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VIA EMAIL

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jay.ryan@bakerbotts.com

November 8, 2023

Christina Gomer
Technical Advisor
Grid Infrastructure, Permitting & Technical Assistance
Grid Deployment Office
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

RE: CHPE LLC
Docket No. PP-481-2
Application of CHPE LLC for Amendment to Presidential Permit

Dear Ms. Gomer:

In accordance with Executive Order 10,485, as amended by Executive Order 12,038, and the United States Department of Energy's (DOE) implementing regulations, 10 C.F.R. § 205.320 *et seq.*, please find enclosed for filing the *Application of CHPE LLC for Amendment to Presidential Permit* (Application). As required, CHPE LLC has submitted a filing fee in the amount of $150 through *Pay.Gov*.

Article 13 of CHPE LLC's Presidential Permit requires CHPE LLC to provide DOE with written notification "of changes of a substantive nature" in the circumstances upon which the Presidential Permit was issued. In the instant filing, CHPE LLC is proposing to move the location of a horizontal directional drill (HDD) site approximately 1,000 feet from its current location on Randall's Island in Manhattan, New York. The proposed change in location of the HDD installation site does not materially change either the Champlain Hudson Power Express Project (Project) or the environmental impacts associated with the Project as evaluated in DOE's

Final Environmental Impact Statement for the Champlain Hudson Power Express Transmission Line Project (DOE/EIS-0447) or DOE's Supplement Analysis for the Champlin Hudson Power Express Project (DOE/EIS-0447-SA-1) issued in April 2021. Additionally, there is no change to the Project's transmission facilities in accordance with Article 5 of the permit.

CHPE does not believe the relocation of the HDD site is a substantive change to the project that triggers notification to DOE pursuant to Article 13. If, however, DOE views the relocation of the HDD installation site as a substantive change to the Project, CHPE LLC requests that the DOE consider the information contained herein to be sufficient notification to DOE of the proposed change. In order to timely meet CHPE LLC's construction schedule, CHPE LLC respectfully requests that the DOE issue written authorization approving the new location of the HDD site on or before November 30, 2023.

Out of an abundance of caution, and to preserve its construction schedule, CHPE LLC has styled the information regarding the change in location of the HDD site as an application to amend the presidential permit. If DOE determines a formal amendment is required, the HDD location change is ready to be processed as an amendment in accordance with applicable DOE regulations. If DOE processes the change in HDD location as an amendment, CHPE LLC renews its request to DOE that DOE approve the proposed route modification and amend Presidential Permit No. 481-2 on or before November 30, 2023.

Please do not hesitate to contact me if you have any questions regarding this matter.

Sincerely,

Jay Ryan

cc: Jeremiah Sheehan (CHPE)
Josh Bagnato (CHPE)
Sean Murphy (Flycatcher)

UNITED STATES OF AMERICA

BEFORE THE DEPARTMENT OF ENERGY

CHPE LLC

Docket No. PP-481-2

APPLICATION OF CHPE LLC FOR AMENDMENT TO PRESIDENTIAL PERMIT

November 8, 2023

UNITED STATES OF AMERICA

BEFORE THE DEPARTMENT OF ENERGY

CHPE LLC	**)**	**DOCKET NO. PP-481-2**

APPLICATION OF CHPE LLC FOR

AMENDMENT TO PRESIDENTIAL PERMIT

Pursuant to Executive Order 10,485 as amended by Executive Order 12,038, and applicable regulations of the United States Department of Energy (DOE), 10 C.F.R. §§ 205.320 *et seq*, CHPE LLC (Applicant) respectfully files this application to amend Presidential Permit No. 481-2 (PP-481-2) to approve the relocation of a horizontal directional drill (HDD) installation site for the Champlain Hudson Power Express Project (Project). Specifically, CHPE LLC seeks to relocate the site of an HDD installation on Randall's Island located in Manhattan, New York approximately 1,000 feet from its current location.

I. BACKGROUND

On October 6, 2014, DOE issued a Presidential Permit (PP-362) authorizing the predecessor of CHPE, LLC[1] to construct, operate, and maintain the Project. The Project, as initially permitted, was a 1,000 Megawatt (MW), high-voltage direct current (HVDC), underground and underwater merchant transmission system that will cross the United States-Canada international border near the Town of Champlain, New York, extend approximately 336

[1] PP-362 was issued to Champlain Hudson Power Express, Inc. (CHPEI), an affiliate of CHPE LLC.

miles south through New York State, and interconnect to facilities located in Queens, New York. The aquatic segments of the transmission line will primarily be submerged in Lake Champlain and in the Hudson, Harlem, and East rivers. The terrestrial portions of the transmission line will primarily be buried in existing road and railroad rights-of-way (ROW).

On April 6, 2020, CHPEI and CHPE LLC jointly filed an application with DOE requesting that DOE amend or, in the alternative, rescind and reissue Presidential Permit No. PP-362 to enable the transfer of the permit from CHPEI to its affiliate CHPE LLC. The transfer of the permit was necessitated by an internal corporate reorganization. In response to the joint application, DOE issued a Presidential permit to CHPE LLC (PP-481) on July 21, 2020.

On April 30, 2021, DOE issued Presidential Permit No. PP-481-1, amending CHPE LLC's permit to incorporate minor revisions to the Project route and authorizing an increase in the Project's capacity from 1,000 MW to 1,250 MW. On March 22, 2022, DOE issued Presidential Permit No. PP-481-2, clarifying that the Project is authorized to inject 1,250 MW at the Astoria Annex Substation.

II. PROPOSED CHANGE TO RANDALL'S ISLAND HDD LOCATION

A. Preliminary Information Required By DOE Regulations

1.1 *Project Description*

The description of the Project as approved in PP-481-2 remains unchanged except for the change discussed below.

1.2 *Maps of Proposed Route Modifications*

Maps identifying the proposed change to the Randall's Island HDD site are provided below.

1.3 *Bulk Power System Information*

Bulk power system information related to the Project has not changed since the issuance of PP-481-2.

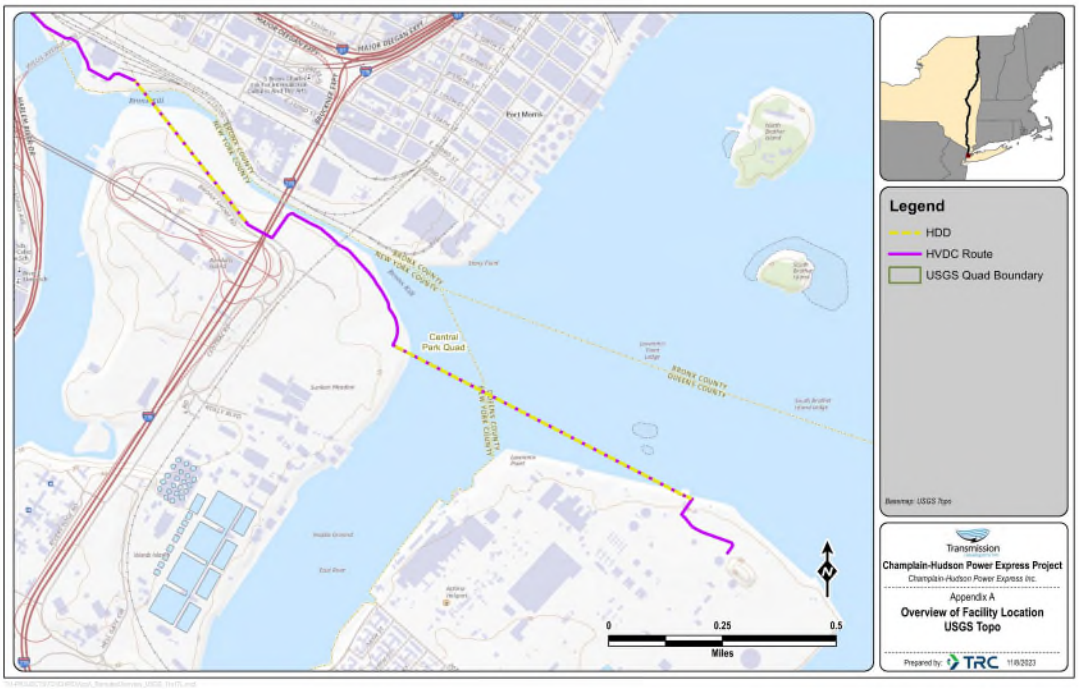
1.4 *Other Information Regarding the Applicant*

