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# Evergreen Mill Creek Point Mitigation Bank Prospectus

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**Submitted to:**

**Interagency Review Team  
c/o U. S. Army Corps of Engineers  
New York District  
26 Federal Plaza  
New York, New York 10278**



**Submitted by:**



**Evergreen Environmental, LLC**

**June 2024**





June 28, 2024

Mr. Rosita Miranda (via email)  
Chief, Western Section  
IRT Chair  
Regulatory Branch  
U.S. Department of the Army  
New York District, Corps of Engineers  
Jacob K. Javits Federal Building, Room 1937  
New York, New York 10278-0090

**Re: Evergreen Mill Creek Point Mitigation Bank  
Prospectus  
Formerly NAN-2014-00955-WCA**

Dear Ms. Miranda:

Enclosed please find the above mentioned Prospectus for a proposed mitigation bank in Hudson County, New Jersey in accordance with "Compensatory Mitigation for Losses of Aquatic Resources"; Final Rule (33 CFR Parts 325 and 332 and 40 CFR Part 230) of April 10, 2008. This Prospectus is submitted to the U.S. Army Corps of Engineers – New York District (Corps), Chair of the Interagency Review Team (IRT) to formally advance the bank approval process. We look forward to advertisement of the required public notification, response to public comments, if any, and preparation of a Mitigation Banking Instrument.

Please do not hesitate to contact me should you require further information at 973/356-7164 or [mrenna@evergreenenv.com](mailto:mrenna@evergreenenv.com).

Sincerely,  
EVERGREEN ENVIRONMENTAL, LLC

Mark Renna  
President

\enclosure

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## 1.1 Objectives of the Proposed Mitigation Bank – 33 CFR 332.8 d-2(i)

The Evergreen Mill Creek Point Mitigation Bank is proposed to serve permitted impacts in the watershed. This Prospectus is presented in accordance with the requirements for a Prospectus as detailed in "Compensatory Mitigation for Losses of Aquatic Resources; Final Rule", 33 CFR Parts 325 and 332 and 40 CFR Part 230 as amended on April 10, 2008.

The Bank Site is located within the Hackensack Meadowlands District (HMD), a region long recognized as a valuable resource within the New York/New Jersey Harbor area. The Hackensack Meadowlands is among the largest brackish estuarine complexes in the northeastern United States and has been given special designations by various State and Federal agencies. The U.S. Environmental Protection Agency (EPA) includes all of the Hackensack Meadowlands on its list of Priority Wetlands for the State of New Jersey. The Hackensack Meadowlands is considered one of the Significant Habitat Complexes of the New York Bight Watershed by the U.S. Fish and Wildlife Service (USFWS; Complex # 19).

The Sponsor, Evergreen Environmental, LLC ("Evergreen" or "Sponsor"), proposes to develop a mitigation bank on the Mill Creek a tributary of the Hackensack River known as the Evergreen Mill Creek Point Mitigation Bank (Bank or Bank Site). Evergreen is requesting the standing Interagency Review Team (IRT) in the Meadowlands, the Meadowlands Interagency Mitigation Advisory Committee (MIMAC), review and comments on this Prospectus to establish the Bank. The Bank Site is located south of the Hackensack River, along Mill Creek within the Hackensack Meadowlands District, an area in which land use is partly regulated by the New Jersey Sports & Exposition Authority (NJSEA).

More specifically, the Bank Site is located in the Town of Secaucus, Hudson County, New Jersey. The Bank Site consists of open water, wetland and upland habitats (See Figure 1.1 and 1.2 in Attachment 1 and Photographs in Attachment 2). The habitat value of the Bank Site is diminished by the colonization of the invasive common reed *Phragmites australis* ("*Phragmites*"), which covers the wetland portions of the Bank Site in dense, monotypic stands. The upland edge of the marsh contains disturbed lands adjacent to ballfields on the western portion of the Bank Site. The habitat value of the proposed Bank Site could be improved with the establishment of native vegetation and increased tidal flow.

The Bank project is not new and was advanced to a Draft Mitigation Banking Instrument (DMBI) in 2015 and 2016. Evergreen placed the Bank project on hold in late 2016 due to a lack of mitigation credit demand as well as issues related to mitigation credit valuation.

Evergreen met with the MIMAC on April 19, 2023, November 15, 2023, November 27, 2023 (Field Tour) and April 17, 2024. The MIMAC provided advice, direction and offered comments (See Agency Correspondence Attachment 3).

The Bank Site is a portion of a 35.24-acre parcel identified as Block 225, Lot 12 in the Town of Secaucus, Hudson County, New Jersey. The parcel is owned by the Town of Secaucus with an easement granted to the Sponsor for 22.61 acres. The Bank Site is flanked on the east and south sides by Mill Creek and Mill Ridge Road on the west side (Figure 1.3 in Attachment 1). The remaining 12.63 acres of the lot are occupied by recreational ballfields on the western upland portion of the lot, and will remain unaffected by the Bank project. The goal of the Bank Site is to

restore an area of 22.61 acres of degraded tidal wetlands on the eastern portion of the lot. The habitat value of the Bank Site will be improved with the establishment of native vegetation and increased tidal flow.

The Bank Site would provide wetland mitigation for permitted projects and potentially for unauthorized violations within the approved service area, shown in Figure 1.4: Service Area Map in Attachment 1.

The establishment of the mitigation Bank and the restoration of native wetland species will be consistent with several existing watershed planning initiatives, including:

1. The Hackensack Meadowlands Initiative – A watershed partnership that brings Federal and State agencies and non-governmental organizations together to work with key local stakeholders to remediate, restore, enhance, and protect the Meadowlands ecosystem. Partners include the United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACE), U.S. EPA, National Oceanic and Atmospheric Administration Fisheries (NOAA), National Parks Service (NPS), New Jersey Meadowlands Commission (NJMC, now NJSEA), and New Jersey Division of Fish and Wildlife. As stated in the document: *The Hackensack Meadowlands Initiative, Preliminary Conservation Planning, Prepared by the USFWS New Jersey Field Office, March 2007*, “the USFWS vision for the initiative includes: (1) a more natural estuarine ecosystem with healthy fish and wildlife resources; (2) a cleaner environment (progressive reduction in acute and chronic contaminant effects); (3) diverse wetland and associated communities that sustain local and regional populations of native species, including Federal trust fish and wildlife resources; and (4) public commitment to and diverse social benefits from the Meadowlands.”

2. The Hudson Raritan Estuary (HRE) Comprehensive Restoration Plan – The USACE and the Port Authority of New York and New Jersey are developing a comprehensive plan to restore the degraded habitat within the HRE. One of the Target Ecosystem Characteristics for the plan is the restoration and/or creation of Coastal Wetlands within the HRE by 2050.

3. The Hudson Raritan Estuary Hackensack Meadowlands Restoration Study – As a part of the HRE Study, the USACE and their partners the New Jersey Meadowlands Commission (NJMC), now the NJSEA, are conducting a focused study on possibilities to restore degraded habitat within the Hackensack Meadowlands. The Meadowlands Comprehensive Restoration Plan and HRE Feasibility Study of 2020 identified specific sites to restore such as the Metromedia Marsh Wetland Restoration Site across the river from Mill Creek Point.

The Bank is also consistent with and supportive of wetland restoration initiatives proposed and planned by the NJSEA’s predecessor NJMC including the Mill Creek Marsh (128 acres; constructed in 1999) and Secaucus High School Marsh (38 acres; 2005) projects. In addition, the bank is located within the close proximity of several restoration sites that are either implemented or proposed as part of an ecosystem-wide restoration planning initiative in the Meadowlands. Nearby restored marshes include, Evergreen MRI3 Mitigation Bank (51 acres, 2012), Port Jersey Container Terminal Expansion Project Mitigation Site (16 acres, 2012), the Marsh Resources Meadowlands Mitigation Bank (206 acres; 1998), the Skeetkill Creek Marsh (16 acres; 1999), the Eastern Brackish Marsh (77 acres), the Vince Lombardi Marsh mitigation site (10 acres) and the Western Brackish Marsh (75 acres).

The establishment of the Bank in this region is not only consistent with existing restoration initiatives, but will also help to improve the overall value of the region's habitat by contributing to a large expanse of restored and connected fish and wildlife habitat and removing a significant amount of contaminated sediments, a major degradation factor to the waters and wetlands of the Meadowlands.

The following sections of this Prospectus describe the existing and proposed conditions of the Bank Site as required pursuant to the Federal Rules of 2008.

## **1.2 How the Mitigation Bank or In-Lieu Fee Program will be Established and Operated - 33 CFR 332.8 d-2 (ii)**

The Bank is proposed in accordance with the Federal Rules; "Compensatory Mitigation for Losses of Aquatic Resources"; Final Rule (33 CFR Parts 325 and 332 and 40 CFR Part 230) of April 10, 2008. This Bank will provide mitigation for impacts to aquatic resources including impacts to wetlands.

The Bank will be developed in accordance with the following Federal and State authorities and implemented to provide aquatic resource mitigation including mitigation for regulated impacts to waters of the U.S., and wetlands as regulated by the Corps and NJDEP.

- Section 404 of the Clean Water Act (33 U.S.C. § 1344)
- Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403)
- Section 404(b)(1) Guidelines for Specification of Disposal Sites for dredged or Fill Material (40 C.F.R. Part 230)
- Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)
- Regulatory Program Regulations of the U.S. Army Corps of Engineers, Final Rule (33 CFR Parts 320-332)
- Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army concerning the Determination of Mitigation Under the Clean Water Act, Section 404 (b)(1) Guidelines (February 6, 1990)
- Magnuson-Stevens Fishery Conservation and Management Act, P.L. 94-265
- Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. § 1531 et seq.)
- New Jersey Waterfront Development Law (N.J.S.A. 12:5-1 et seq.)
- New Jersey Freshwater Wetlands Protection Act of 1987 (N.J.S.A. 13-9B-1 et seq.)
- New Jersey Coastal Zone Management Rules (N.J.A.C. 7:7E-1.1 et seq.)
- New Jersey Tidelands Act, N.J.S.A. 12:3

The Sponsor will establish, operate, and maintain the restored tidal wetland, open water and upland habitat in accordance with the provisions of a Mitigation Banking Instrument (MBI), as well as a Corps' Nationwide Permit 27 and applicable State permits.

Mitigation credit valuation and generation is based functional value uplift proposed at the Bank Site. The functional value uplift is based on the differential between the value of the site in current baseline condition, the effect of the specific mitigation design, and the resultant ecological uplift from existing baseline conditions. The final determination of the number and type of credits the Banks will be approved for will be made by the MIMAC, which often bases credit ratios on

ecological factors, policy and regulatory dictates and precedent established at other mitigation banks and sites in the State.

Per federal and State rules, mitigation credit generation is to be predicated on the functional value assessment of the mitigation design and resultant uplift as prepared and presented in Attachment 4 - Functional Value Assessment.

A functional value assessment is a useful tool to determine wetland mitigation site value. The Evaluation for Planned Wetlands (EPW) analysis applied provides valuable information regarding the valuation of the mitigation initiative. However, a functional value assessment alone is not the only tool to be applied to such a valuation determination. In addition to the submitted functional value assessment, Evergreen contends the complete assessment of mitigation credit valuation, often represented as ratios, also entails professional judgement. The professional judgment should also consider a review of baseline conditions, the mitigation design plan specifics, an assessment of future habitat conditions and functional uplift, the functional value of these future conditions within the Bank Site as well as the functional value in the overall landscape position and watershed within which the mitigation bank credits were developed.

### 1.2.1 Mitigation Valuation Summary

A mitigation credit is defined as the amount of mitigation required to offset one acre of impact. Credit generation is based on the difference in the value of the site in the current baseline condition, and the conditions anticipated based upon the mitigation design, as well as the ecological uplift from existing baseline conditions and regulatory definitions of mitigation. Quantification of credits is determined by the IRT who often base credits and credit to acre ratios on wetland functions, values and services augmented, ecological factors, policy and regulatory dictates as well as precedent established at other mitigation banks and sites in the State.

Complicating mitigation valuation in the urban estuaries of the Meadowlands is the relatively recent human-induced alterations of the wetland ecosystem and the domination of wetland systems composed of non-native invasive species. In general, permitted impacts of the region are to open water and *Phragmites*-dominated wetlands, yet in-kind mitigation of *Phragmites*-dominated marsh is not desired by the regulatory agencies. Review of many permitted actions over the years as well as credit sales out of the Evergreen MRI3 Mitigation Bank support this observation. Additionally, it is impossible to restore any portion of the Meadowlands to its original state (historically Atlantic white cedar swamps), as it is impossible to make the Meadowlands a freshwater system again. As a result, the MIMAC generally requires native emergent wetland mitigation with no historical frame of reference in the altered landscape of the Meadowlands. The MIMAC generally requests out of kind mitigation (i.e., native tidal *Spartina* emergent marsh for impacted tidally restricted *Phragmites*-dominated marsh). As a result, mitigation in the Meadowlands is not typical and success in this degraded environment is so difficult that failures have occurred. These pervasive regional difficulties faced by mitigation practitioners in Meadowlands make mitigation in the Meadowlands some of the most challenging in the entire Mid-Atlantic region and beyond. The scope of the watershed wetlands degradations and the uniqueness of the mitigation concepts required and applied add considerably to the valuation of the changed condition between baseline and future mitigated wetland.

It is proposed that the credits will be available to be used as mitigation in accordance with applicable requirements. One (1) credit from the Bank would mitigate for one (1) typical acre of

authorized wetland impact. Permitted projects proposed to utilize bank credits will be submitted to the Corps and/or NJDEP for consideration in conjunction with the permitting for such projects. The Sponsor will submit a statement to the MIMAC each time credits are debited or additional credits are approved.

Upon submittal of all appropriate documentation by the Sponsor and subsequent approval by the Corps and NJDEP in consultation with the MIMAC, it is agreed that credits will become available for use by the Sponsor for sale to approved permittees.

The implementation of the design will produce an ecological uplift measured in units of mitigation credits. Credit generation is based on the value of the site in its current baseline condition, the mitigation design, the ecological uplift from existing baseline conditions and regulatory definitions of mitigation. Credit generation is also predicated on the functional value assessment of the mitigation design as presented in Attachment 4 - Functional Value Uplift Assessment. The following Section presents a summary of the functional value assessment.

- **Evaluation for Planned Wetlands (EPW)**

On behalf of Evergreen Environmental, LLC, HDR Engineering, Inc. (HDR) conducted a functional value assessment (FVA) using the Evaluation for Planned Wetlands (EPW) methodology for the proposed Bank. The purpose of the FVA using EPW was to determine the potential ecological uplift quantified through the predicted increase in Functional Capacity Units (FCU) of the 22.38-acre Wetland Assessment Area (WAA) under its current baseline condition, and an improved/restored condition based on the mitigation design plans.

The EPW has been selected as it is employed by the US Army Corps of Engineers, New York District to evaluate wetland mitigation functional value uplift for planned wetland restoration projects associated with the Hudson-Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study (2020), that proposes several projects in the Hackensack Meadowlands similar to the proposed Bank.

The EPW quantifies the benefits resulting from wetland restoration. Per the methodology, EPW is designed to assess wetland impacts and quantify the amount of wetland mitigation required to offset the impact. Per the New York District and HRE the EPW has been certified since 2016 for such quantification of the size of the wetland mitigation required as excerpted from the HRE:

*Evaluation of Planned Wetlands (EPW) was used to quantify benefits for estuarine and freshwater wetland restoration sites. EPW is a rapid assessment procedure, certified for regional use in July 2016, which provides a method for determining the capacity of an ecosystem to perform certain ecological and watershed functions. EPW evaluates five functional categories: shoreline bank erosion, sediment stabilization, water quality, wildlife, and fish (Bartoldus 1994, Bartoldus et al. 1994). EPW scores were calculated for existing conditions at each site. From this baseline, each alternative was assessed relative to anticipated increases in each functional outcome as a result of implementing the proposed action. The five functional categories were averaged to obtain a functional capacity index (FCI), which was subsequently multiplied by project area (in acres) to obtain a quality-weighted area metric (functional capacity units [FCUs]).*

The New York District references the certification and approval of the EPW methodology in a Memorandum for Commander dated September 18, 2017, and again in a follow on memorandum of 2019. The memo approves the HRE Study Review Plan and methods. The EPW is cited as an approved regional method to measure “functional capacity which are necessary under current regulatory programs that require tangible goals and a method for calculating planned wetlands size”, as excerpted below:

Environmental Benefits model: Evaluation of Planned Wetlands and Habitat Suitability Index Models	EPW is a rapid assessment procedure that documents and highlights differences between a wetland assessment and a planned wetland based on their capacity to provide six functions: shoreline bank erosion control, sediment stabilization, water quality, wildlife, fish (tidal, non-tidal stream/river and non-tidal pond/lake) and uniqueness/heritage. The difference between wetlands are expressed in terms of individual elements. Functional Capacity Indices, and Functional Capacity Units. The results provide information on individual design elements and measures of functional capacity which are a necessity under current regulatory	EPW approved for regional use, 30 June 2016. The model is approved for use in the Northeastern Coastal Zone, Northern Piedmont and Atlantic
	programs that require tangible goals and a method for calculating planned wetlands size.	

In the EPW, the planned wetland is the mitigation site. Clearly, the NY District has approved the EPW to be used to assess not only the functional quality of a mitigation site, or to compare and contrast mitigation sites or alternate designs in the candidate site selection process, but to determine the appropriate size of the mitigation site often expressed in acres. The EPW-determined size of the wetland mitigation site can be compared to the size of the wetland area subject of permitted impact. The ratio of mitigation acres to impact acres would effectively result in a ratio of mitigation required to mitigate one acre of impact. Such a ratio could then be divided into the mitigation site acreage to determine the mitigation credits developed at the mitigation site as defined as the amount of mitigation required to mitigate one acre of impact.

In the 2020 HRE, EPW was used to assess and quantify the mitigation value of alternative mitigation designs of candidate wetland restoration sites by the New York District. To quote the HRE:

*The Project Delivery Team (PDT) identified the Evaluation of Planned Wetland (EPW) assessment framework as meeting the needs for an assessment approach. The assessment approach would provide an evaluation in terms of acre-based habitat units.*

*The FCI is a dimensionless number ranging from 0.0 to 1.0 that describes a wetland's relative capacity to perform a function, where 0.0 indicates no functional capacity and 1.0 indicates optimal function capacity. The FCI and WAA are then used to derive the functional capacity units (FCUs). The FCIs represents the “quality” of functional capacity per unit area, whereas the FCUs represent the “quantity” of functional capacity. FCUs are calculated by multiplying FCI times the area of the planned/anticipated impacts. The WAA was evaluated by completing the data sheets, and calculating the FCI and FCUs for the existing conditions at each site. Each alternative was evaluated by completing the data sheets with the predicted conditions at each time interval. The*

*total EPW score for a given alternative was calculated using averaged functional capacity indices/units rather than summation.*

*The approach used in this study assessed the restored and the unrestored areas within the project footprint to gain a full picture of the benefits.*

In a personal communication with New York District, U.S. Army Corps of Engineers – Planning (Diana M. Kohtio Bazzini Biologist, Environmental Analysis Branch, June 28, 2024) further detail was described related to the use of EPW in the HRE Feasibility Study as well as its application to wetland mitigation valuation. Planning indicated that EPW in the HRE was used to assess wetland value in terms of both quality and quantity. The EPW analysis is part of the decision making process that also considers other factors such as cost effectiveness in the incremental cost analysis to determine the best buy plan to be advanced by the Corps. Planning confirmed EPW is the approved model by headquarters as it is reliable, user friendly and a rapid assessment technique. In the 2020 HRE, the EPW was used in the selection of sites to advance for restoration, but also to assess alternative mitigation designs at each site and to assess wetland restoration quantity in terms of acres derived from area based FCU scores. Planning described EPW's application in the HRE to be part of the assessment of wetland restoration site value based on size and area. Planning observed that the EPW value of existing conditions could be compared to the EPW valuation of future conditions to derive a differential in mitigation value, and agreed an approach may be possible to distill such a value to a unit of mitigation like a credit considering the value delta over time. However, Planning does not and had not assessed such a direct application as part of the HRE. Planning concluded, the EPW in the HRE is being used to assess wetland restoration site value in terms of area or acreage.

