving Calculator (Version 1.2, 2022)

Behavioral effects, such as avoidance or disruption of foraging activities, may occur in fish exposed to noise levels above 150 dB RMS and sea turtles exposed to noise levels above 175 dB RMS or 220 SELcum (cumulative). The onset of physical injury can occur in fish exposed to noise levels above 206 dB peak (single strike), 187 dB SELcum (fish ≥ 2 grams), or 183 dB SELcum (fish smaller than 2 grams). Physical injury can occur in sea turtles exposed to 232 dB peak (single strike) or 204 dB SELcum. 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 292.9 meters (960.8 feet) from the pile being installed (**Table 1**). Underwater noise levels reaching the behavioral threshold for sea turtles could occur at a maximum distance of 6.3 meters (20.7 feet) during vibratory hammering (**Table 1**).

It is reasonable to assume that upon detecting underwater noise levels at the behavioral threshold, fish and sea turtles would modify their behavior move away from the ensonified area. Avoidance of the ensonified area would constitute a temporary loss of foraging habitat within the avoided section of the waterbody. However, if fish or sea turtles move away from the area, it is unlikely that these movements would 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. While the full width of Wallabout Channel, which is approximately 300 feet wide at the Project Site, will be exposed to elevated noise levels during pile driving, pile tapping and/or slow start techniques will be used to deter fish and sea turtles from the Project Site and individuals will likely avoid entering the Channel once pile installation is occurring at full strength. Outside Wallabout Channel, the East River is sufficiently wide (over 2,200 feet) to allow fish to avoid the ensonified area and continue 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 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). This habitat loss represents a negligible reduction in the amount of similar habitat and benthic organisms in the area and will not significantly impact populations of benthic fauna or their predators. Similarly, the 1.3-acre increase in overwater coverage from the FESS barges will have minimal impacts on aquatic habitat. While the mooring of the barges along Pier K will result in alteration of aquatic habitat currently used by aquatic organisms due to shading, fish will still be able to access the water column beneath the barges and use the structured habitat created by the new piles. Submerged aquatic vegetation has not been observed at the Project Site, and the effects of shading on aquatic habitat are not expected to result in significant adverse effects to aquatic biota.

### E. APPLICABLE REGULATIONS AND COMPLIANCE

#### **FEDERAL**

### SECTION 404 CLEAN WATER ACT

The Federal Clean Water Act (CWA) §404(b)(1) guidelines<sup>2</sup> stipulate in part that a project affecting waters of the United States cannot be permitted if:

- (i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or
- (ii) The proposed discharge will result in significant degradation of the aquatic ecosystem under §230.10(b) or (c); or
- (iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem; or
- (iv) There does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with these Guidelines.

The Project will not result in the failure of Wallabout Channel to meet its designated water quality standards, nor will it result in significant adverse impacts to aquatic or terrestrial biota, or threatened or endangered species. Dredging for the project to the Federally authorized depth of 20 feet at MLW will be conducted in accordance with best management practices such as the use of an environmental bucket and full-length turbidity curtain, containment of all dredged materials on a scow, and offsite disposal at a licensed facility, and will not result in significant adverse impacts to water quality or aquatic resources. The 33.5 cubic yards of flowable concrete fill below SHW will be contained within the piles and separated from the water column and will not have the potential to adversely affect water quality or aquatic biota. Therefore, the Project is in compliance with the guidelines published for discharge of dredged or fill material in waters of the United States under 40 CFR Part 230, is consistent with the criteria for being in the public interest pursuant to 33 CFR Part 320.4, and warrants a permit in accordance with 33 CFR Part 323.

### SECTION 10 RIVERS AND HARBORS ACT OF 1899

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through USACE, for the construction of any structure in or over any navigable water

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<sup>&</sup>lt;sup>2</sup> 40 CFR 230.12

of the United States, the excavation from or deposition of material in these waters, or any obstruction or alteration in navigable waters of the United States. Any structures placed in or over navigable waters, such as pilings, piers, or bridge abutments up to the spring high water line, are regulated pursuant to this act. The construction of the Project requires approval under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

The barges will be moored at the existing Berth 20 of Pier K and will not interfere with the movement of vessels in the federal navigation channel. The project will deepen the Project Site to the fedrally authorized depth of 20 feet at MLW with one foot of allowable overdredge and will improve access for vessels in the Channel in addition to facilitating the installation of the FESS barges for the Project. As presented in the environmental review for the Project (**Attachment 3**) and the discussion of impacts to EFH, historic resources, and coastal resources that accompany this Joint Application, the Project will not result in significant adverse impacts to natural resources or historic and cultural resources, or adversely affect the limits of the territorial seas. Therefore, the Project is consistent with 33 CFR Part 322.

#### SECTION 14 RIVERS AND HARBORS ACT OF 1899

Section 14 of the Rivers and Harbors Act of 1899, as amended and codified in 33 U.S.C. 408 ("Section 408") requires authorization from the Secretary of the Army, acting through USACE, for the permanent or temporary alteration or use of any USACE Civil Works project such as a federal navigation channel. Alteration is considered to be any actions that take possession of or make use of, build upon, alter, deface, destroy, move, injure, obstruct, or in any manner impair the usefulness of a USACE project. Permission to alter a USACE project can be granted under Section 408 if the alteration is not injurious to the public interest and will not impair the usefulness of the project.

The Federal Project in Wallabout Channel was established in the late 1800s with the purpose of keeping wharves open to commerce and allowing ferry access in and out of the channel. Wallabout Channel is not currently used for commerce or ferry access, however, if commercial use or ferry access are proposed for the Federal Project in Wallabout Channel in the future, the FESS Project would not hinder these uses. Currently, ferry access is only required for the South Williamsburg Ferry Landing located about 475 feet north of the Project at the mouth of the Channel on its eastern shore, and ferry vessels using the landing do not typically travel past the Project site. Similarly, the infrastructure bordering Wallabout Channel, including Pier K, has not been used for commerce for many decades. Dredging for the Project will deepen the Channel to the federally-authorized depth of 20 feet at MLW and will allow tidal flushing to occur such that no long-term impacts to water quality will result from Project. **Attachment 6** provides a detailed evaluation of the Project's compliance with the Section 408 requirements.

### MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 USC §§1801 TO 1883)

Section 305(b)(2)-(4) of the Magnuson-Stevens Fishery Conservation and Management Act outlines the process for the National Marine Fisheries Service (NOAA Fisheries) and the Regional Fishery Management Councils (in this case, the Mid-Atlantic Fishery Management Council) to comment on activities proposed by federal agencies (issuing permits or funding projects) that may adversely impact areas designated as Essential Fish Habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC §

1802(10)). Adverse impacts on EFH, as defined in 50 CFR 600.910(A), include any impact that reduces the quality and/or quantity of EFH. Adverse impacts may include:

- Direct impacts, such as physical disruption or the release of contaminants;
- Indirect impacts, such as the loss of prey or reduction in the fecundity of a managed species; and
- Site-specific or habitat-wide impacts that may include the individual, cumulative, or synergetic consequences of a federal action.

The Mid-Atlantic Fisheries Management Council has designated EFH in Wallabout Channel where the project site is located. DOE initiated consultation with NOAA Fisheries regarding potential impacts of the Project on EFH on May 9, 2023 and concluded that the adverse effects on EFH from the FESS Project will not be substantial (Attachment 7). In a letter dated July 25, 2023, NOAA Fisheries indicated that construction of the Project would need to be conducted in accordance with the time-of-year restrictions for overwintering winter flounder and striped bass (November 15 through April 15), winter flounder spawning and early life stages (January 1 through May 31), and migrating diadromous fish (March 15 through June 30) (see Attachment 7). NOAA Fisheries is also requiring compensatory mitigation to offset the 1.31 acres permanently impacted by shading by the barges. Coordination between NOAA Fisheries, DOE, and NYC Energy to develop the mitigation plan is ongoing.

### ENDANGERED SPECIES ACT OF 1973 (16 USC §§1531-1544)

The Endangered Species Act of 1973 recognizes that endangered species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people. The Act prohibits the importation, exportation, taking, possession, and other activities involving illegally taken species covered under the Act, and interstate or foreign commercial activities. The Act also provides for the protection of critical habitats on which endangered or threatened species depend for survival.

Shortnose sturgeon (Acipenser brevirostrum; endangered), Atlantic sturgeon (Acipenser oxyrinchus; endangered), green sea turtle (Chelonia mydas; threatened), loggerhead sea turtle (Caretta caretta; threatened), kemp's ridley sea turtle (Lepidochelys kempii; endangered), and leatherback sea turtle (Dermochelys coriacea; endangered) have the potential to occur in the vicinity of the Project Site. Both sturgeon species are expected to occur in the deeper navigation channel of the East River but could be found in the shallower waters of Wallabout Channel on rare occasions for foraging or migration. Any occurrence of sea turtles near the Project Site in Wallabout Channel is likely limited to rare and brief exploration by transient individuals. As described above, the width of Wallabout Channel will be ensonified during pile installation for the Project but will not affect the waters of the East River where these species are more likely to occur. Migratory pathways through the East River will not be blocked at any time with the Project. Dredging will create deeper water habitat of up to 20 feet deep at MLW over soft substrate, which is suitable habitat for sturgeon and sea turtles that opportunistically forage in shallower nearshore waters while migrating through the East River. The loss of 58.9 square feet of bottom habitat in the footprint of the mooring piles and the shading of 1.3 acres of water column will not result in significant adverse effects on sturgeon or sea turtles, which are expected to occur more frequently in the waters of the East River compared to Wallabout Channel. Attachment 8 includes the Biological Assessment for these species and critical habitat, which DOE submitted to NOAA Fisheries on May 9, 2023. DOE concluded that the effects of the proposed action will be insignificant or discountable and determined that the FESS Project is not likely to adversely affect

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any listed species or critical habitat under NOAA Fisheries' jurisdiction. NOAA Fisheries concurred with DOE's conclusion in a letter dated May 25, 2023.

Attachment 8 also provides correspondence from U.S. Fish and Wildlife Service (USFWS) identifying federally threatened and endangered species under its jurisdiction that have the potential to occur at the Project Site, which include: northern long-eared bat (*Myotis septentrionalis*, endangered), piping plover (*Charadrius melodus*; threatened), red knot (*Calidris canutus rufa*; threatened), roseate tern (*Sterna dougallii dougallii*; endangered), and monarch butterfly (*Danaus plexippus*; candidate). The Project Site in Wallabout Channel and along the interconnection route does not offer suitable habitat for any of these federally protected species. The "No Effect" determination letters generated through IPaC for northern long-eared bat, piping plover, red knot, and roseate tern are included in **Attachment 8**.

### SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966

Section 106 mandates that federal agencies consider the effects of actions on properties listed on or determined eligible for listing on the National Register of Historic Places. It requires consultation with the New York State Historic Preservation Office (SHPO) and federally recognized Native American Tribal Nations that might attach religious and cultural significance to historic properties potentially affected by a project, and with additional consulting parties with a demonstrated interest in the project based on a legal or economic relation to affected properties or on an interest in the project's effects on historic properties.

A portion of the Project Site and interconnection route is within the Brooklyn Navy Yard Historic District (S/NR-listed, 13NR06474). The FESS barges will be moored in Wallabout Channel outside the boundaries of the Historic District. Pier K (Structure 802) is listed as a contributing resource in the Brooklyn Navy Yard Historic District and dates to 1942. Building X29, a salt shed structure on Pier K, is a non-contributing resource in the Historic District that was constructed between 2009 and 2011. An abandoned substation building on Pier K was identified as Building 390 constructed in 1940 and was also a non-contributing resource in the Historic District; this structure was a shell of a one-story brick-walled enclosure and was demolished in the early 2000s prior to this application. The Project includes minor modifications to Pier K to accommodate the mooring piles and interconnection cable. DOE initiated consultation with SHPO for the project on February 27, 2023, and received a No Adverse Effect letter from SHPO on March 16, 2023. **Attachment 9** provides the Structural Archaeological Assessment Form (SAAF) along with the SHPO concurrence letter and Unanticipated Discovery Plan for the project.

### **STATE**

### PROTECTION OF WATERS AND 401 WATER OUALITY CERTIFICATION PROGRAMS

The Project will require approval under the NYSDEC Protection of Waters Permit and Section 401 Water Quality Certification programs. The Project is consistent with the standards for issuance of a permit under 6 NYCRR §608.7 in that supports an ongoing water dependent use and has been designed to: minimize adverse effects on aquatic and terrestrial biota, water quality, hydrology, and water course and waterbody integrity; and to safeguard life and property, to incorporate good engineering design and construction techniques, the safe commercial and recreational use of Wallabout Channel resources, and the natural resource management objectives and values of the waterway. It will not result in significant adverse impacts to: aquatic resources, wetlands, and terrestrial habitats; unique and significant habitats; rare, threatened, or endangered species; or

water quality and hydrology of Wallabout Channel. The project will not result in increased erosion, sedimentation, or turbidity within the Channel, nor will they result in a significant loss of bottom habitat. The 33.5 cubic yards of flowable concrete fill below SHW and MHW will be contained within the piles and separated from the water column and will not have the potential to adversely affect water quality or aquatic biota. The dredged area will undergo some natural deposition of sediments over time, and the deeper waters will allow flushing to occur such that exposed subsurface sediments will not have a long-term impact on water quality in the Project Site or surrounding area.

Measures that will be implemented to avoid the potential for significant adverse impacts to aquatic resources during construction include the use of BMPs during dredging activities (e.g., turbidity curtain, environmental bucket) and minimizing the use of equipment that would elevate underwater noise levels. The project will also implement adequate perimeter protection measures at Pier K to minimize the discharge of materials to Wallabout Channel during landside construction activities on the pier. The dredging will allow the FESS barges to enter the Channel and moor at Berth 20 of Pier K in accordance with NYC Energy's 30-year lease with the Brooklyn Navy Yard. The proposed dredging will be conducted to the federally authorized depth of 20 feet at MLW, with one foot of allowable overdredge, and is the depth necessary to provide clearance for the 16-foot to 18-foot drafts of the FESS barges. It will facilitate New York City's plans to decarbonize electricity generation and meet its clean energy mandates through the storage and delivery of new offshore wind generation directly to the City. Therefore, the Project is consistent with the standards for issuance of a permit under 6 NYCRR §608.8.

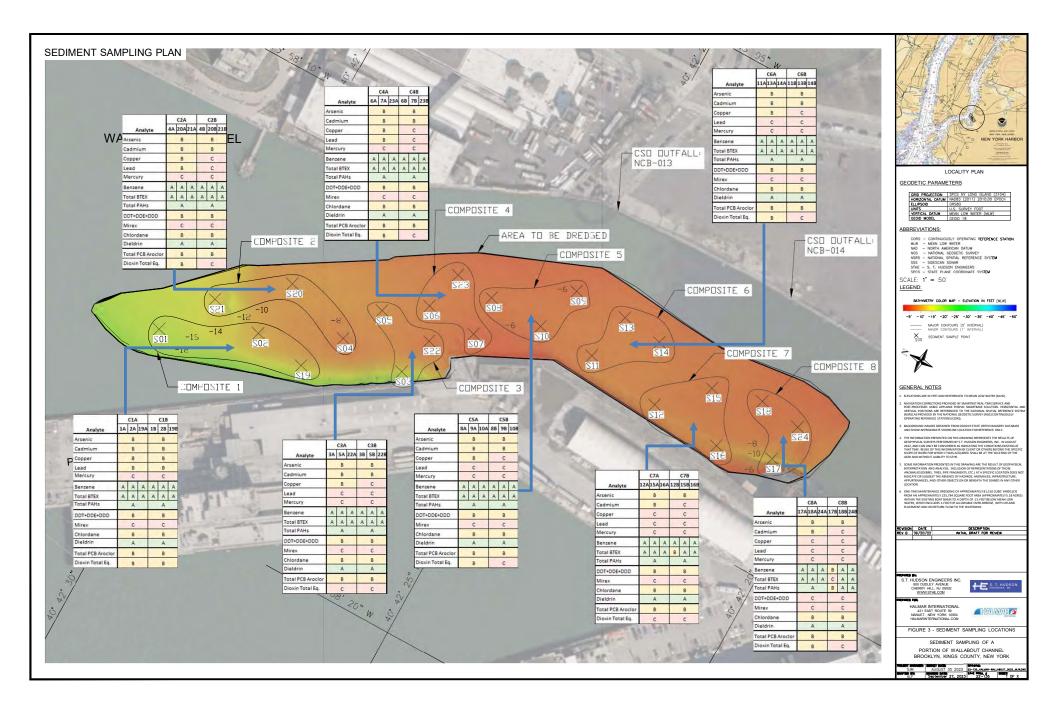
### NEW YORK STATE COASTAL MANAGEMENT PROGRAM

Activities that are authorized under a USACE permit must demonstrate consistency with the New York State Coastal Management Program policies. The project site is located in the Coastal Zone designated by New York State and City, and it subject to the Coastal Zone management policies of both the City's Waterfront Revitalization Program (WRP) and the State Coastal Management Program (CMP). DOE determined that the project is consistent with the policies of the New York State CPM and the New York City WRP. **Attachment 10** presents the consultation between DOE and the New York State Department of State (NYSDOS), initiated on June 2, 2023, regarding the consistency of the funding action with the applicable policies. Coordination between DOE and NYSDOS regarding the Project is ongoing at the time of this application. The Federal and WRP Consistency Assessment Forms and policy evaluations are included in **Attachment 10**.

### COMMUNITY RISK AND RESILIENCY ACT (CRRA) AND CLIMATE LEADERSHIP AND COMMUNITY PROTECTION ACT (CLCPA)

The 2014 Community Risk and Resiliency Act (CRRA), as amended by the 2019 Climate Leadership and Community Protection Act (CLCPA), requires that applicants for permits issued for major projects in all regulatory programs covered by the Uniform Procedures Act (6 NYCRR Part 621) demonstrate consideration of future physical climate risk. Under the CRRA, as amended, NYSDEC must consider future physical risk caused by storm surge, sea level rise, and flooding. Projects must also demonstrate consistency with greenhouse gas emissions limits and meet certain criteria for disadvantaged communities. The CLCPA 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. It 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.

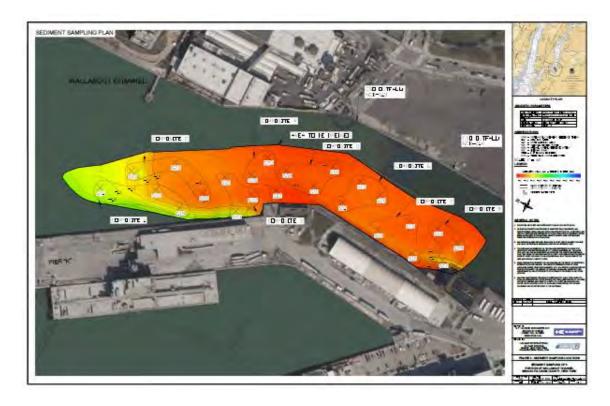
Based on the detailed assessment of the Project's compliance with these provisions provided in **Attachment 11**, the Project will not result in disproportionate impacts to disadvantaged communities, will not result in significant or long-term increases in greenhouse gas and copollutant emissions but in fact will reduce these emissions by reducing the need to operate fossil fuel peaker plants, and will be designed to be resilient to projected flood conditions with sea level rise. The development of battery energy storage facilities is intended to improve system efficiency and reduce dependence on fossil fuel facilities, particularly during peak energy demand periods. Battery energy storage facilities 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, which also improves overall system reliability and facilitates a smooth transition to renewable energy to achieve the State's energy goals. The FESS Project is consistent with the goals of the CLCPA and will help New York State achieve its target for battery energy storage capacity. Therefore, the Project is compliant with the CRRA and CLCPA.



#### DATA COLLECTION

Aqua Survey, Inc. (ASI) collected and analyzed sediment within Wallabout Channel in accordance with the Sediment Sampling Plan issued for the Project by New York State Department of Environmental Conservation on April 7, 2023 (see **Attachment 4** to this JA). ASI performed all sampling and physical analyses of the sediments. Chemical analyses of the sediment and field blanks were performed by Eurofins, located in Edison, NJ.

Test sediment from 24 locations, two field duplicates, and two field blanks were collected by ASI personnel on June 6-9 and June 12, 2023. Due to an error made by the chemical laboratory, additional "A-layer" samples were collected on July 18-21, 2023 to recreate the composites for analysis of SPLP Leachate of the amended material. Sample and composite sample locations and are shown in **Figure 1**, below.



ASI used the R/V Edison, positioned using a Trimble Differential Global Positioning System (DGPS), to collect core samples. Sediment collection was performed using a Rossfelder P-3 vibracore with flexible plastic core liners.

Core samples were inspected and photographed, and characteristics were recorded on Sediment Core Logs. Each core was divided into two layers:

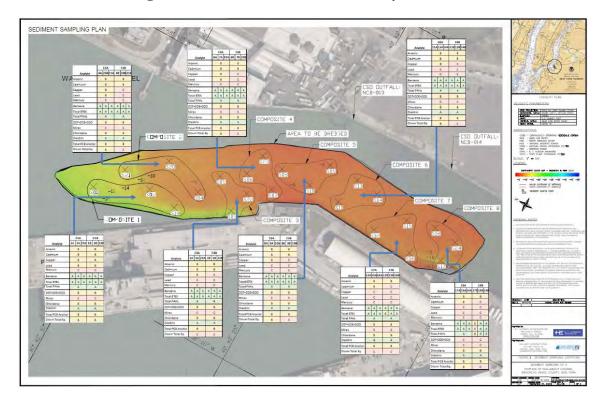
- A-layer: material collected to project depth (-22 feet MLW, including 1-foot overdredge) and
- B-layer: material 0-6" below the proposed dredging depth.

Additional detail on the sample collection, preservation, and analysis is provided in ASI's technical report (**Attachment 1**).

### SUMMARY OF DATA FINDINGS

### TOGS 5.1.9

Sediments within the A- and B-layers were compared to the Sediment Quality Threshold Values for Dredging, Riparian or In-water Placement in Table 2 of TOGS 5.1.9. Individual samples were analyzed for VOCs and composite samples were analyzed for SVOCs, pesticides, PCBs, metals, and dioxin. **Figure 2** summarizes the results of this analysis.



Results of laboratory analysis of the composite sediment samples indicated concentrations of metals were Class B and Class C.

Sediments were largely Class A for PAHs and petroleum-related compounds (i.e., benzene, total BTEX, and total PAHs). The exceptions were:

- Class B sediments identified for total BTEX in sample 12B
- Class B sediments identified for benzene and Class C for total BTEX in sample 17B
- Class B sediments identified for Total PAHs in composite sample C8B

The analysis of pesticide concentrations was confounded by laboratory reporting limit higher than the TOGs 5.1.9 thresholds. Composites 1 through 5 demonstrate that sediments in the A- and B-layers are, at worst, Class B for the sum of DDT+DDE+DDD. Detected concentrations in composites 6 and 7, in both A- and B-layers, demonstrate Class B sediments for the sum of

DDT+DDE+DDD. Composite C8A and C8B contain Class C sediments for the sum of DDT+DDE+DDD. Chlordane levels are, at worst, Class B in all composites in both the A- and B-layers. Conentrations in all composite samples indicate Class A sediments for dieldrin and Class C sediments for Mirex.

Composites were also evaluated for chlorinated hydrocarbons. All composites revealed Class B sediments for total PCBs. Sediments in most A-layer composites were Class B for dioxin. The exceptions were sediments at C3A and C7A, which were Class C for dioxin. With the exception of C1B (Class B), all B-layer sediments were Class C for dioxin.

### NY 6 NYCRR PART 375

Sediments from the A-layer were analyzed and compared to the Unrestricted Use Soil Cleanup Objectives (NY 6 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)), in support of developing disposal options. Individual samples were analyzed for VOCs and composite samples were analyzed for SVOCs, pesticides, PCBs, and metals.

**Table 1** highlights concentrations of parameters that *exceed* Soil Cleanup Objectives. For full analysis results, including for those parameters that did not exceed Soil Cleanup Objectives, please refer to **Appendix 4**.