In response to 10 C.F.R. § 205.322(a), "Information Regarding the Applicant," Applicant hereby incorporates by reference the information provided in its April 6, 2020 application requesting that DOE amend or, in the alternative, rescind and reissue Presidential Permit No. PP-362. The information regarding Applicant has not changed since the April 6, 2020 filing and the proposed change discussed below does not affect or alter the information regarding the Applicant.

B. Proposed Change to Location of HDD Installation on Randall's Island

The Project will access a converter station located at the Astoria Complex in Queens, New York through an HDD under the East River. The HDD location was planned to be sited along the northeastern section of Randall's Island, a New York City park, as depicted in Figure 1 below. In the DOE's Supplement Analysis for the Champlin Hudson Power Express Project (DOE/EIS-0447-SA-1), this routing, including the HDD location, was referred to as the "Harlem Rail Yard Alternative."

Figure 1

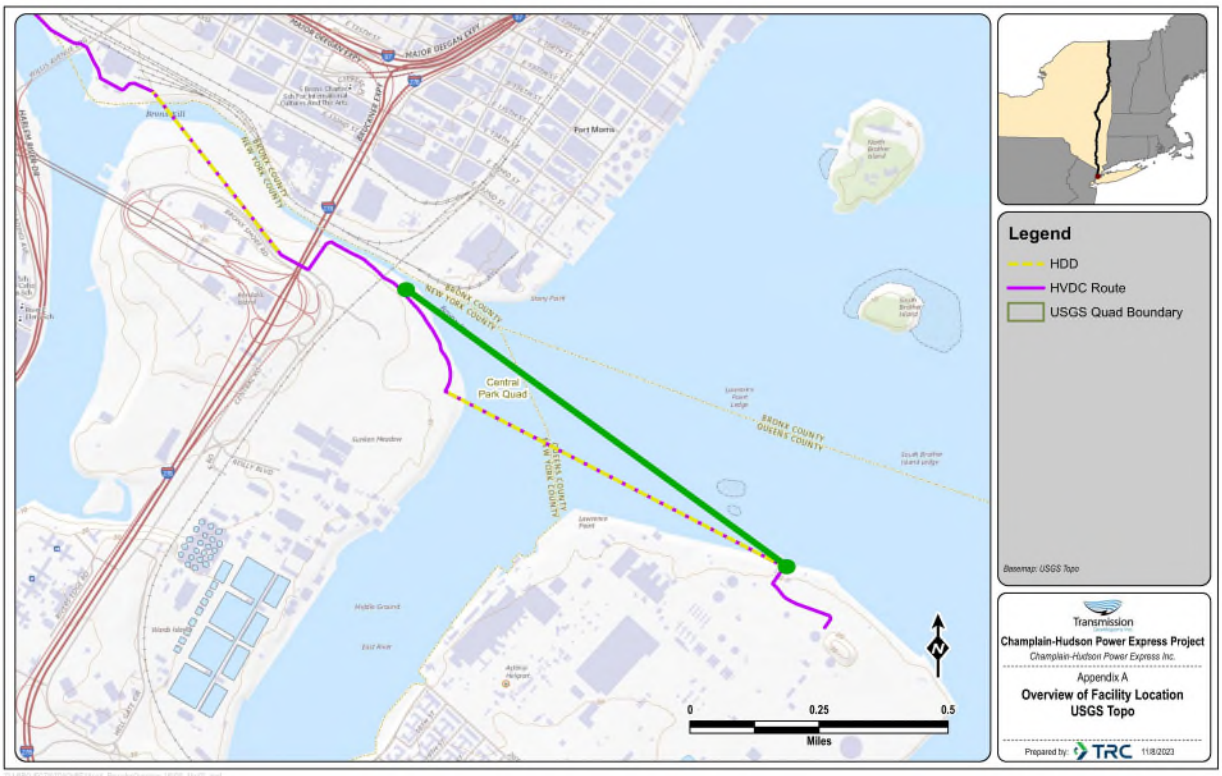


Extensive geotechnical investigations have revealed two critical geological formations that make the current HDD launch area location infeasible. First, the water depth immediately off the HDD launch point on Randall's Island is significantly deeper than shown on NOAA nautical charts. Consequently, the HDD entry and exit points would need to be sited in an area that allows for proper curvature of the HDD entry and exit angles. To address these curvature requirements would necessitate moving the HDD installation further inland within existing recreational fields on Randall's Island. Importantly, the Permittees are operating on Randall's Island pursuant to a Revocable Consent issued by New York City and the New York City Department of Parks and Recreation (NYC Parks); however, the terms of the Revocable Consent prohibit construction activity on recreational fields during periods when the fields are typically used for sports activities. The limited construction window required by NYC Parks requires CHPE LLC to identify another

location for the HDD because the HDD installation is a continuous process that would extend into seasons of significant recreational activity on the Randall's Island fields.

Additionally, and more critically, there is a fault line under the East River. If this fault line shifts, it would damage the plastic casing that would ordinarily line the HDD bores. Therefore, for reliability reasons, steel casings instead of plastic casings will be required within the bore holes. However, the minimum bending radius for steel casing is 1,200 feet, which is the design needed to allow for only minor horizontal bending and compound curves. Connecting the permitted HDD launch point to the available connection point in Astoria would exceed these thresholds. To address the constraints revealed by the geotechnical investigations, CHPE LLC conducted several briefings, forums for questions and feedback, and field visits in late 2022 and throughout 2023 with NYC Parks, the Randall's Island Park Alliance, the New York State Department of Environmental Conservation (NYSDEC), and the New York State Department of Public Service (NYSDPS). These discussions focused on appropriately balancing the many competing interests involved at Randall's Island, including the technical challenges of an East River HDD crossing and the minimization and avoidance of impacts to recreational resources. Based on this consultation and outreach, it was determined that the only practicable alternative would be to relocate HDD operations approximately 1,000 feet away from the existing launch site in an area along the northern border of Randall's Island adjacent to the Bronx Kill and existing route (Proposed HDD Site) as depicted in Figure 2 below. CHPE LLC will also temporarily use an area just west of the HDD launch site within the Bronx Kill to stage the steel pipes needed for the HDD.