In summary the mitigation valuation of the Bank using EPW compares the value of existing versus future proposed conditions. The Bank Site under existing conditions contains degraded coastal wetlands that are dominated by a monotypic stand of *Phragmites australis* (common reed) and the tidal exchange is extremely limited in the portions of the Bank Site with higher elevations. The sediments on the Bank Site contain mercury and other contaminants at levels exceeding the Effects Range Median (ERM) concentrations due to an extended history of non-point source pollution in the Meadowlands. The proposed condition for the mitigation project consists of treating the *Phragmites* with herbicide, removing the *Phragmites* rhizome mat, and grading the site to elevations subject to enhanced tidal influence. Grading will result in the removal of sediment to one-foot below design grade. Design grade will be achieved through the backfilling and placement of clean substrate from an off-site location. The marsh plain will include emergent tidal marsh with a characteristic tidal gradient encompassing zones of lower and higher elevation (e.g., regularly and irregularly flooded) that would be planted with native vegetation species.

The EPW methodology provides a science-based and data driven functional value alternative to acreage-based mitigation requirements (Bartoldus et al. 1994) by presenting a range of ecological metrics rather than solely acreage-based mitigation ratios to yield a compensatory mitigation assessment. The purpose of the EPW methodology is to enable planning and regulatory actions such as wetland creation, restoration, mitigation banking, impact analysis, and watershed planning, using a quantifiable numerical modeling approach.

The six ecological/social metrics used in the EPW model are Shoreline Bank Erosion, Sediment Stabilization, Water Quality, Wildlife, Fish Habitat, and Uniqueness/Heritage. The Functional Capacity Index (FCI) is the single “score” for the functional capacity per unit area of the wetland,

calculated for each function by mathematically combining element variables in a way that accounts for the interactive relationships between elements represented. The FCI and WAA are then used to derive the functional capacity units (FCUs). FCUs are calculated by multiplying FCI by the area, generally acres, of the planned/anticipated wetland mitigation site.

In general, the value of the existing wetland in the Wetland Assessment Area of the Bank Site is severely diminished by invasive plant species, limited lower shore zone sediment availability, and shoreline bank erosion rates, which decreases the availability of suitable intertidal habitat for native emergent vegetation to stabilize banks and offer wildlife foraging and habitat opportunities.

Results of the EPW methodology are presented for the Bank Site in Table 1.2.1. Based on the mitigation design plan, the Bank Site shows high potential to support a variety of characteristic wetland functions/values.

**Table 1.2.1: Mill Creek Point Bank Site - Functional Capacity Index Increase**

Function	Watershed Assessment Area FCI Score	Watershed Assessment Area FCU	Planned Wetland FCI Score	Planned Wetland FCU	FCI Relative Rank Uplift
<b>Shoreline Bank Erosion Control (SB)</b>	0.267	5.97	0.794	17.9	Low → Optimal
<b>Sediment Stabilization (SS)</b>	0.55	12.31	0.75	17.9	Moderate → Optimal
<b>Water Quality (WQ)</b>	0.763	17.06	0.838	17.9	Optimal - Optimal
<b>Wildlife (WL)</b>	0.137	3.06	0.28	6.71	Poor → Low
<b>Fish (Tidal)</b>	0.344	5.97	0.483	11.19	Low → Moderate
<b>Average<sup>1</sup></b>	0.412	8.874	0.629	14.320	Low → Moderate

<sup>1</sup> Average does not factor in Uniqueness/Heritage as these characteristics may or may not be related to size; Therefore, it is inappropriate to multiple the FCI by the 22.38-acre WAA area to calculate FCU.

**Total Functional Uplift is 52.6%** - The assessment of the future Bank Site under the proposed restored conditions across the average of all functions described except Uniqueness/Heritage will provide a 52.6% ecological uplift. This uplift is calculated by taking the percent change of the average for the future without the project (0.412) and the uplifted FCI (0.629) multiplied by the planned wetland acreage (again, 22.38 acres) of the Bank Site. Note: The Uplift FCI of 0.629 is 52.6% greater than the Existing Condition FCI of 0.412 ( $0.412 \times 1.526 = 0.629$ ).

### 1.2.1.1 Regulatory Background

Mitigation valuation by the U.S. Army Corps of Engineers and Environmental Protection Agency (Final Rule, 2008) and the New Jersey Department of Environmental Protection (N.J.A.C. 7:7A and 7:7) is intended to be based on the functional value assessment of the ecological uplift that

a mitigation project has from its baseline to proposed enhanced conditions on a case-by-case basis. However, in some cases in the past, the credit calculation has been largely based on mitigation ratios based on regulatory precedent. Evergreen contends that this approach lacks a sound scientific basis, and notes that it has been often applied to sites located elsewhere in the region with different features, restoration methods and goals.

The 2008 Final Rule established that the district engineer must require a mitigation ratio *“greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or the distance between the affected aquatic resource and the compensation site.”* The rationale for the required replacement ratio must be documented in the administrative record for the permit action (40 CRF 230.93(f)(2)).

State regulations have also similarly established that the ratio for enhancement of wetlands is determined on a case-by-case basis; If enhancement is the mitigation alternative, the Department shall determine, on a case-by-case basis, the amount of enhancement required to ensure that the mitigation results in wetlands of equal or better functions and values to those lost (N.J.A.C 7:7A-11.12(d) and N.J.A.C 7:7-17.13(c)).

### **1.2.1.2 Regulatory Precedent**

Regionally, EPW is recognized as an accepted method of assessing functional uplift utilized by USACE - New York District. The Hudson-Raritan Estuary Ecosystem Restoration Feasibility Report (“HRE Report”) describes this functional assessment as the basis of assessing restored and unrestored sites within a project footprint to gain a full picture of the benefits, assigning benefit scores (the average annual functional capacity units) at different intervals following construction (USACE 2020<sup>1</sup>). Within the New York/New Jersey region, precedent has not been established for translating EPW’s FCU uplift to mitigation ratios. However, each potential restoration site scored within the HRE Report does establish a baseline and a restored FCU score, which can be translated to a numerical ratio or an area-based functional increase. Such scores have been used in the HRE to determine which mitigation sites and designs warrant advancement to implementation in the national interest.

Beyond the New York District, EPW precedent for translating this area-based increase to mitigation valuation and credits has been established elsewhere in the United States. As noted in the New York District 2020 HRE report, the Department of Ecology (DOE) in the State of Washington essentially utilizes the same methodology for estimating whether a plan for compensatory mitigation site or bank will adequately replace the functions and values lost when a wetland is altered due to a permitted action. The DOE methodology is also designed to provide guidance for regulators and applicants to estimate the gain in functions and values that result from the mitigation. The gains in function described in the mitigation plans are calculated as “credits” whereas the losses in function from impacts to wetlands are calculated the same way and categorized as “debits”. These credits and debits are established with “acre-points” (comparable to EPW FCUs), which represent a score for a rating of wetland function assigned to one acre. The size of the proposed mitigation area is multiplied by the score for a function to

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<sup>1</sup> USACE and PANYNJ. 2020. Hudson Raritan Estuary Ecosystem Restoration Feasibility Study, Appendix E Benefits. Prepared by the New York District U.S. Army Corps of Engineers

determine how many acre-points are credited or debited. The credits are calculated based on the conditions in the wetland expected at the time when all structural and hydrologic elements proposed in the plan have reached maturity (State of Washington Department of Ecology, 2012<sup>2</sup>).

### **1.2.1.3 New York District Army Corps of Engineers Precedent**

The *Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study*<sup>3</sup> proposes several wetland restoration projects in the Hackensack Meadowlands similar to the proposed Bank. For example, the 63-acre Metromedia Marsh restoration project is located directly across the Hackensack River from the proposed Bank Site. Bordered on the east and south by the Hackensack River, and on the north by Marsh Resources Meadowlands Mitigation Bank, the Metromedia Tract restoration site surrounds the Metromedia Broadcast site and towers. Similar to Mill Creek Point, this restoration site is undeveloped and characterized as generally poor habitat, largely dominated by invasive common reed (*Phragmites australis*) underlain by soils and sediments with elevated levels of contaminants.

The wetland restoration design for Metromedia Marsh is similar to that of the Bank Site in that 38,000 CY of material will be excavated and replaced with 41,000 CY of clean growing media. Excavation assumes clearing and grubbing to a depth of six inches, and the material will be removed offsite and taken to an appropriate upland disposal facility. A one-foot layer of clean growing media will be placed in the high marsh and upland areas.

The recommended plan will increase diversity and improve fish and wildlife habitat as well as providing secondary benefits of improving flood storage and water quality. This plan includes wetland restoration, including lower marsh, higher marsh, and scrub/shrub habitats. In addition, the plan includes the restoration of tidal channels. The design includes the excavation of new tidal channels and the enhancement of existing tidal channels. In total this design will restore 26.5 acres of low marsh, 11.7 acres of high marsh, and 13.8 acres of scrub shrub.

The HRE assessed the ecological uplift of the restoration design using EPW. When comparing the unrestored score (future without project) at post-restoration target year 20 (T20) of 36.37 to the restored score of 57.85, it yields an uplift of 21.48 FCUs or a 59% functional value uplift, very similar to the ecological uplift assessed for the Bank Site at 52.6%.

### **1.2.1.4 Application to the Mill Creek Point Mitigation Bank Site**

Adopting the principles from the 2020 USACE HRE Report and State of Washington DOE and applying them to the proposed Bank Site represents a viable approach to determining uplift and calculating mitigation credits. After assessing the EPW functions and their elements, the proposed restoration of the site yields significant ecological uplift. Taking the average of FCI scores across each functional category for the future without the project (0.412) and multiplying it by the acreage of the WAA of the Bank Site (22.38) results in a baseline FCU of 9.225. The assessment of the future Bank Site under the proposed restored conditions takes an average uplifted FCI (0.629) multiplied by the planned wetland acreage for the Bank Site (again, 22.38) and yields a planned wetland FCU of 14.077, a 52.6% increase of 4.852 FCU. This 52.6% functional uplift is comparable to the Metromedia Tract target of 59%.

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<sup>2</sup> Hruby, T. 2012. Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington, Final Report, March 2012. Washington State Department of Ecology publication #10-06-11.

When applying the 52.6% ecological uplift increase to only the 19.11 acres of wetland and open water restoration of the of the Bank Site, excluding 3.5 acres of preserved lands, results in an excess (uplifted) acreage of 29.16 acres, or an increase of 10.05 acres, or credits. Therefore, the restored Bank Site could replace 10.05 acres of impacted aquatic resources and wetlands in the service area.

We note the EPW method includes no provision to calculate uplift in consideration of the removal of contaminated sediments from the site and the watershed, nor for the importation of a new, clean substrate. However, this additional uplift is considerable.

**Table 1.2.2: Proposed Mitigation Credits Based on the EPW Functional Uplift**

<b>Mitigation Category</b>	<b>Acres</b>	<b>Percent Uplift</b>	<b>Mitigation Credits</b>
Wetland Restoration	16.84	52.6%	8.86
Open Water Restoration	2.27	52.6%	1.19
Wetland Preservation	3.27	N/A	-
Upland Preservation	0.23	N/A	-
<b>Total</b>	<b>22.61</b>		<b>10.05</b>

### 1.2.1.5 Conclusion

The field observations at the Bank Site indicate the Planned Wetlands would provide significantly improved functional capacity for four EPW indices: Shoreline Bank Erosion Controls, Sediment Stabilization, Wildlife Habitat Restoration, and improved Tidal Fish Habitat. The Water Quality FCI maintained its already optimal relative ranking score under Planned Wetland conditions. It is anticipated that the ability of the Bank Site to stabilize and promote fish and wildlife biodiversity will increase over time as the newly constructed Bank Site develops a functional equivalency trajectory comparable to that of natural tidal marshes in the regional reference domain (i.e., The Hackensack Meadowlands District). Because the primary restoration goal is to create an herbaceous emergent tidal marsh, the vegetation coverage and the functional target condition will be attained in as few as three growing seasons. This increase in ecological function equates to a 52.6% increase from baseline conditions. Based on the EPW FVA the Bank Site mitigation design increases the functional value of the wetland by 10.05 acres of additional mitigation value for impacted wetlands in the service area.

The EPW functional valuation analysis is a useful method to assess wetland mitigation valuation that can be replicated to assess many sites consistently. However, we contend that professional judgement should also have bearing. The EPW valuation focusses on mitigation areas to be altered in terms of soils, hydrology and vegetation. As a result, we propose that areas to be preserved are valuable and should be granted additional mitigation value as follows:

- **Additional Mitigation Value from Preservation**

Several areas of the site totaling 3.5 acres are to remain untouched and will serve as protected buffer. In addition to the 10.05 credits proposed based on ecological uplift, the 3.5 acres of preserved habitat also warrant mitigation value in terms of credits. These extant habitats will be

protected under a conservation deed restriction in perpetuity, as will the entire Bank Site. These preservation areas are valuable habitat in and of themselves and could be subject to development threat were the Bank not implemented. The Town owns the land and operates parkland ballfields on site and other parkland features such as parking areas and boat ramps and walkways nearby. Left unprotected there is a development threat and it is conceivable that the Town could make use of the land for active recreation such as boat ramp or dock construction, possibly bulkhead and walkway development or ballfields.

Both the NJDEP and federal policy and rules recognize the mitigation value of preservation. The preservation proposed on-site meets all of the requirements as stated in the federal rules.

The preservation proposed on-site meets all of the requirements as stated in the federal rules as follows:

*§ 332.3 General compensatory mitigation requirements.*

*(h) Preservation.*

*(1) Preservation may be used to provide compensatory mitigation for activities authorized by DA permits when all the following criteria are met:*

*(i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed;*

*(ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available;*

*(iii) Preservation is determined by the district engineer to be appropriate and practicable;*

*(iv) The resources are under threat of destruction or adverse modifications; and*

*(v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust).*

*(2) Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. This requirement may be waived by the district engineer where preservation has been identified as a high priority using a watershed approach described in paragraph (c) of this section, but compensation ratios shall be higher.*

### **1.3 The Proposed Service Area - 33 CFR 332.8 d-2 (iii)**

The proposed Service Area for the proposed Bank is depicted in Figure 1.4 in Attachment 1. This proposed service area is the same as that of the Evergreen MRI3 Mitigation Bank. The service area includes the Hackensack Meadowlands District (HMD) and HUC-11 hydrologic unit code watershed numbers of the common HUC-6 as follows:

020-30-103-170

020-30-103-180 (Bank location)

020-30-104-010

020-30-101-170

020-30-103-150

In the service area, the mitigation credits from the Bank will be used to mitigate for impacts to estuarine and palustrine emergent, mudflat, scrub/shrub and open water wetlands and waters of the U.S. The mitigation credits from the bank will not be used to mitigate for impacts to palustrine forested wetlands.

#### **1.4 The General Need for and Technical Feasibility of the Proposed Mitigation Bank**

There is a general need for wetland mitigation in the greater Meadowlands region. The proposed wetland mitigation bank is technically feasible based on the success of other similar wetland mitigation sites in the region including the Evergreen MRI3 Mitigation Bank and the Kane Wetland Mitigation Bank.

Based on available public information, multiple infrastructure projects are anticipated over the next few years in and around the Meadowlands region and these projects will likely require more mitigation than is currently available. Presently, available mitigation is extremely limited in the region. There are currently two wetland mitigation banks with available credits in the region, but the credits from one bank (Kane) can only be used by four transportation agencies provided that a component of their project is located within the Hackensack Meadowlands District. The other bank, (Evergreen MRI3 Mitigation Bank (MRI3)), is much smaller and, as of the time of this writing, has nearly sold out of credits. Both MRI3 and Kane have tidal wetland habitat and can mitigate tidal wetland impacts. A recently proposed bank, Penhorn Creek, is freshwater and unable to mitigate tidal wetland impacts in kind.

The Bank Site was selected in the Meadowlands region based on previous land use and degradation of wetlands and proximity to several other successful mitigation sites, such as Secaucus High School and Mill Creek, each of which provides a biobenchmark and affirmation that mitigation can be successful in this specific location of the watershed. The proposed Bank is technically feasible and incorporates design concepts applied successfully to other mitigation sites in the State over the past several decades. The concept entails the lowering of site elevations, some filled as a result of man-made activities, replacing the removed sediment with new substrate to restore the proper elevations, and creating brackish emergent marsh of varying elevations taking into account anticipated sea level rise.

The sediments of the Bank Site display elevated levels of contaminants found pervasively throughout the Meadowlands region likely originating from numerous non-point sources. The Sponsor, as well as many regulatory and non-profit entities focused on the restoration of the Hackensack Meadowlands District, do not believe that this regional affliction disqualifies the wetlands of the Meadowlands from consideration for restoration and enhancement efforts. In fact, the need to restore the Meadowlands despite the existence of pervasive contamination is well recognized by the U.S. Army Corps of Engineers, New York District. The Corps notes in the CRP, that with respect to contaminated sediments, *“due to the urban nature of the HRE, it is highly unlikely that the HRE would be cleaned up to acceptable risk guidance benchmarks. Restoration implementation in the HRE, requires that agencies discuss the concept of ‘acceptable’ for this urban estuary”* (See, Page 207 of the CRP).

As noted above, the design of the proposed Bank includes the removal of a significant amount of existing sediment. Removal of the sediments will remove contaminant loadings from the

watershed generating an ecological uplift and providing for improved tidal exchange. The earthwork and hydrologic impediment removal will restore tidal flow and exchange. Non-native invasive species currently dominating the Bank Site including *Phragmites* will be treated with herbicides and native plantings will be introduced to restore the wetland habitat.

#### 1.4.1 Mitigation Design Development

Restoration of the Bank Site will entail *Phragmites* removal, excavation to lower grades to permit tidal exchange, and planting with native plant species. The design will excavate to a depth of a foot below design elevation and then backfill to marsh plain design elevation with imported clean material as a planting cap. Once restored, the Bank will be a combination of emergent marsh of varying elevations designed to take into account predicted sea level rise, open water, and mudflat habitat, generally exposed twice a day during the tidal cycle, and upland buffer habitat.