Table 1 - Comparison to 6 NYCRR Part 375 Soil Cleanup Objectives

	6 NYCRR Part 375-6.8(a): Unrestricted Use	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:						В	ulk Sedime	ent					
	Soil Cleanup	Protection of	Protection of		C1A			C2A		C2A Dup		СЗА			C4A	
Analyte	Objectives	Ecological Resources	Groundwater	1A	2A	19A	4A	20A	21A		3A	5A	22A	6A	7A	23A
Acetone (2-Propanone) 2-Butanone (Methyl ethyl ketone)	50 ug/kg	2,200 ug/kg	50 ug/kg	140	440	490	77	77	900		75	97	480		140	
(MEK)	120 ug/kg	NS	930 ug/kg						250						,	
Fluoranthene	100 ug/kg	NS	1,000,000 ug/kg		120			170				140			140	
2-Methylphenol (o-Cresol)	330 ug/kg	NS	330 ug/kg		ND			ND		ND		ND			ND	
3&4-Methylphenol (mp-Cresol)	330 ug/kg	NS	330 ug/kg		ND			ND		ND		ND				
Phenol	330 ug/kg	NS	330 ug/kg		ND			ND		ND		ND			ND	
4,4'-DDE	3.3 ug/kg	3.3 ug/kg	17,000 ug/kg		ND			ND		ND	9	ND		-	ND	
4,4'-DDT	3.3 ug/kg	3.3 ug/kg	136,000 ug/kg		ND			ND		ND		ND			ND	
4,4¹-DDD	3.3 ug/kg	3.3 ug/kg	14,000 ug/kg		ND			ND		ND		ND			ND	
Aldrin	5 ug/kg	140 ug/kg	190 ug/kg		ND			ND		ND		ND			ND	
Dieldrin	5 ug/kg	6 ug/kg	100 ug/kg		ND			ND		ND		ND				
Endrin	14 ug/kg	14 ug/kg	60 ug/kg		ND			ND		ND		ND			ND	
Total PCB Aroclor(SUM)	100 ug/kg	1,000 ug/kg	3,200 ug/kg		ND			ND		ND		ND			ND	
Arsenic	13 mg/kg	13 mg/kg	16 mg/kg		14.2			14.9		13.7		14.9				
Cadmium	2.5 mg/kg	4 mg/kg	8 mg/kg									2.8				
Hexavalent chromium	1 mg/kg	1 mg/kg	19 mg/kg		ND			ND		ND		ND			2.1	
Trivalent chromium	30 mg/kg	41 mg/kg	N/A		99.2			116		110		146			103	
Copper	50 mg/kg	50 mg/kg	1,720 mg/kg		151	600		177		166		210			161	
Lead	63 mg/kg	63 mg/kg	450 mg/kg		167			179		165		231			189	
Mercury	0.18 mg/kg	0 mg/kg	1 mg/kg		3.2			3.3		2.6		3.1			2.7	
Nickel	30 mg/kg	30 mg/kg	130 mg/kg	1	38.2			38		35.5		42.5	-0		37.4	
Silver	2 mg/kg	2 mg/kg	8 mg/kg		5.5			7.4		7		8			5.4	
Zinc	109 mg/kg	109 mg/kg	2,480 mg/kg		261	1		260	11	246		318			291	

ND (Not Detected) analyte RL value exceeds any of the above Soil Cleanup Objectives Grey indicates no analysis

Table 1 - Comparison to 6 NYCRR Part 375 Soil Cleanup Objectives (continued)

	6 NYCRR Part 375-6.8(a): Unrestricted Use	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:							Bu	lk Sed	iment					
	Soil Cleanup	Protection of	Protection of		C	5A			C6A	<u>-</u> 1		C7	'A			C8A	- 7
Analyte	Objectives	<b>Ecological Resources</b>	Groundwater	8A	9A	Dup	10A	11A	13A	14A	12A	15A	Dup	16A	17A	18A	24A
Acetone (2-Propanone)	50 ug/kg	2,200 ug/kg	50 ug/kg		380	250	0 300	260	490	500	360	390	600	550	430	880	800
2-Butanone (Methyl ethyl ketone)		100		1						240	450	450	250	200	400	200	220
(MEK)	120 ug/kg	NS	930 ug/kg	+	130		130		210	-	150		250	200	A	280	320
Fluoranthene	100 ug/kg	NS	1,000,000 ug/kg	1					210			15	-		-	280	
2-Methylphenol (o-Cresol)	330 ug/kg	NS	330 ug/kg			ID			ND			N	D			ND	
3&4-Methylphenol (mp-Cresol)	330 ug/kg	NS	330 ug/kg			ID											
Phenol	330 ug/kg	NS	330 ug/kg		٨	ID			ND			N				ND	
4,4'-DDE	3.3 ug/kg	3.3 ug/kg	17,000 ug/kg		N	ID			ND			N				ND	
4,4'-DDT	3.3 ug/kg	3.3 ug/kg	136,000 ug/kg		N	ID			13			7.	.5			54	
4,4'-DDD	3.3 ug/kg	3.3 ug/kg	14,000 ug/kg		N	ID			7			7.	3			65	
Aldrin	5 ug/kg	140 ug/kg	190 ug/kg		N	ID			ND			N	D			ND	
Dieldrin	5 ug/kg	6 ug/kg	100 ug/kg						ND								
Endrin	14 ug/kg	14 ug/kg	60 ug/kg		٨	ID			ND			N	D			ND	
Total PCB Aroclor(SUM)	100 ug/kg	1,000 ug/kg	3,200 ug/kg		٨	ID			200			28	30			ND	
Arsenic	13 mg/kg	13 mg/kg	16 mg/kg									24	.7				
Cadmium	2.5 mg/kg	4 mg/kg	8 mg/kg		3	.2			3			8.	2			6.1	
Hexavalent chromium	1 mg/kg	1 mg/kg	19 mg/kg		N	ID			ND			N	D			ND	
Trivalent chromium	30 mg/kg	41 mg/kg	N/A		1	06			100			14	18		1	137	
Copper	50 mg/kg	50 mg/kg	1,720 mg/kg		2	00			238			46	53			396	
Lead	63 mg/kg	63 mg/kg	450 mg/kg		2	67			306			55	50			752	
Mercury	0.18 mg/kg	0 mg/kg	1 mg/kg		1	.5			2			5.	2			5	
Nickel	30 mg/kg	30 mg/kg	130 mg/kg		37	7.2		- 1	43.6			78	8.8		140	54.4	
Silver	2 mg/kg	2 mg/kg	8 mg/kg		5	.7			5.4			9.	.4			8.8	
Zinc	109 mg/kg	109 mg/kg	2,480 mg/kg		3	83			527			10	20			827	

ND (Not Detected) analyte RL value exceeds any of the above Soil Cleanup Objectives Grey indicates no analysis

### Volatile Compounds

Two volatile compounds exceeded objectives. Acetone (a common lab contaminant) exceeded the Restricted Use Soil Cleanup Objectives for the Protection of Groundwater in most samples. Methyl ethyl keytone (MEK) levels exceeded the Unrestricted Use Soil Cleanup Objective in samples 21A, 9A, 10A, 13A, 14A, 12A, 15A, 16A, 17A, 18A, and 24A.

### **SVOCs**

Fluoranthene concentrations exceeded the Unrestricted Use Soil Cleanup Objective in six of the eight composite samples. Concentrations of o-cresol, mp-cresol, and phenol were below the reporting limit; however, the lab was unable to achieve reporting limits lower than the Soil Cleanup Objectives.

### Pesticides/PCBs

The lab was not able to achieve reporting limits below the Soil Cleanup Objectives for 4-4'-DDE, 4-4'-DDD, aldrin, dieldrin, endrin, or total PCBs. Detected concentrations of 4-4'-DDT, 4-4'-DDD exceeded Restricted Use Soil Cleanup Objectives for the Protection of Ecological Resources in composite samples C6A, C7A, and C8A. Detected concentrations of total PCBs exceeded the Unrestricted Use Soil Cleanup Objective in composite samples at C6A and C7A.

#### Metals

Metals were pervasive across the samples. Arsenic concentrations exceeded the Restricted Use Soil Cleanup Objectives for the Protection of Ecological Resources in composite samples C1A,

C2A, and C3A. Arsenic concentrations in sample C7A exceeded the Restricted Use Soil Cleanup Objective for the Protection of Groundwater. Cadmium concentrations exceeded the Unrestricted Use Soil Cleanup Objective in composite samples C3A, C5A, and C6A; exceeded the Restricted Use Soil Cleanup Objective for the Protection of Groundwater in composite sample C7A; and exceeded the Restricted Use Soil Cleanup Objective for the Protection of Ecological Resources in composite sample C8A. The lab was not able to achieve reporting limits below the Soil Cleanup Objectives for hexavalent chromium; the concentration detected in composite sample C5A exceeded the Restricted Use Soil Cleanup Objective for the Protection of Ecological Resources.

Concentrations of trivalent chromium, copper, nickel, and zinc exceeded Restricted Use Soil Cleanup Objective for the Protection of Ecological Resources in all composite samples. Concentrations of lead and silver exceeded Restricted Use Soil Cleanup Objective for the Protection of Ecological Resources in composite samples C1A, C2A, C3A, C4A, C5A, and C6A and exceeded Restricted Use Soil Cleanup Objective for the Protection of Groundwater in composite samples C7A and C8A. Concentrations of Mercury exceeded Restricted Use Soil Cleanup Objective for the Protection of Groundwater in all composite samples.

### NJDEP STANDARDS

Sediments from the A-layer, both bulk (unamended) and amended, were analyzed and compared to the NJDEP Residential Ingestion-Dermal Soil Remediation Standards in support of developing disposal options. Leachate from the amended sediments was analyzed and compared to the NJDEP Migration to Ground Water Soil Leachate Remediation Standards. Individual samples were analyzed for VOCs and composite samples were analyzed for SVOCs, pesticides, PCBs, metals, and dioxin/furan.

**Table 2** highlights concentrations of parameters that *exceed* NJDEP standards. For full analysis results, including for those parameters that did not exceed standards, please refer to **Appendix 1**.

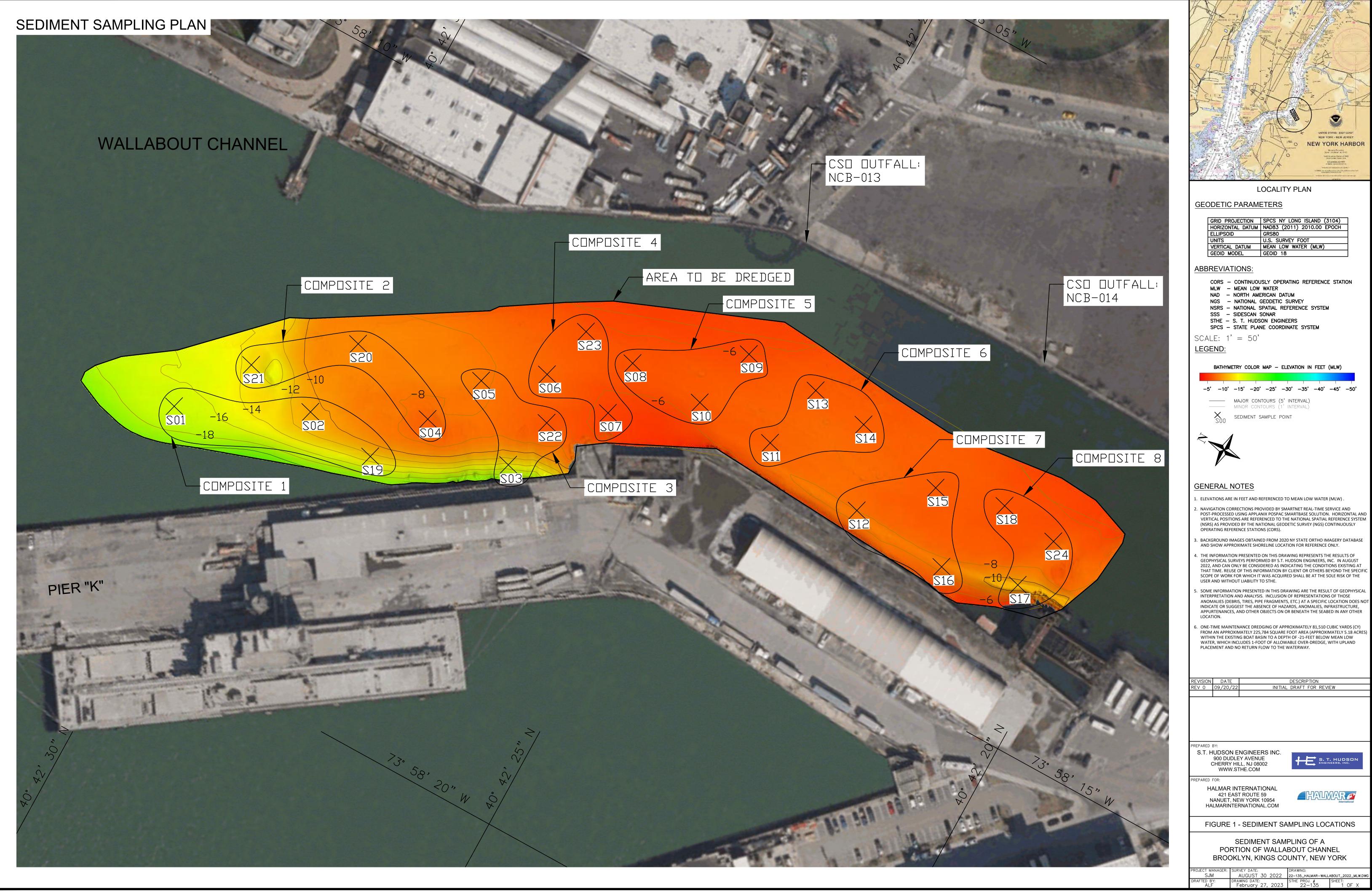
Table 2 - Comparison to NJDEP Standards Exceedences Only

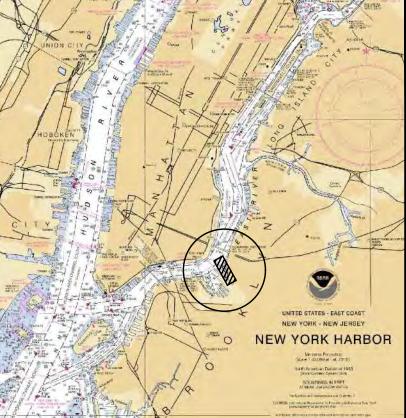
	NJDEP Residential											E	Bulk Se	edime	ent										
	Ingestion-Dermal Soil		C1A			C2A			СЗА			C4A			C5A			C6A			C7A			C8A	
Analyte	Remediation Standards	1A	2A	19A	4A	20A	21A	ЗА	5A	22A	6A	7A	23A	8A	9A	10A	11A	13A	14A	12A	15A	16A	17A	18A	24A
Total Aroclor (SUM)	250 ug/kg (ppb)	Г						Г													280				$\neg$
Arsenic	19 mg/kg (ppm)	ı																			24.7				
Lead	400 mg/kg (ppm)																				550			752	

	NJDEP Residential										-	Amen	ded B	ulk Se	edime	nt									
	Ingestion-Dermal Soil		C1A	١		C2A			СЗА			C4A	1		C5A			C6A			C7A			C8A	
Analyte	Remediation Standards	1A	2A	19A	4A	20A	21A	зА	5A	22A	6A	7A	23A	8A	9A	10A	11A	13A	14A	12A	15A	16A	17A	18A	24A
Total Aroclor (SUM)	250 ug/kg (ppb)	Г				280			560												860			360	
Arsenic	19 mg/kg (ppm)	l																			25.7				
Lead	400 mg/kg (ppm)	l																			473			570	

	NJDEP Migration to Ground Water Soil											5	PLP L	eacha	ate										
	Leachate Remediation		C1A	١		C2A			СЗА			C4A	ı		C5A			C6A			C7A			C8A	
Analyte	Standards	1A	2A	19A	4A	20A	21A	зА	5A	22A	6A	7A	23A	8A	9A	10A	11A	13A	14A	12A	15A	16A	17A	18A	24A
Total Aroclor (SUM)	10 ug/L (ppb)	Г																							
Arsenic	0.06 mg/L (ppm)	l																							
Lead	0.01 mg/L (ppm)																								

Bulk and amended soils were largely below the NJDEP Residential Ingestion-Dermal Soil remediation standards. Bulk sediments (unamended) exceeded the total aroclor, arsenic, and lead standard at C7A and the lead standard at C8A. Amended sediments exceeded the total aroclor standard at C2A, C3A, C7A, and C8A. The amended sediments exceeded the arsenic standard at C7A. The amended sediments also exceeded the lead standard at C7A and C8A. All samples showed SPLP leachate values below the NJ Migration to Groundwater Soil Leachate Remediation standards.





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



- 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
- . 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
- 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
- 5. 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

REVISION	DATE	DESCRIPTION DESCRIPTION
REV 0	09/20/22	INITIAL DRAFT FOR REVIEW





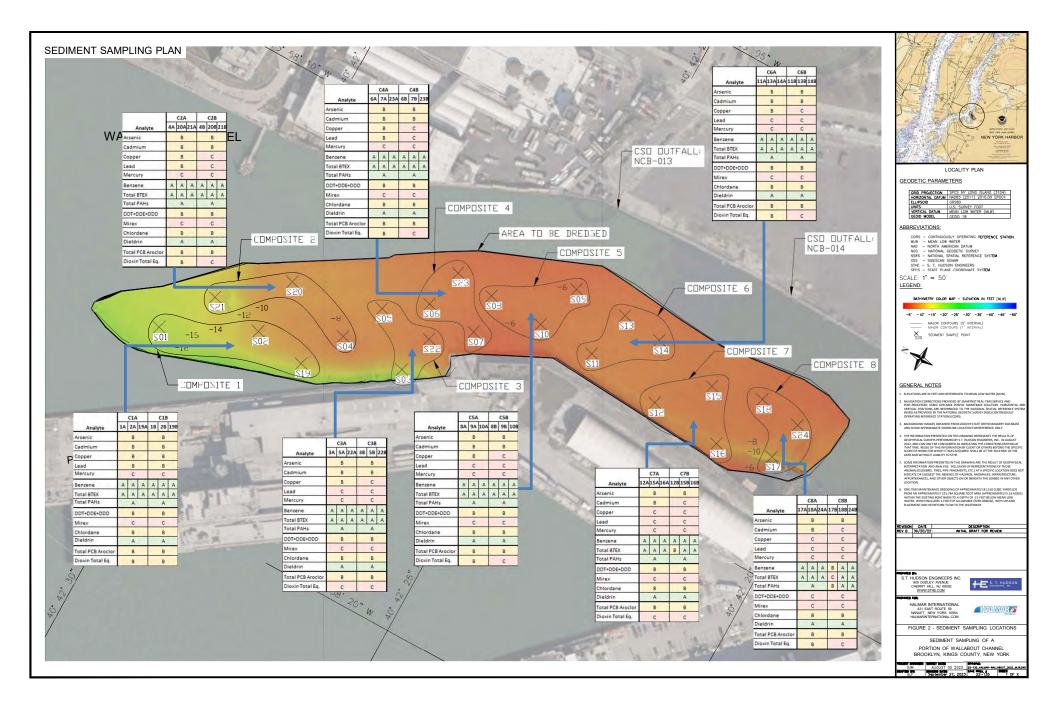


Table 1 - Comparison to 6 NYCRR Part 375 Soil Cleanup Objectives Exceedences Only

	6 NYCRR Part 375-6.8(a): Unrestricted Use	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:		C1A		ı	C2A		 Sedir 2A Du		nt	СЗА			C4A	
Analyte	Soil Cleanup Objectives	Protection of Ecological Resources	Protection of Groundwater	1A		19A	4A	20A			<u> </u>	3A		22A	6A		23A
Acetone (2-Propanone) 2-Butanone (Methyl ethyl ketone)	50 ug/kg	2,200 ug/kg	50 ug/kg	140	440	490	77	77				75	97	480		140	
(MEK)	120 ug/kg	NS	930 ug/kg						250								
Fluoranthene	100 ug/kg	NS	1,000,000 ug/kg		120			170					140			140	
2-Methylphenol (o-Cresol)	330 ug/kg	NS	330 ug/kg		ND			ND		ND			ND			ND	
3&4-Methylphenol (mp-Cresol)	330 ug/kg	NS	330 ug/kg		ND			ND		ND			ND				
Phenol	330 ug/kg	NS	330 ug/kg		ND			ND		ND			ND			ND	
4,4'-DDE	3.3 ug/kg	3.3 ug/kg	17,000 ug/kg		ND			ND		ND			ND			ND	
4,4'-DDT	3.3 ug/kg	3.3 ug/kg	136,000 ug/kg		ND			ND		ND			ND			ND	
4,4'-DDD	3.3 ug/kg	3.3 ug/kg	14,000 ug/kg		ND			ND		ND			ND			ND	
Aldrin	5 ug/kg	140 ug/kg	190 ug/kg		ND			ND		ND			ND			ND	
Dieldrin	5 ug/kg	6 ug/kg	100 ug/kg		ND			ND		ND			ND				
Endrin	14 ug/kg	14 ug/kg	60 ug/kg		ND			ND		ND			ND			ND	
Total PCB Aroclor(SUM)	100 ug/kg	1,000 ug/kg	3,200 ug/kg		ND			ND		ND			ND			ND	
Arsenic	13 mg/kg	13 mg/kg	16 mg/kg		14.2			14.9		13.7			14.9				
Cadmium	2.5 mg/kg	4 mg/kg	8 mg/kg										2.8				
Hexavalent chromium	1 mg/kg	1 mg/kg	19 mg/kg		ND			ND		ND			ND			2.1	
Trivalent chromium	30 mg/kg	41 mg/kg	N/A		99.2			116		110			146			103	
Copper	50 mg/kg	50 mg/kg	1,720 mg/kg		151			177		166			210			161	
Lead	63 mg/kg	63 mg/kg	450 mg/kg		167			179		165			231			189	
Mercury	0.18 mg/kg	0 mg/kg	1 mg/kg		3.2			3.3		2.6			3.1			2.7	
Nickel	30 mg/kg	30 mg/kg	130 mg/kg		38.2			38		35.5			42.5			37.4	1
Silver	2 mg/kg	2 mg/kg	8 mg/kg		5.5			7.4		7			8			5.4	
Zinc	109 mg/kg	109 mg/kg	2,480 mg/kg		261			260		246			318			291	

ND (Not Detected) analyte RL value exceeds any of the above Soil Cleanup Objectives
Grey indicates no analysis

Table 1 - Comparison to 6 NYCRR Part 375 Soil Cleanup Objectives (continued) Exceedences Only

	6 NYCRR Part 375-6.8(a): Unrestricted Use	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives:							Bu	lk Sed	iment					
	Soil Cleanup	Protection of	Protection of		С	5A			C6A			C	7A			C8A	
Analyte	Objectives	Ecological Resources	Groundwater	8A	9A	Dup	10A	11A	13A	14A	12A	15A	Dup	16A	17A	18A	24A
Acetone (2-Propanone) 2-Butanone (Methyl ethyl ketone)	50 ug/kg	2,200 ug/kg	50 ug/kg		380	25	300	260	490							880	
(MEK)	120 ug/kg	NS	930 ug/kg		130		130		210	210	150	150	250	200	180	280	320
Fluoranthene	100 ug/kg	NS	1,000,000 ug/kg						210			1	50			280	
2-Methylphenol (o-Cresol)	330 ug/kg	NS	330 ug/kg		N	۱D			ND			N	D			ND	
3&4-Methylphenol (mp-Cresol)	330 ug/kg	NS	330 ug/kg		N	ND											
Phenol	330 ug/kg	NS	330 ug/kg		N	ND			ND				D			ND	
4,4'-DDE	3.3 ug/kg	3.3 ug/kg	17,000 ug/kg		N	۱D			ND			N	D			ND	
4,4'-DDT	3.3 ug/kg	3.3 ug/kg	136,000 ug/kg		N	۱D			13			7	.5			54	
4,4'-DDD	3.3 ug/kg	3.3 ug/kg	14,000 ug/kg		N	۱D			7			7	.3			65	
Aldrin	5 ug/kg	140 ug/kg	190 ug/kg		N	۱D			ND			N	D			ND	
Dieldrin	5 ug/kg	6 ug/kg	100 ug/kg						ND								
Endrin	14 ug/kg	14 ug/kg	60 ug/kg		N	۱D			ND			N	D			ND	
Total PCB Aroclor(SUM)	100 ug/kg	1,000 ug/kg	3,200 ug/kg		N	ND			200			28	30			ND	
Arsenic	13 mg/kg	13 mg/kg	16 mg/kg									24	1.7				
Cadmium	2.5 mg/kg	4 mg/kg	8 mg/kg		3	3.2			3			8	.2			6.1	
Hexavalent chromium	1 mg/kg	1 mg/kg	19 mg/kg		N	ND			ND			N	D			ND	
Trivalent chromium	30 mg/kg	41 mg/kg	N/A		1	06			100			14	48			137	
Copper	50 mg/kg	50 mg/kg	1,720 mg/kg		2	00			238			4	63			396	
Lead	63 mg/kg	63 mg/kg	450 mg/kg		2	67			306			5.	50			752	
Mercury	0.18 mg/kg	0 mg/kg	1 mg/kg		1	5			2			5	.2			5	
Nickel	30 mg/kg	30 mg/kg	130 mg/kg		37	7.2			43.6	j		78	3.8			54.4	
Silver	2 mg/kg	2 mg/kg	8 mg/kg		5	.7			5.4			9	.4			8.8	
Zinc	109 mg/kg	109 mg/kg	2,480 mg/kg		3	83			527			10	20			827	