Figure 2



There is an existing tidal wetland located in close proximity to the Bronx Kill Swing Bridge that would be temporarily impacted for approximately 8 to 16 months. Due to the workspace required to install the HDD crossing of the Bronx Kill and the East River, as well as temporary construction access and installation of a splice vault, temporary impacts will occur within approximately 0.61 acres of tidal wetland, and approximately 0.39 acres of state-regulated adjacent areas during construction. The construction sequence within wetlands would typically consist of installation of sediment and erosion control measures, access matting, followed by vegetation clearing within the Project corridor (tree stumps would only be removed where necessary), removal and stockpiling of soil as needed, installation of the steel and then PVC conduit, and

refilling of the trench and bore pit. Due to HDD operations, once drilling begins it must continue until completion to avoid the risk of collapse in the HDD bore.

Sediment and erosion control measures will include the installation of silt fence, wetland protection fence, and turbidity curtain around the work area as well as the installation of a layer of geotextile fabric over the marsh soils to protect existing soil composition. Timber mats will be layered to set up work access and helical piles will be utilized to stabilize the stacked timber mats. No permanent fill or infrastructure will remain in the tidal wetland upon completion of construction.

With regard to the HDD staging area within the Bronx Kill, impacts would be limited to installation of temporary structures and shading. A turbidity curtain and erosion and sediment control measures will enclose this staging area to avoid and minimize impacts to sediment and water quality as well as limit access to the area by larger aquatic species. Upon completion of the staging operations, CHPE LLC will undertake cleanup and restoration and, if needed, stream banks will be reestablished to original grade. Where applicable, the banks will be stabilized by seeding with native grasses, mulched, and, if needed, planted with native or naturalized shrub seedlings.

CHPE LLC has worked with NYC Parks, the Randall's Island Parks Association, NYSDEC, and other stakeholders to develop the Randall's Island Salt Marsh Restoration Plan. The Salt Marsh Restoration Plan, which is included as Appendix A, provides for pre-restoration surveys, soil preparation and grading, and salt marsh plantings. Post revegetation monitoring will continue for 5 years, or until all plantings have a 90% survival rate, whichever occurs later. CHPE LLC is consulting with National Oceanic and Atmospheric Administration Fisheries and the U.S. Army Corps of Engineers (Army Corps) regarding the proposed change to the location of the

proposed HDD installation on Randall's Island. CHPE LLC has also sent a Coastal Consistency Certification request to the New York State Department of State. The routing modification was approved by the New York State Public Service Commission on October 13, 2023[2] with the support of the City of New York.[3]

In its Supplement Analysis for the Champlain Hudson Power Express Project (DOE/EIS-0447-SA-1), the DOE concluded that the Harlem Rail Yard Alterative would not result in environmental impacts that were substantially different from the impacts analyzed in the Final Environmental Impact Statement (FEIS). The terrestrial portion of the proposed modification overlaps or is within one-hundred (100) feet of the Harlem Rail Yard Alterative and there is no change in the proposed installation technique. An HDD will be utilized to avoid impacts to aquatic habitat and species. Therefore, there would be no changes from the conclusions of the Supplement Analysis in terms of water resources and quality, aquatic habitat and species, aquatic protected and sensitive species, terrestrial habitat and species, terrestrial protected and sensitive species, visual resources, public health and safety, hazardous materials and wastes, air quality, socioeconomics, cultural resources, land use, transportation and traffic, infrastructure, noise, and environmental justice.

As discussed, the modified route would require construction to occur on and in proximity to a tidal wetland. However, the Army Corps has determined that these wetland impacts would be temporary, and a restoration plan has been developed in consultation with local and state stakeholders.

[2] https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={10792A8B-0000-CC36-B7FC-CB20B05C70B0}
[3] https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={406ADC8A-0000-C71A-A3BB-292852F1105B}

III. CONCLUSION

WHEREFORE, for the reasons stated herein, the Applicant respectfully requests that DOE amend PP-481-2, as required, on or before November 30, 2023 to incorporate the proposed relocation of the HDD installation site on Randall's Island. To the extent that formal amendment of the permit is not required, CHPE LLC requests that DOE issue written authorization of the proposed relocation of the HDD installation on or before November 30, 2023.

Respectfully submitted,

Jay Ryan
Baker Botts LLP
700 K Street, N.W.
Washington, D.C. 20001
(202) 256-9813
jay.ryan@bakerbotts.com

Verification Statement

The undersigned attests that he is an officer of CHPE LLC and that he has read and has knowledge of the matters set forth in this application, and that the facts and representations set forth in said application are true and correct to the best of his knowledge.

By: _____

Title: Executive Vice President & General Counsel

Date: 11/8/23

State of New York)
)ss.:
County of New York)

On the 8th day of November in the year 2023, before me, the undersigned notary public, personally appeared Jeremiah Sheehan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public

Sara Villagomez
Notary Public, State of New York
Reg. No. 01VI0012736
Qualified in New York County
Commission Expires August 25, 2027

OPINION OF COUNSEL

I, Jeremiah Sheehan, Executive Vice President and General Counsel of CHPE LLC, do hereby state and give my opinion, pursuant to 10 C.F.R. § 205.322(a)(6) as follows:

1. I have examined and am familiar with the Certificate of Incorporation and By-laws of CHPE LLC;

2. I have examined and am familiar with the contents of CHPE LLC's Application for Amendment to which this Opinion is attached; and

3. I am of the opinion that the construction, connection, operation and maintenance of the facilities, as described in Presidential Permit No. 481-2 and this Application, are within the corporate power of CHPE LLC as set out in CHPE LLC's Certificate of Incorporation and By-laws, and that CHPE LLC has complied with or will comply with all pertinent Federal and State laws.

Jeremiah Sheehan, Esq.
Executive Vice President and General Counsel

CHPE LLC

Dated November 8, 2023

State of New York)
)ss.:
County of New York)

On the 8th day of November in the year 2023 before me, the undersigned notary public, personally appeared Jeremiah Sheehan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Sara Villagomez
Notary Public, State of New York
Reg. No. 01VI0012736
Qualified in New York County
Commission Expires August 25, 2027

Notary Public

APPENDIX A

RANDALL'S ISLAND SALT MARSH RESTORATION PLAN

Randall's Island Salt Marsh Restoration Plan

Prepared for:

CHPE Properties, Inc. and CHPE, LLC
600 Broadway
Albany, NY 12207

Great Ecology – New York
Office PO Box 357
Glenford, NY 12433

September 2023

GREATecology
ENVIRONMENT + DESIGN

Table of Contents

1.0 INTRODUCTION

CHPE Properties, Inc. and CHPE LLC (together "CHPE") proposes a plan to restore a previously created salt marsh mitigation site next to the Bronx Strait on Randall's Island, (Manhattan, NY), that will be impacted by construction activities associated with the Champlain Hudson Power Express power cable project (Project). The site will be covered with timber mats for approximately 18 months. During this time, the marsh vegetation will be suppressed, and the marsh substrate will likely become compacted from timber mats and heavy machinery. This compaction will alter the elevation profile and microtopography of the site that is crucial for maintaining the specific tidal inundation regimes necessary for supporting characteristic native salt marsh vegetation. The following restoration plan describes the methods that will be used to return the marsh to its existing condition and advance its function following the conclusion of CHPE construction activities on the site.

Figure 1. Restoration Site Location

2.0 RESTORATION PLAN

The restoration design and implementation plan details timing and sequencing for marsh restoration construction, and site preparation and grading to support habitat redevelopment and sustainability.