The marsh plain elevation will vary to incorporate areas inundated at varying frequencies that will be vegetated with a variety of native species. Invasive plant species will be controlled via herbicide treatment and excavation as well as planting of native species to out-compete the invasive species. The tidal inundation of the Bank Site will also serve to curtail invasive species through increased hydroperiod and increased exposure to saline waters. The establishment of the tidal hydrologic regime is the key step to supporting the proposed and planned types of aquatic resources. The aquatic resources planned and proposed provide functions typical of native tidal marshes of the Meadowlands region.

Functions anticipated to be enhanced at the Bank Site include flood storage, nutrient retention, as well as transport, and water filtration resulting in improved water quality from the interaction of the daily tides with the marsh plain vegetated with native species. The wetland can only perform an aquatic function such as flood storage and water filtration if the wetland interfaces with water and if the time of interface is substantial. Today the Bank Site has limited water interface due to elevation as well as *Phragmites* impedance of surface flow. These conditions reduce tidal water interface with the marsh in terms of water volume, depth and duration of inundation. In the future, more water will enter the Bank Site and interface with the substrate and vegetation of the wetland permitting the wetland to perform functions that result in valuable services.

Wildlife and fish habitat, including habitat for threatened and endangered species, will be enhanced in the aquatic community. Social functional benefits will include increased opportunities for scientific education, passive recreation, and aesthetic visual benefits of a restored tidal marsh.

The habitat value of the Bank Site will be improved with the establishment of native vegetation and increased tidal exchange. The hydrologic restoration of the Bank Site will create a tidal habitat suitable for a native emergent marsh community. The target vegetative community is a brackish emergent marsh dominated by native species such as smooth cordgrass (*Spartina alterniflora*), big cordgrass (*S. cynosuroides* (L.)), strong sturdy bulrush (*Bolboschoenus robustus*), *Spartina patens* and common three-square bulrush (*Schoenoplectus pungens*). Biobenchmarks support the design elevation of the emergent marsh including nearby extant stands of *S. alterniflora* at the Secaucus High School Mitigation Site as well as the design bio-benchmarks derived from the Evergreen MRI3 Mitigation Bank located on the northern shore of the Hackensack River in the vicinity of the Bank Site.

Once implemented, the Bank Site will contain a combination of brackish emergent marsh of varying elevation, open water and mudflat habitat, generally exposed from twice a day to twice a month (spring tides) during the tidal cycle. It is expected that brackish species will volunteer including cattail, a native species common throughout the Meadowlands. Wildlife and fish habitat, including habitat for threatened and endangered species, will be enhanced in the aquatic community. Social functional benefits will include increased opportunities for scientific education, passive recreation, and the aesthetic visual benefits of a restored tidal marsh.

The proposed project includes grading the Bank Site to elevations appropriate for the establishment of tidal marsh communities. Much of the Bank Site will be graded to elevations appropriate for an intertidal marsh community and planted with native emergent marsh vegetation. Expanses of the emergent marsh will be graded at a higher elevation expected to be tidally flowed twice a month. The highest elevations of the wetland restoration area would be established as scrub shrub and marsh habitat. Small upland areas occur along the western boundary of the restoration area, adjacent to the Mill Creek Point Park ballfields. These areas would be seeded with native species characteristic of these communities such as broomsedge bluestem (*Andropogon virginicus*), foxtail barley (*Hordeum jubatum*), perennial ryegrass (*Lolium multiflorum*), and switchgrass (*Panicum virgatum*).

## **The Mitigation Design Plan is presented in Attachment 5**

### **1.4.2 Design Concept Reference: Metromedia Marsh Tract Restoration Site**

The wetland restoration design for the Bank began prior to publication of *The Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study (2020)* by the New York District Army Corps of Engineers (HRE). However, the Bank design emulates major design components incorporated into the HRE wetland restoration designs of several projects in the Hackensack Meadowlands District. The Bank design specifically uses as a reference and emulates the 63-acre HRE's Metromedia Marsh Tract Restoration Site located directly across the Hackensack River from the Bank Site (Figure 1.4.1 shown below). Bordered on the east and south by the Hackensack River, and on the north by Marsh Resources Meadowlands Mitigation Bank, the Metromedia Tract restoration site surrounds the Metromedia Broadcast property and radio transmission towers. Similar to the Bank Site, this restoration site is undeveloped and characterized as generally poor habitat, largely dominated by invasive common reed (*Phragmites australis*). The Metromedia site is also subject of contaminants including metals (Celebrano, 1995) and as such dredging and capping of contaminated sediments is also proposed by the Corps at the Metromedia site dependent on sediment contaminant testing.

The wetland restoration design for Metromedia Marsh is similar to that of the Bank Site in that 38,000 CY of material will be excavated and replaced with 41,000 CY of clean growing media. Excavation at Metromedia assumes clearing and grubbing to a depth of six inches and the material will be dredged, excavated and removed offsite to an appropriate upland disposal facility. A one-foot layer of clean growing media will be placed in the high marsh and upland areas.

The recommended plan for Metromedia will increase diversity and improve fish and wildlife habitat as well as provide secondary benefits of improving flood storage and water quality. This plan includes wetland restoration, including low marsh, high marsh and scrub/shrub habitats. In addition, the plan includes the restoration of tidal channels. The design includes the excavation of new tidal channels and the enhancement of existing tidal channels. In total this design,

presented below, will restore 26.5 acres of low marsh, 11.7 acres of high marsh, and 13.8 acres of scrub shrub.



Figure 1.4.1. Metromedia Tract – Recommended Plan (Taken from Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study, 2020)

### 1.4.3 Mitigation Design Concept

The proposed design of the Bank is supported and corroborated by the detailed analysis and resultant proposed design of the similar and nearby Metromedia Marsh Tract Restoration Site as developed by the New York District Army Corps of Engineers. Specific components emulated in the proposed Bank design include the over excavation of contaminated sediments, the restoration of the marsh plain with a one-foot cap of clean substrate and the incorporation of high marsh habitat zones.

A unique design aspect of the Bank will be the removal of sediments with levels of contaminants above eco-risk screening guidance levels from the aquatic environment. Excavation will proceed to a depth one foot below the marsh plain design target elevation and the restored marsh will be backfilled with a foot of substrate to final marsh plain elevation with imported clean substrate. This extraordinary step will serve to remove sediment with elevated levels of contaminants from the Meadowlands aquatic ecosystem and result in a marsh plain free of elevated levels of contaminants, defined as being below the effects range median (ERM) eliminating any potential for ecological risk.

The ecological benefits of restoring human induced degradations of a wetland system is a regulatory agency accepted premise driving wetland mitigation concepts and approval. Many wetland mitigation sites have been subject of ditching or draining altering hydrology or land use disturbance permitting and promoting invasive species non-native to the area due to human induced transport and introduction. Other candidate wetland mitigation sites have been subject of fill or disturbance to the surface substrate of the land. Human induced contamination is a common degradation factor in the HRE of which the Meadowlands is a critical component.

Wetland mitigation concepts in the categories of restoration or enhancement all involve the reversal of human induced degradations by definition.

The ecological benefits of human induced contaminant removal from the environment are undeniable. The New York District HRE notes the benefits while recognizing that all functional value assessment methodologies, including EPW do not necessarily directly address this specific parameter as quoted:

*The EPW benefits calculation assume a clean site and do not account for benefits inherently obtained from the removal of contamination.*

The marsh design will support a community of mixed shrubs (marsh elder [*Iva frutescens*], eastern baccharis [*Baccharis halimifolia*]) and emergent marsh grasses (saltmeadow cordgrass [*Spartina patens*], seashore saltgrass [*Distichlis spicata*], big cordgrass [*Spartina cynosuroides*], and saltmeadow bullrush [*Schoenoplectus robustus*]). Benefits of this vegetative zonal design include not only a resilient wetland that will be resistant to the effects of sea-level rise, but also a clean marsh plain to support a wetland that will be free from contaminants after implementation. The addition of marsh surface elevations above MHW will also slow the potential for recontamination of watershed-wide contaminants brought to the site through tidal inundation. A raised marsh surface elevation would only be flooded one to two times per month as opposed to once or twice per day.

The excavation and removal of sediment containing contaminants in excess of New Jersey's ecological screening criteria to one foot below design grade across the restored wetland and implementation of a one-foot clean cap at the bank is an unprecedented protective measure in New Jersey mitigation banking. Furthermore, Evergreen has proposed to completely excavate and dispose of 1.25 acres where lead hot spots have been horizontally and vertically delineated on site, providing both hot spot elimination and a cap in this area thicker than 1 foot. Hot spot removal and the site-wide clean cap are protective measures that provide reduced overall contaminant mass in all soil layers and a physical barrier between ecological receptors in the biotic zone and remaining underlying sediments with residual contaminants below. NJDEP

defines the biotic zone in their Ecological Evaluation Technical Guidance (NJDEP 2023) as follows:

*“the interval in soil/sediment that corresponds to the highest level of biological activity. In terrestrial soil, biological activity is typically associated with soil invertebrates, plant/root production, and microorganisms, while in sediment the activity is associated with the macroinvertebrate community. This zone is generally related to the 0-6” interval for sediments and generally 0-12” for soils, however, it may extend to deeper intervals in certain habitat settings or when burrowing receptors are present.”*

A combination of hot spot excavation and removal and capping would be used, based on ecological restoration expertise, and understanding of the habitat and the protective solution, to reduce contaminant risk to ecological receptors and to human health.

Sediment sampling was conducted in September 2013 and again in January 2015 to identify whether contamination exists on site. Sediment samples were analyzed for priority pollutant (PP) volatile organics (VOC); PP base/neutral acid extractables (BNA); pesticides; PP metals, mercury; cyanide; phenols; total petroleum hydrocarbons (TPH); total organic carbon (TOC), grain size and pH. Sediment sample results were compared to NJDEP Ecological Screening Criteria’s Effects Range-Median (ER-M) level for saline water sediment (NJDEP 2009). Results of laboratory analyses revealed that several of the metal analytes were present in the sediments at levels above ER-M sediment screening criteria. Exceedances were detected for mercury, lead, nickel, copper and zinc in 2013 and for barium, chromium, cobalt, copper, lead, manganese, nickel, vanadium, zinc and antimony in 2015. Dioxins and furans were also detected during the 2013 and 2015 sampling events at levels above NJ ecological screening criteria. Although mercury concentrations are above the ER-M screening criteria (up to 11 mg/kg), it was not unexpected, as the site is connected to the Hackensack River via Mill Creek. Two lead hot spots were detected and delineated using a “step-out” method consistent with the NJDEP Soil Investigation Technical Guidance, taking incremental samples moving away from the original lead contaminated sample (14,000 mg/kg).

While the sediment investigations were conducted in 2013 and 2015, the sediment characterization remains representative of site conditions and these results are also similar to those from investigations of the surrounding restored marsh areas – Western Brackish Marsh and Secaucus High School Marsh (MERI 1997 and 2001). Obtaining additional samples to expand the contamination data set is unlikely to result in any changes in approach to reducing exposure to contaminants or providing protective measures. By capping the entire MCP site, contaminant exposures in the biotic zone on site and within the watershed will decrease, and excavation of the upper layer of sediment and deeper hot spots will result in permanent removal of contaminant mass from the environment, in particular mercury and lead. Furthermore, by capping the site, residual underlying contaminants will be isolated at depth below the biologically active zone of the ecological receptors using the site.

Typical saltmarsh vegetation has a rootzone within the upper foot of the sediment. Saltmarsh cordgrass (*Spartina alterniflora*) roots are concentrated within the upper 12 in. (30 cm) of sediment (McKee 2000, McKee, et al. 2006). Blum and Davey (2013) indicated that *S. alterniflora* roots and rhizomes “occupy a significant volume of the top 10 inches (25 cm) of marsh soil” in both mineral and organic soil types. Saltmeadow cordgrass (*Spartina patens*) roots may grow as deep as 16

inches (40 cm), but are typically concentrated in dense, sediment-binding mats within a few inches of the higher elevation marsh surface (McKee 2000). Seashore saltgrass (*Distichlis spicata*) has its greatest concentration of roots in the 4- to 16-inch zone (Hauser 2006). Marsh elder (*Iva frutescens*) also has a root zone concentrated within the top 5 – 10 cm of soil (Bertness et al 1992). Potential benthic invertebrate burrowing receptors at the MCP Bank site include the fiddler crab (*Uca pugnax* and *Uca pugilator*) and clam worms (*Nereidae*). While both species could potentially burrow below a 1 foot cap, fiddler crab burrows are typically between 6 and 13 inches below ground surface and clam worms typically burrow up to 16 inches within marsh sediments (USEPA 2015).

### 1.4.3.1 Tidal Zonation

Tide gage and biobenchmark elevations were employed to select the ideal range for tidal emergent marsh restoration. Based on elevation, Table 1.4.1 depicts varying vegetative zonation.

Based on this analysis key design zonal elevation ranges are as follows in NGVD29:

**Table 1.4.1: Key Design Zonal Elevation Ranges (NGVD29)**

**MRI3 Bank Site:**

MHW:	3.9 feet
MHW Spring:	4.65 feet
MLW:	-1.63 feet
Tidal Amplitude:	5.53 feet

**MCP Bank Site:**

MHW:	3.42 feet
MLW:	-1.69 feet
Tidal Amplitude:	5.11 feet

**Zonation**

Channels:	0.0 feet and below
OW/Mud Flat	0.0 – 1.5 feet
Marsh:	1.1 – 4.5 feet

Biobenchmarks indicate *Spartina alterniflora* was observed between 1.45 – 2.43 feet, with some as low as -0.57 feet. Review of MRI 1, 2 and 3 as-built conditions indicates *Spartina alterniflora* and *Spartina patens* growing to elevations of 3 to 4 feet NGVD29.

As a result the restored emergent marsh elevation the Bank is proposed to be between 2.0 – 4.2 feet. Elevations from 4.2 to 4.5 feet are proposed as marsh and scrub shrub habitat. The Bank design will permit high tides to enter lower portions of the Bank Site twice a day and higher elevations twice a month.

Currently, elevations above 3.4 feet (MHW) are not inundated daily and some lower areas are not inundated due to frictional water transport loss associated with the dense stand of *Phragmites* on site. A majority of the design will incorporate tidal emergent marsh at the higher elevation above 3.4 feet.

Based on the tidal elevations, native vegetation communities will be planted according to their adapted environmental zonal elevations along a gradient. The general elevation ranges for each community with some overlap between communities are shown in Table 1.4.2 below.

**Table 1.4.1: Vegetative Communities and Associated Elevations**

<b>Vegetative Community</b>	<b>Elevation (NGVD29)</b>
Scrub shrub and emergent marsh	4.2 ft. to 4.5 ft.
Wetland emergent marsh	2.0 ft. to 4.2 ft.
Wetland mudflat/open water	-1.8 ft. to 2.0 ft.
Open water	-1.8 ft. to below

The emergent marsh zone will be planted in the lower elevations predominantly with *Spartina alterniflora*. This portion of the marsh would be regularly flooded by tides twice a day. The higher elevation areas of emergent marsh from MHW 3.4' up to 4.2 feet will be planted with species such as saltmeadow cordgrass (*Spartina patens*) and flooded generally twice a month. The highest elevation wetland restoration areas will be planted with shrub species such as groundsel bush and marsh elder with herbaceous species such as saltmeadow cordgrass.

The design plan planting zonation by elevational range is proposed as follows:

- Creek Edge/Open Water to 3.4' = Mudflat and *Spartina alterniflora*
- 3.4 to 4.2' = *Spartina patens*, *Spartina alterniflora*, *Juncus gerardii*, *Distichlis spicata*
- 4.2' – 5.0' = *Spartina patens*, *Juncus gerardii*, *Distichlis spicata*, *Spartina alterniflora*
- 5.0' to Upland Interface = *Spartina patens*, *Juncus gerardii*, *Distichlis spicata*, groundsel bush and marsh elder

The construction sequence and seasonal schedule is proposed to span winter to summer. Following treatment of invasive species in the growing season, will be earthwork in the winter to late-spring time period. Areas of the Bank Site with elevated levels of contaminants will be excavated and substrate removed to an approved offsite location. Tidal channels on the Bank Site will be widened, deepened and extended to promote tidal hydrologic exchange. Areas to be planted with native species will be planted with herbaceous plugs and woody shrubs in the appropriate portion of the growing season, likely between May and July.

The tidal wetland restoration concepts described above have been implemented on many tidal restoration sites in the State and in the Meadowlands and are proven to be technically feasible. The most relevant examples are the Evergreen MRI3 Mitigation Bank and the Secaucus High School Mitigation site adjacent to the proposed Bank. In addition, the proposed Bank is also located in close proximity to a series of other successful wetland mitigation and restoration projects including the Western Brackish Marsh, Eastern Brackish Marsh, Mill Creek Mitigation Site, and Marsh Resources Meadowlands Mitigation Bank Phases 1 and 2. The expansion of this grouping of successful mitigation sites with the addition of the proposed Bank can only positively impact the quality of the contiguous ecological resources within this portion of the Meadowlands region. The proposed Bank also amplifies the continuous efforts of the New Jersey Sports and

Exposition Authority, as well as other local and regional entities, focused on restoring and enhancing the entire Hackensack Meadowlands District.

#### 1.4.4 Monitoring and Maintenance

The Bank will be monitored for a five-year performance period and for as long as the Bank is selling mitigation credits. If performance issues are encountered, maintenance actions will be implemented. Maintenance would include the planting of species to replace those lost as a result of mortality greater than 15 percent; i.e., when plant survival is lower than 85 percent. Additionally, invasive species such as *Phragmites* will be monitored and treated annually to ensure levels are below 10 percent.

Maintenance access will occur by foot or through the use of boats and kayaks in the future. In the event that earthwork must be conducted, construction equipment access would be by low ground pressure equipment supported by movable individual mats.

The primary focus of the maintenance plan will be to initiate management and corrective actions necessary to achieve specified performance standards. Maintenance efforts will be designed to ensure establishment of the target vegetation types, the prevention of *Phragmites* encroachment within the tidal emergent wetland zone, and curtailment of herbivory until the time that dense vegetative cover has become established. Maintenance tasks detailed below will be undertaken as directed by the results of the monitoring program.

- **Monitoring**

Standard statistical methods will be employed to monitor the development of vegetative cover and dominance patterns within the estuarine emergent marsh/tidal marsh portions of the Bank Site. The vegetation sampling program will be conducted once a year in late summer/early fall throughout the monitoring period. Permanent transects will be established within the emergent marsh and the end-points of each transect permanently marked with four-inch capped PVC pipes or equivalent. One-meter square quadrats will be established at evenly spaced intervals along each transect. The number of quadrats along each transect will vary depending on transect length.

For each quadrat, a visual estimate of the total percent ground cover of live vegetation will be made. Using these data, the following statistics will be generated: the total percent ground cover of live vegetation, the total percent ground cover of emergent vegetation by transect, and the mean total percent ground cover of emergent vegetation for all transects. All data sheets will be included in the annual monitoring reports as an appendix. The presence of hydrophytic vegetation will be used to assess the presence and maintenance of wetland tidal hydrology.

A series of representative photographs showing all vegetation zones will be included in each monitoring report. These photographs will show vegetation development on a broad-scale and close-ups of plant growth patterns. Ground level photographs will be taken facing north, south, east and west, from stations located adjacent to each vegetation transect permanent marker or plot. A photo log or key plan will accompany all submitted photos.