ND (Not Detected) analyte RL value exceeds any of the above Soil Cleanup Objectives
Grey indicates no analysis

Table 2 - Comparison to NJDEP Standards Exceedences Only

	NJDEP Residential											E	Bulk Se	dime	ent										
	Ingestion-Dermal Soil		C1A	١		C2A	ı		СЗА	l .		C4A	١		C5A			C6A			С7А			C8A	
Analyte	Remediation Standards	1A	2A	19A	4A	20A	21A	ЗА	5A	22A	6A	7A	23A	8A	9A	10A	11A	13A	14A	12A	15A	16A	17A	18A	24A
Total Aroclor (SUM)	250 ug/kg (ppb)																				280				
Arsenic	19 mg/kg (ppm)																				24.7				
Lead	400 mg/kg (ppm)																				550			752	

	NJDEP Residential										ļ	Amen	ded B	ulk S	edime	nt									
	Ingestion-Dermal Soil		C1A	١		C2A			СЗА			C4A	ı		C5A			C6A			С7А			C8A	
Analyte	Remediation Standards	1A	2A	19A	4A	20A	21A	ЗА	5A	22A	6A	7A	23A	8A	9A	10A	11A	13A	14A	12A	15A	16A	17A	18A	24A
Total Aroclor (SUM)	250 ug/kg (ppb)					280			560												860			360	
Arsenic	19 mg/kg (ppm)																				25.7				
Lead	400 mg/kg (ppm)																				473			570	

	NJDEP Migration to Ground Water Soil Leachate Remediation		C1A		1	C2A			СЗА			SPLP Le			eachate C5A			C6A			C7A			C8A		
Analyte		1A	2A	19A	4A	20A	21A	ЗА	5A	22A	6A	7A	23A	8A	9A	10A	11A	13A	14A	12A	15A	16A	17A	18A	24A	
Total Aroclor (SUM)	10 ug/L (ppb)																									
Arsenic	0.06 mg/L (ppm)																									
Lead	0.01 mg/L (ppm)																									

### Attachment 2

Floating Energy Storage System Project

Representative Photographs

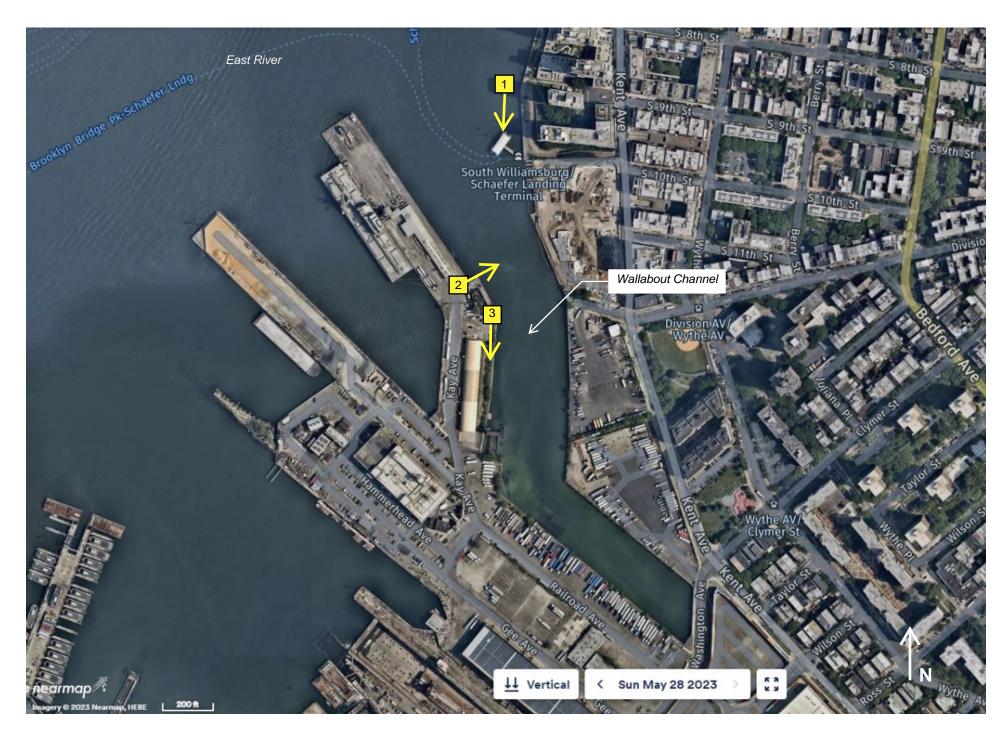


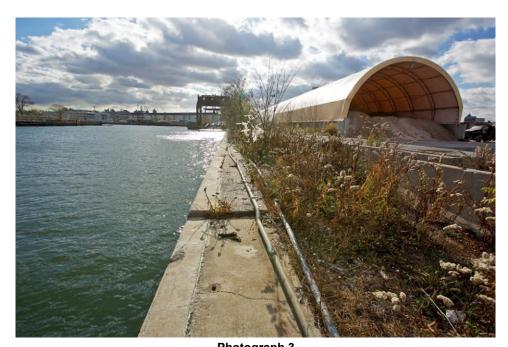
PHOTO KEY



View of Wallabout Channel and the Brooklyn Navy Yard, facing south towards the Project Site from the NYC Ferry terminal at the mouth of the Channel



Facing east across Wallabout Channel from Berth 20 of Pier K just north of the proposed FESS mooring site.



Photograph 3

View looking south along the bulkhead of Berth 20 of Pier K, from the northern end of the Project Site.

### Attachment 6

Floating Energy Storage System Project

**Section 408 Submittal Package** 

### A. INTRODUCTION

NYC Energy LLC (NYC Energy, the Applicant) 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 (Figure 1). 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. (Con Edison). The Project site in Wallabout Channel includes a portion of a federal navigation channel, or "Federal Project," and the barges will be located within the boundaries of the Federal Project as shown in the drawings provided as Enclosure 1. Water depths in the Project site currently range from about 8 to 20 feet at MLW, with localized shallower waters close to the bulkhead. The barges will be moored to twelve steel pipe piles that will be installed outside of the federal navigation channel along the bulkhead of Pier K. A 5.2-acre portion of Wallabout Channel within the Federal Project boundaries will be dredged to the federally- authorized depth of 20 feet at mean low water (MLW) as part of the Project to allow access for the barges.

The Applicant is pursuing authorization from US Army Corps of Engineers (USACE) for this Project pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. This authorization is being requested through the Joint Application process in conjunction with requests for approval from the New York State Department of Environmental Conservation (NYSDEC) under Article 15 "Protection of Waters and Article 25 "Tidal Wetlands" and from the New York State Department of State (NYSDOS) under the State Coastal Management Program. This request for authorization under Section 14 of the Rivers and Harbors Act, as codified at 33 U.S.C. 408 (Section 408) is being provided as part of the Joint Application for the Project.

### B. PURPOSE AND NEED OF THE PROJECT

The purpose of the Project is to integrate clean, renewable energy into New York City's (NYC) electric grid to further NY State's climate goals under the 2019 Climate Leadership and Community Protection Act which established a target for the development of 6,000 MW of battery energy storage capacity in the state by 2030. Energy storage will play a crucial role in meeting New York 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 New York City to meet peak power needs without relying on its oldest peaker plants. This reduces dependency on fossil fuel generation, which would reduce local air emissions, resulting in an overall benefit to air quality in NYC, and prepare the New York electric grid for energy generated by new renewable energy facilities onshore and

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offshore. Successful deployment of the proposed 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 further development of alternative renewable energy systems. The FESS concept could be replicated throughout the country, including potentially at the existing 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.

### C. PROJECT DESCRIPTION

The Project will place 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 (Sheet SK-1 in Enclosure 1). Each barge will have a 100 MW capacity, for a total of 300 MW capacity for the project. 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<sup>1</sup> of 20 feet at 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 at the Brooklyn Navy Yard (Sheets 11 to 13 in Enclosure 1). The piles will be outside the federal navigation channel (Sheet 14 in Enclosure 1). 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 barges are anticipated to remain connected to the grid for the 30-year duration of NYC Energy's lease agreement with Brooklyn Navy Yard.

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 that they can get underway in a timely manner, as described above. Because the Project will be partially within the federal navigation channel, the barges will be set up such that they can be moved out of the channel within a reasonable amount of time. In accordance with this requirement, the barges will be installed such that they can be easily disconnected from the mooring piles and the interconnecting utilities will be installed with quick disconnects to allow for easy separation from land so the barges can be moved out of the channel in a matter of hours following the steps listed on **Sheet SK-3 in Enclosure 1**. As described on **Sheet SK-3**, the power would be turned off and the utilities and gangways disconnected from the barges. The barges would be secured together so they can be moved as a single unit by tugs or would be moved individually as required. They would be temporarily secured directly to the shore while the pile collars are disconnected, and the temporary moorings would be removed when the tugs are ready to maneuver the barges out of the channel. The barges would remain within protected waters in the New York Harbor, likely within the Brooklyn Navy Yard, until they can be returned to the Project site.

The barges will be temporary occupants of the federal channel, in that: they will have practical access to navigable waters and will not be surrounded by a cofferdam or other structure or land; they will be connected to the mooring piles using pile collars that can be easily disconnected by an authorized individual; the interconnection cable running from the barges to the utility connections on land will be quick-release; and the barges would be able to get underway in less

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<sup>&</sup>lt;sup>1</sup> 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

than 8 hours and can be moved from the navigation channel to a temporary mooring location within the New York Harbor, if required.

### **DREDGING**

Dredging will be conducted within about 5.2 acres in Wallabout Channel, including within the Federal Project boundaries, to the federally-authorized depth of 20 feet at MLW with one foot of allowable overdredge (Sheet 7 in Enclosure 1). 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.

### 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 (**Sheet 15 in Enclosure 1**). In this portion of Wallabout Channel the tide changes by about 4 feet between low and high tide based on NOAA tidal data. The piles will be hollow and 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 and soft start. 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 approximately 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.

### **SCHEDULE**

Construction for the project is currently scheduled to begin in May 2024 and end in February 2027. In-water construction includes the 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 four to six weeks, pile driving over two to three weeks, and mooring the barges over two 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.

### D. EFFECTS ON THE FEDERAL PROJECT

The Federal Project in Wallabout Channel was established in the late 1800s with the purpose of keeping wharves open to commerce and allowing ferry access in and out of the channel. The Channel is not currently used for commerce or ferry access, however, if commercial use or ferry access are proposed for the Federal Project in Wallabout Channel in the future, the Project would not hinder these uses. The most recent USACE Controlling Depth Report was completed in 2004 and indicates that water depths in Wallabout Channel in 2003 were about 20 feet at MLW at its mouth and decreased to between 7 and 15 feet in the vicinity of the Project site, which is shallower than the authorized depth for the Federal Project. A hydrographic survey conducted in August 2022 identified water depths ranging from about 8 feet to 20 feet at MLW in the dredging area for the Project. Dredging for the Project will increase water depths and improve navigation from the mouth of the Channel up to the Project site, which is consistent with the original purpose of the Federal Project to "allow ferry access." Currently, ferry access is only required for the South Williamsburg Ferry Landing located at the mouth of the Channel, approximately 475 feet north of the proposed FESS location on its eastern shore. Ferry vessels using the landing do not typically travel past the Project site. Similarly, the infrastructure bordering Wallabout Channel, including Pier K, has not been used for commerce for many decades. The FESS barges will be positioned along the bulkhead at Pier K and will extend approximately 130 feet into Wallabout Channel, which is about 300 feet wide at the Project site, leaving approximately 170 feet of its width open for vessel access. The FESS will not hinder current vessel operations because only smaller vessels that would be able to maneuver around the barges are anticipated to use the Channel near the Project site given the narrowing of the channel and shallow water depths past the proposed FESS location. Additionally, as described above, the barges are not permanent structures and could be moved if required.

The planned dredging for the Project will remove approximately 81,500 cubic yards of sediment comprising mainly silt with some clay and pockets of sand. Sediment sampling within the dredging area was conducted in June and July 2023 and the results of 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. As defined by TOGS 5.1.9, sediments were Class B or Class C for metals, Class B for total PCBs and pesticides, Class A for dieldrin and petroleum-related compounds, and Class C for Mirex. 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. However, as shown in Figure 2, 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 for Composites 7 and 8, which were taken near the upstream limits of the dredging area towards the head of the channel. While some of the deeper sediments with higher contamination levels will be exposed to the water column after dredging, the deeper waters will allow tidal flushing to occur such that no long-term impacts to water quality will result from Project and the characteristics of the Federal Project will not be adversely impacted by the dredging effort.

### E. SECTION 408 REQUIREMENTS

### **OPERATION AND MAINTENANCE REQUIREMENTS**

The Project does not include the placement of permanent structures in the Federal Project area and does not require operation and maintenance protocols specific to the navigation channel. As described above, the Applicant is requesting a 10-year maintenance dredging permit that will cover one maintenance dredging effort and any additional dredging needed as a result of storm-induced sedimentation or to allow the barges to maintain the ability to get underway. NYC Energy will be responsible for identifying the need for and initiating any maintenance dredging activities in the future.

### REAL ESTATE ANALYSIS

NYC Energy has secured two property leases for the Project: one from the Brooklyn Navy Yard Development Corporation for the upland portion of the Project, including an area of Pier K and a portion of the interconnection route, and one from the New York State Office of General Services (OGS) for lands underwater where the barges will be located. **Enclosure 2** shows the leased area within Brooklyn Navy Yard. **Enclosure 3** shows the currently leased area from OGS within Wallabout Channel, along with the proposed expanded lease area that will accommodate the three side-by-side barges. NYC Energy is currently coordinating with OGS to obtain the expanded lease area.

#### RESIDUAL RISK

The Project will not result in increased risk to life or property as a result of dredging of placement of the FESS barges in a portion of the navigation channel. As described below under "Floodplain Considerations," the Project will be designed to rise and fall with changing water levels as it's moored to piles of sufficient capacity and length to anchor the barges under current conditions and under projected conditions with sea level rise. The barges themselves will also be designed in accordance with U.S. Coast Guard standards to limit any risk of capsizing or foundering. The battery storage containers installed on the barges will meet a series of standards and code requirements to mitigate the risk of fire, including an internal fire suppression system, internal and external sprinkler system, a liquid circulating chiller unit, and explosion-proof fan. A Battery Management System (BMS) would automatically activate the fire suppression system at first indication of a thermal runaway. In accordance with FDNY requirements, the FESS barges will be equipped with a CCTV system to monitor the containers, and the BMS will alert a central control facility in the unlikely event of a fire. Additionally, 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 bot to a fire, should it be necessary. Therefore, the Project will not increase the risk to life or property associated with flooding or fire.

### FLOODPLAIN CONSIDERATIONS

Executive Order 11988 "Floodplain Management" requires federal agencies to evaluate the potential long-term and short-term adverse impacts associated with the occupancy and modification of floodplains. The Project site in Wallabout Channel is within the 1-percent annual chance floodplain in Zone VE, which identifies an area with additional hazards due to storm-induced velocity wave action, with a base flood elevation of +13 feet NAVD88. The floodplain in the Project area is mostly affected by coastal flooding associated with tide and storm events, rather

than local flooding caused by precipitation. The minimal occupancy of the floodplain by portions of the Project will not result in short-term or long-term adverse impacts on the flood elevation and would not result in increased risks from flooding to adjacent properties. The Project design will account for its location in the floodplain. For example, the FESS's moored design will allow the barges to rise and fall with changing water levels, and the piles will be of sufficient capacity and length to anchor the barges under current conditions and under projected conditions with sea level rise over the Project's 30-year lease term. The mooring piles will be designed to withstand a Category 5 hurricane and associated storm surge, and the barges will be designed and constructed to meet all U.S. Coast Guard requirements, including standards for stability that will limit the risk of capsizing or foundering and taking into account the final height and weight of the battery storage units. With these considerations, the Project will not result in short-term or long-term adverse impacts associated with the occupancy or modification of floodplains.

### ENVIRONMENTAL PROTECTION COMPLIANCE

A New York State Full Environmental Assessment Form (FEAF) has been prepared for the Project under the State Environmental Quality Review Act (SEQRA) (Enclosure 4). The U.S. Department of Energy (DOE), as the federal agency providing funding<sup>2</sup> for the Project, is preparing an Environmental Assessment (EA) in accordance with the National Environmental Protection Act (NEPA) concurrently with this application. The NEPA EA includes an evaluation of the Project's potential impacts to all regulated resources including air quality, hazardous materials, and noise, documentation of which is required under Section 408. The Draft EA will be provided to USACE upon request.

As part of the NEPA EA, DOE has initiated and/or completed the following consultations:

- NOAA Fisheries Office of Habitat Conservation—Consultation regarding potential impacts
  of the Project on Essential Fish Habitat initiated on May 9, 2023. Response received from
  NOAA Fisheries on July 25, 2023 indicating that compensatory mitigation is required to offset
  the impacts of increased overwater coverage from the barges. Coordination between NOAA
  Fisheries, DOE, and NYC Energy to develop a mitigation plan is ongoing.
- NOAA Fisheries Office of Protected Resources—Consultation regarding potential impacts of
  the Project on species protected under Section 7 of the Endangered Species Act under NOAA
  Fisheries jurisdiction initiated on May 9, 2023. Response received from NOAA Fisheries on
  May 25, 2023 concurring with DOE's conclusion that the Project is not likely to adversely
  affect any listed species or critical habitat under NOAA Fisheries' jurisdiction.
- U.S. Fish and Wildlife Service (USFWS)—Review of the USFWS Information for Planning and Consultation (IPaC) database regarding the potential for the Project to impact species protected under Section 7 of the Endangered Species Act under USFWS jurisdiction was completed on October 13, 2023. Using the IPaC Determination Keys, the Applicant has determined the Project will have No Effect on listed species with the potential to occur in the Project area.
- New York State Historic Preservation Office (SHPO)—Consultation regarding potential impacts of the Project on historic and cultural resources initiated on February 27, 2023.
   Response received from SHPO on March 16, 2023 indicating No Adverse Effect. An

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<sup>&</sup>lt;sup>2</sup> NYC Energy has applied for funding under Title XVII of the Energy Policy Act of 2005 and has not yet received the funding as of November 2023.

- Unanticipated Discovery Plan has been prepared for the Project to address any unanticipated discovery of archaeological resources or human remains during construction in the streetbeds for the interconnection or in Wallabout Channel during dredging.
- Tribal Nations—Consultation was initiated under the National Historic Preservation Act (NHPA) with the Delaware Nation, Shinnecock Indian Nation, Delaware Tribe of Indians, and Stockbridge-Munsee Band of Mohican Indians on October 24, 2022 and May 11, 2023. Written response from the Delaware Tribe of Indians was received on November 21, 2022, stating that there are no known religious or cultural sites in the Project area. No further comments have been received at the time of this application.

### F. SUMMARY AND CONCLUSIONS

Section 14 of the Rivers and Harbors Act of 1899, as amended and codified in 33 U.S.C. 408 ("Section 408") requires authorization from the Secretary of the Army, acting through USACE, for the permanent or temporary alteration or use of any USACE Civil Works project such as a federal navigation channel. Alteration is considered to be any actions that take possession of or make use of, build upon, alter, deface, destroy, move, injure, obstruct, or in any manner impair the usefulness of a USACE project. Permission to alter a USACE project can be granted under Section 408 if the alteration is not injurious to the public interest and will not impair the usefulness of the project.