2.1 Schedule

The salt marsh restoration will begin in the fall following the final construction activities and removal of timber mats. Restoration is estimated to require six to nine months (TABLE 1). Grading and earthwork will begin after pre-restoration activities and be completed before the onset of winter. Planting will occur in early spring in the year following grading.

Table 1. Restoration Implementation Schedule

Implementation Task	Schedule
Pre-restoration activities	Fall prior to plant installation (2025)
Grading, earthwork, and erosion control	Fall / early winter prior to plant installation (2025/2026)
Planting	Early spring following grading (2026)

2.2 Pre-Restoration Activities

Prior to grading activities, initial site preparation activities will include the following:

1. Defining and staking the limits of the work area;
2. Posting signage;
3. Placing construction fencing and signage where required by local jurisdiction and to protect public safety; and
4. Removing any invasive plant species (namely *Phragmites australis*) that are present on the site prior to restoration.

2.3 Substrate Preparation & Grading

2.3.1 Invasive Non-native Species Removal & Management

Prior to grading and planting, invasive plant species will be removed through hand-pulling or mechanical means and without the use of herbicide. Though not currently present on the site to any great extent, common reed (*Phragmites australis*) is a primary anticipated invasive species that will require targeted management if it starts to colonize the site during or after the CHPE HDD construction activities as well as post-restoration. Common reed will not be managed by hand-pulling, but rather by

mechanical of cutting the stalk. If the common reed is growing in water, preferably cutting the stalk below the water line as this will help suffocate and kill the plant. Particularly recalcitrant populations of common reed may require herbicide treatment and will be evaluated as necessary. If herbicide is deemed necessary, best management practices for wetland herbicide applications will be followed. A representative list of additional anticipated invasive species is presented in TABLE 2. CHPE will comply with all NYC Parks standards and regulations related to managing and removing invasive species.

Table 2. Anticipated Invasive Non-native Species Requiring Management

Common Name	Scientific Name
tree-of-heaven	*Ailanthus altissima*
garlic mustard	*Alliaria petiolata*
porcelain berry	*Ampelopsis glandulosa*
common mugwort	*Artemisia vulgaris*
Oriental bittersweet	*Celastrus orbiculatus*
white mulberry	*Morus alba*
wild parsnip	*Pastinaca sativa*
common reed	*Phragmites australis*
Japanese knotweed	*Reynoutria japonica*
black locust	*Robinia pseudoacacia*

2.3.2 Pollution Prevention

During CHPE construction activities, no hazardous chemicals or petroleum will be stored or mixed within the wetland buffer area. Bentonite and additives (which are non-toxic and biodegradable) will be temporarily stored in sealed containers within the wetland buffer area near the HDD work area during HDD operations.

2.3.3 Substrate Preparation & Amendments

Due to heavy equipment that will be used during CHPE HDD construction activities on the site, significant compaction of the marsh substrate is anticipated. Best management practices will be utilized to minimize compaction during CHPE construction activities; however, some substrate compaction will be unavoidable. Immediately following the conclusion of the CHPE HDD construction activities, the substrates at the site will be de-compacted to restore drainage characteristics and prevent ponding.

Although the clean sand substrate intended for use of the restoration is low in nutrients,

the high nutrient levels of tidal waters in the New York City area should provide sufficient nutrients for the salt marsh plantings and the addition of fertilizer is not anticipated to be necessary. A geotechnical survey will be conducted to identify the texture and color of the substrate currently at the site (below the existing peat/root zone). The clean sand that is selected to regrade the site will be matched to the texture and color of the existing parent substrate. Great Ecology has worked on several salt marsh restoration projects in the Hudson-Raritan Estuary, including the original salt marsh mitigation at this site, and knows through this past regional experience that fertilization and substrate amendments are typically not required for success.

2.3.4 Grading

The slope of the restoration site significantly influences the success of a marsh restoration. A gentle incline (generally 1-3%) provides a larger area for the establishment and persistence of intertidal marsh vegetation. The existing grade of the site did not allow for the high marsh plants that were included in the original design to survive. This, along with predicted rates of sea level rise within the Hudson-Raritan Estuary, will require the site to have a gentler grade transition from the upland to the low marsh. This will not only allow for a high marsh plant community to flourish but will also allow for the low marsh to migrate inland over time in response to sea level rise. The baseline elevation data collected in the marsh prior to the construction activities will be used in conjunction with the most recent sea level rise predictions available for the estuary to inform the grading design of the restoration. A variety of interactive, online sea level rise mappers are available for the Hudson-Raritan Estuary (e.g. Cornell-CALS, Scenic Hudson, Columbia Univ., NOAA, etc.) and will be used to determine surface water elevation changes over the anticipated life span of the project.

Efforts will be made to minimize substrate additional compaction during restoration, regrading, substrate preparation, and spreading of clean sand. The restoration area will conform to existing grades on all edges of the site. Using survey equipment to establish the desired elevation and contours of the graded surface, the contractor will stake out the desired locations and establish a filling/cutting sequence. The contractor will excavate and remove any substrate that is above the desired elevation and fill any depressions or low spots with sand. Following this, the contractor will compact the fill material using compaction equipment such as vibratory rollers or plate compactors to achieve the desired level of compaction, following the specifications for the type of substrate/composition desired. Any unwanted compaction will be addressed by disking to loosen the substrate surface.

Conversely, if the site is over-excavated and clean sand is used to achieve the design grades, there might be compaction or settlement following sand placement.

2.4 Shoreline Stabilization

2.4.1 Riprap & Rock Sills

The Bronx Kill, where the site is situated, is a narrow tidal strait between Randall's Island and the Bronx and connects the Harlem River to the East River. The tidal currents flowing through the narrow strait can be of high velocity, depending on tidal stage, requiring shoreline protection and erosion control measures. Riprap and rock sills installed during the original construction of the mitigation site continue to serve their intended purpose by preventing erosion and protecting marsh vegetation nearly 20 years post-construction.

The CHPE construction activities are not anticipated to alter the existing riprap and sill configuration. No alterations to the existing riprap or rock sills are recommended in this restoration plan, other than amending any deficiencies or damages that are identified after CHPE construction activities have finished.

2.5 Tree Replacement

Approximately 25 trees are planned to be removed in preparation for the CHPE construction activities. Any tree removals will be performed per the requirements of NYC Parks Tree Valuation, Removal, and Replacement protocols, permitting and regulations. These trees will be appraised by NYC Parks, and the permits issued by NYC Parks will determine the replacement requirements for the removed trees. The final list of tree species used for replacement will be developed in consultation with NYC Parks.

2.6 Salt Marsh Planting Plan

This restoration plan proposes three plant community zones defined by elevation and frequency of tidal inundation (Figure 2): intertidal low marsh, which is adapted to daily, prolonged tidal inundation; high marsh, which is adapted to less frequent tidal inundation during extreme high tides and storm surge events; and supratidal marsh fringe, which has a drier condition that allows for woody vegetation to survive – a higher level of biodiversity is seen in this zone due to having greater freshwater input via upland runoff.

The preliminary planting palette includes only plant materials native to salt marshes of The Hudson-Raritan Estuary. To the extent practicable, plant material will be sourced

that is ecotypic of the greater New York – New Jersey metropolitan area. The preliminary planting palette and potential establishment methods are provided in TABLE 3. The plant palette will be confirmed and approved prior to the restoration effort in consultation with New York State Department of Environmental Conservation (NYSDEC), the City of New York, and the Randalls Island Park Alliance.