- **Invasive Species Control**

During the monitoring and maintenance period, the Sponsor will conduct an invasive species control program as deemed necessary by monitoring data. This program will consist of herbicide spot treatment applications to areas of invasive species predominantly represented by *Phragmites*. At a minimum, if invasive species exceed 5 percent of the vegetative cover, the Sponsor will initiate control measures.

- **Performance Standards**

The Bank performance standards will be similar to other mitigation sites and banks of the tidal zone of New Jersey. Tidal hydrology will be monitored via observations of the daily tides. Plant survival and coverage will be monitored to achieve 85 percent cover by Year 5 with lower percent cover targets in Year 1 increasing from 65 percent to 75 percent by Year 3 and to 85 percent in Year 5. Invasives will be kept below 10 percent at all times.

All monitoring and maintenance conducted for the Bank will be performed in accordance with the MBI and Federal and State permit standards. The goal of the monitoring and maintenance program will be to accurately determine the success of the Bank relative to performance standards and goals developed and to identify any problems requiring corrective action.

The success of the Bank will be measured by performance standards. Post-construction monitoring and maintenance of the Bank will be performed for five consecutive years, beginning the calendar year and overwinter following completion of construction of the Bank.

The Bank will be designed and implemented to meet performance standards that will serve as success criteria. Monitoring will measure the performance of the Bank and results will be compared to performance standards. If the Bank meets performance standards, success will be achieved. If the Bank does not meet performance standards, corrective actions will be implemented to achieve success. Performance will be measured annually, and successful achievement of performance standards will be assessed annually. Attainment of success criteria or partial attainment of success criteria and subsequent credit release or partial credit release will be subject to agency field inspection at agency discretion.

Performance Standards by designed habitat zone are described below:

- **Emergent Marsh**

- **Establish Hydrologic Regime**

Demonstrate the grading has been implemented as per the approved design plans and the emergent marsh is inundated by the daily or monthly tides. Demonstration of grading includes excavation to minus 1 foot below marsh grade and capping with clean fill to marsh grade.

- **Completion of Planting**

Demonstrate the planting has been completed as per the approved design plans.

- **Hydrologic Performance Standard**

Years 1 through 5; demonstrate daily or monthly tidal inundation.

- **Vegetative Performance Standard**

Years 1 through 5; demonstrate 85 percent survival of target planting density. Years 1 and 2; demonstrate 65 percent vegetative cover. Years 3 and 4; demonstrate 75 percent vegetative cover. Year 5; demonstrate 85 percent vegetative cover. Years 1 through 5; demonstrate invasive cover is less than 10 percent.

- **Basis:**

Vegetative survival of plantings will be based on the target planting density of 4,840 herbaceous plants per acre. Invasive cover will not exceed 10 percent; management efforts will be implemented should invasives exceed a 5 percent threshold. Invasive species include species such as but not limited to *Phalaris arundinacea* (Reed canary grass), *Phragmites australis* (Common reed grass), *Pueraria lobata* (Kudzu), *Lythrum salicaria* (Purple loosestrife), *Ailanthus altissima* (Tree-of-heaven), *Berberis thunbergii* (Japanese barberry), *Berberis vulgaris* (Common barberry), *Elaeagnus angustifolia* (Russian olive), *Elaeagnus umbellata* (Autumn olive), *Ligustrum obtusifolium* (Japanese privet), *Ligustrum vulgare* (Common privet), mile-a-minute (*Persicaria perfoliata*) and *Rosa multiflora* (Multiflora rose). Cattail is specifically not listed as an invasive species to be controlled as it is native to the Meadowlands and expected to colonize the site as it has done at other wetlands of the Meadowlands.

## - Scrub Shrub and Emergent Habitat

- **Establish Hydrologic Regime**

Demonstrate the grading has been implemented as per the approved design plans and the scrub shrub and emergent marsh is inundated by the daily or monthly tides. Demonstration of grading includes excavation to minus 1 foot below marsh grade and capping with clean fill to marsh grade.

- **Completion of Planting**

Demonstrate the planting has been completed as per the approved design plans.

- **Hydrologic Performance Standard**

Years 1 through 5; demonstrate daily or monthly tidal inundation.

- **Vegetative Performance Standard**

Years 1 through 5; demonstrate 85 percent survival of target planting density. Years 1 and 2; demonstrate 65 percent vegetative cover. Years 3 and 4; demonstrate 75 percent vegetative cover. Year 5; demonstrate 85 percent vegetative cover. Years 1 through 5; demonstrate woody plants are thriving. Years 1 through 5; demonstrate invasive cover is less than 10 percent.

- **Basis:**

Vegetative survival of plantings will be based on the target planting density of 200 woody plants per acre. The scrub shrub will be planted with woody species to develop habitat for passerine and raptor bird assemblages. Observations that woody plants are thriving will include positive indications of leaf growth and crown development, and stem growth in terms of height. Invasive cover will not exceed 10 percent; management efforts will be implemented should invasives exceed a 5 percent threshold. Invasive species include species such as but not limited to *Phalaris arundinacea* (Reed canary grass), *Phragmites australis* (Common reed grass), *Pueraria lobata*

(Kudzu), *Lythrum salicaria* (Purple loosestrife), *Ailanthus altissima* (Tree-of-heaven), *Berberis thunbergii* (Japanese barberry), *Berberis vulgaris* (Common barberry), *Elaeagnus angustifolia* (Russian olive), *Elaeagnus umbellata* (Autumn olive), *Ligustrum obtusifolium* (Japanese privet), *Ligustrum vulgare* (Common privet), *Persicaria perfoliata* (Mile-a-minute) and *Rosa multiflora* (Multiflora rose). Cattail is specifically not listed as an invasive species to be controlled as it is native to the Meadowlands and expected to colonize the site as it has done at MRI 1 and 2 and other wetlands of the Meadowlands.

#### - Open Water and Mudflat

- **Establish Hydrologic Regime**

Demonstrate the grading has been implemented as per the approved design plans and the open water and mudflat area is inundated by the daily tides.

- **Hydrologic Performance Standard**

Years 1 through 5; demonstrate daily tidal inundation.

- **Vegetative Performance Standard**

Years 1 through 5; demonstrate invasive cover is less than 10 percent.

- **Basis:**

The intertidal open water and mudflat habitat zone will not be planted or seeded. Invasive cover will not exceed 10 percent; management efforts will be implemented should invasives exceed a 5 percent threshold. Invasive species include species such as but not limited to *Phalaris arundinacea* (Reed canary grass), *Phragmites australis* (Common reed grass), *Pueraria lobata* (Kudzu), *Lythrum salicaria* (Purple loosestrife), *Ailanthus altissima* (Tree-of-heaven), *Berberis thunbergii* (Japanese barberry), *Berberis vulgaris* (Common barberry), *Elaeagnus angustifolia* (Russian olive), *Elaeagnus umbellata* (Autumn olive), *Ligustrum obtusifolium* (Japanese privet), *Ligustrum vulgare* (Common privet), *Persicaria perfoliata* (Mile-a-minute) and *Rosa multiflora* (Multiflora rose). Cattail is specifically not listed as an invasive species to be controlled as it is native to the Meadowlands and expected to colonize the site as it has done at other wetlands of the Meadowlands.

### 1.5 The Proposed Ownership Arrangements and Long-Term Management Strategy for the Mitigation Bank Site – 33 CFR 332.8 d-2(v)

The Bank property is owned by Secaucus Township and leased to the Sponsor pursuant to a long-term lease agreement. The Sponsor will be the owner and operator of the Bank. Evergreen, as Sponsor, will secure sufficient funds and/or financial assurances (performance and maintenance bonds, casualty insurance or letters of credit), as described below, to cover contingency actions in the event that the Sponsor fails to comply with the terms of the MBI or to rectify any unforeseen events as determined by the MIMAC. In addition, the Sponsor shall also be responsible for providing adequate funding to monitor and maintain the Bank until either all Bank credits have been sold or for a total of 10 years after the date of completion of construction and initial planting, whichever comes last.

**Conservation Restriction:** The Bank will be protected under the Conservation Deed Restriction in form and substance presented in Attachment 6. The Conservation Restriction shall be recorded with the County Registrar of Deeds within 60 days of MBI execution and run in perpetuity with the Bank Site. The Sponsor shall provide the USACE and NJDEP with written notification that the Conservation Restriction has been submitted to the County Registrar of Deeds for recordation and shall provide documentation of such recordation to NJDEP and the USACE. Under no circumstances may any credits be released, sold, debited, or credited until the NJDEP and the USACE receive proof of recording of the approved Conservation Restriction. The Conservation Restriction may not be altered, amended, assigned, or terminated without written approval of the NJDEP and the USACE, in consultation with the MIMAC.

**Performance Surety:** Prior to the release of any credits, the Sponsor will obtain a financial assurance that is acceptable to the Corps and names NJDEP as the obligee. The financial assurances for the construction of the Bank will be a Performance Surety bond casualty insurance and/or letter of credit posted in an amount equal to 115 percent of the estimated cost of construction. A Performance Surety bond posted by the construction subcontractor, naming the Sponsor and NJDEP as obligees may be used to satisfy all or part of this requirement. The request for a release of the financial assurance shall be made in writing by the Sponsor to both the Corps and the NJDEP.

**Maintenance Surety:** Prior to the release of the Performance Surety, the Sponsor must obtain a financial assurance that is acceptable to the Corps and NJDEP and names the NJDEP as the obligee. The financial assurances for the monitoring and maintenance costs of the Bank will be a Maintenance Surety bond, casualty insurance and/or letter of credit to assure the success of the mitigation through the completion of the monitoring period, equal to 115 percent of the estimated cost of monitoring and maintaining the site, including the cost to replant the mitigation area.

**Surety Release:** The NJDEP will authorize the release, in writing, of the Performance Surety upon receipt of the Sponsor's written notice of completion of project construction, subject to site inspection and approval. Upon receipt of each written annual monitoring report, showing that the project is meeting yearly performance requirements, subject to site inspection and approval, the NJDEP will annually authorize the Sponsor to reduce the balance of the Maintenance Surety by 20% of the original total.

**Long Term Maintenance Plan:** Long-term management will be conducted after the five-year monitoring performance period until the Bank credits are sold. The Bank will be protected under the Conservation Restriction and transferred to a long-term steward. The Town of Secaucus will continue to own the property and will be provided with a maintenance fund from the Sponsor. The steward will continue to own the property and be provided with a maintenance fund. The maintenance fund will comply with NJDEP policy which states, *"Provide the government agency or charitable conservancy with a maintenance fund for maintenance and supervision of the mitigation area. The amount of the maintenance fund shall be determined by agreement between the mitigator and the agency or conservancy."*

## 1.6 The Qualifications of the Sponsor

The Sponsor has successfully implemented mitigation banks and mitigation sites in the State for nearly two decades. During this period, the Sponsor has developed twenty-two mitigation banks

in New Jersey, Virginia and Pennsylvania, all of which have passed monitoring and maintenance periods successfully. These include the Evergreen MRI3 Mitigation Bank, which is one of the few tidal wetland mitigation banks located in the HMD. MRI3 is a successful State and federally approved bank as per the U.S. Army Corps of Engineers. The Sponsor is qualified to implement the Bank. Please see Qualifications provided in Attachment 7.

#### **1.7 Ecological Suitability – 33 CFR 332.8 d-2 (vii)**

##### **(A) The ecological suitability of the site to achieve the objectives of the proposed mitigation bank, including the physical, chemical, and biological characteristics of the bank site and how that site will support the planned types of aquatic resources and functions**

The Bank Site is ideally situated to become a restored and valuable wetland habitat in the HMD. Existing site conditions warrant restoration and the proposed mitigation design plan incorporates concepts applied successfully to other wetland restoration sites of the region to increase functions, values and services. The Bank Site is predominantly a *Phragmites*-dominated tidally restricted wetland due to marsh accretion and fill. The sediments of the site display elevated levels of contaminants found pervasively throughout the Meadowlands Region. Removal of the sediments will remove contaminant loadings from the watershed generating an ecological uplift and providing for improved tidal exchange. The tidal exchange is critical to the establishment of a native vegetative community of higher habitat value than the dense monoculture of *Phragmites*.

Once implemented, the Bank will be a combination of brackish emergent marsh of various elevations, open water and mudflat habitat, generally inundated twice a day during the tidal cycle, with elevated marsh areas inundated less frequently. The marsh plain will be vegetated with native species and invasive species will be controlled via herbicide treatment and excavation as well as planting of native species to out-compete the invasive species. The tidal inundation of the site will also serve to curtail invasive species through increased hydroperiod and increased salinity levels.

The upland habitat at the edge of the Bank Site will be enhanced with excavated material and planted and seeded with native species. This upland edge will be blended into a continuum of habitats extending from open water to mudflats to brackish marsh of varying elevations to upland border.

The re-establishment and restoration of the tidal hydrologic regime is the key step to supporting the proposed and planned types of aquatic resources. The aquatic resources planned and proposed provide functions typical of restored tidal marshes of the Meadowlands region. Functions anticipated to be restored at the Bank Site include flood storage, nutrient retention as well as transport and water filtration and therefore improved water quality will result from the interaction of the daily and monthly tides with the marsh plain vegetated with native species. Further, as noted above, it is anticipated that the removal of sediments containing elevated contaminants found pervasively throughout the Meadowlands region will result in higher quality habitat for wildlife and fish, including habitat for threatened and endangered species in both the aquatic community and in the upland habitat community. Social functional benefits will include increased opportunities for scientific education, passive recreation and aesthetic visual benefits of a restored tidal marsh interspersed with upland habitat.

## 1.7.1 Existing Conditions/Site Survey

The Bank Site is located in Town of Secaucus, Hudson County, New Jersey. The Bank Site consists of approximately 22.61 acres of a 35.24-acre parcel located on Tax Block 225, Lot 12. The Bank is controlled by the Sponsor, a wholly owned subsidiary of Evergreen Environmental, LLC, pursuant to a long-term lease between Secaucus and the Sponsor. The Bank Site consists of predominantly wetland and open water habitats with upland areas along the western portion of the site adjacent to recreational ballfields.

### 1.7.1.1 Topography

Topographic elevations at the Bank Site have been obtained based on survey and are presented in the Design Plans.

### 1.7.1.2 Hydrology

Located within the Hackensack River watershed, the Bank Site is within the New Jersey Department of Environmental Protection's (NJDEP's) Watershed Management Area 5 (WMA-5). The entire site is within the 100-year floodplain (Figure 1.5 in Attachment 1). Salinity was observed to be brackish. Tidal amplitude at the site appears to be approximately 4-5 feet based on field observation and tide station data from the region. In January 2008 the Meadowlands Environmental Research Institute (MERI) installed tide gages at several locations throughout the Meadowlands (Figure 1.6 in Attachment 1). Tide information from the MERI Mill Creek and Secaucus High School sites is available to estimate the local regime at the mitigation Bank Site. The Mill Creek site ("new and current") appears to be at the confluence of Mill Creek and the Hackensack River, and the Mill Creek Point site is located in close proximity to the mitigation Bank Site within the Mill Creek marshes. The Secaucus High School marsh is located directly adjacent to the Hackensack River. The MERI reported the following tidal datums for the sites (Table 1.7.1).

**Table 1.7.1: Tidal Elevations at Tide Gages Proximate to the Proposed Mitigation Bank Site**

Datum	Tidal Elevation (feet, NGVD29) MERI Jan 2008					
	Secaucus High School		Mill Creek ("new and current")		Mill Creek Point	
	Observed	Predicted	Observed	Predicted	Observed	Predicted
MHWS	4.21	4.19	4.31	4.07	4.48	4.40
MHHW	4.13	4.09	4.21	3.93	4.35	4.24
MHW	3.77	3.74	3.88	3.64	4.04	3.96
MTL	1.14	1.17	1.16	1.12	1.27	1.27
MLW	-1.48	-1.41	-1.56	-1.39	-1.51	-1.43
MLLW	-1.64	-1.55	-1.81	-1.45	-1.72	-1.57
MLWS	-1.92	-1.86	-1.99	-1.82	-1.94	-1.87

### 1.7.1.3 Wetlands and Vegetation Communities

As discussed above, the Bank Site has upland and wetland areas. The NJDEP classifies the site as saline marshes (Figure 1.7 and Figure 1.8 in Attachment 1). These wetlands have a Cowardin classification of estuarine, intertidal, emergent, persistent, and irregularly flooded (E2EM1P). Based on field observations, the vegetated wetland communities consist of dense monotypic stands of *Phragmites*. There are approximately 21 acres of *Phragmites*-dominated wetlands on the Bank Site. Additionally, there are small portions of mudflats and open water habitats.

### 1.7.1.4 Soils

Soils on the proposed Bank Site are mapped by the Natural Resources Conservation Service (NRCS) as poorly drained, frequently flooded Westbrook mucky peat (WectA) with 0 to 2 percent slopes. Additionally, a small upland portion of Secaucus artifactual fine sandy loam (SecA) with 0 to 3 percent slopes. Areas to the south are mapped as urban land, wet substratum, 0 to 8 percent slopes (URWETB; Figure 1.9 in Attachment 1).

### 1.7.1.5 Contamination

Sediment sampling was conducted during field investigations of the Bank Site in September and October of 2013 and a Site Assessment Report was submitted to the MIMAC in November 2013 followed by additional sampling in 2015 (see Attachment 8 and Figure 1.10 in Attachment 1). Results of laboratory analyses revealed that several of the metal analytes were present in the sediments at levels above ER-L sediment screening criteria, and 11 of the 12 samples taken had concentrations of mercury that exceeded the Effects Range Median (ER-M). Although mercury was present in levels above the ER-M screening criteria, it was not unexpected, as the Bank Site is connected to the Hackensack River known to contain and convey regionally pervasive contaminants. However, elevated metals could also be a result of the variability of a random grab sample with residual mercury as the marsh sediments are highly variable and often human-altered. Results for mercury are within the mercury range that has been found from surrounding wetland areas of the Meadowlands. Sediment samples collected at the Secaucus High School Marsh and Mill Creek Marsh ranged from 4.0 to 27 mg/kg and 0.07 to 41.17 mg/kg, respectively (MERI 1997 and 2001). By restoring this area as a mitigation bank, some mercury laden sediments would be removed to substrate of lower concentrations or backfilled with substrate of lesser concentrations.

Low levels of dioxins and furans were detected during the September and October sampling events. All samples from the proposed Bank Site exceeded the ER-M concentration for dioxin of 0.0036 ng/mg. Low levels of furans are not atypical of sediments within the Hackensack Meadowlands or throughout the watershed. For example, ten samples taken from the Lincoln Park Wetland Restoration site in Jersey City, NJ in May of 2007 had concentrations of TEQ 2,3,7,8-TCDD ranging from 0.0410 to 0.2700 ng/kg (NOAA 2009).