The Project is not injurious to the public interest. The purpose of the Project is to integrate clean, renewable energy into New York City's (NYC) electric grid to further NY State's climate goals under the 2019 Climate Leadership and Community Protection Act which established a target for the development of 6,000 MW of battery energy storage capacity in the state by 2030. Energy storage will play a crucial role in meeting New York 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 New York City to meet peak power needs without relying on its oldest peaker plants. This reduces dependency on fossil fuel generation, which would reduce local air emissions, resulting in an overall benefit to air quality in NYC, and prepare the New York electric grid for energy generated by new renewable energy facilities onshore and offshore. Successful deployment of the proposed 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 further development of alternative renewable energy systems. The FESS concept could be replicated throughout the country, including potentially at the existing 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

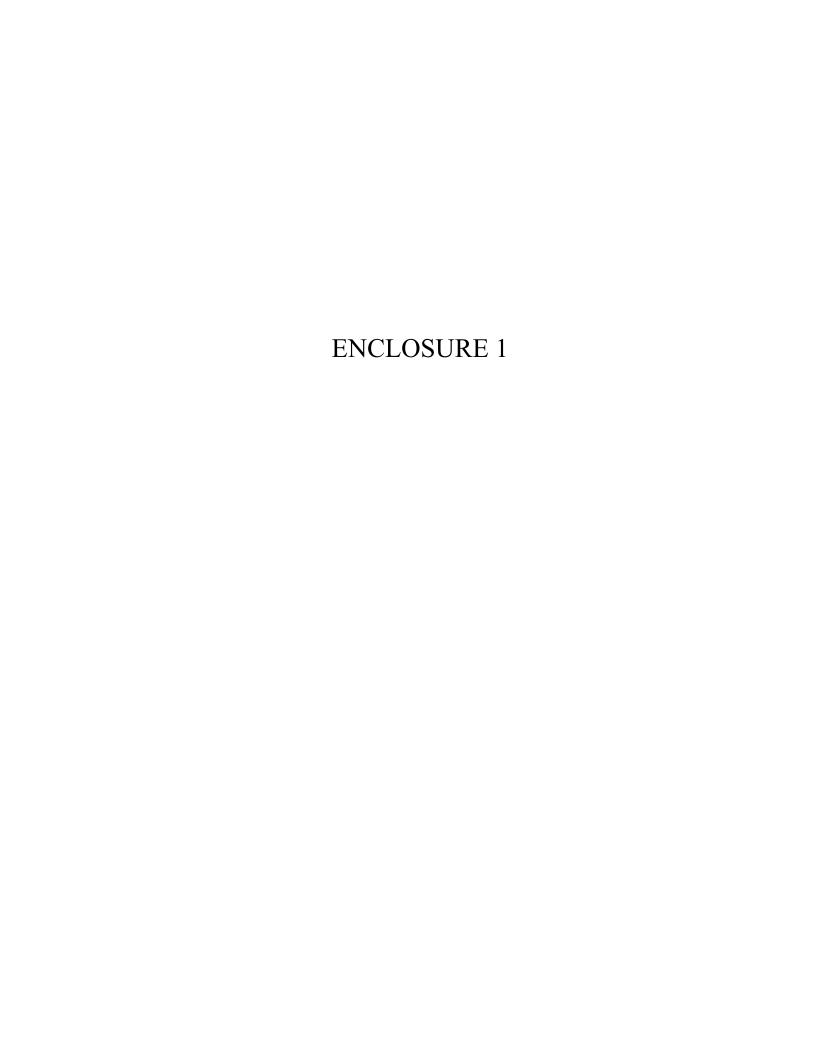
The Project will not impair the usefulness of the Federal Project. The Federal Project in Wallabout Channel was established in the late 1800s with the purpose of keeping wharves open to commerce and allowing ferry access in and out of the channel. Wallabout Channel is not currently used for commerce or ferry access, however, if commercial use or ferry access are proposed for the Federal Project in Wallabout Channel in the future, the FESS Project would not hinder these uses. Currently, ferry access is only required for the South Williamsburg Ferry Landing located about 475 feet north of the Project at the mouth of the Channel on its eastern shore, and ferry vessels using the landing do not typically travel past the Project site. Similarly, the infrastructure bordering Wallabout Channel, including Pier K, has not been used for commerce for many decades. Dredging for the Project will deepen the Channel to the federally-authorized depth of 20 feet at

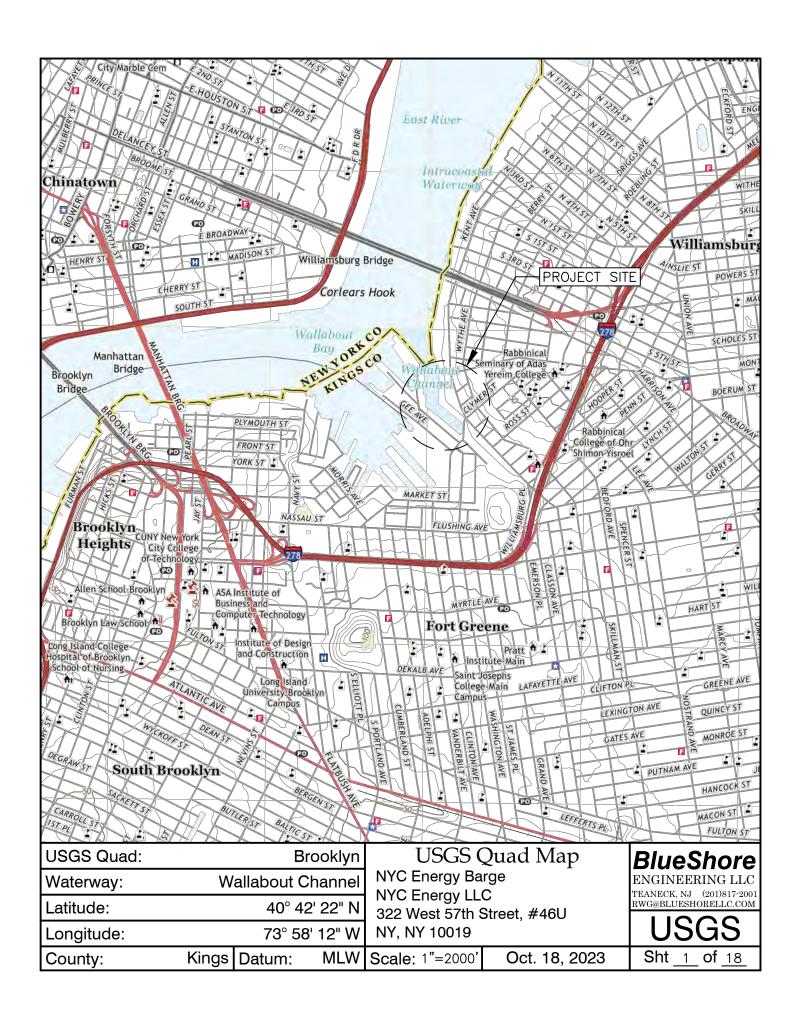
### **Floating Energy Storage System Project**

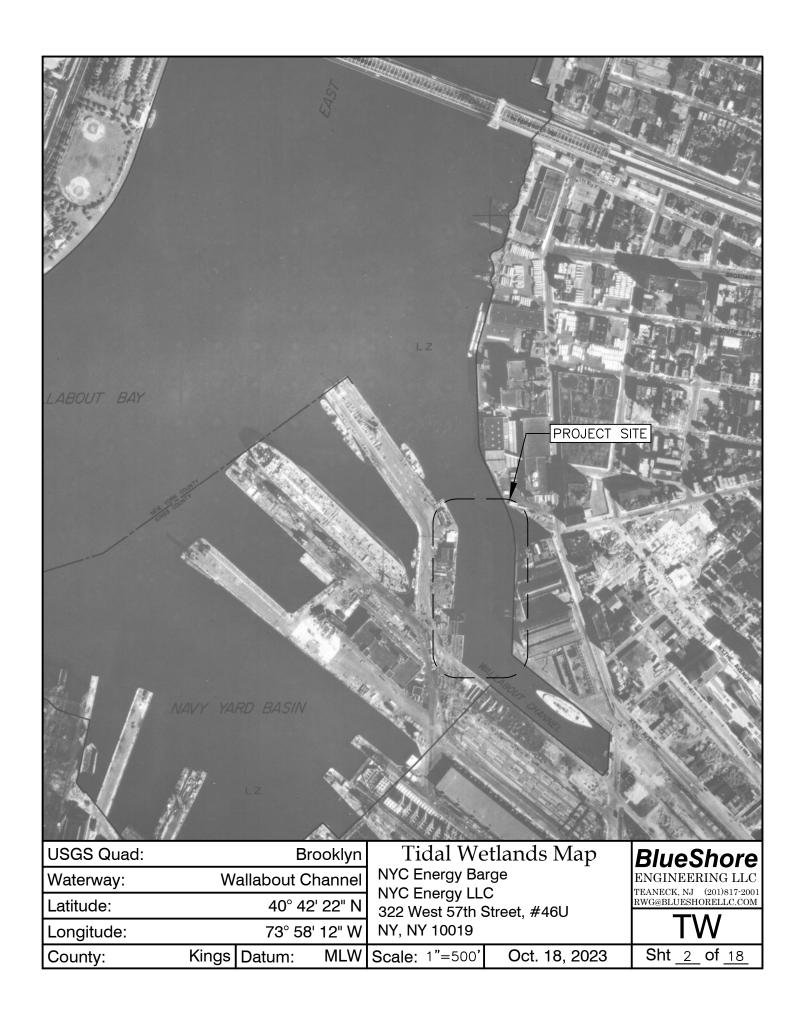
MLW and will allow tidal flushing to occur such that no long-term impacts to water quality will result from Project.



**Project Location** 







#### PERMIT REQUIREMENTS & ENVIRONMENTAL CONTROLS

- THE CONTRACTOR SHALL BE FURNISHED A COPY OF ENVIRONMENTAL PERMITS FROM THE US ARMY CORPS OF ENGINEERS AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION. THE CONTRACTOR SHALL REVIEW AND COMPLY WITH ALL PERMIT CONDITIONS.
- 2. THE CONTRACTOR SHALL PREVENT TRASH OR CONSTRUCTION DEBRIS FROM ENTERING THE WATERCOURSE, AND SHALL RECOVER ANY ITEMS THAT ENTER THE WATERCOURSE IMMEDIATELY.

#### REFERENCE DATUM

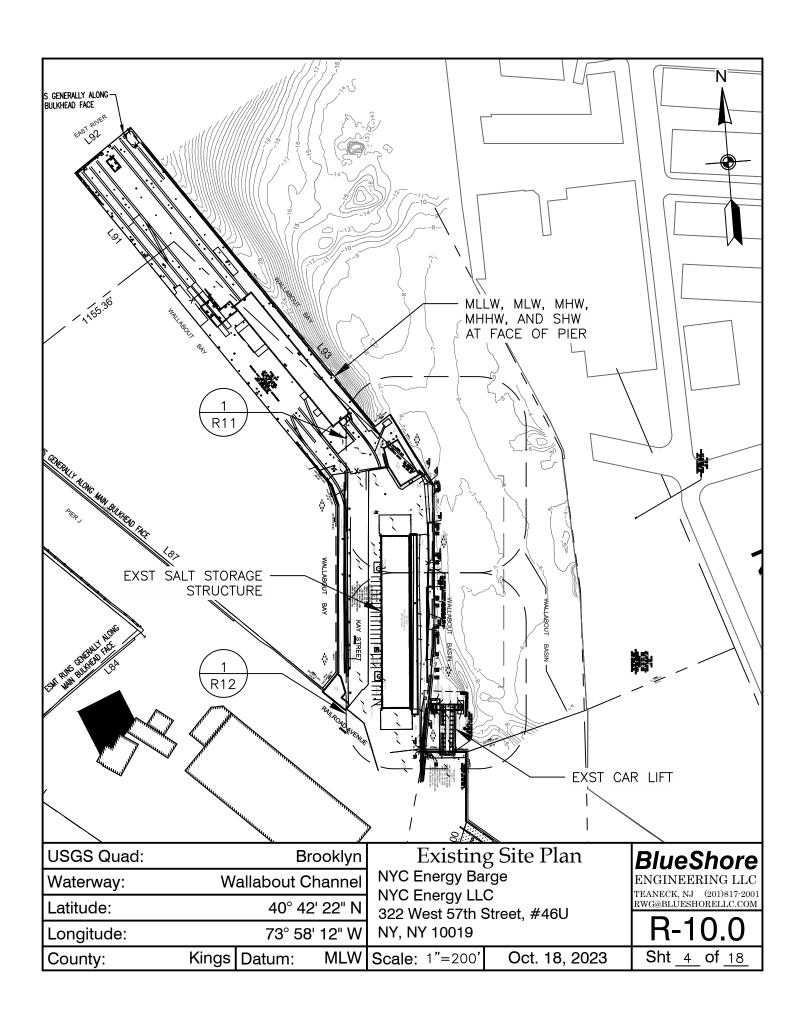
ELEVATIONS SHOWN ON DRAWINGS ARE RELATIVE TO MLW, UNLESS NOTED OTHERWISE. DATUM CONVERSIONS SHALL REFER TO THE TABLE ON THIS SHEET.

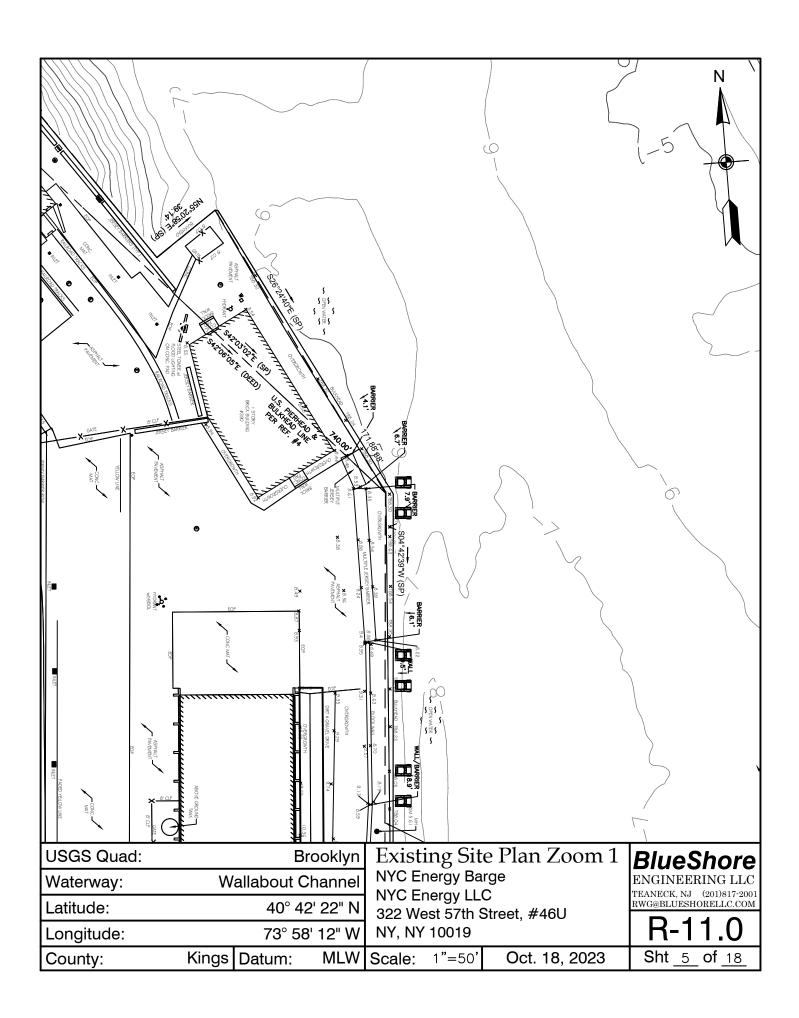
REFERENCE TOPOGRAPHIC SURVEYS PREPARED BY GALLAS SURVEYING GROUP, DATED DECEMBER 6, 2021, REVISED MARCH 9, 2023.

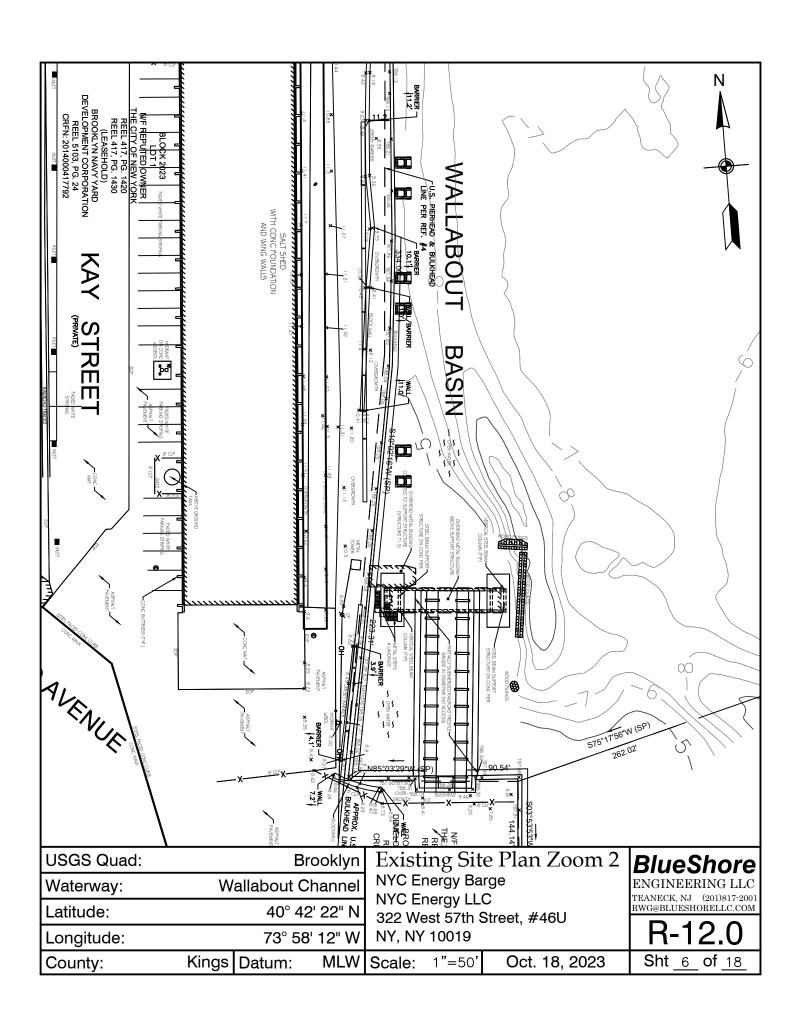
REFERENCE HYDROGRAPHIC SURVEYS PREPARED BY S.T. HUDSON ENGINEERS INC., DATED AUGUST 30, 2022.

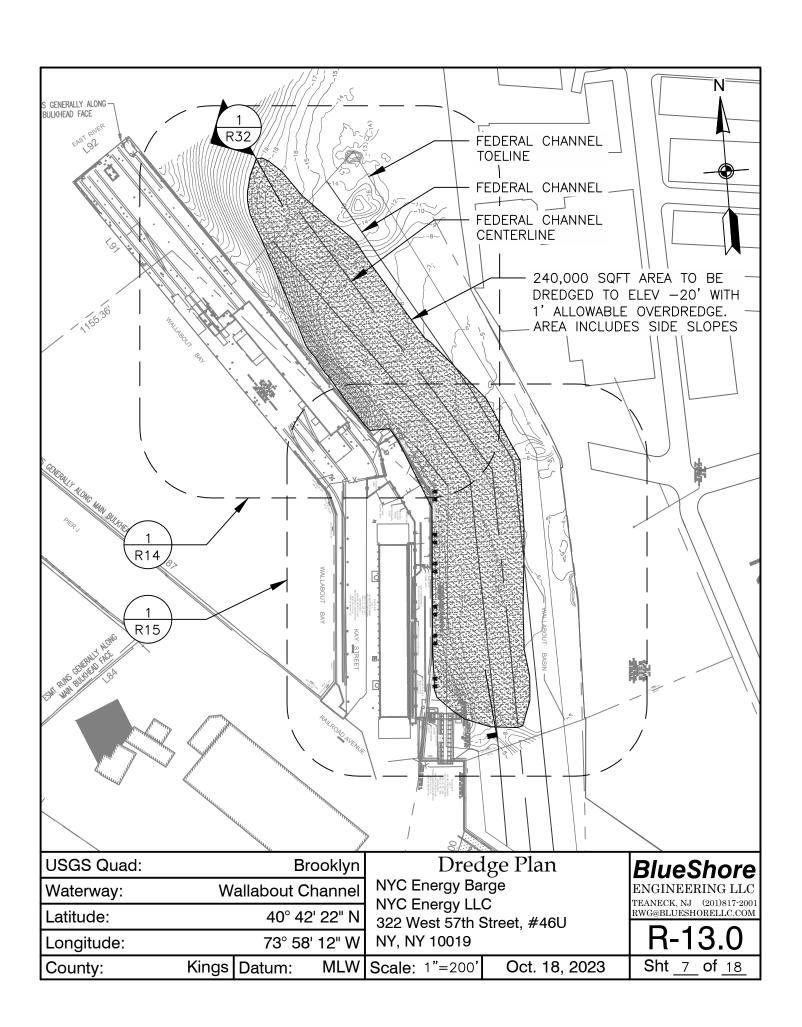
DATUM CONVERSION (ELEVATIONS IN FEET)				
DATUM	NAVD88	MLW	MLLW	
500-yr Return Period	+14.00	+16.40	+16.62	
FEMA Preliminary VE Zone	+13.00	+15.40	+15.62	
Hurricane Sandy Max Recorded Tide Elevation	+11.28	+13.68	+13.90	
100—yr Return Period	+10.90	+13.30	+13.52	
FEMA Effective AE Zone	+10.00	+12.40	+12.62	
50—yr Return Period	+9.70	+12.10	+12.32	
10-yr Return Period	+6.90	+9.30	+9.52	
Spring High Water	+2.37	+4.77	+4.99	
Mean Higher—High Water	+2.20	+4.60	+4.82	
Mean High Water	+1.87	+4.27	+4.49	
NAVD88	0.00	+2.40	+2.62	
Mean Diurnal Tide Level	-0.21	+2.19	+2.41	
Local Mean Sea Level	-0.24	+2.16	+2.38	
Mean Low Water	-2.40	0.00	+0.22	
Mean Lower-Low Water	-2.62	-0.22	0.00	

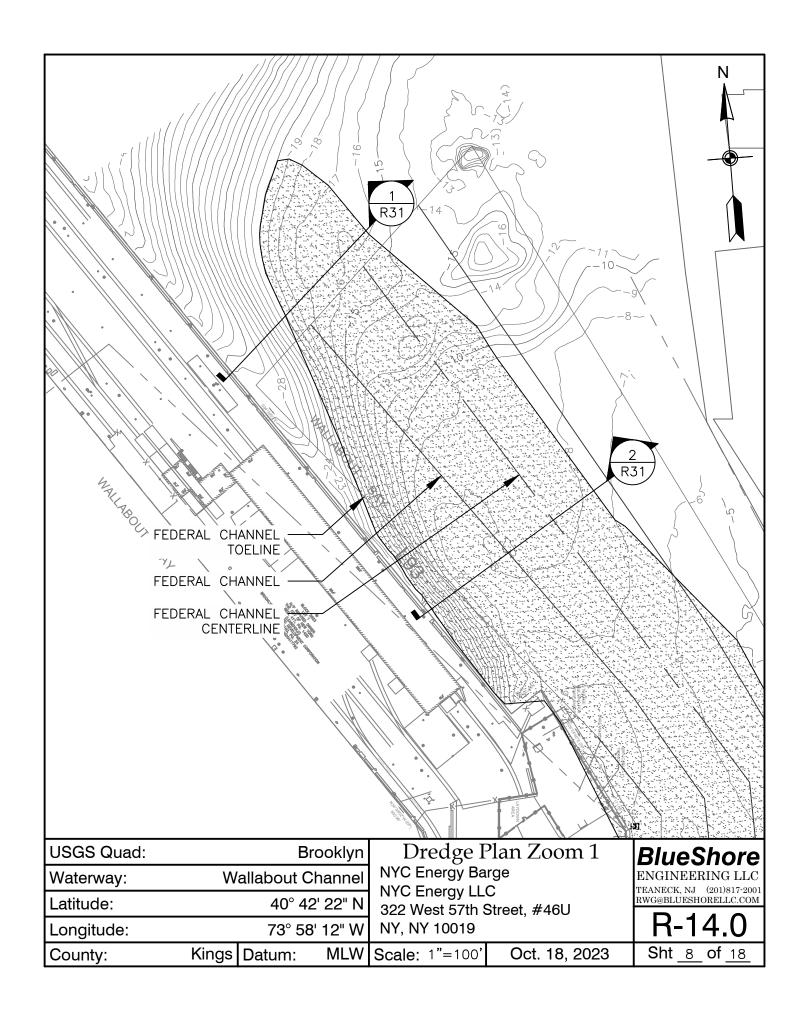
USGS Quad:	Brooklyn	NYC Energy Barge NYC Energy LLC 322 West 57th Street, #46U		BlueShore
Waterway:	Wallabout Channel			ENGINEERING LLC TEANECK, NJ (201)817-2001
Latitude:	40° 42' 22" N			RWG@BLUESHORELLC.COM
Longitude:	73° 58' 12" W			R-1.0
County:	Kings Datum: MLW	Scale: N/A	Oct. 18, 2023	Sht <u>3</u> of <u>18</u>