The largest planting zone by area in the marsh restoration is intertidal low marsh dominated by saltmarsh cordgrass (*Spartina alterniflora*). The intertidal low marsh is a near monoculture of *S. alterniflora.* This zone will be planted within the Mean Tide Level (MTL) and Mean High Water (MHW) elevations.

The high marsh will be dominated by marsh hay cordgrass (*Spartina patens*), saltgrass (*Distichilis spicata*) and big cordgrass (*Spartina cynosuroides*). *S. cynosuroides* is regionally uncommon, especially in New York City, so the re-establishment of this species is of particular importance. The high marsh has more plant species diversity than the intertidal low marsh and will also have plantings of sea lavender (*Limonium carolinana*) and saltmarsh aster (*Symphyotrichum tenuifolium*). This zone will be planted within the Mean High Water (MHW) and Mean High High Water (MHHW) elevations.

The supratidal marsh fringe zone will be dominated by groundsel tree (*Baccharis halimifolia*) and marsh elder (*Iva frutescens*) and will also contain species such as seaside goldenrod (*Solidago sempervirens*), rose mallow (*Hibiscus moscheutos*), and switchgrass (*Panicum virgatum*). This zone will be planted above the MHHW elevation zone.

Plants will be installed either as plugs or transplanted containers from nurseries. Establishment methods will ultimately be determined by the availability of plant material. For plugs and container material, plant layout and spacing over the large project area will be driven by species compatibility and elevational zone. Planting plans and typical plant layout templates will be provided in future construction document submittal to direct planting layout. The contractor will use flags or tape to demarcate planting layouts onsite per plans, and all site layouts will be approved by the landscape architect or restoration ecologist prior to planting installation.

Figure 2. Conceptual Restoration Site Plan

Table 3. Preliminary Planting Palette

Common Name	Scientific Name	Plant Form	Establishment Method
Low Marsh			
saltmarsh cordgrass	*Spartina alterniflora*	Graminoid	Plugs
High Marsh			
sea lavender	*Limonium carolinianum*	Forb	Plugs
saltgrass	*Distichilis spicata*	Graminoid	Plugs
common glasswort	*Salicornia depressa*	Forb	Plugs
marsh hay cordgrass	*Spartina patens*	Graminoid	Plugs
big cordgrass	*Spartina cynosuroides*	Graminoid	Plugs
saltmarsh aster	*Symphyotrichum tenuifolium*	Forb	Plugs
Supratidal Marsh Fringe			
groundsel tree	*Baccharis halimifolia*	Shrub	Container
rose mallow	*Hibiscus moscheutos*	Forb	Container
marsh elder	*Iva frutescens*	Shrub	Container
switchgrass	*Panicum virgatum*	Graminoid	Plugs
beach plum	*Prunus serotina*	Small Tree	Container
seaside goldenrod	*Solidago sempervirens*	Forb	Plugs

2.6.1 General Plant Selection, Inspection, and Watering

Plant material will be obtained from nursery sources. All container and plug plant material will be obtained from within the Mid-Atlantic Ocean/Long Island Sound watershed if possible. If plant material cannot be provided from local nursery sources, it may be provided from the closest commercially available sources. Plants must be certified by the supplier (nursery) to be free of exotic pests prior to delivery. The landscape architect or restoration ecologist will inspect and approve all plant material prior to installation. Substitutions for species listed in the proposed palette will not be allowed unless approved by the project landscape architect or restoration ecologist. Prior to planting, all planted areas will be adequately watered. Attempts will be made to coordinate planting with rain events. Planting of both container plants and plugs should occur in mid- to late-spring (May to early-June) for optimum success. Planting that takes place during the heat of the summer will stress the plants and lead to survival failure. Fall plantings will not provide adequate time for roots systems to develop prior to winter and will also likely lead to high levels of survival failure.

2.6.2 Container and Box Plant Specifications

The project restoration ecologist or landscape architect will oversee the delivery of plants

to the site in a healthy and vigorous condition before installation. Low quality plants that are root bound, stunted, infested, diseased, or otherwise unacceptable will not be installed.

Container plants will be installed in ecologically appropriate locations and natural groupings as directed in planting plans and details provided in each construction document submittal. The contractor may use flags or tape to indicate planting groups and layouts for final approval by the landscape architect or restoration ecologist. The landscape architect or restoration ecologist will coordinate with the contractor to confirm plant layout follows the plans and maximizes potential habitat quality and plant survivability.

Container and Box Plant Installation Steps

Before planting, the contractor will confirm that the planting area substrate is moistened adequately from rainfall or irrigation, so the first few inches of substrate are saturated. The volumetric substrate moisture level, in both the planting substrate and the root balls of all plants, prior to, during, and after planting will be above permanent wilting point and below field capacity for the site substrate, as measured with a digital moisture meter. The contractor will install container plants using standard horticultural practice:

1. Ensure all plants are thoroughly watered in their containers before planting;
2. Dig a planting pit appropriately sized per planting details. Break up clods and roughen the sides of the planting pit to remove any compacting or glazing;
3. Partially backfill the pit with clean sand that matches details and specifications and gently tamp and moisten the substrate to eliminate settling;
4. Remove the plant from its container and using tools capable of making clean cuts, shave all outer surfaces of the root ball to remove all circling, descending, and matted roots;
5. For plantings one gallon or larger, create a temporary planting saucer by berming clean sand roughly two feet in diameter around the plant and apply one to two inches of mulch inside the berm; and
6. Thoroughly water and allow the planting saucer to drain.

2.6.3 Plug Specifications

The project restoration ecologist or landscape architect will confirm that plugs are

delivered to the site in a healthy and vigorous condition before they are installed. Any unacceptable plugs will not be installed and will be replaced with material of acceptable quality as determined by the landscape architect or restoration ecologist.

Plugs will be installed in locations as shown in landscape plans and details, and the contractor will flag, tape, or paint areas for plug installation for final approval by the landscape architect or restoration ecologist.

Plug Installation Steps

Before planting, the contractor will confirm that all trays of plugs are thoroughly watered to appropriate volumetric substrate moisture level. The contractor will install plugs with the following steps:

1. Remove herbaceous plugs from cells immediately prior to planting and set to the same depths as they were grown in the nursery bed, to the spacing as indicated in the planting schedule;
2. Set plants plumb, with the root system oriented downward, and held in position until sufficient substrate has been placed by hand around the root mass, taking care to avoid leaving air pockets, bruising or damaging the roots;
3. Set plants upright in an excavated pit so the root ball is level with the substrate surface; and
4. Fill plant pit with clean sand by hand, pushing the mix around and just over the surface of the root ball. Add substrate in layers not more than four inches deep and with each layer thoroughly settled by hand tamping and with water, and free of all voids before the next layer is put into place.

2.7 Exclusion Fencing

The contractor will install exclusion fencing and flagging immediately after planting, ensuring it remains in place for a duration of two to three years. Any damage to the fencing and flagging during the establishment period must be promptly repaired and maintained. This exclusionary measure is crucial to safeguard the plants from trampling by both wildlife and people, as well as from herbivorous wildlife, particularly geese.

The perimeter of the planted area will be enclosed with orange exclusion fencing to deter any trampling by wildlife and humans, thereby protecting the newly planted vegetation. A 6-inch gap will remain at the bottom of the fencing to allow for coastal

wildlife, including horseshoe crabs and other marine invertebrates, to move freely in and out of the site. Inside the planting area, 6-foot wooden stakes will be strategically positioned in an 8-foot grid pattern. These stakes will be interconnected with heavy nylon material, featuring bright orange flagging attached at 2-foot intervals, effectively preventing geese from landing, and causing damage to the planted area.