While the sediment investigations were conducted in 2013 and 2015, the sediment characterization remains representative of site conditions and these results are also similar to those from investigations of the surrounding restored marsh areas – Western Brackish Marsh and Secaucus High School Marsh (MERI 1997 and 2001). Obtaining additional samples to expand the contamination data set is unlikely to result in any changes in approach to reducing exposure to contaminants or providing protective measures. By capping the entire MCP site, contaminant exposures in the biotic zone on site and within the watershed will decrease, and excavation of the

upper layer of sediment and deeper hot spots will result in permanent removal of contaminant mass from the environment, in particular mercury and lead. Furthermore, by capping the site, residual underlying contaminants will be isolated at depth below the biologically active zone of the ecological receptors using the site. Typical saltmarsh vegetation has a rootzone within the upper foot of the sediment. Saltmarsh cordgrass (*Spartina alterniflora*) roots are concentrated within the upper 12 in. (30 cm) of sediment (McKee 2000, McKee, et al. 2006). Blum and Davey (2013) indicated that *S. alterniflora* roots and rhizomes “occupy a significant volume of the top 10 inches (25 cm) of marsh soil” in both mineral and organic soil types. Saltmeadow cordgrass (*Spartina patens*) roots may grow as deep as 16 inches (40 cm), but are typically concentrated in dense, sediment-binding mats within a few inches of the higher elevation marsh surface (McKee 2000). Seashore saltgrass (*Distichlis spicata*) has its greatest concentration of roots in the 4- to 16-inch zone (Hauser 2006). Marsh elder (*Iva frutescens*) also has a root zone concentrated within the top 5 – 10 cm of soil (Bertness et al 1992). Potential benthic invertebrate burrowing receptors at the MCP Bank Site include the fiddler crab (*Uca pugnax* and *Uca pugilator*) and clam worms (*Nereidae*). While both species could potentially burrow below a 1 foot cap, fiddler crab burrows are typically between 6 and 13 inches below ground surface and clam worms typically burrow up to 16 inches within marsh sediments (USEPA 2015).

Overall, the contamination identified on the proposed Bank Site is not atypical of the pervasive contamination that can be observed throughout the entire Hackensack Meadowlands District. The EPA announced in September 2022 that the Lower Hackensack River located in Bergen and Hudson counties, New Jersey, has been added to the Superfund program's National Priorities List (NPL). Evergreen's design includes the removal of substantial amounts of sediments laden with these low-level contaminants, permanently removing them from the watershed and moving the region one step closer to a more ecologically improved condition.

In light of the vast area burdened by these kinds of contaminants, projects like the proposed Bank as well as the banks previously developed in the region and government and non-profit sponsored restoration activities, present the best, and likely only, opportunity to incrementally improve and enhance the ecological condition of the Hackensack Meadowlands District.

#### **1.7.1.6 Threatened and Endangered Species**

The NJDEP Natural Heritage Program (NHP) were contacted to request information on any known occurrences of federal or state endangered, threatened, proposed, or candidate species of flora or fauna or any critical habitats known to support those species within the vicinity of the Bank Site. Agency correspondence is provided in Attachment 3 and a listed species are outlined in Table 1.7.2. The results of the NJDEP Landscape Project Habitat Suitability are presented in Figure 1.11 in Attachment 1.

Suitable habitat for bald eagles consists of large open waters and large nesting trees that tower over canopies. The nearby Hackensack River may provide potential foraging grounds for this species. Marsh areas within the project site may provide potential habitat for glossy ibis and northern harriers, and the quiet waters of Mill Creek may provide habitat for little blue heron and snowy egret. Yellow-crowned night heron may be found near the wetlands, along Mill Creek, or in the nearby forested uplands.

The Bank Site may provide potential breeding habitat for the cattle egret within the marshes and nearby upland forests. Nearby upland forested areas west of the Bank Site may provide potential habitat for the Canada warbler. The Bank Site offers foraging habitat for the barn owl which prefers

large areas of open marshland. Potential habitat for the northern diamondback terrapin may exist in the brackish waters of Mill Creek and the wetland. Tall structures commonly associated with peregrine falcon habitat are not found within the Bank Site. Despite the fact that potential habitat for these species already exists and would be disturbed during project construction, the species would benefit from the coastal wetland habitat that will be present following the construction of the Bank because it would be of higher quality and more suitable for their needs.

The USFWS Official Species List (OSL) indicated that there are no federally listed or proposed threatened or endangered species under USFWS jurisdiction that occur within the vicinity of the Bank Site. Therefore, according to the USFWS, no further consultation pursuant to Section 7 of the Endangered Species Act is required.

**Table 1.7.2: Summary of Threatened, Endangered or Special Concern or Tracked Species or Habitat at and within One Mile of the Evergreen Mill Creek Point Mitigation Bank**

Common Name	Scientific Name	Status <sup>1</sup>	Feature Type
<b>At the Project Site</b>			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Endangered	Foraging
Glossy Ibis	<i>Plegadis falcinellus</i>	Special Concern	Foraging
Little Blue Heron	<i>Egretta caerulea</i>	Special Concern	Foraging
Northern Harrier	<i>Circus cyaneus</i>	Special Concern	Non-breeding sighting
Yellow-Crowned Night Heron	<i>Nyctanassa violacea</i>	Special Concern	Foraging
Snowy Egret	<i>Egretta thula</i>	Threatened	Foraging
<b>Within One Mile of the Project Site</b>			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Endangered	Foraging
Barn Owl	<i>Tyto alba</i>	Special Concern	Non-breeding sighting
Canada Warbler	<i>Wilsonia canadensis</i>	Special Concern	Breeding sighting
Cattle Egret	<i>Bubulcus ibis</i>	Threatened	Foraging
Glossy Ibis	<i>Plegadis falcinellus</i>	Special Concern	Foraging
Little Blue Heron	<i>Egretta caerulea</i>	Special Concern	Foraging
Northern Harrier	<i>Circus cyaneus</i>	Endangered	Breeding sighting
		Special Concern	Non-breeding sighting
Peregrine Falcon	<i>Falco peregrinus</i>	Special Concern	Urban Nest
Snowy Egret	<i>Egretta thula</i>	Special Concern	Foraging
Yellow-Crowned Night-Heron	<i>Nyctanassa violacea</i>	Threatened	Foraging
		Threatened	Nesting Colony
Northern Diamondback Terrapin	<i>Malaclemys terrapin terrapin</i>	Tracked by NHP	NA

Source: NJDEP Natural Heritage Program consultation dated February 10, 2015. Rare Wildlife Species or Wildlife Habitat on the Project Site and within One Mile of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches.

<sup>1</sup> Status indicates state listing. USFWS OSL indicates no federally listed species are present and none of the species identified by NHP are federally listed.

Mill Creek and the Hackensack River are potential habitat for anadromous fish and potential essential fish habitat (EFH). Construction of the Bank does not include any work within the Hackensack River or Mill Creek. Sedimentation and erosion control measures, in addition to Best Management Practices, will be employed during construction to ensure turbid discharges and disturbances to the bottom sediments do not occur, resulting in no impacts to aquatic habitat. Restoration of the wetland, mudflat and open water within the Bank Site will ultimately create additional habitat for anadromous fish and other estuarine fish and wildlife species. Upon consultation with NOAA National Marine Fisheries Service, a letter dated February 18, 2015 stated that no listed threatened or endangered species are present within the vicinity of the Bank Site. For these reasons, no impacts to threatened and endangered marine species, anadromous fish or EFH are anticipated to occur.

### **1.7.1.7 Sea Level Rise Attenuation**

Sea level rise effects will be assessed relative to the Bank design and operation. Understanding the range of potential relative sea level rise (RSLR) scenarios is important in the design of wetland mitigation sites. To accommodate varying water levels over time, the design may include planned vertical vegetation migration over the design life. Evergreen will compile RSLR guidance including from the NOAA 2022 Sea Level Rise Technical Report. The RSLR compilation will provide an understanding of three risk scenarios (low, intermediate and high) over the several time frames within the project design life. Evergreen will summarize and discuss these results to understand the bank's RSLR risk profile.

Sea level is projected to rise 10 - 12 inches in the next 30-year period (2020 - 2050) (Sweet et al. 2022). The Bank design will incrementally assess the low, medium, and high rates of sea level rise for a period of 50 years from projected implementation in 2025. Tidal elevation and inundation effects of sea level rise will be incorporated into the Bank design components. Projected levels for mean low water, mean high water, and mean high water spring will be calculated to assess sea level rise affects. Based on the results of the sea level rise analysis the Bank design will be modified to reduce impacts of sea level rise such as incorporation of higher elevation emergent marsh, scrub/shrub habitat and upland interface buffer.

Although sea level rise is a concern in the Hackensack Meadowlands District, the site of the proposed Bank has certain geographical advantages that provide it with a degree of natural resiliency. Specifically, the Bank Site is part of the Hackensack River riverine system which is continuously providing a supply of alluvial sediments that could help to counter the effects of sea level rise through accretion. As noted in the U.S. Army Corps of Engineers, New York District's Hudson Raritan Estuary Ecosystem Comprehensive Restoration Plan, dated, June 2016 (CRP), a precursor study upon which the Corps' Restoration Feasibility Study, dated April 2020 was based, ". . . wetlands associated with a continuous source of alluvial sediments from extensive riverine drainage basins (e.g., Raritan River wetlands) may persist for a much longer duration before reaching disturbance thresholds." (See, Page 45 of the CRP).

In addition to the natural resiliency enjoyed by the Bank Site as a result of its positional location within a riverine drainage, the Sponsor is also proposing to design the Bank Site with varying elevations of emergent marsh which will help to further forestall the effects of sea level rise.

Evergreen is aware that sea level rise could affect restored wetlands and has designed the proposed bank to contain emergent marsh of varying elevations to withstand the potential effects of future sea level rise while maintaining the hydraulic conditions necessary to allow for a vibrant,

resilient and diverse emergent marsh community. Based upon sea level rise predictions the Bank Site will not be affected by sea level rise until after the projected 10-year operational period of the mitigation bank.

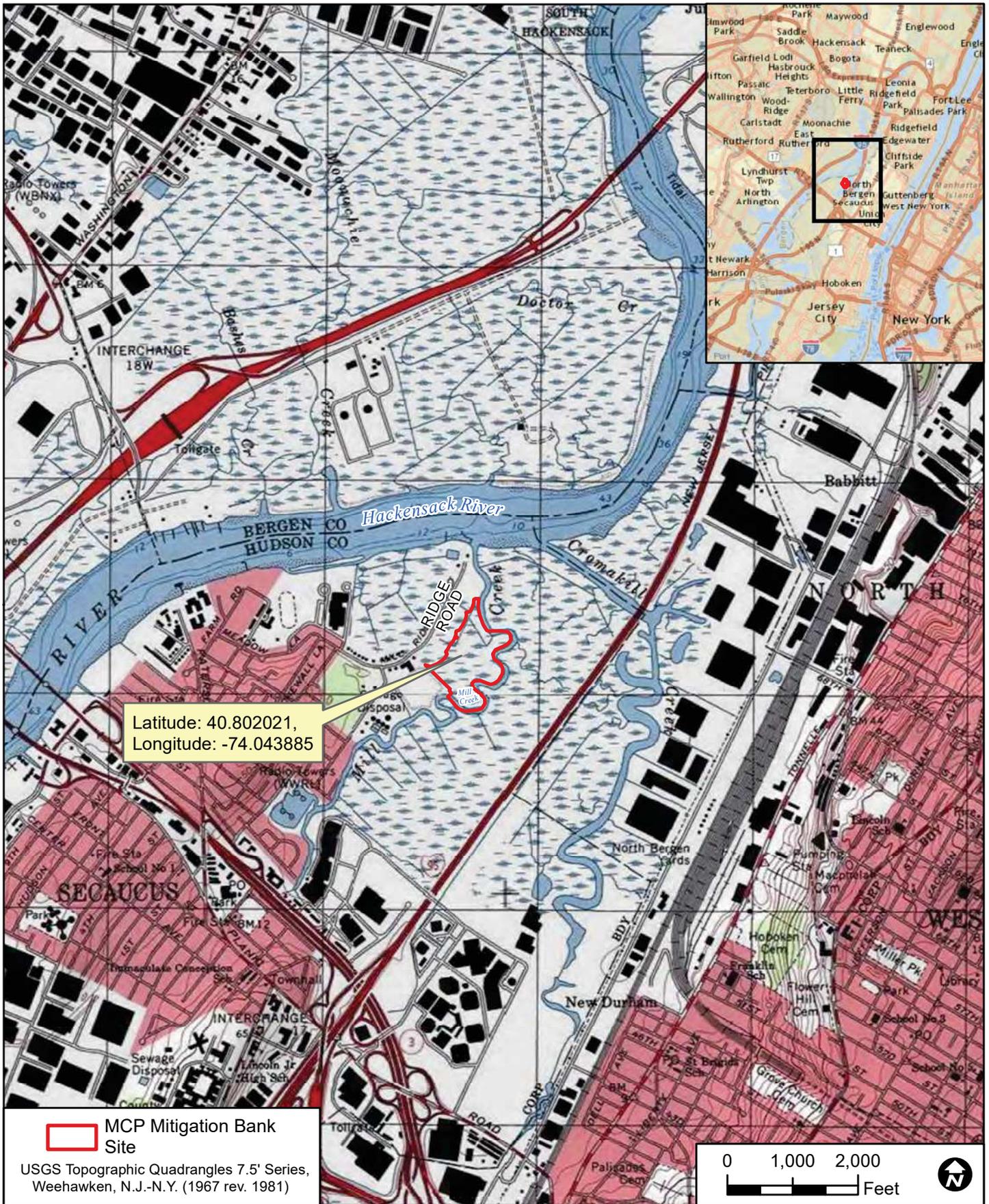
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- NJDEP. 2023. Ecological Evaluation Technical Guidance. Contaminated Site Remediation and Redevelopment. Version 2.1, May 2023. Accessed online May 2023 at [https://www.nj.gov/dep/srp/guidance/srra/ecological\\_evaluation.pdf](https://www.nj.gov/dep/srp/guidance/srra/ecological_evaluation.pdf)

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# ATTACHMENT 1

## FIGURES



Latitude: 40.802021,  
Longitude: -74.043885

 MCP Mitigation Bank Site

USGS Topographic Quadrangles 7.5' Series,  
Weehawken, N.J.-N.Y. (1967 rev. 1981)

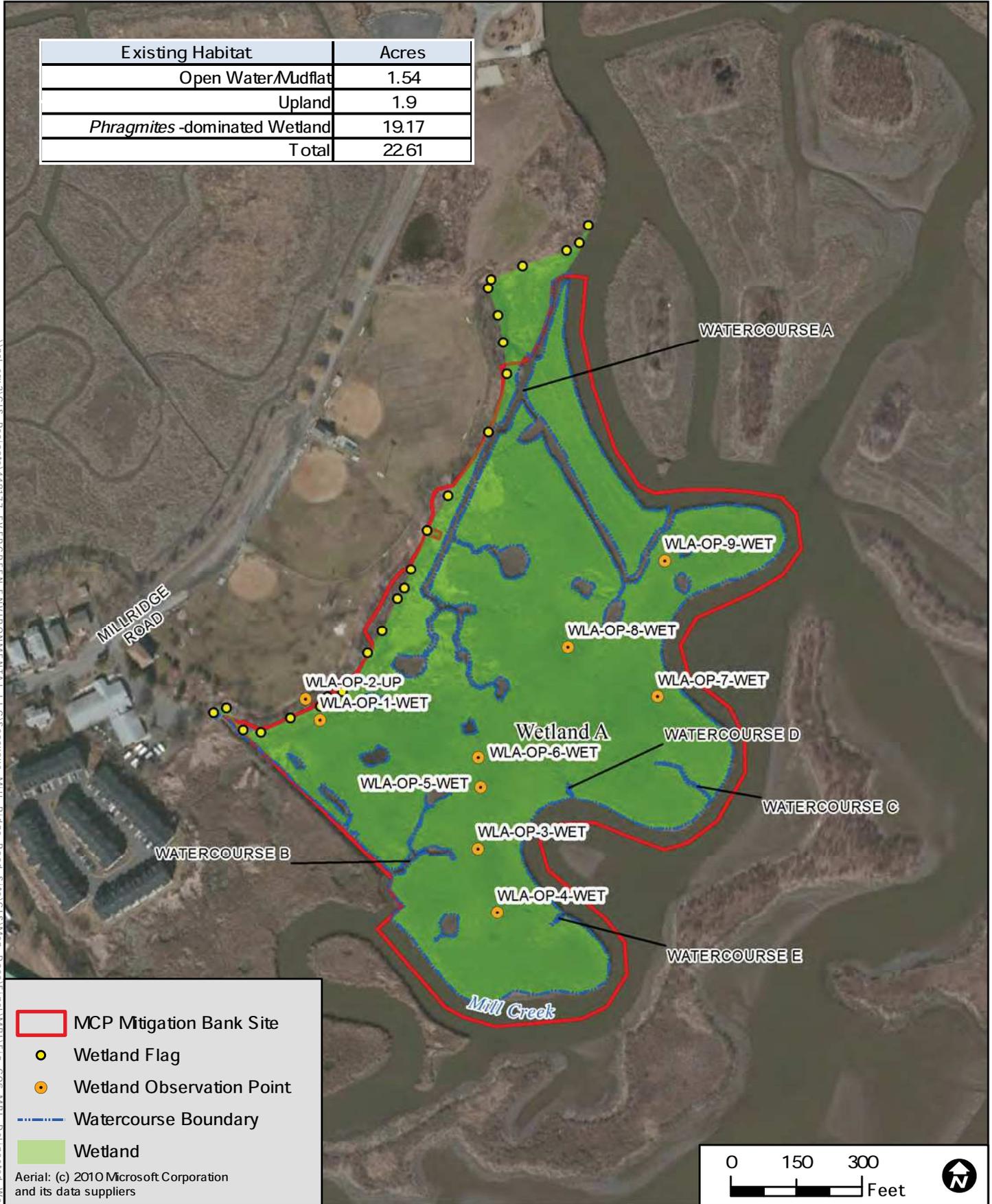


USGS Quadrangle Map  
Evergreen Mill Creek Point Mitigation Bank Site  
Secaucus, Hudson County, NJ

Figure  
1.1

\\ppl-srv3\GIS\_Proj\Projects\448177\_EVERGREEN\_ENVIRONMENTAL\_LEC\Secaucus\_Mill\_Creek\_Road\_Site\GISMap\_Docs\Final\MB1\Fig\_C01\_MBI\_USGS\_topo.mxd

Existing Habitat	Acres
Open Water/Mudflat	1.54
Upland	1.9
<i>Phragmites</i> -dominated Wetland	19.17
Total	22.61



MCP Mitigation Bank Site  
● Wetland Flag  
● Wetland Observation Point  
 Watercourse Boundary  
 Wetland

Aerial: (c) 2010 Microsoft Corporation and its data suppliers

0 150 300 Feet



*Delineated Wetlands and Watercourses*  
 Evergreen Mill Creek Point Mitigation Bank Site  
 Secaucus, Hudson County, NJ

Figure  
 1.2

\\pr1-srv-3\GIS\Projects\448177\_EVERGREEN ENVIRONMENTAL LLC\Secaucus\_Mill\_Creek\_Bridge\_Road\_StreetGISMap\_Docs\Final\MB1\Fig\_006\_MB1\_Delineated\_Wetland\_Watercourses.mxd



\p1-riv-3\GIS-Projects\448177-EVERGREEN ENVIRONMENTAL, LLC\Secaucus\_Mill\_Ridge\_Road\_SteigisMap\_Docs\Final\MB1\Fig\_CO2\_MBI\_TaxMap.mxd