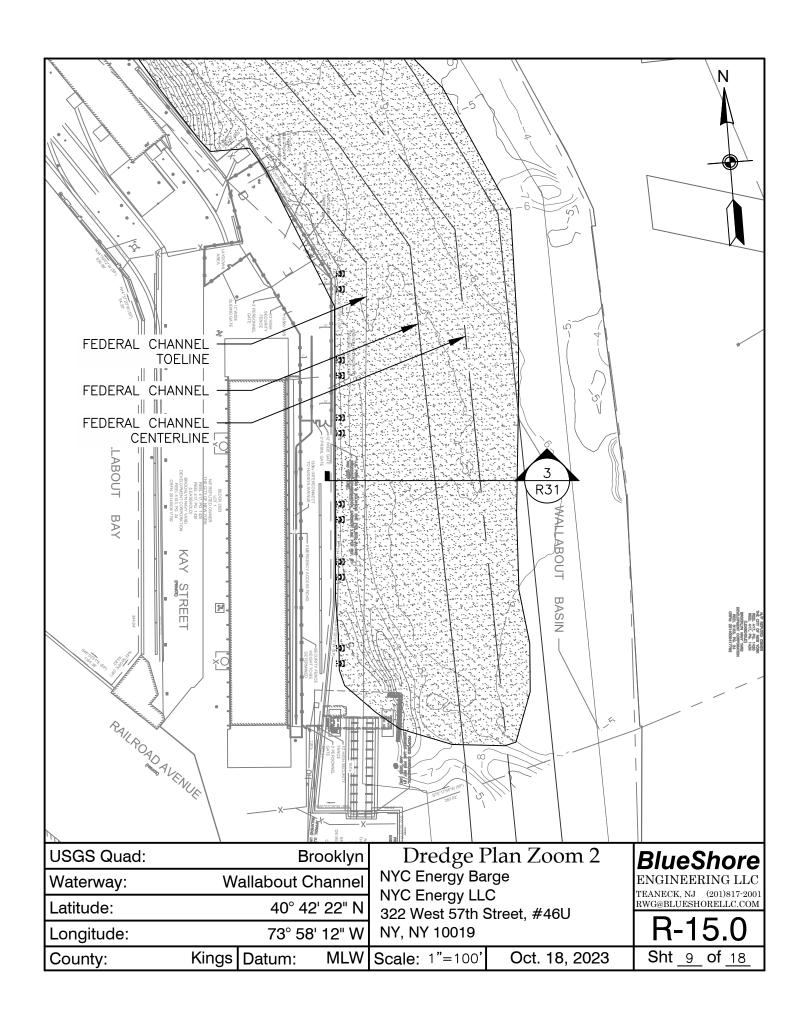


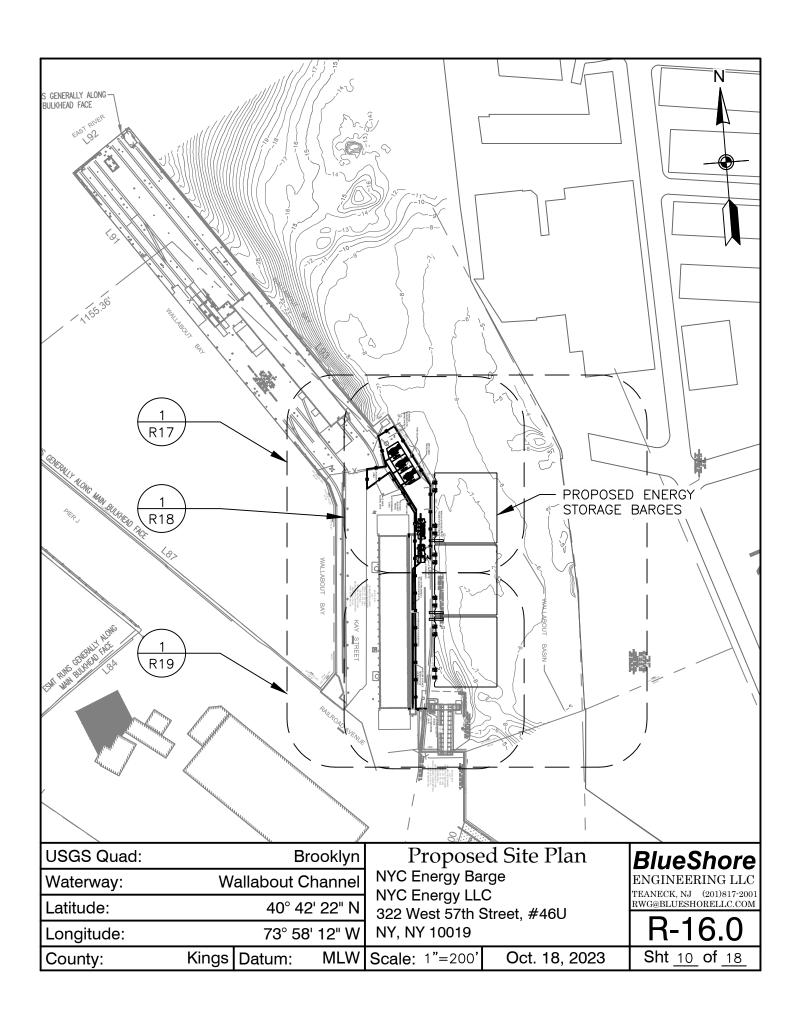


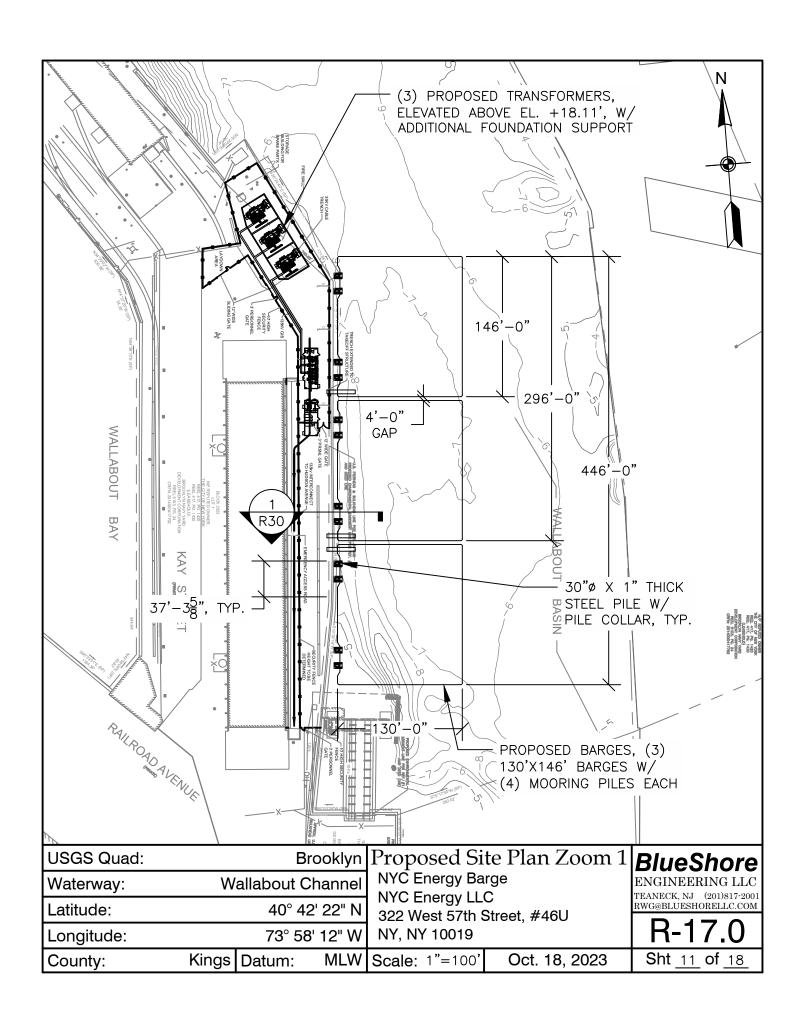


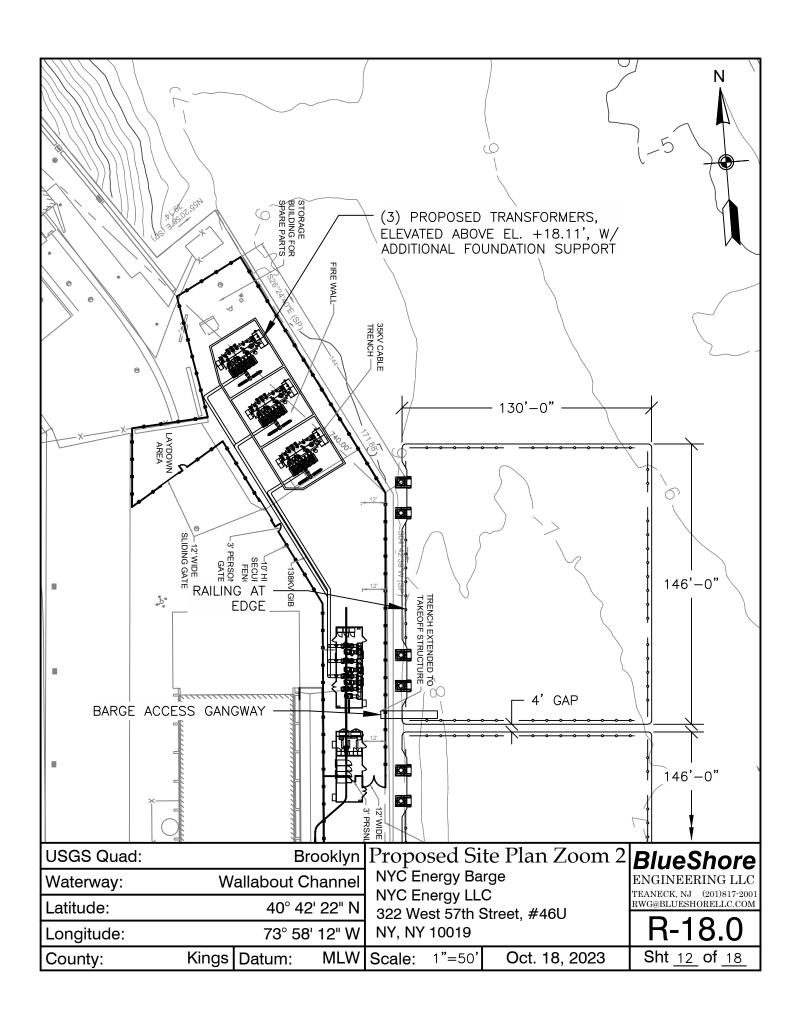


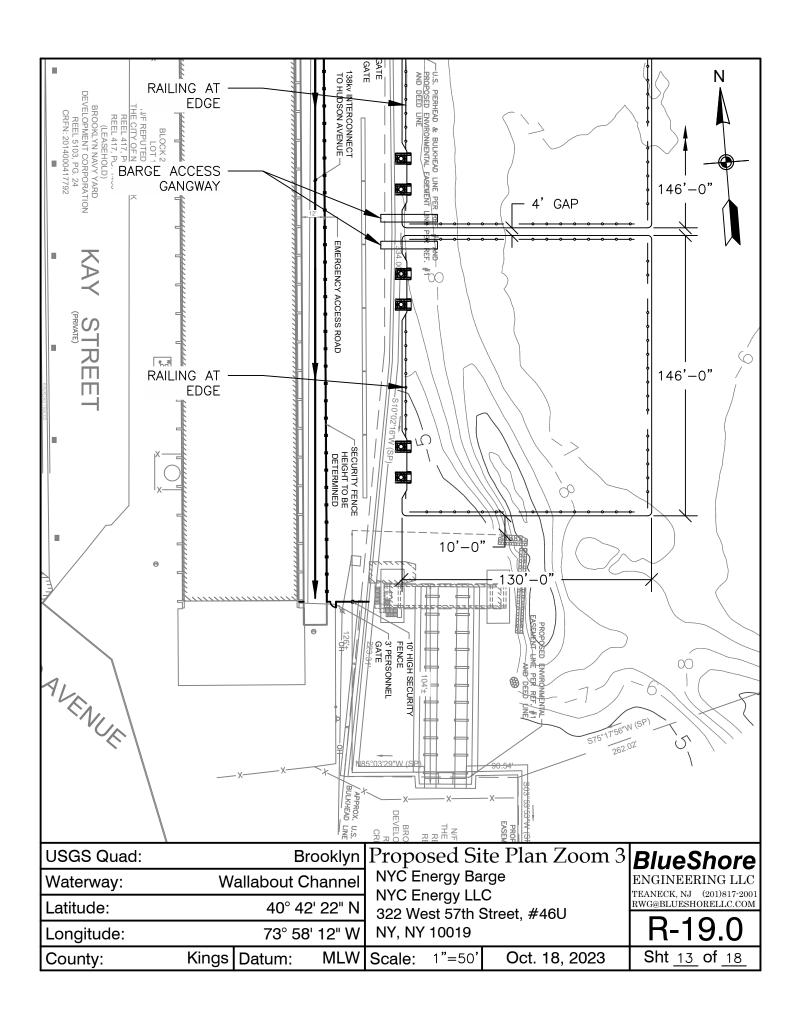


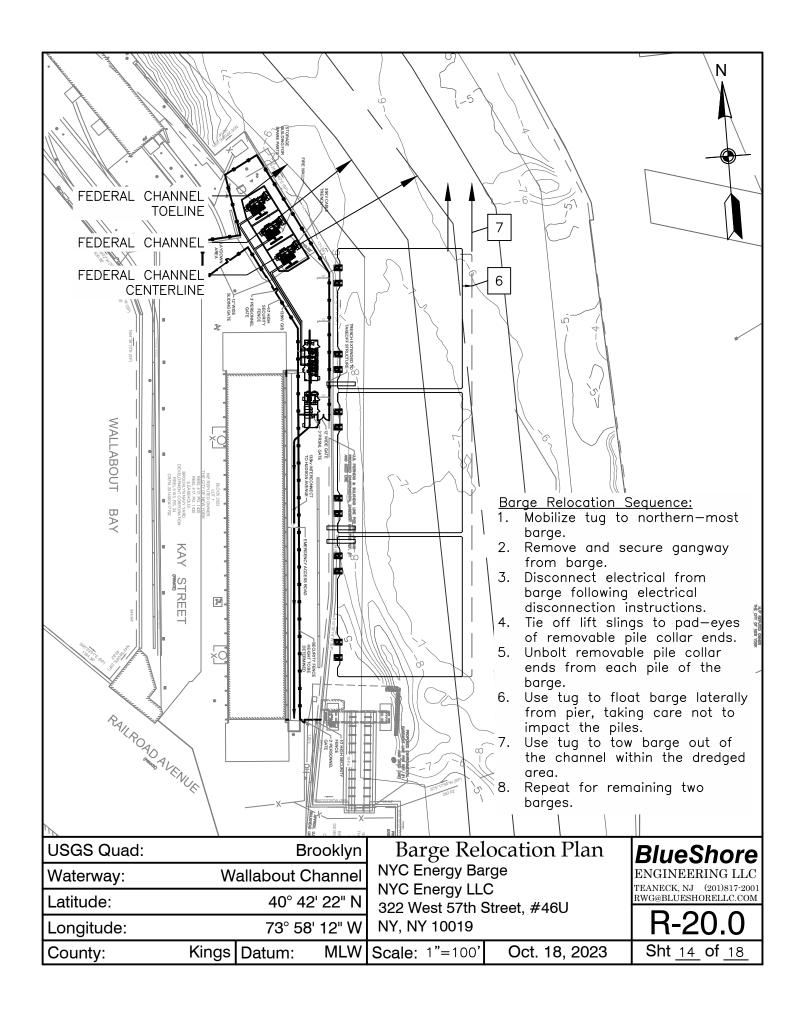


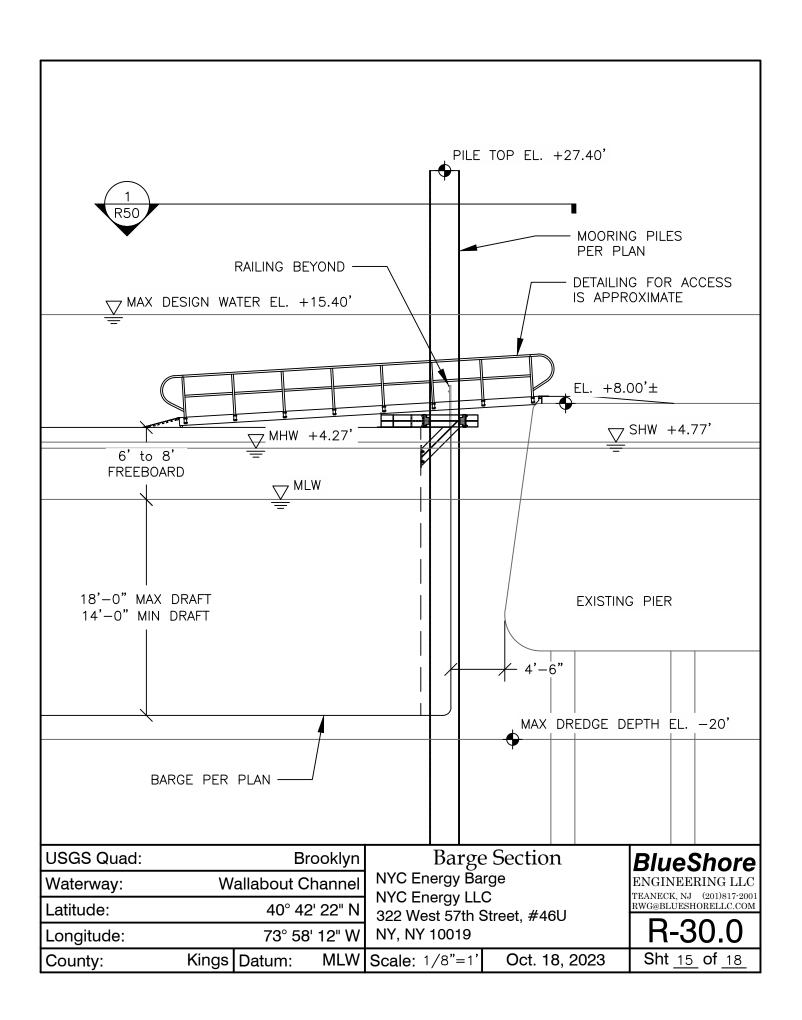


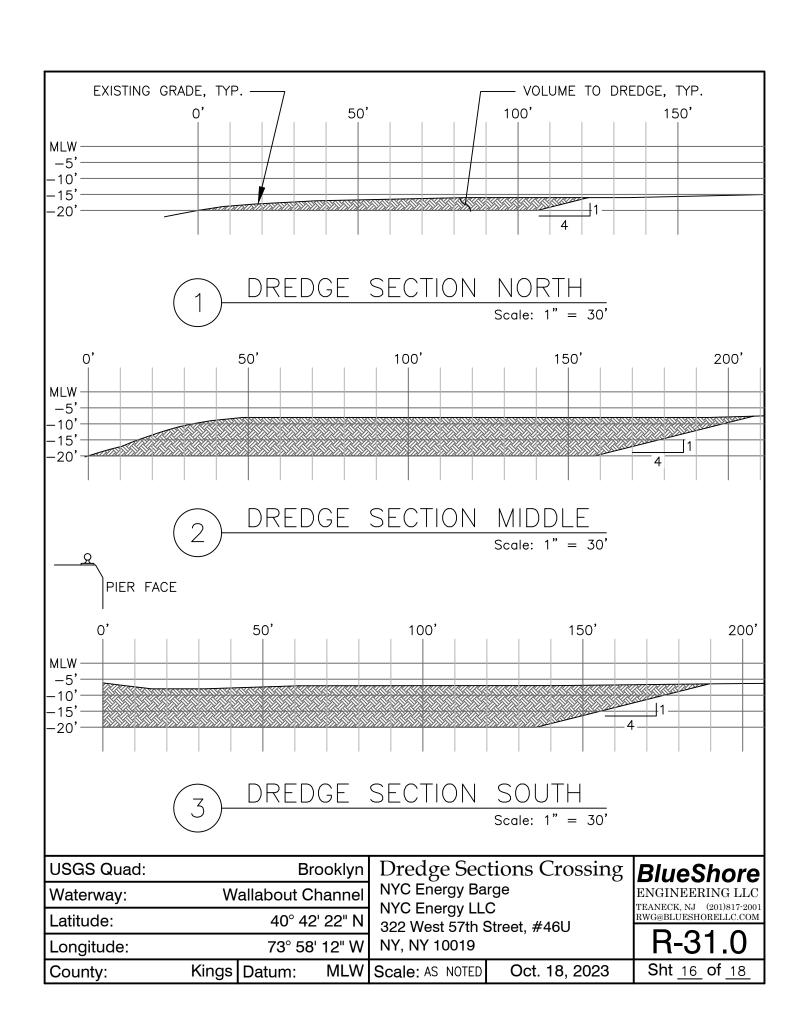


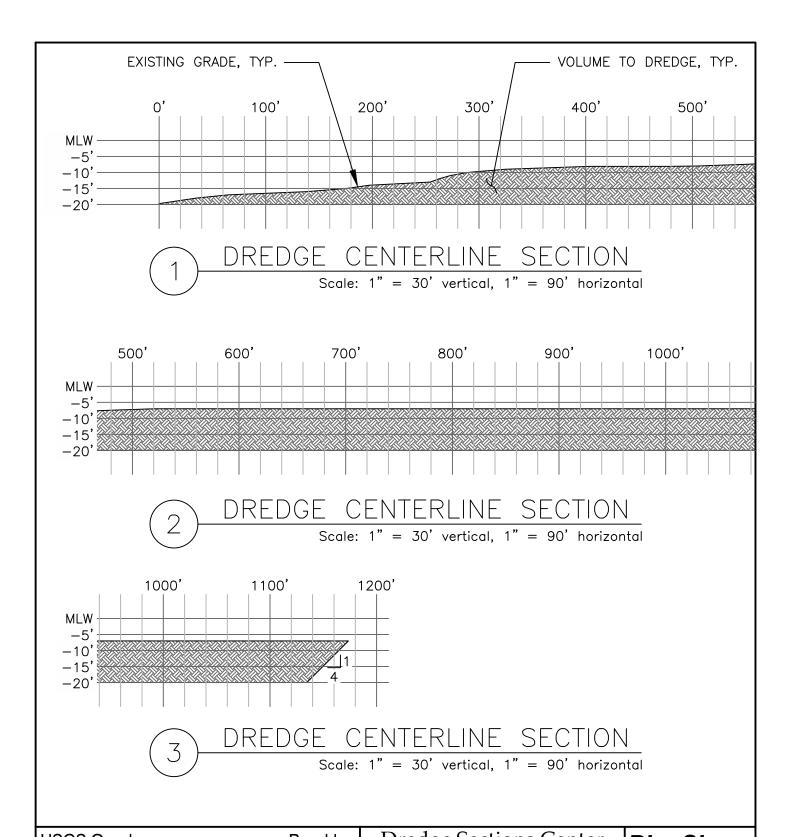




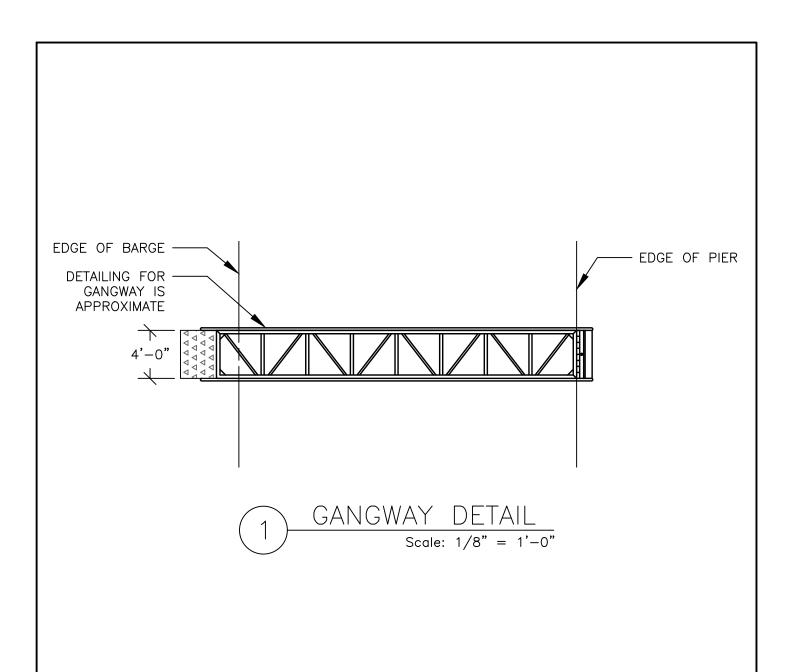




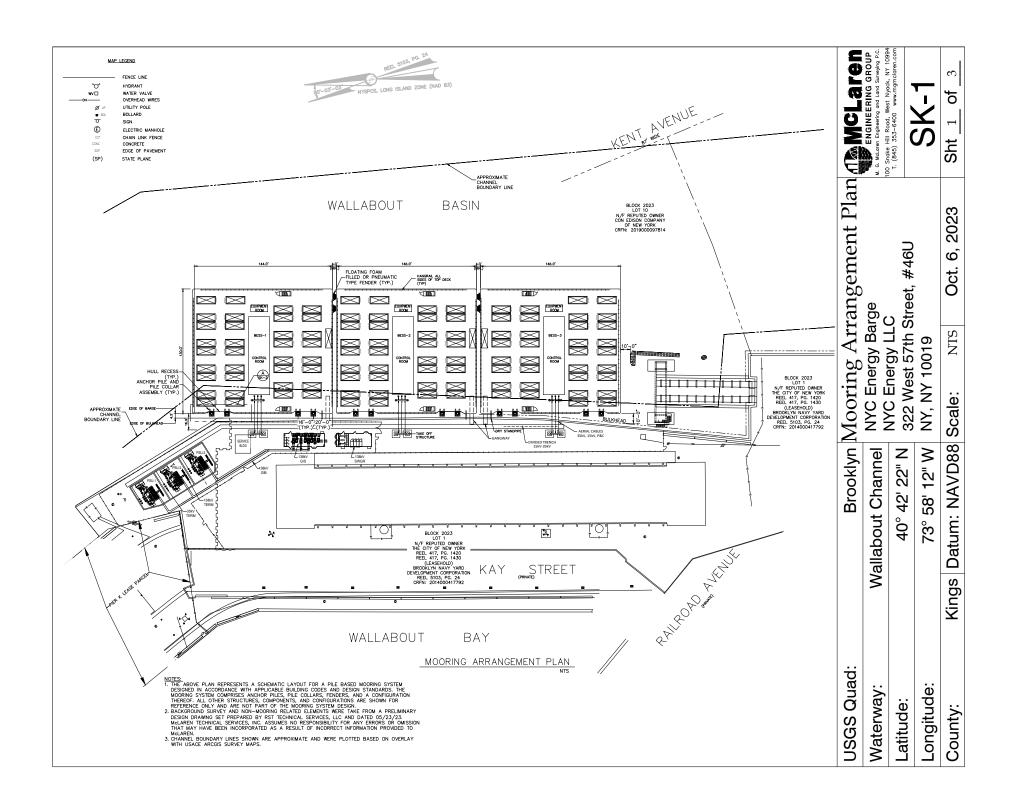


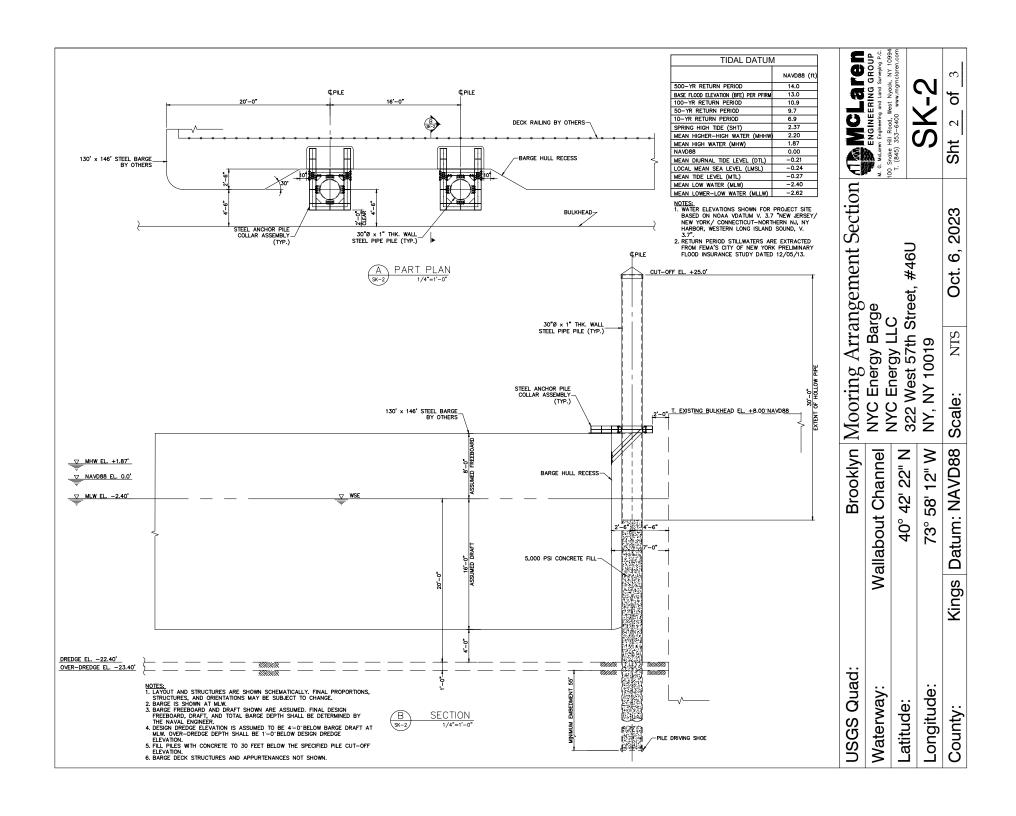


USGS Quad:	Broo	oklyn	NYC Energy Barge NYC Energy LLC		BlueShore
Waterway:	Wallabout Cha	annel			ENGINEERING LLC
Latitude:	40° 42' 2	22" N			TEANECK, NJ (201)817-2001 RWG@BLUESHORELLC.COM
Longitude:	73° 58' 1	12" W			R-32.0
County:	Kings Datum:	MLW	Scale: AS NOTED	Oct. 18, 2023	Sht <u>17</u> of <u>18</u>
			•		



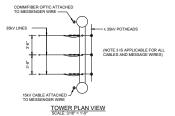
USGS Quad:	Brooklyn	NYC Energy Barge NYC Energy LLC 322 West 57th Street, #46U		BlueShore
Waterway:	Wallabout Channel			ENGINEERING LLC TEANECK, NJ (201)817-2001
Latitude:	40° 42' 22" N			RWG@BLUESHORELLC.COM
Longitude:	73° 58' 12" W			R-50.0
County:	Kings Datum: MLW	Scale: AS NOTED	Oct. 18, 2023	Sht <u>18</u> of <u>18</u>



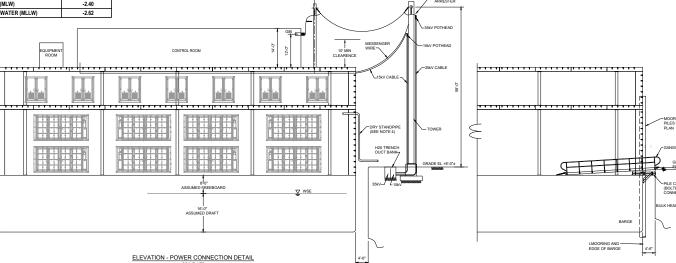




- 1. WATER ELEVATIONS SHOWN FOR PROJECT SITE BASE ON NOAA VDATUM V. 3.7 "NEW JERSEY / NEW YORK / CONNECTICUT-NORTHERN NJ, NY HARBOR, WESTERN LONG ISLAND SOUND, V. 3.7".
- 2. RETURN PERIOD STILLWATERS ARE EXTRACTED FROM FEMA'S CITY OF NEW YORK PRELIMINARY FLOOD INSURANCE STUDY DATE 12/05/13



ELEVATION - GANGWAY / MOORING PILES DETAIL



#### BARGE UNDOCKING SEQUENCE:

- 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).
- SECURE AND DISCONNECT OTHER UTILITY CONNECTIONS SUCH AS THE FIRE STAND PIPE
- 5. SECURE BARGES TOGETHER SO THAT THEY CAN BE SHIFTED AS A COMPOSITE UNIT (BINDERS, HAND WINCHES, BARGE TENSIONERS, BITTS, ETC.)
- 6. BARGE OPERATING PERSONNEL DEPART BARGE.
- BARGE OPERATING PERSONNEL OR LINE CREW ON BEACH REMOVE THE GANGWAYS TO SHORE.
- 8. TUGS ARRIVE.
- TUG PERSONNEL USE BARGE LADDER TO TRANSFER TO\FROM BARGE.
- 10. TUG PERSONNEL ABOARD BARGE.

- 11. TUGS MAKE UP TO THE BARGES. NOTE THAT THE BATHYMETRY MAY LIMIT THE CONFIGURATION OF TUGS WHILE IN THE SLIP.
- 12. 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.
- 13. TUGS MANEUVER BARGES OUT OF THE SLIP.
- 14. 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.
- 15. 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.
- 16. PROCESS REVERSED TO DOCK. PARK, PIN, SECURE MOORING LINES, DISCONNECT TUGS.

ARRANGEMENT #46U Street, **Energy Barge** Energy LL
West 57th ( GENERAL West NYC NYC 322 Brooklyn

Channel Z 22" 42 allabout 40° ⋛

Quad

**USGS** 

Waterway

Latitude

58 73°

Longitude:

County:

Scal NAVD88 Datum: ഗ King

Σ̈́ ≥ 12

1001

2023 9

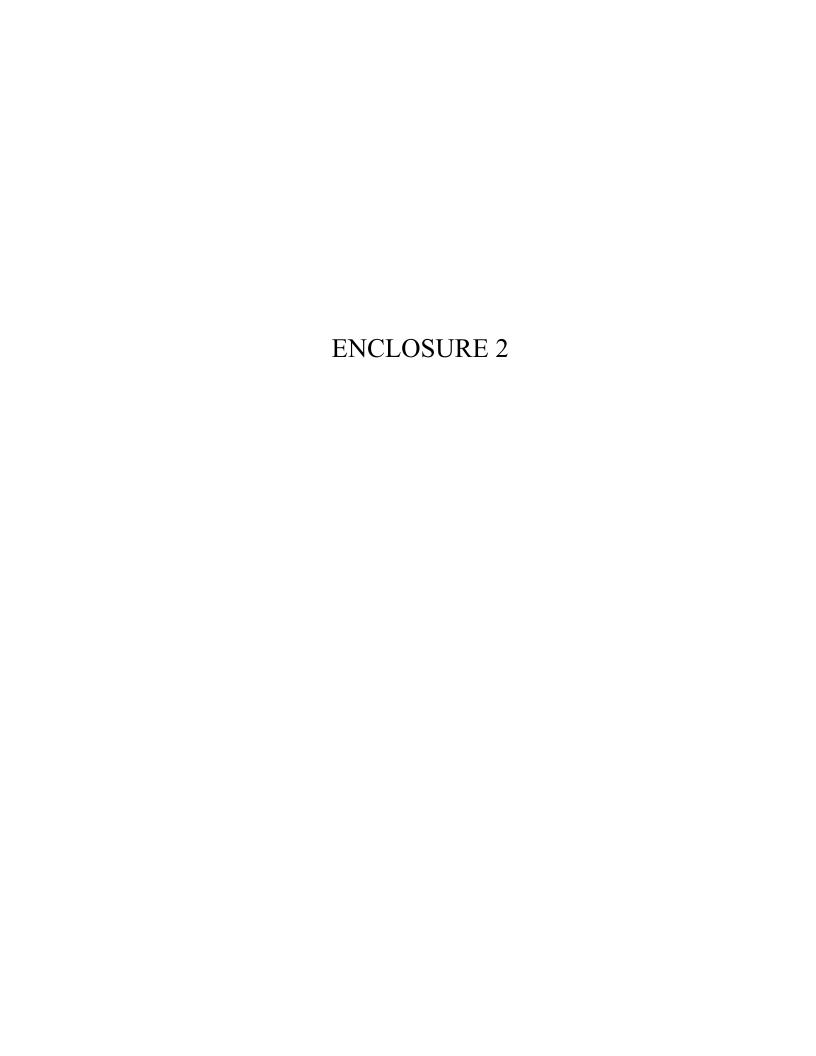
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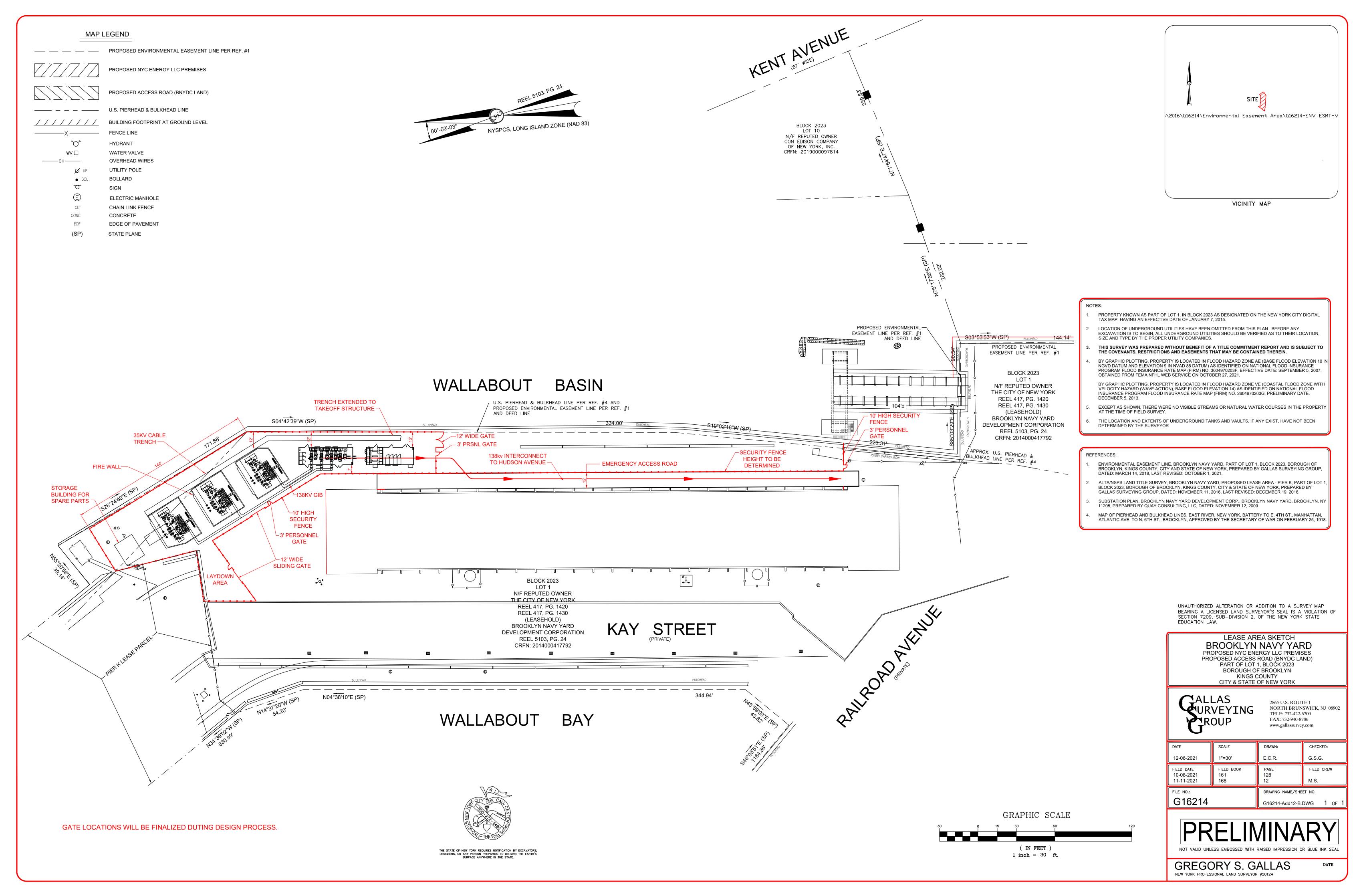
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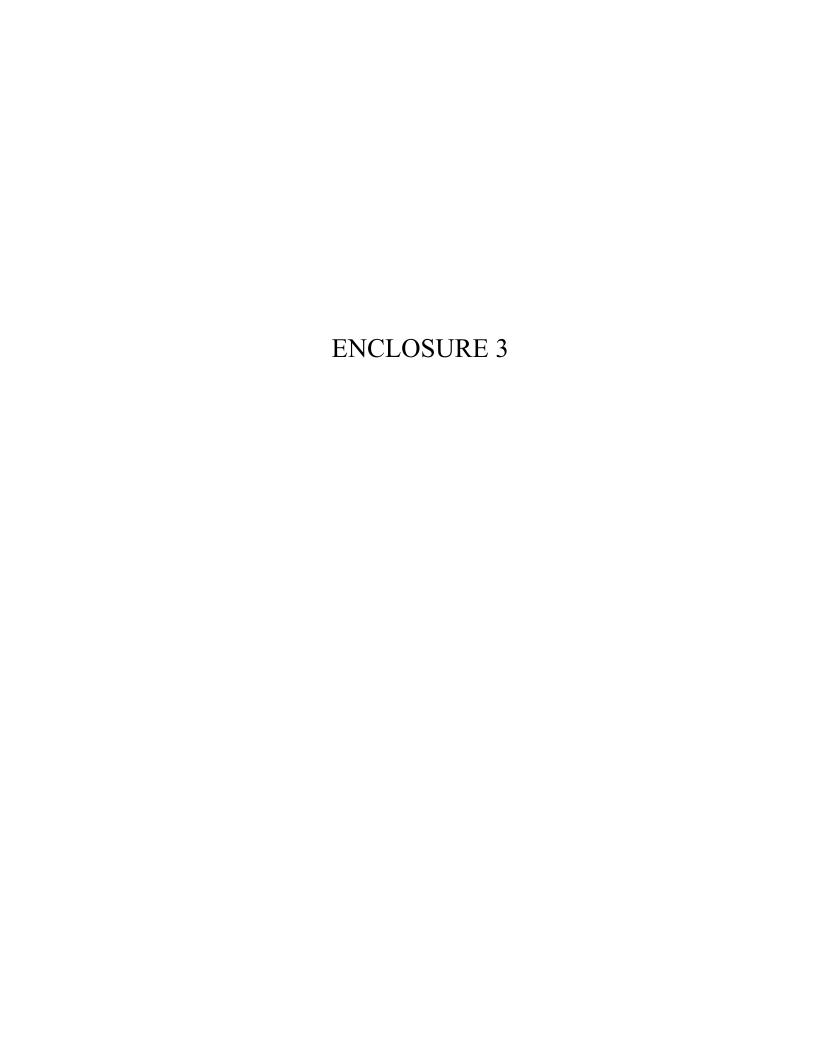
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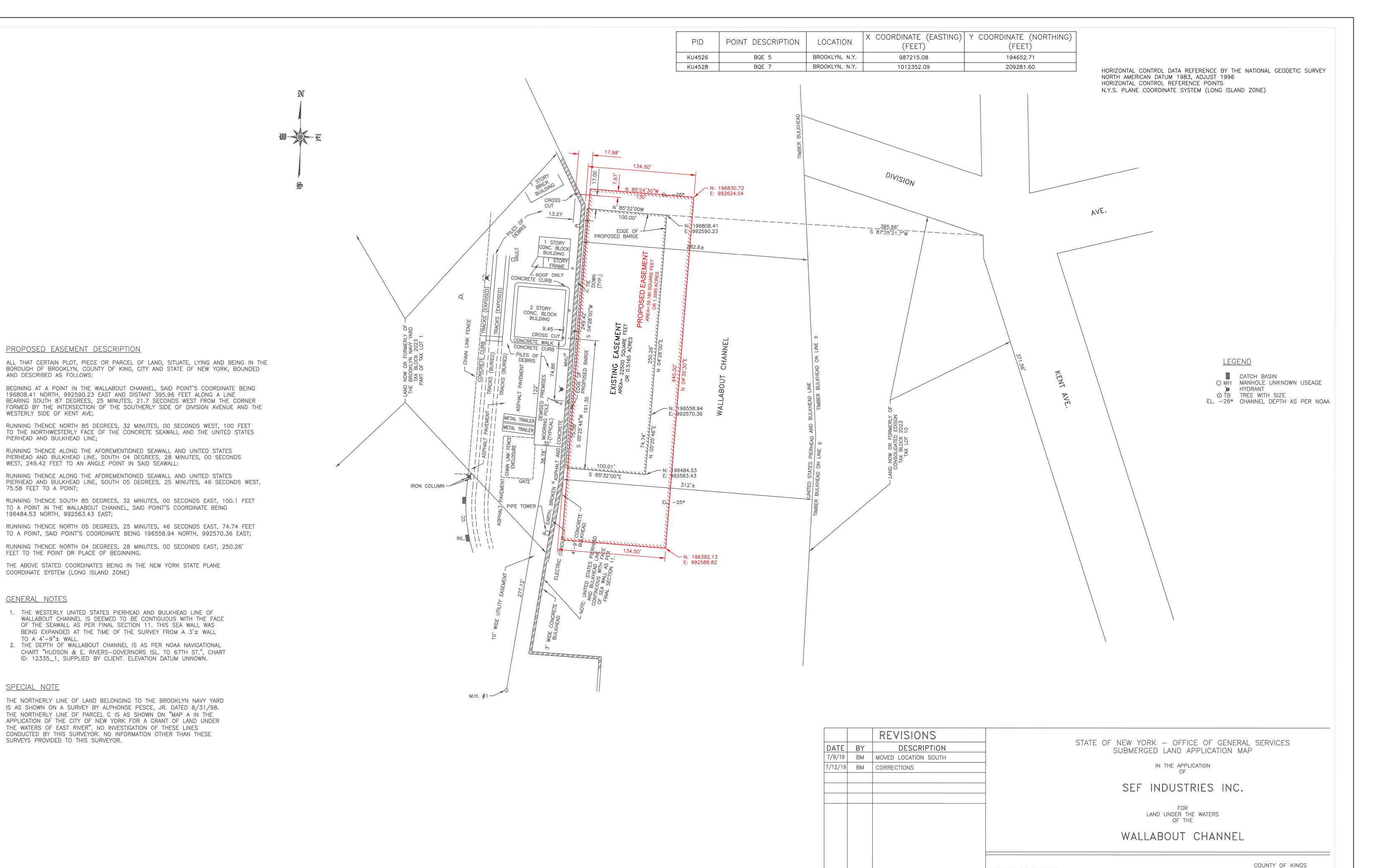
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BOROUGH OF BROOKLYN SCALE 1"=50'

GRAPHIC SCALE - FEET

O. G. S. MAP NO. 1829

AND DESCRIBED AS FOLLOWS:

WESTERLY SIDE OF KENT AVE;

PIERHEAD AND BULKHEAD LINE;

**GENERAL NOTES** 

SPECIAL NOTE

TO A  $4'-9"\pm$  WALL.

## 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

Express Address:

Address: New York State Office of Parks, Recreation, and Historic

Preservation, Division for Historic Preservation P. O. Box 189, Waterford, NY 12188-0189 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 Deborah Dotson
Director of Historic Preservation President

Delaware Nation
P.O Box 825

Anadarko, OK 73005 Phone: (405) 247-2448, ext. 1403 Anadarko, OK 73005 Phone: (405) 247-2448

Email: <a href="mailto:epaden@delawarenation.com">epaden@delawarenation.com</a>
Email: <a href="mailto:ddotson@delawarenation-nsn.gov">ddotson@delawarenation-nsn.gov</a>

#### DELAWARE TRIBE OF INDIANS

Larry Heady Susan Bachor

Tribal Historic Preservation Office (THPO) Historic Preservation Representative (East Coast)

Delaware Tribe of Indians

Delaware Tribe of Indians

125 Dory Lane 126 University Circle, Stroud Hall Room 437

Grants Pass, OR 97527 East Stroudsburg, PA 18301 Phone: (262) 825-7586 Phone (m): 610-761-7452

Email: <u>lheady@delawaretribe.org</u> 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 Brian Polite
Tribal Historic Preservation Officer (THPO) Trustee

PO Box 5006 PO Box 5006

Southampton, NY 11969 Southampton, NY 11969 Phone: (631) 283-6143 Phone: (631) 283-6143

Email: davidmartine@shinnecock.org Email: adminoffice@shinnecock.org

### Attachment 10

Floating Energy Storage System Project

**Coastal Zone Consistency Assessment Forms** 

### NEW YORK STATE DEPARTMENT OF STATE COASTAL MANAGEMENT PROGRAM

#### Federal Consistency Assessment Form

An applicant, seeking a permit, license, waiver, certification or similar type of approval from a federal agency which is subject to the New York State Coastal Management Program (CMP), shall complete this assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist an applicant in certifying that the proposed activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). It should be completed at the time when the federal application is prepared. The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.

A. <u>APPLICANT</u> (please print)				
1. Name: NYC Energy LLC, c.o. Ed Seaman				
2. Address: 322 West 57th Street, #46U, New York City, NY 10019				
3. Telephone: Area Code ( ) <u>347-739-7137</u>				
B. PROPOSED ACTIVITY				

#### 1. Brief description of activity:

NYC Energy LLC is developing a utility-scale floating energy storage system (FESS) of up to 300 megawatts (MW) of energy using stacked energy storage containers and associated equipment on barges within Wallabout Channel. The Project will secure three barges, each measuring 146 feet long by 130 feet wide (56,940 square feet total), to a total of 12 30-inch diameter steel pipe piles installed in Wallabout Channel off Berth 20 of Pier K at the Brooklyn Navy Yard. Approximately 5.2 acres within Wallabout Channel will be dredged to the federally-authorized depth of 20 feet at MLW to accommodate the barges. The FESS will interconnect to the NYISO-controlled NYS Transmission System via two 138 kV interconnection cables that will run beneath public and private ROWs to ConEdison's existing Hudson Avenue East Substation in Brooklyn. The barges are anticipated to remain connected to the grid for the 30-year duration of NYC Energy's lease agreement with Brooklyn Navy Yard. If needed, the barges can be easily disconnected from the mooring piles and the interconnection conduits such that they can be moved out of the channel in a matter of hours.