2.8 Post-Restoration Monitoring

All plants are to be monitored for a minimum of 5 years following the initial planting to ensure a 90% survival rate of the initial plantings. If plant survival is less than 90%, dead plants are to be replaced. CHPE shall notify NYSDEC in writing when planting activities are completed. Should the plantings not be on track to achieve 90% survival by the third year, CHPE must notify NYSDEC and provide an updated approach. CHPE shall also notify NYSDEC by December 31st of each consecutive growing season following initial planting, as to the condition of the plants and the actions taken in the buffer planting area. Both the initial notification and following growing seasons should include plant species, number of plants alive, condition of plants, and photographs of the planting area. For a detailed description of the baseline and post-restoration monitoring methods, please see the Sampling and Analysis Plan in **Appendix A**.

Appendix A

Monitoring, Sampling, and Analysis Plan

1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) has been prepared to provide an overview of the proposed field efforts to establish the baseline ecological conditions of a one-half acre salt marsh on the northeastern end of Randall's Island that will be permanently impacted by construction activities related to the Champlain Hudson Power Express project. This monitoring protocol is designed to assess the pre-construction (baseline) ecological condition of the one-half acre of salt marsh habitat on Randall's Island and the determination of characteristic salt marsh structure and function. This plan will also serve as a blueprint for post-construction monitoring which includes assessment of vegetation development, substrate properties, colonization by benthic invertebrates, and potential for habitat use by fish and wildlife, as described below. Post-construction monitoring will occur once annually, for a minimum of five years following restoration (dependent on the restoration meeting success targets).

2.0 MONITORING PROTOCOLS

The site is located on the northeastern end of Randall's Island connecting the Harlem River to the East River and is subject to tidal fluctuations from the East River and the Long Island Sound to the east. The site is approximately 150 meters long and ranges in width from 10 to 24 meters wide. The site consists of two vegetation zones: intertidal and supra-tidal. All monitoring at the site will be conducted during the period between July 15 and October 7, the time of peak biomass for *S. alterniflora*, to maintain data consistency for comparison of site data over time and with regional marsh monitoring data.

2.1 Transects

Proposed sampling transects depicted in FIGURE 1 will be located by referencing predetermined latitude and longitude data for sample locations (TABLE 1). Great Ecology will use Global Positioning System (GPS) instrumentation to navigate to the stations, which will be verified using available on-the-ground landmarks. Transects will be established perpendicular to the main channel across the restoration site from the seaward edge of the *Spartina alterniflora* zone to the landward extent of the supra-tidal plantings, but not including the seed lawn. Four transects will be evenly spaced across the proposed restoration site as represented in the site plan labeled T1, T2, T3, & T4 with their landward and seaward end points. Transect locations will be permanently marked at the landward and seaward ends using two stakes that are sturdy and easily located.

During monitoring visits, a tape measure will be used to mark the transect line, starting at the supra-tidal end. The person conducting the monitoring (Monitor) will take the tape measure onto the permanent landward stake and walk toward the seaward transect end, also marked by a permanent stake. To minimize trampling of the site, the Monitor will not walk directly to the seaward transect end but will walk diagonally from the supra-tidal marker toward a point a short distance away from the actual seaward marker, but in line with the marker to either the right or left. When in line with the seaward marker, the Monitor will walk to the seaward marker and wrap the measuring tape around the stake, making sure it is taut. This forms a transect line between the landward and seaward stakes. This procedure will be repeated for all pairs of supra- tidal/seaward transect ends at the restoration site.

Noteworthy features occurring along each transect will be recorded relative to the distance marked on the tape measure at the point of occurrence. It is imperative that a notation is made regarding which transect end is being used as zero distance (using the placement method above it will be the landward marker), and that the same transect end (the landward marker) be consistently used as zero distance for all transect monitoring at the restoration site.

Table 1: Proposed Transect Identifiers and Locations

Transect	Land End	Latitude	Longitude	Sea End	Latitude	Longitude
T1	T1-L	40.7973087°N	73.9161662°W	T1-S	40.7973759°N	73.9160395°W
T2	T2-L	40.7970486°N	73.9158627°W	T2-S	40.7971568°N	73.9157265°W
T3	T3-L	40.7968729°N	73.9156572°W	T3-S	40.7969641°N	73.9154450°W
T4	T4-L	40.7966610°N	73.9154074°W	T4-S	40.7967187°N	73.9152586°W
T5*	T5-L*	40.7969576°N	73.9157565°W	T5-S*	40.7970769°N	73.9155637°W

* Transect 5 (T5) was an amendment to this monitoring plan after the baseline monitoring was completed. T5 data will not be compared to baseline data but will inform the success trajectory post-restoration.

2.2 Quadrats

During the baseline monitoring, the Monitor will place quadrats (1.0 m^2) along the transects at two different elevations, one quadrat in the supra-tidal zone and two quadrats in the intertidal zone. During post-restoration when a high-marsh community has been planted between these two zones, an additional quadrat will be added to each transect to capture this zone. Multiple quadrats per elevation zone are not necessary within the zones due to the small size of the project area. Quadrats will be placed semi-randomly on alternating sides of the transect line and within an

area 2.0 meters to either side of the transect line. After placement, the Monitor will orient the quadrats so one side is parallel to the transect line and record the location of upper and lower quadrat boundaries with respect to the tape measurer, (e.g., upper boundary at three meters, lower boundary at four meters). This will be done for all quadrats along all transects at the restoration site.