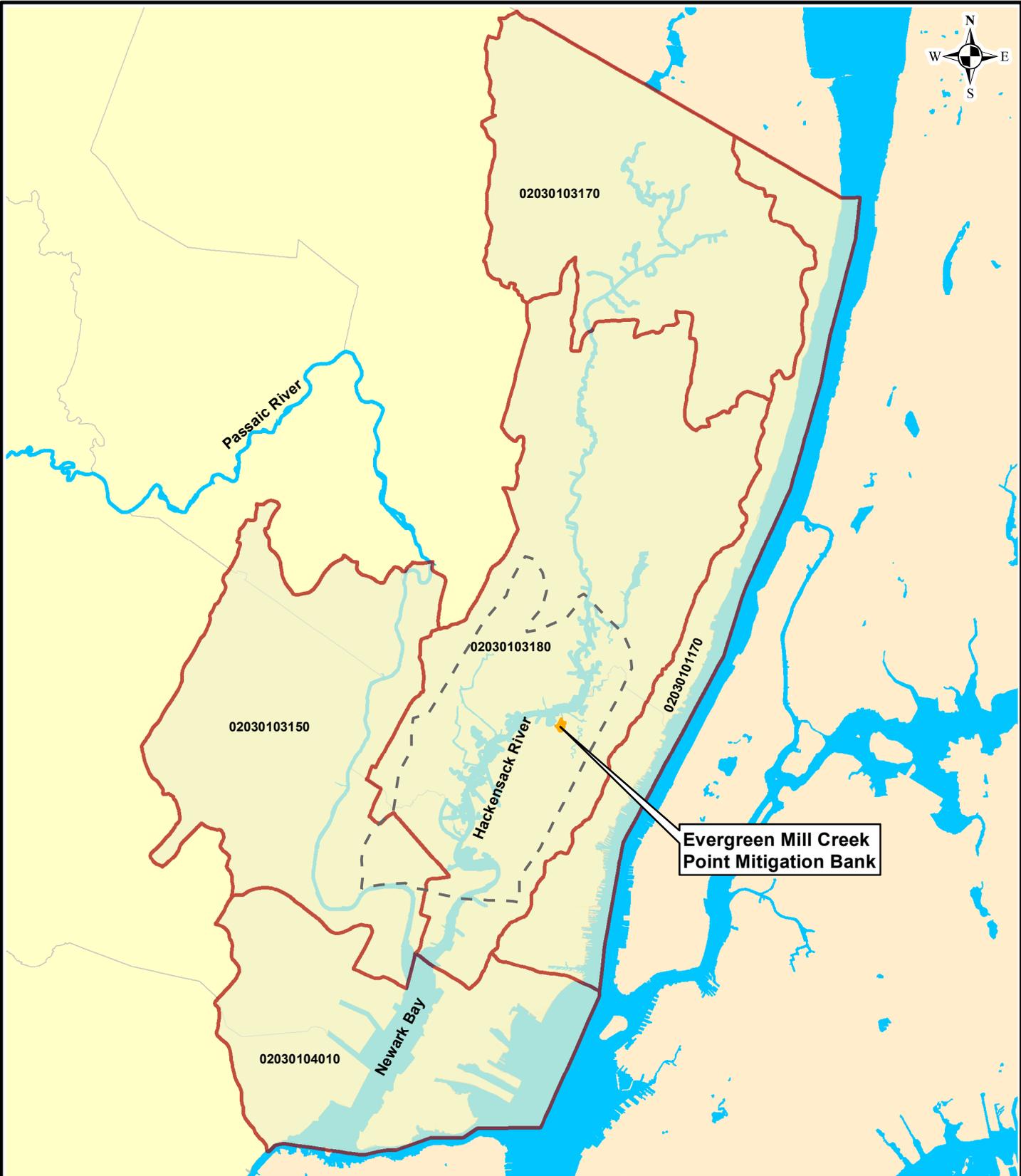
- MCP Mitigation Bank Site
- Parcel

Aerial Photo Basemap:  
 (c) Microsoft Corporation and its data suppliers



**Tax Map**  
 Evergreen Mill Creek Point Mitigation Bank Site  
 Secaucus, Hudson County, NJ

**Figure**  
 1.3



**Legend**

- Evergreen Mill Creek Point Mitigation Bank
- HUC-11
- Hackensack Meadowlands District



**FIGURE 1.4**

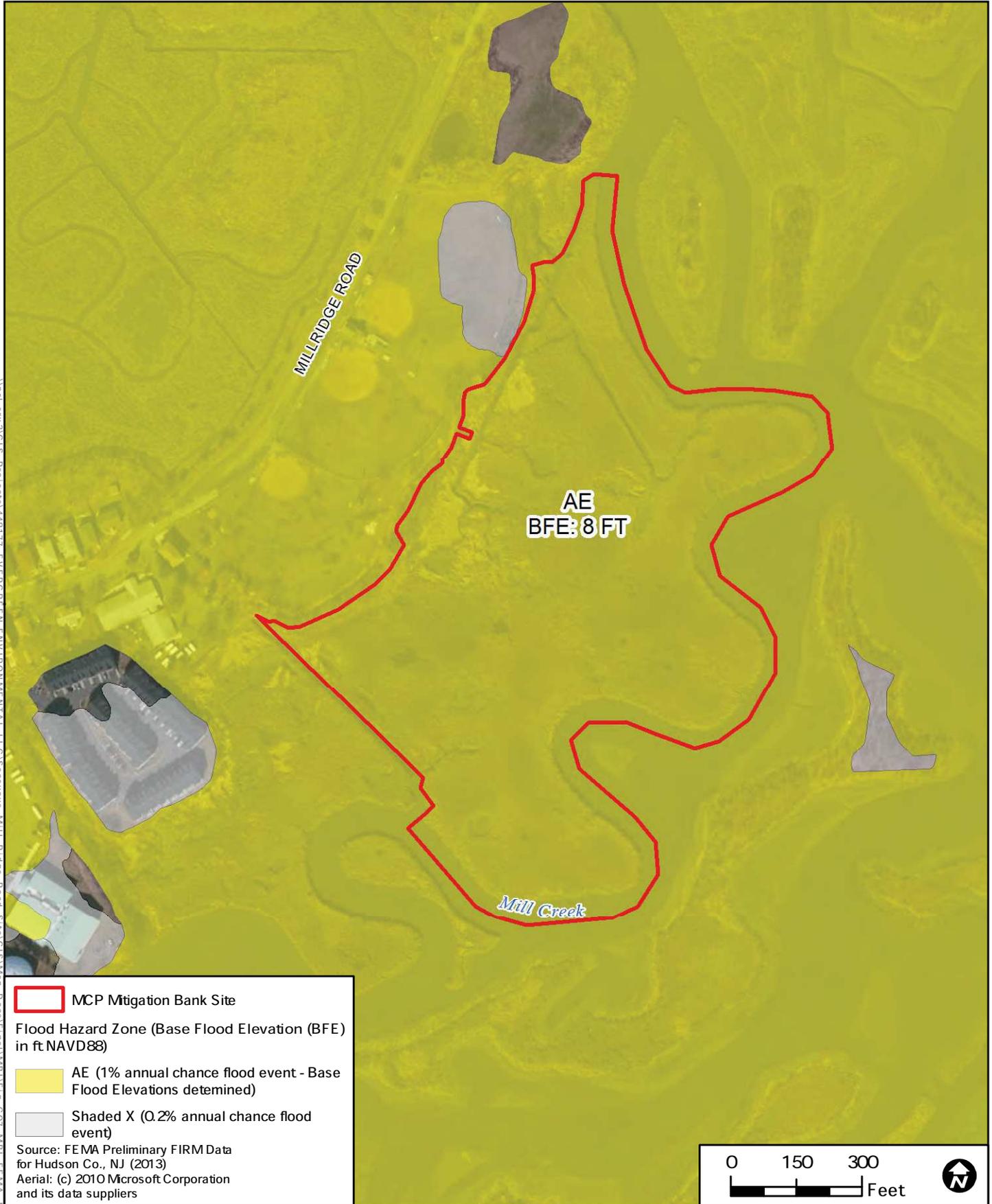


**SERVICE AREA  
EVERGREEN MILL CREEK POINT  
MITIGATION BANK**

SECAUCUS, HUDSON COUNTY

NEW JERSEY

\\p1-srv3\GIS-Projects\448177\_EVERGREEN ENVIRONMENTAL LLC\Secaucus\_Mill\_Creek\_Road\_Site\GIS\Map\_Docs\Final\MB1\Fig\_07\_MBI\_FEMA\_Flood.mxd



 MCP Mitigation Bank Site

Flood Hazard Zone (Base Flood Elevation (BFE) in ft NAVD88)

 AE (1% annual chance flood event - Base Flood Elevations determined)

 Shaded X (0.2% annual chance flood event)

Source: FEMA Preliminary FIRM Data for Hudson Co., NJ (2013)  
Aerial: (c) 2010 Microsoft Corporation and its data suppliers

0 150 300 Feet 

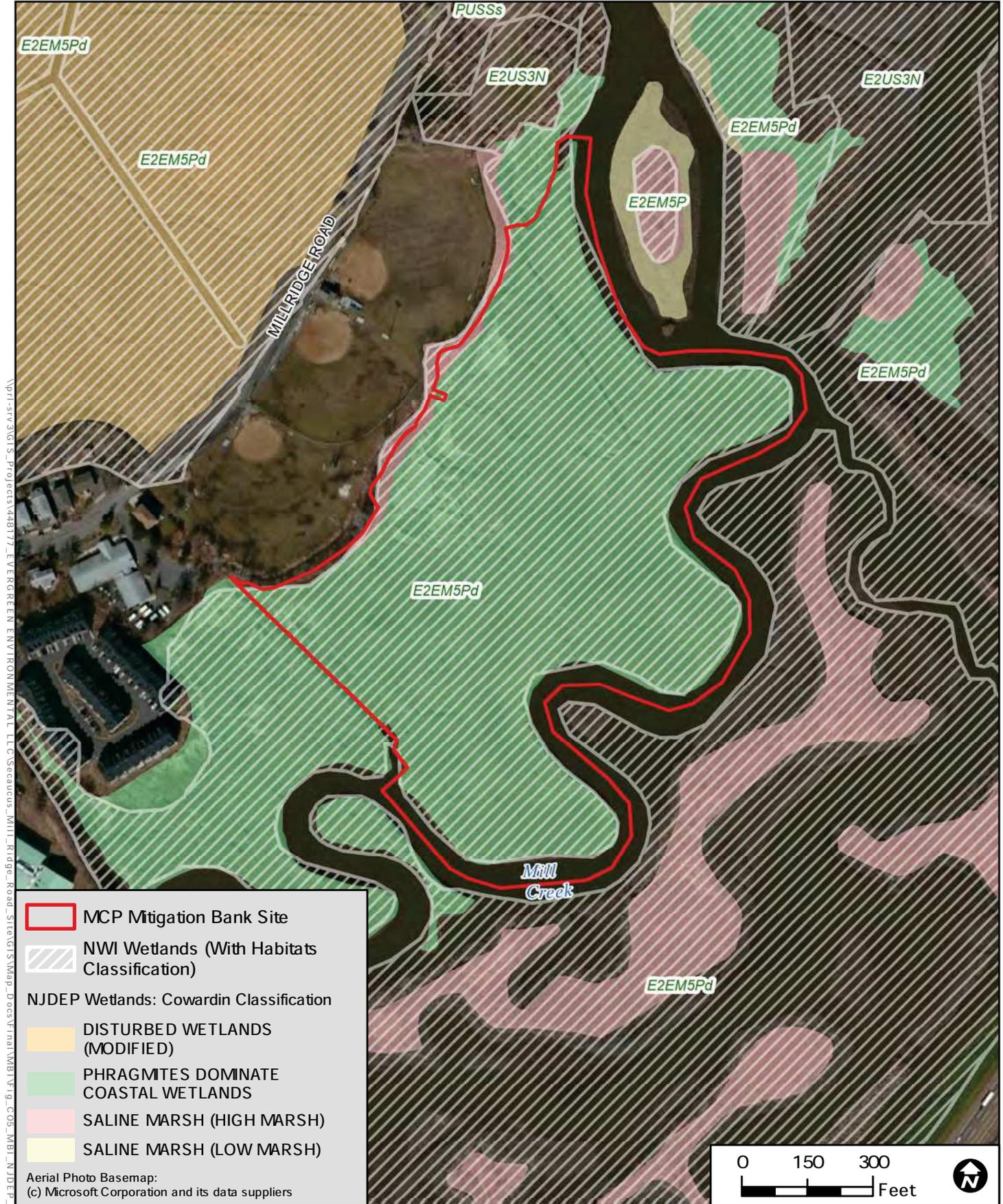


FEMA Flood Hazard Area Map  
Evergreen Mill Creek Point Mitigation Bank Site  
Secaucus, Hudson County, NJ

Figure 1.5

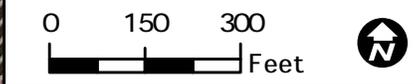


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- MCP Mitigation Bank Site
- NWI Wetlands (With Habitats Classification)
- NJDEP Wetlands: Cowardin Classification
- DISTURBED WETLANDS (MODIFIED)
- PHRAGMITES DOMINATE COASTAL WETLANDS
- SALINE MARSH (HIGH MARSH)
- SALINE MARSH (LOW MARSH)

Aerial Photo Basemap:  
 (c) Microsoft Corporation and its data suppliers



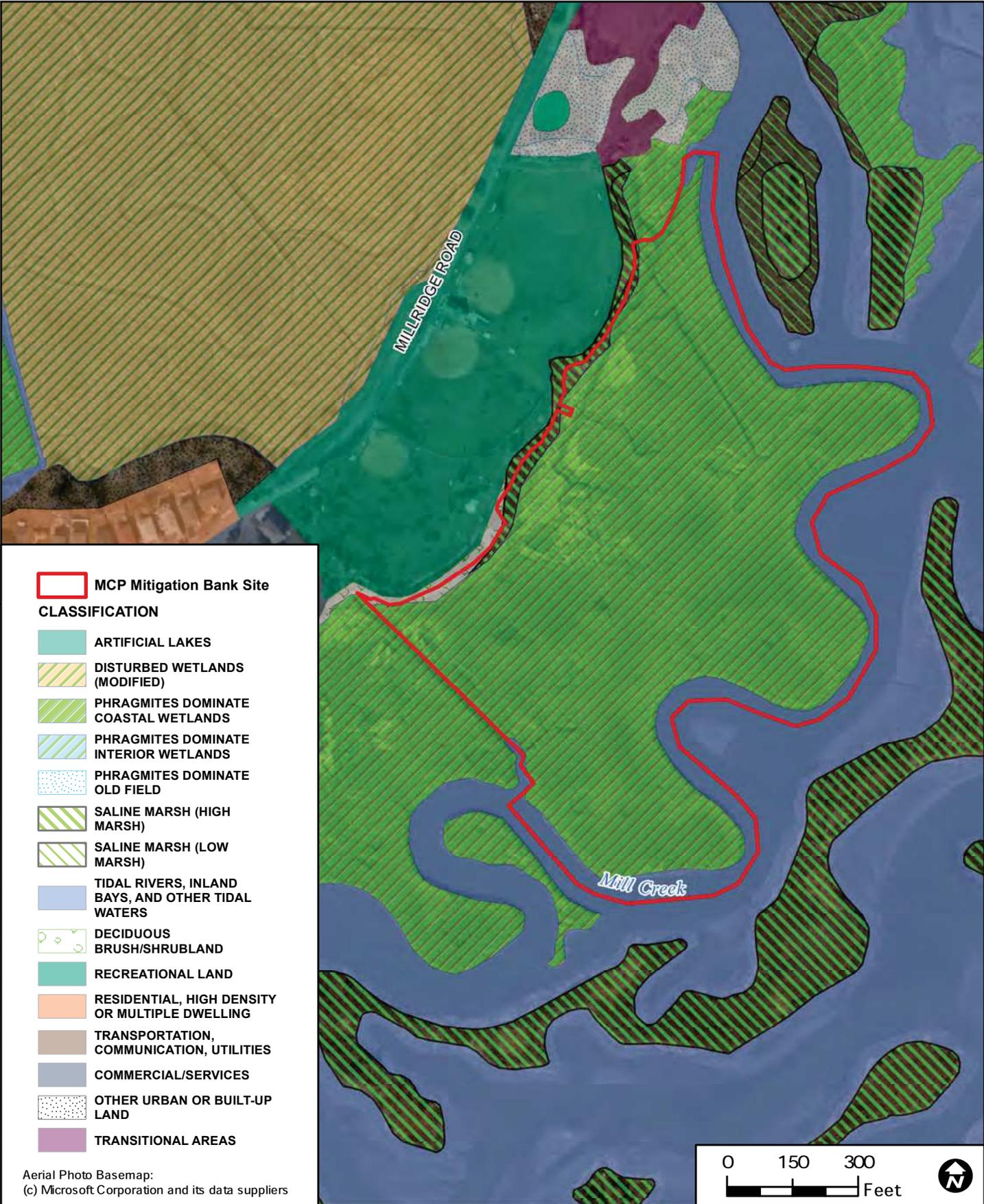
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NJDEP/NWI Wetlands Map  
 Evergreen Mill Creek Point Mitigation Bank Site  
 Secaucus, Hudson County, NJ

Figure  
 1.7

\\p1-rsv301s-projects\48177-EVERGREEN ENVIRONMENTAL-LLC\Secaucus-MHI-Ridge-Road-StreetMap\_Docs\Final\MB1\Fig\_CO3\_MBI\_Land\_Use.mxd