#### 2. Purpose of activity

The Project is intended to integrate clean, renewable energy into NYC's electric grid to further NY State's climate goals under the 2019 Climate Leadership and Community Protection Act which established a target of 6,000 MW of battery energy storage capacity in the state by 2030. The successful deployment of this innovative FESS concept will create a scalable modular design that could be replicated throughout the country.

3. Location of activity

Kings	Brooklyn	from Pier K, Brooklyn Navy Yard
County	City, Town, or Village	Street or Site Description
4. Type of federal permit/license required:	USACE Section 404, Section 10,	Section 14
5. Federal application number, if known:		

Wallahout Channel offshore

6. If a state permit/license was issued or is required for the proposed activity, identify the state agency and provide the application number, if known:

NYSDEC Section 401 WQC and permits under Articles 15 and 25

C.	. <u>COASTAL ASSESSMENT</u> Check either "YES" or "NO" for each of these questions. The numbers following each question refer to the policies described in the CMP document (see footnote on page 2) which may be affected by the proposed activity.				
1. V	Will the proposed activity result in any of the following:	YES/	<u>'NO</u>		
	a. Large physical change to a site within the coastal area which will require the preparation of an environmental impact statement? (11, 22, 25, 32, 37, 38, 41, 43)		X		
	b. Physical alteration of more than two acres of land along the shoreline, land under water or coastal waters? (2, 11, 12, 20, 28, 35, 44)	X			
	c. Revitalization/redevelopment of a deteriorated or underutilized waterfront site? (1)		X		
	d. Reduction of existing or potential public access to or along coastal waters? (19, 20)		X		
	e. Adverse effect upon the commercial or recreational use of coastal fish resources? (9, 10)		X		
	f. Siting of a facility essential to the exploration, development, and production of energy resources in coastal waters or on the Outer Continental Shelf? (29)		X		
	g. Siting of a facility essential to the generation or transmission of energy? (27)	X			
	h. Mining, excavation, or dredging activities, or the placement of dredged or fill material in coastal waters? (15, 35)	X			
	i. Discharge of toxics, hazardous substances or other pollutants into coastal waters? (8, 15, 35)		X		
	j. Draining of stormwater runoff or sewer overflows into coastal waters? (33)	X			
	k. Transport, storage, treatment, or disposal of solid wastes or hazardous materials? (36, 39)	X			
	1. Adverse effect upon land or water uses within the State's small harbors? (4)		X		
2. V	Will the proposed activity affect, or be located in, on, or adjacent to any of the following:	YES/	<u>'NO</u>		
	a. State designated freshwater or tidal wetland? (44)	X			
	b. Federally designated flood and/or state designated erosion hazard area? (11, 12, 17)	X			
	c. State designated significant fish and/or wildlife habitat? (7)		X		
	d. State designated significant scenic resource or area? (24)		X		
	e. State designated important agricultural lands? (26)		X		
	f. Beach, dune or Barrier Island? (12)		X		
	g. Major ports of Albany, Buffalo, Ogdensburg, Oswego or New York? (3)		X		
	h. State, county, or local park? (19, 20)		X		
	i. Historic resource listed on the National or State Register of Historic Places? (23)	X			
3. V	Will the proposed activity require any of the following:	YES/	<u>'NO</u>		
	a. Waterfront site? (2, 21, 22)	X			
	b. Provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (5)		X		
	c. Construction or reconstruction of a flood or erosion control structure? (13, 14, 16)		X		
	d. State water quality permit or certification? (30, 38, 40)	X			
	e. State air quality permit or certification? (41, 43)		X		
4. V	Will the proposed activity occur within and/or affect an area covered by a State approved local	v			

waterfront revitalization program? (see policies in local program document\*)

New York City Waterfront Revitalization Program

X

#### D. ADDITIONAL STEPS

- 1. If all of the questions in Section C are answered "NO", then the applicant or agency shall complete Section E and submit the documentation required by Section F.
- 2. If any of the questions in Section C are answered "YES", then the applicant or agent is advised to consult the CMP, or where appropriate, the local waterfront revitalization program document.\* The proposed activity must be analyzed in more detail with respect to the applicable state or local coastal policies. On a separate page(s), the applicant or agent shall: (a) identify, by their policy numbers, which coastal policies are affected by the activity, (b) briefly assess the effects of the activity upon the policy, and (c) state how the activity is consistent with each policy. Following the completion of this written assessment, the applicant or agency shall complete Section E and submit the documentation required by Section F.

#### E. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with the State's CMP or the approved local waterfront revitalization program, as appropriate. 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, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name:	NYC Energy LLC, c.o. Ed Seaman		
Address: 322 West 57th	Street, #46U, New York City, NY 10019		
Telephone: Area Code ( )	347-739-7137		
Applicant/Agent Signature:	. <u>.</u>	Date:	
Applicant/Agent Signature:		Date:	

#### F. SUBMISSION REQUIREMENTS

- 1. The applicant or agent shall submit the following documents to the New York State Department of State, Office of Planning and Development, Attn: Consistency Review Unit, One Commerce Plaza-Suite 1010, 99 Washington Avenue Suite 1010, Albany, New York 12231.
  - a. Copy of original signed form.
  - b. Copy of the completed federal agency application.
  - c. Other available information which would support the certification of consistency.
- 2. The applicant or agent shall also submit a copy of this completed form along with his/her application to the federal agency.
- 3. If there are any questions regarding the submission of this form, contact the Department of State at (518) 474-6000.

\* These state and local documents are available for inspection at the offices of many federal agencies, Department of Environmental Conservation and Department of State regional offices, and the appropriate regional and county planning agencies. Local program documents are also available for inspection at the offices of the appropriate local government.

#### **Additional Information**

As determined by the Federal Consistency Assessment Form, the Proposed Actions require detailed assessment for several New York State Coastal Management Program policies, including policies 2, 11, 12, 15, 17, 20, 21, 22, 23, 27, 28, 30, 33, 35, 36, 38, 39, 40, and 44. The consistency assessment is provided below for all questions that were answered "yes" in the CAF.

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

The FESS will 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 will 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 will 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. **Enclosure 1** to this assessment provides an analysis of site and design alternatives for the FESS Project.

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 will be prepared offsite and floated into place, which will result in very limited disturbance to existing water-dependent uses and adjacent properties. Construction and maintenance requiring the delivery of heavy or oversized equipment will be readily accommodated by the FESS's in-water location and able to avoid the disruption of vehicle transportation in New York City. It will also be resilient to sea level rise and flood risk, as the mooring piles will be of sufficient length and capacity to support the barges under these conditions and the barges will always float. 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 will improve its resiliency as compared to siting a similar battery energy storage system on land. The floating system will not hinder existing or future waterfront, water-dependent, or water-enhanced uses of Berth 20 of Pier K or the surrounding properties because it will not require the construction of landside structures. Due to its location next to Pier K at Berth 20, it will not hinder vessel activity in Wallabout Channel. At the end of its 30-year lease with Brooklyn Navy Yard, NYC Energy will 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 is 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 will not result in any significant adverse impacts to floodplains, as it will not affect flood levels, flood risk, or the flow of flood waters within the project site or adjacent areas. It will not alter the existing site elevation, will not alter the shoreline of the site, and will

not encroach into adjacent properties. The FESS will comprise three barges floating at the water's surface and moored to piles installed to a top elevation of +25 feet NAVD88, and of sufficient capacity and length to secure the barges in storm conditions and with consideration of sea level rise. The barges will 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 will be secured to the barges and will not be at risk of detachment in storm conditions. The transmission lines will be installed in a trench backfilled with thermal sand beneath City streets along the interconnection route and will not be susceptible to flood damage. Therefore, the Project is 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 will include dredging within Wallabout Channel to provide sufficient depth for construction access and mooring of the FESS. Dredging will 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 hydrographic survey conducted in August 2022 to provide updated bathymetry for Wallabout Channel 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 will 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 will not result in increased erosion to the shoreline, which is bulkheaded, and will not affect the net supply or flow of sediments in the East River or Wallabout Channel. Dredging will be conducted in accordance with the measures specified in permits issued by USACE and NYSDEC. Therefore, the Project is 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 will be located within a flood hazard area, the barges will always float and the mooring piles will 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 will be installed below grade and will not be susceptible to damage from flooding. Therefore, the Project is consistent with this policy.

Policy 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 in a manner compatible with adjoining uses.

While the barges would be located over underwater lands owned by the State of New York, the Project site is in an M3-1 heavy industrial zoning district which is not conducive to public recreational use. Therefore, this policy does not apply.

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, etc.) 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 will not be associated with any water dependent or water-enhanced recreational uses, it also will not hinder future recreational uses of Wallabout Channel should they occur. Therefore, the Project is 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 will not hinder future recreational uses of the Channel should they occur. Therefore, the Project is 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), an abandoned substation building on Pier K, was constructed in 1940 and was also a non-contributing resource in the Historic District; this structure was a shell of a one-story brick-walled enclosure and was demolished in the early 2000s prior to this application. The FESS will be moored at Berth 20 of Pier K and minor modifications to the pier will be required to accommodate an emergency access roadway and security fence and trenching on the pier for the interconnection. Building 390 will be demolished because of the Project, which will not constitute an adverse effect due to the building's non-contributing status. The FESS will be constructed offsite and floated into the mooring site, thereby minimizing potential construction related impacts to Pier K. The barges will be of a size and character similar to other industrial facilities in the Brooklyn Navy Yard and will not adversely affect the historic industrial character of the Historic District. The interconnection route will 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 will 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 will be installed at the depth of existing utilities and manholes will be installed at regular intervals for access. The streets along the interconnection route do not contain decorative historic paving treatments, and NYC Energy will incorporate best management practices during construction to avoid construction-related impacts to adjacent architectural resources during the transmission line installation. The Project will not isolate any historic standing structures from or significantly alter their setting or visual relationship with the streetscape. It also will 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 is 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 will 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 will 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 will 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 will be located in an area zoned for industrial uses and will 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 will run beneath established rights-of-way alongside other existing utility lines. Installing the energy storage containers on a barges will ensure that the stored energy will be resilient to flood events, as the barges will always float and will not be at risk of flooding, thereby improving reliability with respect to the electrical grid. Therefore, the Project is consistent with this policy.

# Policy 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.

The Project does not include ice management practices and is not influenced by ice management practices within the Brooklyn Navy Yard. Therefore, this policy is not applicable.

Policy 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.

The Project does not involve the discharge of municipal, industrial, or commercial pollutants into coastal waters. Therefore, this policy is not applicable.

# Policy 33: Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.

Stormwater runoff from the barges will be similar to stormwater discharge from a pier or other overwater structure and will not result in adverse impacts to surface waters. The battery storage containers will be enclosed so there is no potential for leaching into stormwater runoff, and the FESS will not store fuel or other chemicals onsite. Therefore, the Project is 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 will be conducted in accordance with the measures specified in permits issued by the USACE and NYSDEC to minimize impacts to aquatic resources. It will 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 will be placed on a scow without barges overflow, dewatered, and transported offsite for disposal at a licensed facility. While dredging will remove surface sediments to deepen portions of the Channel, it will not alter the substrate composition and will 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 is consistent with this policy.

Policy 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.

The Project does not include the shipment or storage of petroleum or hazardous materials. However, the battery units themselves will contain chemical components. The Project will adhere to safety protocols and procedures developed by the Project sponsor to prevent or minimize the potential for spills into coastal waters and the protocols will include a cleanup and response plan should a spill occur. Therefore, the Project would be consistent with this policy.

# Policy 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.

Neither surface waters nor groundwater are used as potable water supply in the Project area, and the Project will not result in surface or groundwater withdrawal. Measures implemented during construction (e.g., turbidity curtain, dredging with environmental bucket) will reduce the potential for impacts to water quality from sediment resuspension. While dredging may expose some subsurface materials that contain higher levels of contamination based on the 2023 sediment sampling results, the deeper waters will also allow for improved tidal flushing, which will minimize the potential for impacts on water quality. Therefore, the Project is consistent with this policy.

Policy 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.

The Project does not include the transport, storage, treatment, or disposal of solid wastes. 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. Contractors will use best management practices in federal and state permits for transport, storage, treatment, and disposal of hazardous and contaminated materials. Dredged materials will be transported offsite by barges or scow for upland disposal at a licensed facility. Therefore, the Project is consistent with this policy.

Policy 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.

The Project does not include effluent from a steam electric generating or industrial facility. Therefore this policy is not applicable.

# 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 will 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). The Project will 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 will 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 is consistent with this policy.



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### **Draft Memorandum**

**To:** David Oster, DOE

From: Sandy Collins, AKRF

**Date:** June 26, 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 / 1200 MW(hr) of energy 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 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. This memorandum summarizes the alternatives evaluated with respect to site location and alternative in-water designs for the FESS Project. In evaluating these alternatives, consideration was given to site and design requirements including:

- interconnection to an existing substation,
- consistency with the New York City Zoning Resolution and established Zoning Districts,
- spatial requirements, and
- the innovative nature of the Project and loan eligibility.

#### 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

D. Oster, DOE 2 June 26, 2023

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, 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 Agreement. 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 2023 under the 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 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 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<sup>1</sup>. 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 or construction.

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)<sup>2</sup>" 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 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 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 fire and safety issues associated with utility-scale battery energy storage systems also need to be considered.

<sup>&</sup>lt;sup>1</sup> Use Group 18, https://zr.planning.nyc.gov/article-iv/chapter-2#42-15

<sup>&</sup>lt;sup>2</sup> https://zr.planning.nyc.gov/article-xiv/chapter-4#144-00

D. Oster, DOE 4 June 26, 2023

#### **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 granted 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

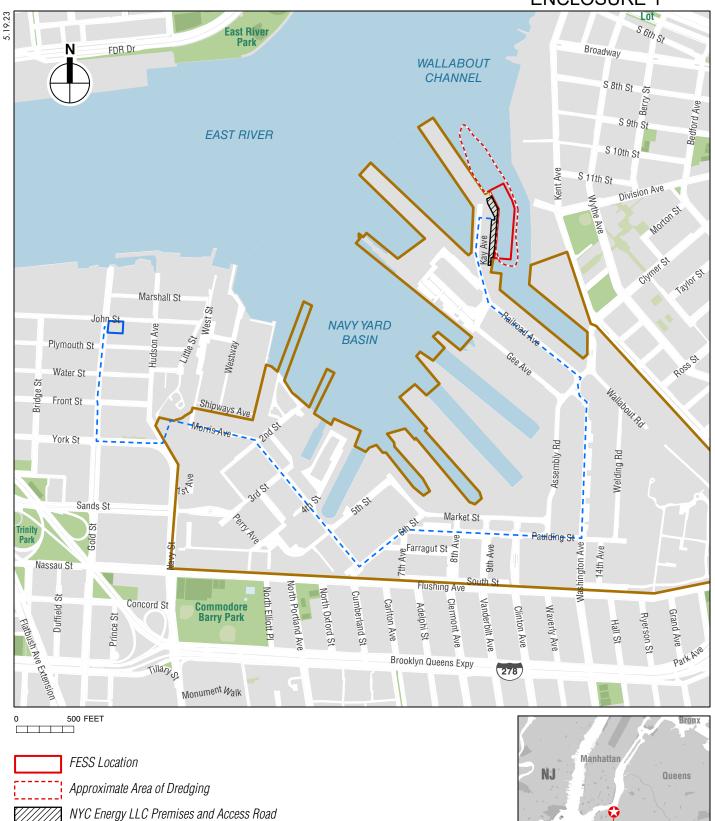
With this alternative, the Project would be completed in two phases, with Phase 2 resulting in the placement of a second barge waterward of the first barge at Berth 20 of Pier K. This alternative would reduce the water depths needed to support the loaded barges, because the weight of the battery storage units would be divided between two barges, thereby reducing the dredging depth. However, this alternative would still require some dredging because Wallabout Channel is a minimum of 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.

D. Oster, DOE 5 June 26, 2023

#### **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 been granted a 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 asof-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 1**



**Project Location** 

**Project Location** 

Brooklyn

Staten

Interconnection Route

Brooklyn Navy Yard Boundary

Location of Substation Modifications



FESS Location

Approximate Area of Dredging

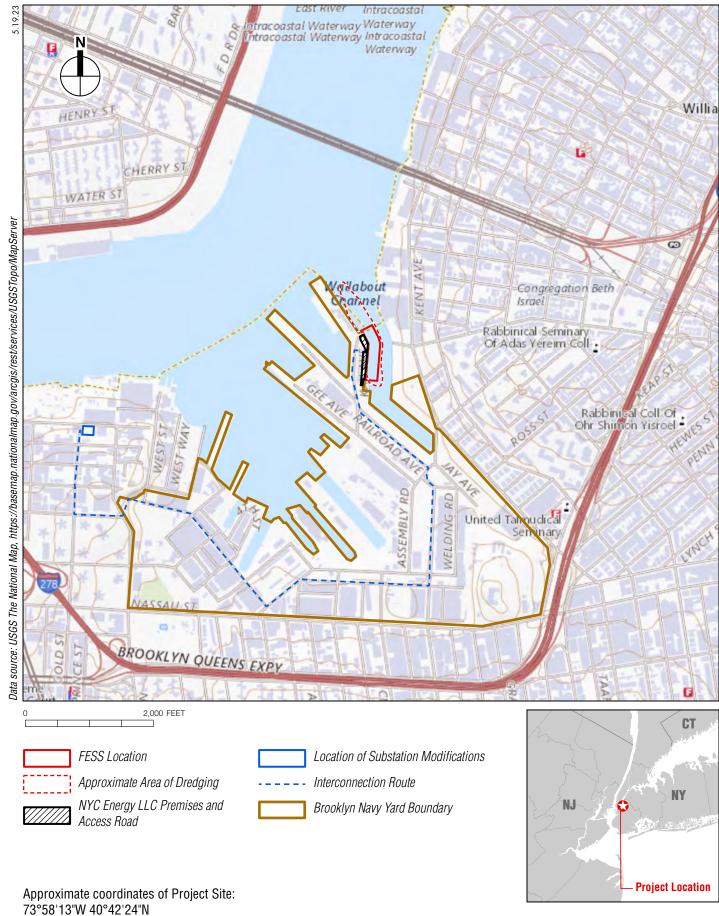
NYC Energy LLC Premises and Access Road

Location of Substation Modifications

Interconnection Route

Brooklyn Navy Yard Boundary

# **ENCLOSURE 1**



USGS Topographic Map - Brooklyn Quadrangle

FOR INTERNAL USE ONLY	WRP No
Date Received:	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 <u>New York City Waterfront Revitalization Program</u> (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:		
Name of Applicant Representative:		
Address:		
Telephone: Email:		
Project site owner (if different than above):		
B. PROPOSED ACTIVITY  If more space is needed, include as an attachment.		
I. Brief description of activity		
2. Purpose of activity		

1

C.	PROJ	ECT LOCATION					
	Borou	gh: Tax B	Slock/Lot(s	):			
	Street	Address:					
	Name	of water body (if located on th	ne waterfr	ont): _			
	_	UIRED ACTIONS OR A at apply.	PPROV	ALS			
Cit	y <b>A</b> ctio	ons/Approvals/Funding					
	City P	lanning Commission	☐ Yes	□N	lo		
		City Map Amendment Zoning Map Amendment Zoning Text Amendment Site Selection – Public Facility Housing Plan & Project Special Permit (if appropriate, specify type:		cation	Zoning Certification Zoning Authorizations Acquisition – Real Property Disposition – Real Property Other, explain:  Renewal other) Expiration	Date:	Concession UDAAP Revocable Consent Franchise
	Board	of Standards and Appeals				= 400	
		Variance (use) Variance (bulk) Special Permit		_	Renewal Other) Expiratio	n Date	
	Other	City Approvals					
		Legislation Rulemaking Construction of Public Facilit 384 (b) (4) Approval Other, explain:	ties		Funding for Construction, specify: Policy or Plan, specify: Funding of Program, specify: Permits, specify:		
Sta	ite <b>A</b> ct	ions/Approvals/Funding					
		Funding for Construction, sp Funding of a Program, specify	ecify: y:		Permit type and number		
Fed	deral A	actions/Approvals/Funding					
		Federal permit or license, spe	ecify Agen	су:	Permit type and number	r:	
		Funding for Construction, sp	ecify:				
		i unung or a riogram, specily	γ.				
		Other, explain:					
ls tl	nis hein				ion for Permits?		1 No

#### **E. LOCATION QUESTIONS**

١.	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 <u>Maps – Part III</u> 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
	$\square$ 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 <u>NYC Waterfront Revitalization Program</u>. 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.

ı	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.			

				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	e Hinder
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.		
The a Wate canno "The New Mana	certification  applicant or agent must certify that the proposed activity is consistent with New York City's approper front Revitalization Program, pursuant to New York State's Coastal Management Program. If this certification can be made, complete this proposed activity shall not be undertaken. If this certification can be made, complete this proposed activity complies with New York State's approved Coastal Management Program as expectively's approved Local Waterfront Revitalization Program, pursuant to New York State's agement Program, and will be conducted in a manner consistent with such program."	rtification rtification ressed	on on. in
Addr			_
	For the second s		
Appli	icant/Agent's Signature:		_
Date:	:		

#### **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 <a href="NYS Department of State">NYS Department of State</a> 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 (I) 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

The project site is located within the City's designated Coastal Zone Boundary. Therefore, in accordance with the guidelines of the *CEQR Technical Manual*, an evaluation of the proposed project's consistency with the revised WRP policies was undertaken. New York City's WRP includes 10 principal policies designed to maximize the benefits derived from economic development, environmental preservation, and public use of the waterfront, while minimizing the conflicts among those objectives. Assessments of the proposed project's conformity with the City's WRP policies are provided below for all policy questions answered "Promote" or "Hinder" on the CAF.

**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 will 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 will 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 will 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 will 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. **Enclosure 1** to this assessment provides an analysis of site and design alternatives for the FESS Project.

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 will not inhibit the safe and efficient operation of the SMIA as an industrial or maritime area; rather, it will be consistent with industrial uses and will improve the potential for maritime operations associated with dredging for the Project. Due to its location at Berth 20 of Pier K, the FESS will not hinder vessel activity in Wallabout Channel and will not preclude the use of Pier K or other Berths or future use of the existing berth where the FESS will be moored for other water-dependent purposes. The FESS is 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 will be the first utility-scale floating battery storage system in the U.S., and

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its water-borne nature is a contributing factor to the qualification of the Project for this type of loan. Siting the Project on land will not involve the same level of innovation and could potentially put this funding opportunity at risk. 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 will be prepared offsite and floated into place, which will result in very limited disturbance to existing water-dependent uses and adjacent properties. Construction and maintenance requiring the delivery of heavy or oversized equipment will be readily accommodated by the FESS's in-water location and able to avoid the disruption of vehicle transportation in New York City. It will also be resilient to sea level rise and flood risk, as described under Policy 6.2, as the mooring piles will be of sufficient length and capacity to support the barges under these conditions and the barges will 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 will 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 will 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 promotes this policy.

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

The Project will be located south of the existing City ferry landing at Kent Avenue in Wallabout Channel and will not interfere with ferry operations. Dredging for the Project will 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 in August 2022. 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 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 will be removed from the 5.2-acre dredge area within the channel. Deepening of the dredged area will improve navigation within the SMIA for vessels that use the Channel. The dredged material will be placed on a scow and transported for disposal at a licensed facility. The Project will 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 will be decommissioned and removed from the Project site. Minor surface rehabilitation of the bulkhead cap will be required and will be completed above the surface of the water using land-based equipment. The mooring piles that will be installed to support the FESS will be at the existing Berth 20 of Pier K. The Project will connect to the Hudson Avenue East Substation through a new transmission line installed beneath existing rights-of-way but will not require potable water or sanitary sewer connections. The FESS will not interfere with transportation within or around the Brooklyn Navy Yard, nor will it hinder use of Wallabout Channel by vessels. Therefore, the Project promotes 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 will minimize the impacts of flooding and will be consistent with Policy 6.2. Therefore, it promotes 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 will be in an industrially zoned area that does not support commercial boat operations and it will not include development of upland properties. Dredging of a portion of Wallabout Channel will 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 will also improve navigation for larger vessels, as described above under Policy 2.4. The FESS will be moored at Berth 20 of Pier K at the Brooklyn Navy Yard which will keep it at the pier edge and will not create an obstruction in Wallabout Channel or result in hazards to navigation. The Project will incorporate resiliency measures consistent with Policy 6.2, as described below. Therefore, the Project promotes this policy.