2.3 Fixed-Point Photo Stations

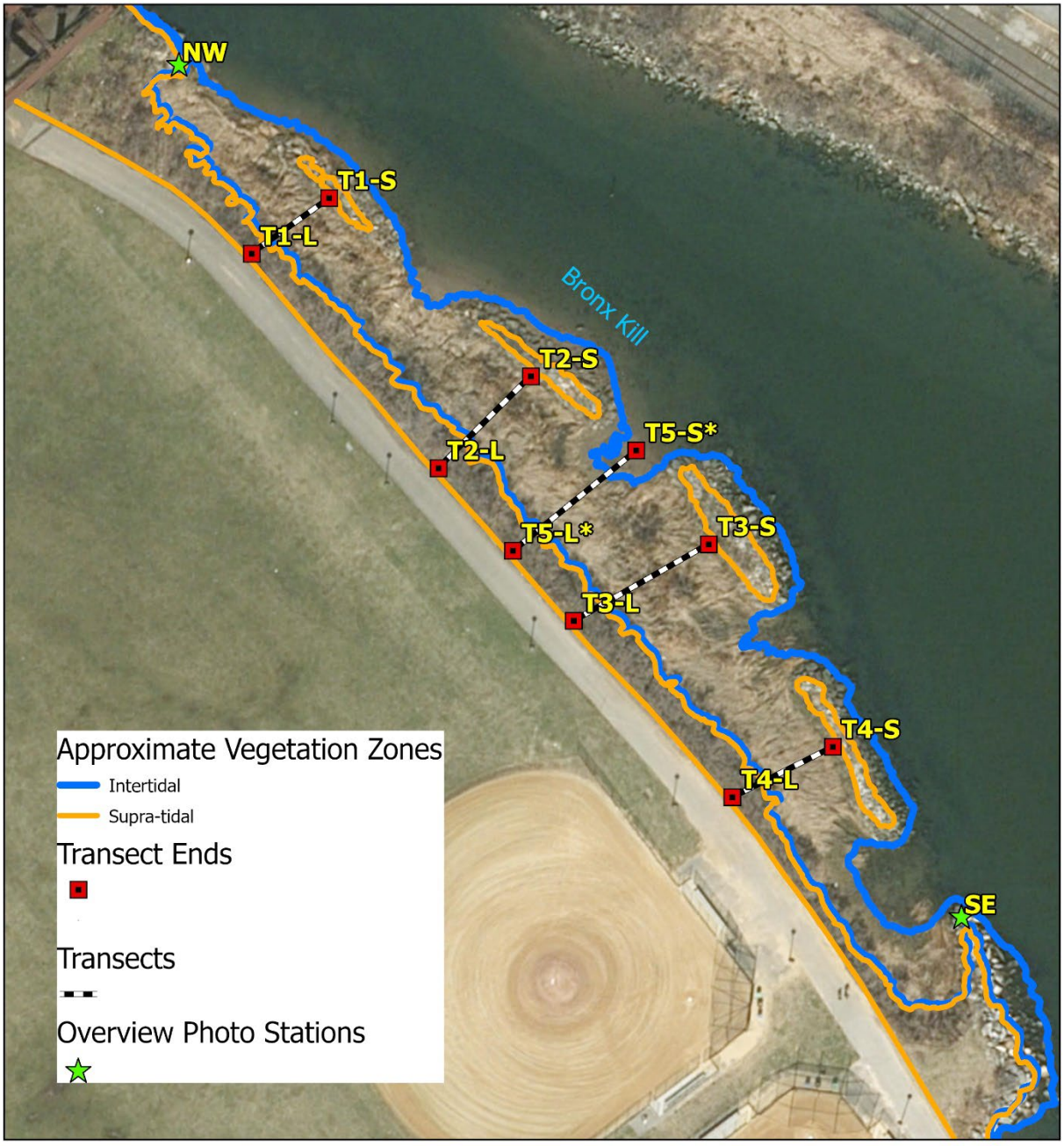
The transect marker stakes (seaward end and landward end) will be used as permanent photo stations for photographic monitoring. Photographs of each transect will be taken facing the seaward transect marker from the landward transect marker and facing the landward transect marker from the seaward transect marker. This will be done for all pairs of transect ends at the restoration site (i.e., eight photos per monitoring visit). Each vegetation monitoring plot will be photographed on the day of monitoring.

In addition, there shall be two overview photographs of the entire site taken consistently from the same locations (TABLE 2) for the duration of all future photo monitoring. Photographs shall be taken at low tide (avoiding spring tide and full moon periods) and shall be labeled with the location code, the direction of view, date, time, and tide.

Table 2: Overview Photo Station Locations

Overview Photo Station	Latitude	Longitude
Northwest	40.7975344°N	73.9162764°W
Southeast	40.7965216°N	73.9150552°W

Figure 1. Monitoring Transects



3.0 MONITORING PARAMETERS

3.1 Vegetation

The following parameters will be monitored to establish the baseline characteristics pre- construction and once annually for at least five years following construction, during the period between July 15 and October 7 (SOURCE), at the project site.

- **Plant species:** All plant species occurring in each quadrat along the transects will be recorded.
- **Stem Density:** All live stems of any plant species found within a 0.25 m^2 section of the quadrat will be counted. The Monitor will divide each 1.0 m^2 quadrat into four 0.25 m^2 sections and randomly select one 0.25 m^2 section for the stem density count. The Monitor will use the same 0.25 m^2 section for plant height measurements; see below.
- **Percent Cover:** The percent cover of all plant species occurring in each quadrat along the transects will be recorded within one of the following cover classes: Trace/<1%, 1-5%, 6-25%, 26-50%, 51-75%, 76-95%, or >95%.
- **Plant Height:** All live stems of any plant species within a 0.25 m^2 section of the quadrat will be measured from the base of the plant to the top of the stem in meters. The Monitor will use the same 0.25 m^2 section of the quadrat for height measurements as was used for stem density count; see above.
- **Signs of disease, predation, or other disturbance** will be monitored in each quadrat and along the length of the transect, recording observations as necessary.
- **Inflorescence:** The presence or absence of flowers or seeds will be noted at each quadrat.
- **Vegetation Zones:** The Monitor will walk along the measuring tape that demarcates the transect line starting at the seaward transect end. The Monitor will note the distance marked on the tape measure at the transition between the supra-tidal and intertidal zones and the dominant species composition of these zones.

3.2 Fixed-Point Photo Stations

The Monitor will take photographs from all designated locations to establish the baseline conditions pre-construction and once annually for at least five years

following construction, during the period between July 15 and October 7, at the project site. The permanent transect marker stakes (seaward end and landward end) will be used as photo stations for photographic monitoring. Overview photograph locations for photographs of the entire restoration site will be consistently used in all photo monitoring. Each vegetation monitoring plot will be photographed on the day of monitoring. The Monitor will take photographs at low tide (avoiding spring tide and full moon periods) in the manner articulated above. The Monitor will label all photographs with the location code, direction of view, date, time, and tide.

3.3 Surface Soil Properties

The following parameters will be monitored to establish the baseline characteristics pre- construction and once in the first, second, fifth, and tenth years following construction, during the period between July 15 and October 7, at low tide avoiding spring tide and full moon periods. The Monitor will measure each soil property parameter once in each quadrat placed along the transect lines. Surface soil properties monitoring will be conducted at the restoration site. Sediment cores will be sampled to 10 cm depth using (e.g., a cylindrical push corer ~5 cm in diameter) to be sent to a laboratory for **% Organic Content** and **Grain Size** analyses. SGS North America of Dayton, NJ will conduct analytical testing of samples for sediment characterization. SGS North America has a New York-specific certification through the Environmental Laboratory Certification Program. Additionally, SGS North America holds a national certification for testing through the National Environmental Laboratory Accreditation Program (NELAP), which offers certification based upon nationwide criteria.

The **Soil Salinity** will be determined in the field using a refractometer and a nest of two piezometer wells. Porewater wells are made from PVC tubing with 0.5-inch (1.27 cm) inside diameter, which are cut to 120 cm (47.24 inches) in length. Solid endcaps are secured with PVC cement. The wells are then perforated with 0.125-inch (3.175 mm) holes in the 1.25-inches (3.175 cm) above the end-cap. The perforated area is wrapped in two layers of common gardening filter fabric, to keep sediment from entering and filling the wells. “T-junctions” are placed on the upper ends of the wells to keep rainwater out and are removed at the time of sampling. A nest of two wells will be buried to a depth of 20 cm and 50cm.Both **Soil pH** and **Soil Redox Potential** will be measured using a multi-parameter soil probe.

Each of these parameters is important in determining the capacity of tidal wetland soils to support the establishment and growth of characteristic native vegetation. The soils data collected can also be combined with the results of geotechnical surveys (pre- and post-construction) to assess baseline suitability for propagation of characteristic native plant species and habitat development.

3.3.1 Chain of Custody Procedures

Chain-of-custody documentation will serve as a tracking tool to confirm that the analytical laboratory undertakes proper the analyses in accordance with this SAP. Chain-of-custody documentation will accompany the preserved samples when transported to the laboratory, and during any subsequent transfer.