MCP Mitigation Bank Site

**CLASSIFICATION**

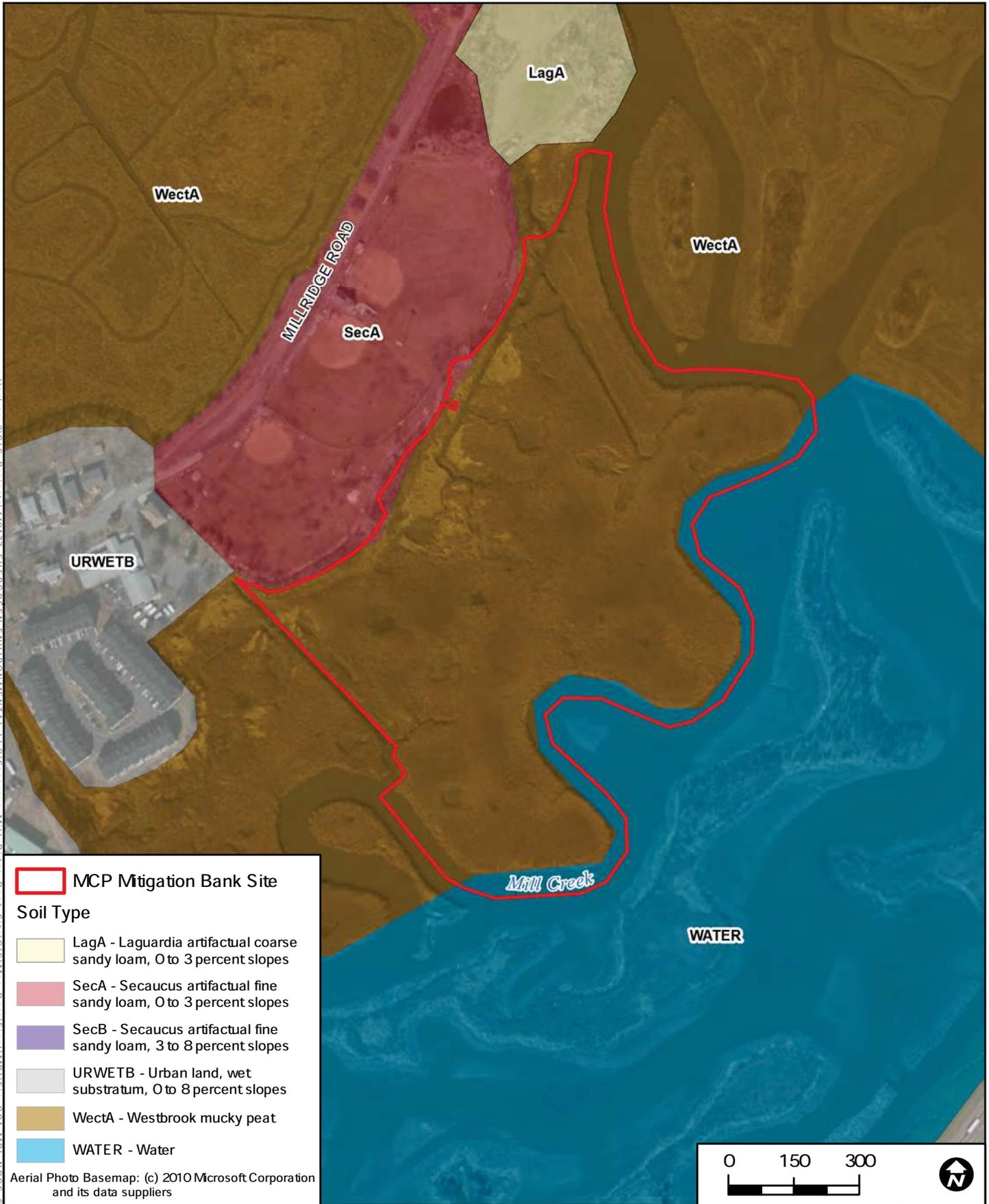
- ARTIFICIAL LAKES
- DISTURBED WETLANDS (MODIFIED)
- PHRAGMITES DOMINATE COASTAL WETLANDS
- PHRAGMITES DOMINATE INTERIOR WETLANDS
- PHRAGMITES DOMINATE OLD FIELD
- SALINE MARSH (HIGH MARSH)
- SALINE MARSH (LOW MARSH)
- TIDAL RIVERS, INLAND BAYS, AND OTHER TIDAL WATERS
- DECIDUOUS BRUSH/SHRUBLAND
- RECREATIONAL LAND
- RESIDENTIAL, HIGH DENSITY OR MULTIPLE DWELLING
- TRANSPORTATION, COMMUNICATION, UTILITIES
- COMMERCIAL/SERVICES
- OTHER URBAN OR BUILT-UP LAND
- TRANSITIONAL AREAS

Aerial Photo Basemap:  
(c) Microsoft Corporation and its data suppliers



NJDEP Land Use/Land Cover  
 Evergreen Mill Creek Point Mitigation Bank Site  
 Secaucus, Hudson County, NJ

Figure  
 1.8



\p1-riv-3\GIS-Projects\448177\_EVERGREEN ENVIRONMENTAL LLC\Secaucus\_Mill\_Ridge\_Road\_Steigis\_Map\_Docs\Final\MB1\Fig\_C04\_MBI\_NRCS\_Soils.mxd

Aerial Photo Basemap: (c) 2010 Microsoft Corporation and its data suppliers



NRCS Soil Map  
 Evergreen Mill Creek Point Mitigation Bank Site  
 Secaucus, Hudson County, NJ

Figure  
 1.9

ER-M		ER-M	
Hg	0.71	Ni	52
Ba	48	V	57
Cr	370	Zn	410
Co	10	Sb	9.3
Cu	270	Ag	3.7
Pb	218	TEQ	3.6
Mn	260		

**Notes**

1. Metal concentrations reported in mg/kg.
2. TEQ concentrations reported in ng/kg.
3. "-" signifies concentration for that sample does not exceed ER-M criteria.
4. "NA" - Sample not analyzed for analyte.
5. \* Sample analyzed only for Hg.
6. Analytes not exceeding ER-M criteria for a given sample location are not listed.

Sample	MCP-2S	MCP-2D*
Sample Depth (in.)	0-6	9-15
Hg	5.1	11
Ba	140	NA
Co	12	NA
Mn	4700	NA
Ni	53	NA
TEQ	47	NA

Sample	MCP-3S*	MCP-3D
Sample Depth (in.)	0-6	9-15
Hg	12	6.7
Ba	NA	94
Pb	NA	550
Mn	NA	350
Ni	NA	160
V	NA	92
Zn	NA	520
TEQ	NA	14

Sample	MCP-4S	MCP-4D*
Sample Depth (in.)	0-6	10-16
Hg	3.4	3.4
TEQ	140	NA

Sample	MRR-2S	MRR-2D
Sample Depth (in.)	0-6	30-36
Hg	3.9	2.1
Ni	92	78
TEQ	180	19

Sample	MRR-1S	MRR-1D
Sample Depth (in.)	0-6	30-36
Hg	4.9	4.2

Sample	MCP-1S*	MCP-1D
Sample Depth (in.)	0-6	12-18
Hg	11	11
Ba	NA	140
Cr	NA	530
Co	NA	40
Cu	NA	310
Pb	NA	14000
Mn	NA	840
Ni	NA	330
V	NA	290
Zn	NA	1500
Sb	NA	39
TEQ	NA	160

Sample	MRR-3S	MRR-3D
Sample Depth (in.)	0-6	30-36
Hg	2.4	-
Ni	76	-

Sample	MCP-12S	MCP-12D*
Sample Depth (in.)	0-6	18-24
Hg	6.6	2
Ba	98	NA
Mn	450	NA
TEQ	22	NA

Sample	MCP-8S	MCP-8D*
Sample Depth (in.)	0-6	17-23
Hg	9.3	NA
Ba	72	NA
TEQ	5.7	NA

Sample	MRR-5S	MRR-5D
Sample Depth (in.)	0-6	30-36
Hg	2.8	1.2
Ni	-	68
Pb	-	240
TEQ	47	-

Sample	MCP-7S*	MCP-7D
Sample Depth (in.)	0-6	15-21
Hg	2.1	1.5

Sample	MCP-11S*	MCP-11D
Sample Depth (in.)	0-6	15-21
Hg	2.8	3.6

Sample	MCP-5S*	MCP-5D
Sample Depth (in.)	0-6	12-18
Hg	11	1.8
Ba	NA	220
Co	NA	34
Cu	NA	390
Pb	NA	4300
Mn	NA	1500
Ni	NA	400
V	NA	150
Zn	NA	550
TEQ	NA	46

Sample	MRR-4S	MRR-4D
Sample Depth (in.)	0-6	30-36
Hg	3.5	3.8
Ni	-	75
TEQ	30	-

Sample	MCP-10S	MCP-10D*
Sample Depth (in.)	0-6	17-23
Hg	3.7	6
Ba	54	NA
Ag	4.2	NA
TEQ	47	NA

Sample	MCP-9S*	MCP-9D
Sample Depth (in.)	0-6	9-15
Hg	6.3	0.74
Ba	NA	71
Mn	NA	490

Sample	MRR-6S	MRR-6D
Sample Depth (in.)	0-6	30-36
Hg	14	1.9
Cr	760	-
Pb	390	-
Ni	150	-
Zn	440	-

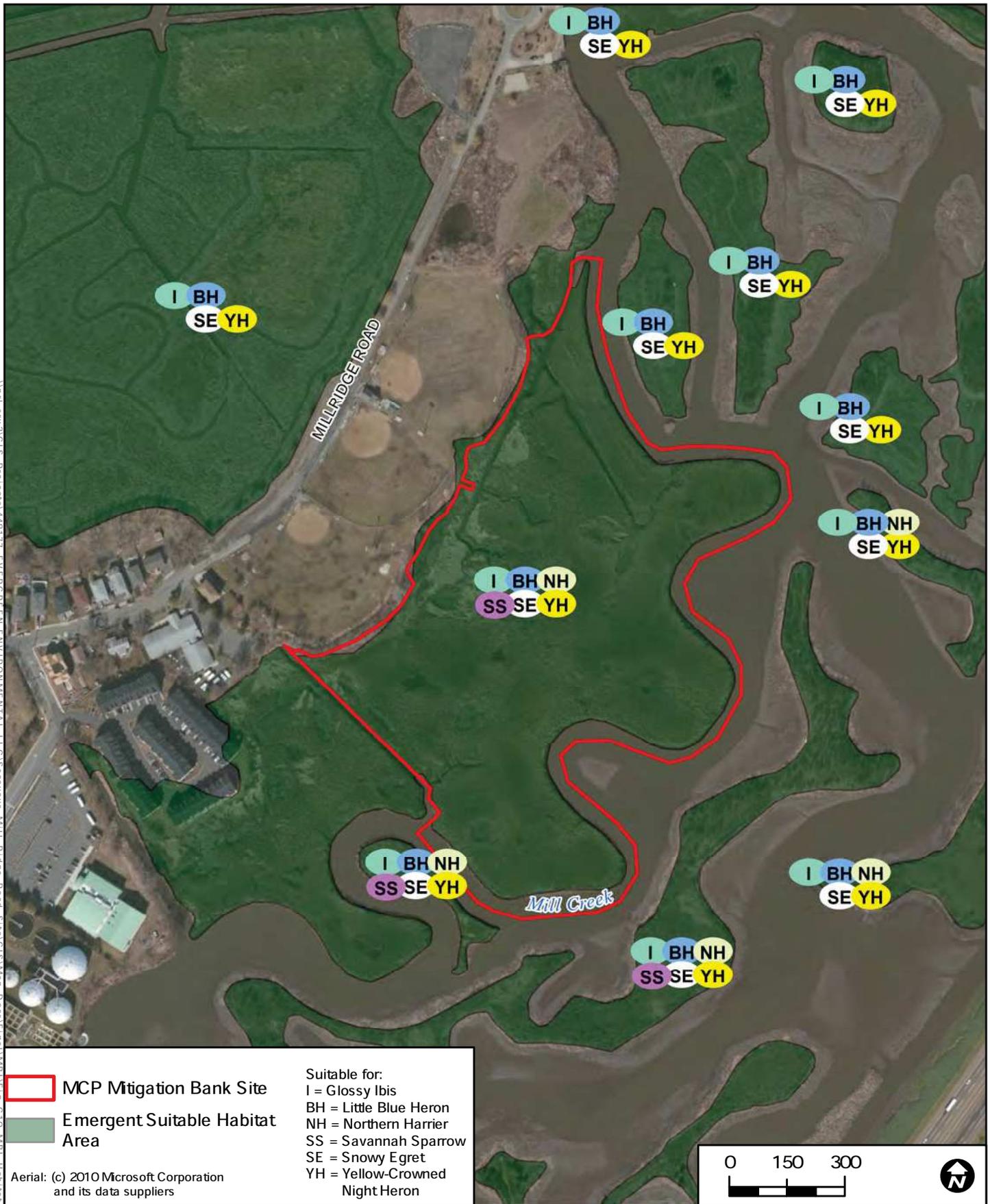
Sample	MCP-6S	MCP-6D*
Sample Depth (in.)	0-6	14-20
Hg	5.8	6.2
Ba	100	NA
Mn	370	NA
TEQ	6.4	NA

- MCP Mitigation Bank Site
- 2013 Sediment Samples
- 2015 Sediment Samples



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MCP Mitigation Bank Site  
 Emergent Suitable Habitat Area

Aerial: (c) 2010 Microsoft Corporation and its data suppliers

Suitable for:  
 I = Glossy Ibis  
 BH = Little Blue Heron  
 NH = Northern Harrier  
 SS = Savannah Sparrow  
 SE = Snowy Egret  
 YH = Yellow-Crowned Night Heron

0 150 300

# **ATTACHMENT 2**

# **SITE PHOTOGRAPHS**

Attachment 2 – Site Photographs



**The Evergreen Mill Creek Point Mitigation Bank is in the center of the photo and appears as yellow/brown *Phragmites* with a curving shoreline associated with Mill Creek.**



**2023 Aerial view**



**Aerial view from Mill Creek**



**MIMAC Tours Site November 2023**



**Phragmites November 2023**



Facing east from edge of ball fields across the site composed mainly of *Phragmites*.



Center of site, *Phragmites*



**MIMAC tours the site**



**Facing southeast from edge of ball fields across site composed mainly of *Phragmites*.**



**Interface of ball fields and mitigation site, facing north.**



**Mill Creek at the northern edge of the site.**

# **ATTACHMENT 3**

## **AGENCY CORRESPONDENCE**



**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT  
JACOB K. JAVITS FEDERAL BUILDING  
26 FEDERAL PLAZA  
NEW YORK NY 10278-0090

Regulatory Branch

**JUNE 18, 2024**

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

Evergreen Environmental, LLC  
Mr. Mark Renna  
121 Carol Place  
Wayne, New Jersey 07470

Dear Mr. Renna:

On September 22, 2023, Evergreen Environmental, LLC provided the New York District of the U.S. Army Corps of Engineers (USACE), the New Jersey Department of Environmental Protection (NJDEP), and the Meadowlands Interagency Review Team (IRT) with an updated functional value assessment report for the proposed Evergreen Mill Creek Point (MCP) Mitigation Bank employing the Evaluation for Planned Wetlands (EPW) method. The MCP Mitigation Bank was previously reviewed by the Meadowlands IRT and advanced through Draft Final MBI in 2016.

A presentation was made to the Meadowlands IRT members on November 15, 2023. A site visit was conducted November 27, 2023 by some of the Meadowlands IRT members, specifically, the US Fish and Wildlife Service (USFWS) and the New Jersey Sports and Exposition Authority (NJSEA). On December 20, 2023, the entire Meadowlands IRT discussed the updated proposal, and the site visit and comments were submitted for your review and response on January 30, 2024. On March 25, 2024, you provided a response to the IRT's preliminary comments on the EPW methodology. A meeting was then held on April 17, 2024 where you presented information regarding the EPW methodology and the proposed functional value assessment for establishing mitigation credit ratios.

As other members of the IRT have noted, there are concerns about both recontamination of the site, especially in light of the September 2022 designation of the Lower Hackensack River as a Superfund Site, as well as the concern regarding invasive species management. The USFWS issued a White Paper in August 2015 (enclosed) outlining concerns regarding recontamination of mitigation banks in the Hackensack Meadowlands. This document details that existing mitigation banks following post-construction monitoring are becoming recontaminated and any future proposed bank would need to address recontamination concerns. Should recontamination levels reach those to be harmful to fish and wildlife resources, the bank would not be achieving its intended purpose, especially in the context of enhancement of existing wetlands. The

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

functional uplift that is proposed by the enhancement is reduced by the potential for this bank to become recontaminated.

Since the meeting on April 17, 2024, we have reviewed the EPW methodology report provided on September 22, 2023, the presentations from November 15, 2023, and April 17, 2024, in addition to the response to preliminary comments on the EPW methodology on March 25, 2024. As this office has stated before in a letter dated June 2, 2016, while wetland enhancement activities may provide for the temporal loss of wetland functions and services, once all performance standards have been met, enhancement will not fully compensate for the overall continuous and cumulative loss of wetland acreage within the system.

In his email dated June 5, 2024, Mr. Brizzolara requested confirmation as to whether or not the EPW is an acceptable functional assessment method for determining credit generation. This office has determined that the EPW is not the appropriate method for determining credit ratios at the Mill Creek site because it does not fully take recontamination into account, in addition to omitting a number of other factors such as viability of the proposed bank, climate change, wetland hydrology, flood storage, sediment/toxicant retention, nutrient exchange, and other factors, which have been noted in previous comments provided by both NMFS and USFWS. While USACE has used EPW for the Hudson Raritan Estuary (HRE) Restoration projects feasibility study, it too only evaluated a limited number of factors (shoreline bank erosion control, sediment stabilization, water quality, wildlife, fish tidal, non-tidal stream/river, non-tidal pond/lake, and uniqueness/heritage) to generate the benefit ratios. These benefit ratios were used in the selection of sites to advance for restoration. Further, Mr. Brizzolara's email asked if USACE supports mitigation being conducted in the Meadowlands. USACE is neither a proponent nor an opponent for any kind of project proposal, and is neither supporting or opposing specific mitigation banking projects in the Meadowlands.

Your response to preliminary comments from the IRT members dated March 25, 2024 was provided to the IRT. We are in receipt of NJDEP's letter dated June 4, 2023 indicating a 2:1 ratio would be acceptable to their agency. To date, no other IRT members have provided further comments. Based on the comments raised in this letter and our previous correspondence with you, USACE will agree to a 3:1 credit ratio in light of the recontamination and invasive species management concerns and the reduced level of functional uplift provided in the long-term due to recontamination. We agree that each site has site specific factors and concerns, and in acknowledging the specific concerns of this site as raised by the IRT members and USACE, this office maintains our prior determination that a compensatory mitigation ratio of 3:1 is necessary and appropriate for the development of the high marsh habitat. A draft Mitigation Banking Instrument (MBI) would need to clearly address these issues.

In light of this, given the duration of time that has passed since the original prospectus public notice, if you would like to continue moving forward with this mitigation bank proposal, this office will need an updated and revised prospectus

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

pursuant to 33 CFR 332.8(d)(5)(iii). Upon receipt of a revised prospectus, we will review and assess for completeness and determine if any additional information is needed. From there we would issue a revised public notice with the updated prospectus in accordance with 33 CFR 332.8(d)(4).

If you have any questions regarding this matter, please contact Mr. Christopher Minck by email at [Christopher.W.Minck@usace.army.mil](mailto:Christopher.W.Minck@usace.army.mil) or by phone at 917-790-8547.

Sincerely,

Stephan A. Ryba  
Chief, Regulatory Branch

Attachments:

USFWS White Paper: Recontamination of Mitigation Sites in the Meadowlands  
USACE letters dated May 17, June 2, and August 11, 2016 and January 19, and June 1, 2017  
NJDEP Letter dated June 4, 2024

Copies Furnished:

NJSEA: Terry Doss, Susan Mascaro, Drew McQuade  
NJDEP: Jessica Klein, Chivon Kistic  
USEPA: Marco Finocchiaro, Jaclyn Woollard  
NOAA: Jessie Murray, Karen Greene  
USFWS: Michael Ciappi, Ross Conover  
USACE: Rosita Miranda, Chris Minck, Kim Isenhour, Jeffrey Branham



# State of New Jersey

## DEPARTMENT OF ENVIRONMENTAL PROTECTION

### WATERSHED AND LAND MANAGEMENT

501 East State Street

P.O. Box 420, Mail Code 501-02A

Trenton, New Jersey 08625-0420

[www.nj.gov/dep/wlm](http://www.nj.gov/dep/wlm)

**PHILIP D. MURPHY**

*Governor*

**TAHESHA L. WAY**

*Lt. Governor*

**SHAWN M. LATOURETTE**

*Commissioner*

June 4, 2024

Rosita Miranda, Chief, Western Section  
Regulatory Branch  
Department of the Army  
US Army Corp of Engineers, New York District  
Jacob K. Javits Federal Building  
26 Federal Plaza  
New York, New York 10278-0090

RE: Mill Creek Point Mitigation Bank  
NJDEP File No.: 0909-13-0007.1  
Block: 225 Lot: 12  
Town of Secaucus, Hudson County  
Evergreen Mitigation Bank and Functional Value Assessment Response

Dear Ms. Miranda:

Evergreen Environmental, LLC requested the Meadowlands Interagency Mitigation Advisory Committee (MIMAC) Interagency Review Team (IRT) review and comment on the “**Evergreen Mill Creek Point Mitigation Bank Evaluation for Planned Wetlands Assessment**” on September 22, 2023. The New Jersey Department of Environmental Protection (Department) is committed to ensuring successful wetlands mitigation in the Meadowlands. Availability of mitigation banks in the Meadowlands is imperative for growth and redevelopment.