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

The Project will 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 will be moored. The in-kind in-place surface repairs made to the existing bulkhead will 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 will not preclude the subsequent use or future adaptation of the shoreline for vessel docking, berthing, or tie up. As discussed above under Policy 2.1, the in-water design of the Project will be beneficial in terms of safety and resiliency and will be consistent with the goals outlined in the City's Zoning Resolution for Brooklyn Navy Yard. The existing berth and proposed mooring piles will 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 promotes 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 will 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., NYSDEC littoral zone tidal wetlands). The Project will 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 will 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 is 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 58.9 feet of bottom habitat in the footprint of the mooring piles will 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, will create deeper waters and additional foraging habitat that could potentially be used by sturgeon migrating through the East River. Measures implemented during construction will 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, and minimizing draft depth and speeds of construction vessels. DOE initiated consultation with NMFS under Section 7 of the Endangered Species Act on May 9, 2023, concluding that all effects of the proposed action will be insignificant or discountable and determined that the FESS is not likely to adversely affect any listed species or critical habitat under NOAA Fisheries' jurisdiction. NMFS concurred with DOE's conclusion in a letter dated May 25, 2023. Therefore, the Project promotes this policy.

Policy 4.8: Maintain and protect living aquatic resources.

Construction of the Project will result in temporary increases in suspended sediment associated with dredging and pile installation. It will 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 will be performed in accordance with the measures specified in permits issued by the USACE and NYSDEC to minimize impacts to aquatic resources. It will 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 will be placed on a scow without barge overflow, dewatered, and transported offsite for disposal at a licensed facility. While dredging will remove surface sediments to deepen this portion of the Channel, it will not alter the substrate composition and will not result in adverse effects to sediment quality. The dredged area will undergo some natural deposition of sediments over time, and the deeper waters will allow flushing to occur such that the exposed sediments will not have a longterm impact on water quality in the area. Benthic organisms will be expected to quickly recolonize the dredged area, as similar habitat is present in the surrounding area that will be unaffected or minimally affected by the project activities and will serve as the source of colonizing invertebrates. The loss of approximately 58.9 square feet of bottom habitat from the mooring piles and 1.3 acres of additional overwater coverage along the shoreline will be minimal compared to similar habitat that will continue to be available in the area. The Project will not result in significant long-term adverse impacts to water quality or aquatic habitat. Therefore, it promotes 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 will not require potable water, vessel pumpout, or sanitary sewer services. The only direct discharge related to the Project will be stormwater overflow from the barge surface. The battery storage containers will be enclosed so there is no potential for leaching into stormwater runoff. The FESS will not store fuel or other chemicals onsite. Stormwater runoff from the barges will be similar to stormwater discharge from a pier or other overwater structure and will not result in adverse impacts to surface waters. Therefore, the Project promotes 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 will 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 will make the waters too deep to be classified as NYSDEC littoral zone tidal wetlands. The Applicant will conduct a hydrographic survey within the proposed dredge footprint and barge mooring area to confirm the existing water depths and that there are no NYSDEC littoral zone tidal wetlands. Should NYSDEC littoral zone tidal wetlands be present within the dredging footprint, the Project will 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 will coordinate with NYSDEC during the permitting process with respect to any mitigation required to offset the loss of NYSDEC littoral zone tidal wetlands Dredging will not affect sediment processes within Wallabout Channel and will not impact NYSDEC littoral zone tidal wetlands outside the Project site. Therefore, the Project promotes 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 will not result in any significant adverse impacts to floodplains, as it will not affect flood levels, flood risk, or the flow of flood waters within the project site or adjacent areas. It will not alter the existing site elevation, will not alter the bulkheaded shoreline of the site, and will not encroach into adjacent properties. The FESS will comprise three barges floating at the water's surface and moored to piles installed to a top elevation of +25 feet NAVD88, and of sufficient capacity and length to secure the barges in storm conditions and with consideration of sea level rise. The barges will 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 will be secured to the barges and will not be at risk of detachment in storm conditions. The transmission lines will be installed in a trench backfilled with thermal sand beneath City streets along the interconnection route and will not be susceptible to flood damage. Ultimately, the Project will result in an energy storage and delivery system for offshore wind generation that will be resilient to sea level rise and flooding given the floating design and the below-grade interconnection route. Therefore, the Project promotes 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 will 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 **Attachment 1**.

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 will 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 design life.

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 will be in place for 30 years.

The transmission line will be located below grade beneath existing rights-of-way in the 1-percent annual chance floodplain (BFEs of +11 and +12 feet). While they will be below the floodplain elevation, these lines will not be susceptible to flooding under existing or projected conditions as they will be below ground, installed within a trench backfilled with thermal sand, and designed to be resistant to moisture. The FESS will be moored to piles with a top elevation of +25 feet NAVD88, which will be above the flood elevation throughout the 30-year design life of the Project. The FESS will always float and will 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 will be installed below-grade and will not be vulnerable to MHHW under existing or projected conditions. No in-water project elements will 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 will be within Zone VE and will 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 will 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 will continue to be within the floodplain under all projected scenarios. The top elevation of the mooring piles will be well above current and projected flood elevations and will allow the FESS to rise and fall with the tides and water levels during flood events. They will 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 will be enclosed in the energy storage containers and will connect to the transmission route through the bulkhead. The transmission lines will 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 will any planned adaptive measures protect the feature in the future from flooding?

As described in Step 1(c), none of the project elements will 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 will be of sufficient length and capacity to withstand coastal hazards such as waves, high winds, or debris. The FESS will be able to rise and fall with the water level during flood events while remaining secured to the piles and will always float. The energy storage containers onboard will be fully enclosed and will not be susceptible to flooding or damage from precipitation. The interconnection line will be buried and will not be susceptible to these additional coastal hazards.

d. Describe how the project will 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 will not alter the bulkheaded shoreline or encroach into adjacent areas. Deepening of the Project site will not alter tidal flow or surface water levels such that behavior of the water will change during flood conditions. During and following construction, activities at the Project site will be managed as described above under Policy 5.2. Any excavation will 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 will not involve the construction of new vulnerable or hazardous features and will 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 will remain above future flood elevations, and containment of all electrical and mechanical systems on the FESS. By design, the FESS will be resilient to sea level rise and storm events under projected conditions given that it is a floating system. The barges will be secured to the mooring piles, will rise and fall with the water levels, and will float at all times. It will be stable during storm events in Zone VE given these design factors. The interconnection line will be installed below-grade within a concrete conduit and will not be susceptible to coastal hazards. Further, the FESS will provide grid resiliency since it will 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 will 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 will 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 will 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 will 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 NYSDECapproved SMP will be conducted in accordance with a Waste Handling Plan that will be prepared and implemented for the Project. This will 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 will be transported offsite by barges or scow for disposal at a licensed facility. With these protocols in place, the Project will 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 will not change any urban design features such that the context of natural or built visual resources is substantially altered. The FESS will be located along the shoreline of a former naval shipyard that is now an industrial park and will be adjacent to an active City ferry landing. The FESS barges that will be positioned within Wallabout Channel will be similar to other industrial vessels moored within the Brooklyn Navy Yard, such as the Matilde concrete barge currently moored at Pier K and will not significantly alter its visual qualities when viewed from the surrounding area. The FESS will be approximately the same height as the adjacent salt shed structure on the pier and railway trestle to the south. It will not introduce any incompatible visual elements to the setting of the Brooklyn Navy Yard and will 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 will be consistent with the industrial nature of the surrounding area. Therefore, it will 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

9

Yard Historic District. The Substation L Building (Building 390), an abandoned substation building on Pier K, was constructed in 1940 and was also a non-contributing resource in the Historic District; this structure was a shell of a one-story brick-walled enclosure and was demolished in the early 2000s prior to this application. The FESS will be moored at the existing Berth 20 of Pier K and minor modifications to the pier will be required to accommodate the mooring piles, an emergency access roadway and security fence, and trenching beneath the pier for the interconnection. Building 390 will be demolished as a result of the Project, which will not constitute an adverse effect due to the building's non-contributing status. The FESS will be constructed offsite and floated into the mooring site, thereby minimizing potential construction related impacts to Pier K. The barges will be of a size and character similar to other industrial facilities in the Brooklyn Navy Yard and will not adversely affect the historic industrial character of the Historic District. The interconnection route will 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 will 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 will be installed at the depth of existing utilities and manholes will be installed at regular intervals for access. The streets along the interconnection route do not contain decorative historic paving treatments, and NYC Energy will incorporate best management practices during construction to avoid construction-related impacts to adjacent architectural resources during the transmission line installation. The Project will not isolate any historic standing structures from or significantly alter their setting or visual relationship with the streetscape. It also will 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 will 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 will not extend beneath the depth of existing fill material, and the Project will not be expected to encounter artifacts. Should any unexpected resources be encountered during construction, NYC Energy will coordinate with SHPO to avoid adverse impacts in accordance with the Unanticipated Discovery Plan that was prepared for the Project. DOE initiated consultation with SHPO for the project on February 27, 2023, and received a No Adverse Effect letter from SHPO on March 16, 2023. Therefore, the Project will promote this policy.

#### 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 Project				
Location	Wallabout Channel, Brooklyn Navy Yard, New York City				
Type(s)	Residential, Commercial, Commercial, Community Facility Parkland, Open Space, and Natural Areas Tidal Wetland Restoration Community Facility Facility Industrial Uses				
	Over-water Structures Shoreline Structures Transportation Wastewater Treatment/Drainage Coastal Protection				
Description	Placement of 3 side-by-side 146 ft x 130 ft barges equipped with battery energy storage containers and associated equipment within Wallabout Channel at Berth 20 of Pier K in the Brooklyn Navy Yard. Project would establish 300 MW of battery storage capacity. Transmission lines installed beneath existing ROW to connect the FESS to the Hudson Ave East Substation. Dredging required within 5.2 acres of Wallabout Channel to the USACE authorized depth of 20 feet at MLW to accommodate the barges. Installation of 12 30-inch diameter pipe piles to secure the barges. If needed, barges can be disconnected from piles and interconnection conduits so they can be moved out of channel in a matter of hours.				
Planned Completion Date	May-24				
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

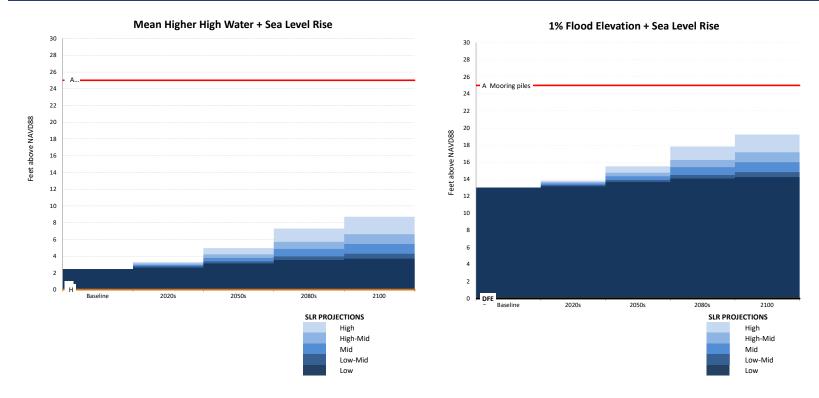
# Establish current tidal and flood heights.

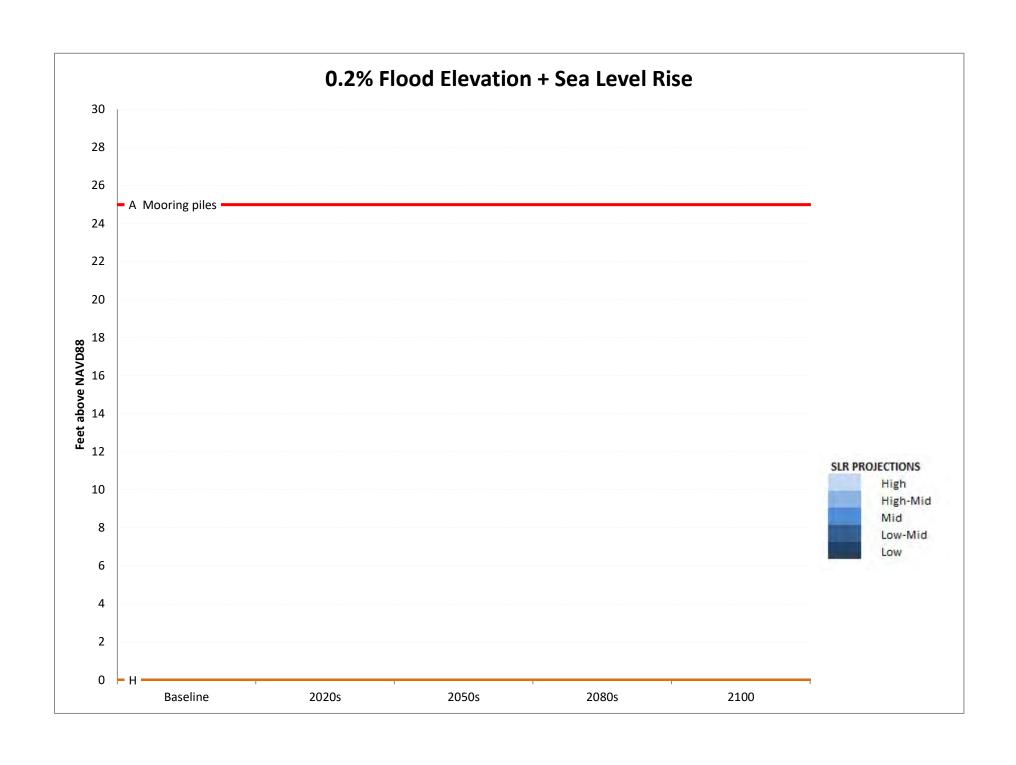
	FT (NAVD88)	Feet	Datum	Source
MHHW	2.47	2.47	NAVD88	Appendix A, Station 8518699 Williamsburg Bridge
1% flood height	13.00	13.00	NAVD88	NYC Flood Hazard Mapper
Design flood elevation	>			
As relevant:				
0.2% flood height	>			

# 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 0.2% flood height 25.0 Feet NAVD88 22.5 #VALUE! Top elevation of mooring piles in Wallabout Channel next to Pier K in Brooklyn Navy Yard Vulnerable Critical Potentially Hazardous Feet NAVD88 Description of Planned Uses and Materials Vulnerable Critical Potentially Hazardous Feet NAVD88 Description of Planned Uses and Materials Vulnerable Critical Potentially Hazardous Other Feet NAVD88 Description of Planned Uses and Materials Vulnerable Critical Potentially Hazardous Feet NAVD88 Description of Planned Uses and Materials Vulnerable Critical Potentially Hazardous Other NAVD88 Description of Planned Uses and Materials Vulnerable Critical Potentially Hazardous Other NAVD88 Feet Description of Planned Uses and Materials Vulnerable Critical Potentially Hazardous NAVD88 Description of Planned Uses and Materials





SLR	(ft)

	Low	Low-M	id Mi	id Hi	gh-Mid H	igh	
Baseline	0.0	00 (	0.00	0.00	0.00	0.00	2014
2020s	0.	17 (	0.33	0.50	0.67	0.83	2020s
2050s	0.0	67 (	).92	1.33	1.75	2.50	2050s
2080s	1.0	08 1	L.50	2.42	3.25	4.83	2080s
2100	1	25 1	L.83	3.00	4.17	6.25	2100

# MHHW+SLR (ft above NAVD88)

	Low	Low-N	1id Mi	id High-	Mid High	
Baseline	2.	47	2.47	2.47	2.47	2.47
2020s	2.	64	2.80	2.97	3.14	3.30
2050s	3.	14	3.39	3.80	4.22	4.97
2080s	3.	.55	3.97	4.89	5.72	7.30
2100	3.	.72	4.30	5.47	6.64	8.72

# 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)

0.270.0211 (10.00000 11710.000)					
	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			
В	0	0			
С	0	0			
D	0	0			
E	0	0			
F	0	0			
G	0	0			
Н	0	0			
DFE	0.00	0.00			

SLR (in)

Low	Lov	w-Mid	Mid H	ligh-Mid I	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**

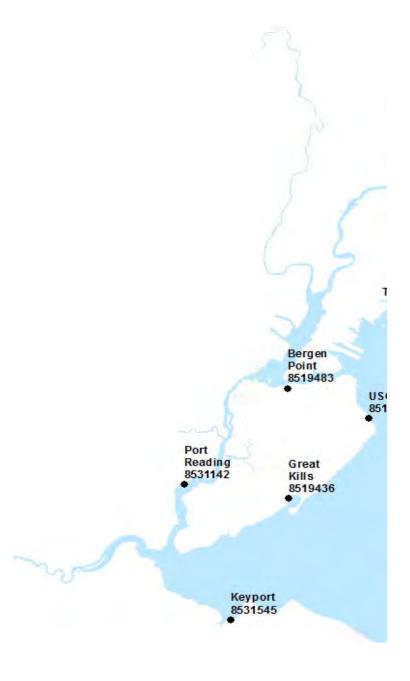
(to be used only when a site survey is unavailable)

		Source MHHW (Feet,	Adjusted MHHW (Feet,
Station ID	Station Name	NAVD88)*	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

 $<sup>^{</sup>st}$  MHHW values include an addition 0.33 feet to account for changes in sea level since the 1983-200

Source
NOAA Tides and Currents
NOAA VDATUM
NOAA Tides and Currents
NOAA VDATUM
NOAA Tides and Currents
NOAA Tides and Currents
NOAA VDATUM
NOAA VDATUM
NOAA VDATUM
NOAA Tides and Currents

)1 tidal epoch.







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### **Draft Memorandum**

**To:** David Oster, DOE

From: Sandy Collins, AKRF

**Date:** June 26, 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 / 1200 MW(hr) of energy 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 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. This memorandum summarizes the alternatives evaluated with respect to site location and alternative in-water designs for the FESS Project. In evaluating these alternatives, consideration was given to site and design requirements including:

- interconnection to an existing substation,
- consistency with the New York City Zoning Resolution and established Zoning Districts,
- spatial requirements, and
- the innovative nature of the Project and loan eligibility.

#### 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

D. Oster, DOE 2 June 26, 2023

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, 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 Agreement. 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 2023 under the 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 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 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<sup>1</sup>. 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 or construction.

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)<sup>2</sup>" 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 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 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 fire and safety issues associated with utility-scale battery energy storage systems also need to be considered.

<sup>&</sup>lt;sup>1</sup> Use Group 18, https://zr.planning.nyc.gov/article-iv/chapter-2#42-15

<sup>&</sup>lt;sup>2</sup> https://zr.planning.nyc.gov/article-xiv/chapter-4#144-00

D. Oster, DOE 4 June 26, 2023

#### **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 granted 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

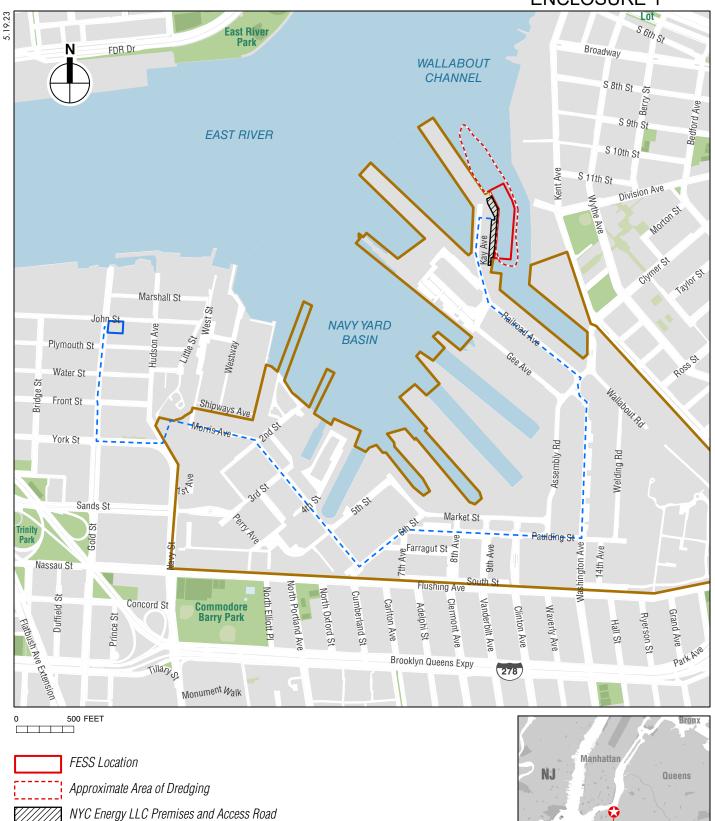
With this alternative, the Project would be completed in two phases, with Phase 2 resulting in the placement of a second barge waterward of the first barge at Berth 20 of Pier K. This alternative would reduce the water depths needed to support the loaded barges, because the weight of the battery storage units would be divided between two barges, thereby reducing the dredging depth. However, this alternative would still require some dredging because Wallabout Channel is a minimum of 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.

D. Oster, DOE 5 June 26, 2023

#### **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 been granted a 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 asof-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 1**



**Project Location** 

**Project Location** 

Brooklyn

Staten

Interconnection Route

Brooklyn Navy Yard Boundary

Location of Substation Modifications



FESS Location

Approximate Area of Dredging

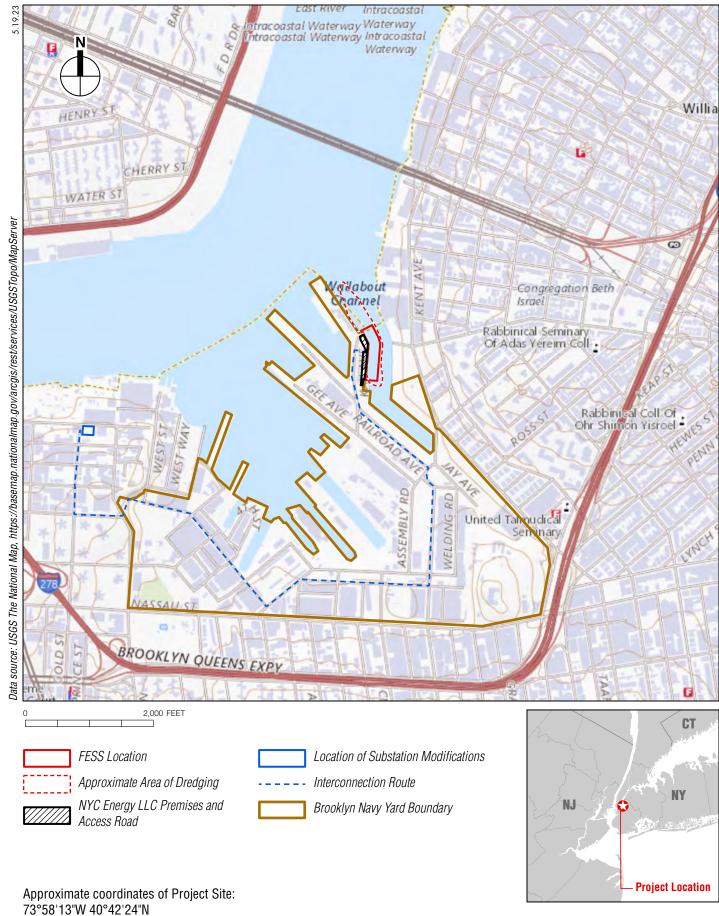
NYC Energy LLC Premises and Access Road

Location of Substation Modifications

Interconnection Route

Brooklyn Navy Yard Boundary

# **ENCLOSURE 1**



USGS Topographic Map - Brooklyn Quadrangle