3.4 Elevational Profile

Elevation profile data will be collected using a sub-decimeter accuracy Trimble TDC650 GPS receiver at the tidal wetland to establish the baseline conditions pre-construction and once annually for at least five years following construction. These elevation profiles will be used to develop a contour map to guide the substrate placement, grading, and creation of micro-topographic features during restoration of the site. Post-construction monitoring of elevational profiles will determine whether substrate placement, grading, and creation of micro-topographic features during restoration of the site effectively replicated those features in comparison to pre-construction (baseline) conditions, and whether these features are developing along an acceptable trajectory towards meeting suitable elevation criteria for native marsh vegetation establishment as outlined in the Restoration Plan.

3.5 Benthic Invertebrates

The following parameters will be to establish a baseline pre-construction and once annually for at least five years following construction, during the period between July 15 and October 7, at low tide avoiding spring tide and full moon periods.

- **Ribbed Mussels:** Ribbed mussels (*Guekensia demissa*) in each m^2 quadrat will be counted and recorded.
- **Fiddler Crab Burrows:** Fiddler crab (*Uca* sp.) burrows in each m^2 quadrat will be counted and recorded. The presence of live fiddler crabs will also be recorded, where applicable.

- **Other Benthic Invertebrates:** The presence of any additional species observed (e.g., mud snails, amphipods, etc.), will be recorded both within m^2 quadrats and along the length of the transect line, as applicable.

4.0 FUNCTIONAL ASSESSMENT

The Monitor will perform functional assessments to establish the baseline conditions pre- construction and once annually for at least five years following construction, during the period between July 15 and October 7, at the project site. The monitor will use standardized assessment protocols, "Wetlands Evaluation Technique" (WET) and "Evaluation for Planned Wetlands" (EPW), to determine the functional capacity of the marsh ecosystem pre- and post-construction. The benefit of the combined approach is that it provides an assessment of characteristic tidal wetland functions as well as societal values, both of which are essential in formulating restoration concepts for a tidal wetland ecosystem in an urban park setting, such as Randall's Island. The results of the post-restoration functional analysis will be compared to the baseline functional analysis conducted in 2023 to determine the level of function gained (e.g., "uplift") or lost because of site restoration activities, and/or to assess the functional "trajectory" of the site as ecological attributes develop over time.

4.1 Wetlands Evaluation Technique (WET)

WET evaluates the potential of a wetland to perform or support a suite of eleven wetland functions and values:

- Groundwater Recharge
- Groundwater Discharge
- Flood Flow Alteration
- Sediment Stabilization
- Sediment/Toxicant Retention
- Nutrient Removal/Transformation
- Production Export
- Aquatic Diversity/Abundance
- Wildlife Diversity/Abundance
- Recreation
- Uniqueness/Heritage

4.2 Evaluation for Planned Wetlands (EPW)

The EPW method provides a quantitative measure of wetland function across a suite of characteristic wetland attributes:

- Wildlife Habitat,
- Fish Habitat,
- Water Quality,
- Uniqueness/Heritage,
- Shoreline Bank Erosion Control and
- Sediment Stabilization.

For each attribute chosen, 7-20 elements are used to evaluate the functional capacity. A numerical score is applied to each element, weighted according to the relative contribution of each element, and totaled to obtain a functional capacity index (FCI) score.

EPW allows designers to identify elements important to each function so that changes can be made to improve the design based on the output of the assessment.

5.0 Data Quality Assurance

5.1 Positioning

The field team will use a sub-decimeter Trimble TDC650 GPS receiver to obtain the location data for transects ends within 0.1 meters (m) of the identified latitude and longitude in TABLE 1. Tidal stage information will also be available to calculate the mean lower low water elevation. An appropriate, nearby tidal station to be used for reference will be identified during the pre-field reconnaissance.

5.2 Analytical Quality Assurance

The analytical laboratory will follow physical and chemical analysis quality control procedures throughout the proposed characterization effort in compliance with NYSDEC guidance and internal laboratory protocols. Analytical methods will incorporate method blanks, field blanks, rinse blanks, matrix spikes, and duplicate analyses as required per standard method procedures.

Appendix B

Photo Log:

Existing Condition of Impacted Area

Photo 1-A: Overview of to-be Impacted Area from Southeast Extent

Photo 1-B: Overview of to-be Impacted Area from Northwest Extent

Photo 2-A: Monitoring Transect 1: Landward End

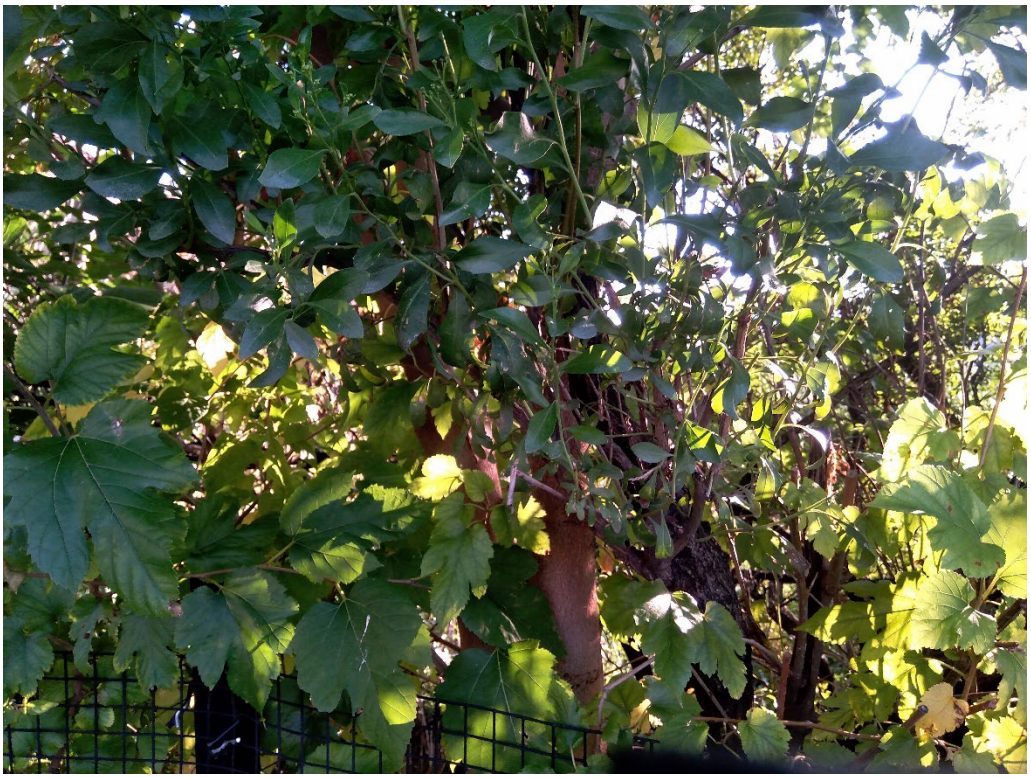


Photo 2-B: Monitoring Transect 1: Seaward End

Photo 3-A: Monitoring Transect 2: Landward End

Photo 3-B: Monitoring Transect 2: Seaward End

Photo 4-A: Monitoring Transect 3: Landward End

Photo 4-B: Monitoring Transect 3: Seaward End

Photo 5-A: Monitoring Transect 4: Landward End

Photo 5-B: Monitoring Transect 4: Seaward End