Department comments to MIMAC are below:

1. The Department is aware of the historic amounts of contamination throughout the Meadowlands; cleanup is ongoing and crucial but also an obligation for all parties. The Department recommends continuing to work with the applicant to address contamination and the potential for recontamination. As on previous bank sites, the applicant will be required to achieve acceptable eco-risk levels to complete this bank project. In addition, the applicant should be asked to provide post-construction sampling to monitor contamination, with the understanding that this monitoring will be used to inform future mitigation efforts in the Meadowlands, and not to penalize this applicant if contamination levels increase.
2. With the expectation that the water will rise, due to New Jersey's changing climate restoring the site to high marsh is appropriate. The Department would like the MIMAC to discuss mitigation site design and would like to see more high marsh incorporated into the site designs in the Meadowlands. This will provide additional habitat benefits and partially address sea level rise. It

also may give the site more potential for success since some recently designed sites clearly have too much water.

3. The availability of mitigation banks in the Meadowlands is imperative for growth and redevelopment. Unless there is a “halt” to development (which is not likely), applicants that submit permit applications to the Army Corps of Engineers and/or Department need to have a viable mitigation banking option for projects in the Meadowlands. The number of credits currently available to the general public has almost been exhausted and the lack of new banks will put an added burden on the regulatory agencies to help applicants identify viable mitigation options.
4. In the past, it has been the policy of the regulatory agencies to agree that the removal of phragmites and replanting with native wetland species is desirable. If the agencies believe this policy needs to be changed, that conversation needs to happen in advance of bank applications so the MIMAC and the regulatory agencies can provide unified advice to applicants. Given the proliferation of phragmites, the Department is still of the opinion that removing it provides greater values and functions to the wetlands than allowing it to remain. Lowering the elevation of sites may no longer be desirable due to strong indications that sea level rise will convert these sites to open waters if they are lowered thus losing most of their values and functions as wetlands. However, it still seems ecologically beneficial to do all that can be done to remove the phragmites and replace it with more diverse high marsh vegetation instead of allowing a monoculture of phragmites to remain.
5. Establishing mitigation ratios is the “shorthand” alternative to requiring extensive functional assessments for every mitigation project. Functional assessments are unlikely to produce repeatable results especially as it relates to agreeing on an appropriate ratio for various types of mitigation, because that’s not the purpose of a functional assessment. Thus, the use of pre-set ratios is an attempt to standardize and simplify requirements. While the ratio that is most often used for enhancement is 3:1, in this case, consideration may be given to the applicant if the applicant agrees to build high marsh when it will be more difficult to keep out reinvasion by phragmites than it would be with low marsh. Therefore, in this case, if the applicant agrees to build high marsh, the Department agrees to using a 2:1 ratio for enhancement.
6. Additionally, the Department believes that the enhancement of upland buffers does provide a vital resource to adjacent wetland systems and forms a valuable component of the freshwater wetland ecosystem, particularly in the Meadowlands where vertical structure is almost a non-existent resource. Therefore, the Department does not oppose providing credits for upland enhancement at 6:1.

In conclusion, the wetlands in the Meadowlands are a limited resource and the Meadowlands is a unique environment. While all efforts should be made to facilitate extensive environmental cleanup, until that time, the cleanup of individual sites to meet eco-risk criteria as part of mitigation banking can be a valuable component of the overall effort. New banks in the Meadowlands provide ecological benefits while also providing credits, needed to continue to support redevelopment in the Meadowlands. This bank may contribute to that effort provided:

1. It is required to meet all Eco-risk requirements;
2. It is constructed as high marsh and not lowered in elevation;



3. Monitoring should continually assess the abundance of phragmites. If overabundance is determined to be present, measures are to be implemented to remove the phragmites and replace it with more diverse high marsh vegetation, and;
4. Upon completion of construction and as part of monitoring, informational sampling is done to add to the overall knowledge of the “movement” of contamination in the Meadowlands.

If you have any questions concerning this letter, please do not hesitate to contact Chivon Kistic, Jessica Klein or me at (609) 777-0454. Be sure to indicate the Division’s file number with all correspondence.

Sincerely,

Cathryn Schaffer, Bureau Manager  
Bureau of Watershed Management  
Division of Watershed Protection and Restoration

c: Susan Lockwood, NJDEP  
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## **Interagency Review Team (IRT) Meeting Minutes Evergreen Mill Creek Point (MCP) Mitigation Bank April 17, 2024**

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**Attendees:** USACE/IRT Chair: Rosie Miranda, Chris Mallery, Christopher Minck, Kim Isenhour  
NMFS: Jessie Murray  
USFWS: Michael Ciappi, Ross Conover  
NJDEP: Jessica Klein, Chivon Kistic  
EPA: Jaclyn Woollard  
NJSEA: Terry Doss, Sharon Mascaro, Sara Sundell  
HDR: David Brizzolara, Dr. David Yozzo  
Evergreen Environmental: Mark Renna, Jamie Holt, Ryan Scerbo

### **1.0 Background and Introduction**

After introductions led by Rosie Miranda of the Corps, Evergreen Environmental, Mark Renna, began with the introduction slides stepping through the agenda and stating that Evergreen has been requesting guidance from the MIMAC since reinitiating the Evergreen Mill Creek Point Mitigation Bank project (“the Project”) at a meeting in April of 2023. The Evaluation for Planned Wetlands (EPW) for Evergreen Mill Creek Point Mitigation Bank report was submitted in September 2023 with a virtual meeting to discuss the report and follow up site visit (for a subset of MIMAC members) held in November 2023. US Army Corps of Engineers (USACE) and others, a subset of the MIMAC agencies, provided additional comments in January 2024 and Evergreen responded on March 25, 2024.

Evergreen gave a project background for the multiple attendees new to the project present in the meeting, including USACE subject matter expert. The Mill Creek Point Mitigation Bank is 22 acres located in Secaucus along Mill Creek close to the Hackensack River. It is predominately Phragmites with restricted tidal brackish flow. One of the main points of the meeting is to determine the appropriate mitigation valuation of the proposed mitigation bank. Evergreen and HDR assessed functional value uplift using EPW for the proposed bank and also compared to other tidal marsh restoration proposed in the Meadowlands.

A Mitigation Banking Instrument (MBI) was submitted to the interagency review team (IRT) by Evergreen and HDR Engineering, Inc. (HDR) in November 2015 which included many technical studies and advanced design drawings for the Project. The Project proposed lowering the marsh plain and excavating the soil and backfilling with one foot of clean substrate, unprecedented in mitigation banking in New Jersey to Evergreen’s knowledge, although proposed in the restoration design of the Metromedia wetland restoration site in the HRE Feasibility Study. Evergreen requested that the agencies provided any examples of similar mitigation design approaches in New Jersey or elsewhere. The planting plan called for three separate zones of emergent marsh based on elevation. The higher the elevation of the

zone, the less that zone would be exposed to tidal influence of the Hackensack River tides. The project was suspended in 2016 due to evaluation of credits and the difficulty of dealing with potential recontamination issues associated with the tidal influence of the Hackensack River.

## **2.0 Functional Value Assessment and Valuation**

The objective of this meeting was to respond to MIMAC comments and to further discuss the Project's use of EPW as it relates to functional value uplift and credits along with discussion of a path forward for Hackensack River watershed-wide contamination that affects mitigation in the Hackensack Meadowlands.

Evergreen stated that their consultations with the MIMAC have been far more nuanced, but at some level there seems to be two approaches to credit valuation: "Accepted or Standard Ratios of 3:1" or "Functional Value Assessment" tailored to the mitigation site and design.

The Project would provide wetland credits and the standard mitigation valuation for environmental enhancement is 3:1, but Evergreen raised the question, based on federal and state regulations, that the mitigation valuation should be based case-by-case on ecological uplift functions and values. Evergreen reviewed the history of mitigation in the Meadowlands to see if all mitigation in the Hackensack Meadowlands District (HMD) been assessed as 3:1. Is 3:1 for enhancement really Standard? If not, are there examples? Each site has a separate story based on a site's existing conditions and the proposed type of mitigation design.

The federal regulations for mitigation state "the number of credits must reflect the difference between pre- and post- compensatory mitigation project site conditions, as determined by a functional or condition assessment or other suitable metric". The NJDEP states in their regulations that "if enhancement mitigation is the mitigation alternative, the Department shall determine on a case-by-case basis the amount of enhancement required to ensure that the mitigation results in wetlands of equal functions and values lost".

The ICWMA MIMAC agreement states, "Wetland assessment methodologies acceptable to the MIMAC may be used to assess impacts to existing wetlands and determine whether wetland mitigation sites, including mitigation banks, are functioning as wetland and aquatic ecosystems."

In the history of the state of NJ and of the HMD there have been few wetlands mitigation banks. There are 23 mitigation banks in NJ and only 7 tidal, federal mitigation banks, relatively few upon which to base a mitigation ratio as standard. By proportional area in comparison to a state like North Carolina, where 890 banks exist, New Jersey would have 138 banks if banks were implemented at the rate observed in NC.

Evergreen then discussed previous examples of mitigation bank valuation in the Meadowlands when comparing acres to credits. Sites immediately surrounding the proposed Project:

- Western and Eastern Brackish Marsh had 1.24:1 ratio;
- Mill Creek Mitigation site 0.9:1 ratio;
- MRI1 and 2 and had 206 "acre-credits" that would require 3-3.5 credits withdrawn for each impact, per the MBI. Ultimately, based on the MRI 1 and 2 credit ledger,

the valuation of these banks came down to 1.53:1 ratio. The MRI1 and 2 bank was highly successful and received letters of commendation from the USFWS.

Other federal mitigation banks in NJ have mitigation ratios different from 3:1 such as;

- Abbot Creek 1.87:1 ratio;
- Rio Grande 2:1 ratio;
- Port Reading 1:1 enhancement ratio.

A review of the limited number of mitigation banks in NJ indicates a 3:1 ratio has been employed, but is not standard. The point is that each mitigation site has a unique story, including the proposed Mill Creek Point Mitigation Bank Site. The site should be evaluated as a mitigation site uniquely based on our EPW methodology, each enhancement situation is unique to itself, and mitigation design matters to the degree of ecological uplift.

As stated in the EPW report submitted to the MIMAC, the EPW Methodology was selected because the USACE used it in the Hudson Raritan Estuary Feasibility Study to evaluate complicated restoration projects in the national interest. If it is good enough for USACE to use, it seems good enough to use in mitigation sites and banks under development in the Meadowlands. Evergreen contends that standard mitigation ratios at MCP do not reflect the functional value uplift delta between the baseline and proposed condition. Evergreen and HDR believe EPW is a more accurate assessment of value than a standard 3:1 ratio for enhancement and when looking back at the proposed valuation in the draft MBI of 2016, where the classification of much of the mitigation was restoration at a 2:1 ratio, the total credit valuation is not dramatically different.

### **3.0 Contamination in the Meadowlands and Impacts on Mitigation**

Evergreen stated the need for the MIMAC to offer clear direction, a path forward as expressed in the USACE letter of January 2024, on contamination issues in the Meadowlands. If restoration is not able to be done in the Meadowlands, then functional value assessment and credit valuation don't matter. Conversations with EPA and NMFS MIMAC members have indicated that both agencies are in agreement that in-kind mitigation for permitted impacts needs to occur in the Meadowlands. NJSEA has documented wildlife thriving in the HMD waters and emergent wetlands despite contamination. USFWS has expressed concerns both in the January 2024 letter and in-person during the site visit related to contamination and re-contamination effects on trust resources.

Evergreen recognizes these concerns and is evaluating potentially raising the elevation of the marsh more than the current design calls for, which would slow the potential for recontamination due to the tides, allowing the site to be flooded far less frequently. This would also potentially address long-term concerns related to sea level rise. However, this does not come without risks to the project, which include a higher likelihood of Phragmites infiltration. Construction would be completed by excavating approximately 1-2 feet of the existing grade (material containing contaminants) and backfilling to design elevation with a foot of clean substrate. Evergreen and HDR believe this would be a huge step in addressing contamination on site as proposed at Metromedia.

Evergreen cited the NJDEP regulation 7:7-17.1 definition of "degraded wetland" which means a wetland in which there is impaired surface water flow or groundwater hydrology, or excessive drainage; a wetland that has been partially filled or excavated, contaminated with

hazardous substances, or that has an ecological function substantially less than that of undisturbed wetlands in the region. Evergreen posed the point that you can only have restoration where the opposite of degradation occurs and believes that contamination removal is valuable as a form of wetland restoration warranting mitigation value. Evergreen noted that due to the current nature of the overall urbanized Hudson Raritan Estuary, including the HMD, the HRE Feasibility Study stated that “it is highly unlikely that the HRE would be cleaned up to acceptable risk guidance benchmarks. Given this challenge, in order to implement restoration in the HRE, agencies need to discuss the concept of “acceptable” for this urban estuary.” Evergreen stated that we have all heard the term “Meadowlands clean” and contended that this may be what we need to strive for understanding that adhering to ecological screening criteria for contaminants may ultimately not be achievable as we cannot escape where we are in the context of this urban estuary.

#### **4.0 Discussion**

USACE, Rosie Miranda, asked if Abbot Creek and then if all banks that were shared in the meeting were joint federal and state banks and Evergreen confirmed. Evergreen stated that USACE has jurisdiction at all of the banks mentioned. Evergreen stressed that the project team wants to be treated fairly but be treated based on the nuances of the site and not to a standard that doesn’t take that into account.

USACE discussed the Meadowlands region saying that it is unique and needs to be looked at more intimately. At this time, USACE cannot make a stance on contamination and will have to discuss with the entire MIMAC. It was opined that wetland restoration in the Meadowlands could fall more closely under Natural Resources Damages (NRD) under NMFS and USFWS; how does it get translated into a mitigation bank? Probably needs to be looked at a little more to understand it with more discussions.

Although Evergreen did not respond during the meeting, it should be noted that NRD does not apply to this site. The site is not on the list of open NRD settlements in New Jersey nor is it on the known contaminated sites list for New Jersey. Rather, Mill Creek Point was contaminated in the same manner as all other tidally flowed sites in the Hackensack Meadowlands District, by offsite industrial activity which has resulted in pervasive regional contamination. There is no potentially responsible party (PRP), in fact, the Mill Creek Point site actually belongs to a town (Secaucus), and is leased by Evergreen, which is eager to have the sediments removed and native plantings installed as a benefit to the town and its residents. To be clear there is no pollution or contamination investigation associated with the Mill Creek Point and as a result there is no need to consider Natural Resource Damage-related issues when evaluating Evergreen’s Mill Creek Point bank proposal. Furthermore, the site is being compared to ecological screening criteria standards, not remedial standards.

USACE mentioned that the NJDEP has a mitigation technical manual and stated it should be something the project team looks at to see what is applicable and that there may be guidance on functional assessment methods. The USACE will need additional information to make any determinations or provide further guidance.

HDR, David Brizzolara directed a question to NJDEP, Chivon Kistic that he’s been through the NJDEP Technical Manual and was unable to find anything regarding specific functional assessments in the guidance and if she knew if it was in there.

NJDEP responded that they are having internal discussions today but that there is no guidance regarding a specific functional method in the mitigation technical manual.

NMFS, Jessie Murray stated she would like a copy of the presentation as it has a lot of information. She stated she was in agreement with Evergreen on the need for mitigation in the HMD and for the MIMAC to offer guidance. NMFS would need to have internal discussions. NMFS asked if it was possible to schedule a site visit in the near future. Evergreen confirmed that they would share the presentation following the meeting and welcomed a site visit.

USEPA, Jaclyn Woollard agreed with NMFS in that they would require time to have internal discussions and need some additional information. It would be up to Marco Finocchiaro to make a definitive decision. It is likely that the EPA would want to have a meeting with additional EPA team members on the call that are more versed in contamination. She stated it's nice to hear the acknowledgement of the uniqueness of the Meadowlands and potential for mitigation in the area. She also requested a site visit.

NJSEA, Terry Doss stated they are pushing for restoration in the Meadowlands. The NJSEA is currently putting together data related to fish and wildlife occurrences in the HMD to help progress the discussion around mitigation within the backdrop of urbanization and superfund and contamination. NJSEA would like to assist in developing methods to do mitigation in contaminated areas and understands the urgency of the need for mitigation in the Meadowlands.

USACE Mitigation SME, Kim Isenhour appreciated the presentation and Evergreen providing the project background as she is new to the project. USACE emphasized that the project team look at the regulation Part 332.3 (d) (vi) site selection if the project were to come out with another version of the mitigation plan. USACE asked if using the EPW was the correct mechanism for the value restating it was used across the Hackensack River for another site but wondered if the application was appropriate to credit scoring. USACE asked if site selection analysis was conducted for other sites in the area and stated that by looking at the current site condition and what credits will be there is maybe a step ahead of where the Project should be. The USACE needs to have an internal discussion on if there should be a standard for credit ratio, but mentioned that a consistent method is needed. She also suggested defining certain words as terms like restoration and enhancement were used but based on the discussion it seems like the work being done is restoration, not enhancement.

Evergreen stated that NJDEP and USACE do not always have the same definitions for mitigation terminology. The standardization for credit ratios and consistent methodology is what the project team has an issue with and is seeking guidance on. It is believed that the standard 3:1 enhancement ratio is not something that projects should be held to, based on the uniqueness of the Meadowlands, the MCP site and the specific mitigation design plan proposed. The concern is also from recontamination due to water and sediment from the Hackensack River. The contamination isn't limited to the project site, it's from the river water tidally flowing onto the site. Therefore, any site within the HMD will have the same issue with contamination.

HDR, Dave Brizzolara emphasized that the USACE use of EPW is acceptable. The scoring system is based on professional judgement, but because the system is based on categorical scoring ranges within different elements of each function, it does not lend itself to bias. For

this reason, the assessment is repeatable and consistent across different sites and in different situations. In the preamble of the EPW manual, it states that this is an accepted functional method that was developed to provide versatile rapid assessment procedure that can be used in a variety of situations including wetland creation, restoration, mitigation banking, impact analysis and watershed planning. Steps of EPW are the same as the Hydrogeomorphic method established by USACE Wetland Research Program. HDR would be happy to further discuss some of the scoring in the field during an upcoming site visit. HDR could provide the EPW Report that was submitted in September 2023 to USACE new members.

USACE, Kim Isenhour asked what the best tools for baseline conditions are and said EPW may not be the best for credit valuation. How are you able to determine the planned wetlands?

HDR, Dr. David Yozzo answered that the EPW is not just for current conditions but also for planned wetlands (aka, the mitigation site proposed to offset the permitted impact). As the project site plan is developed further, the project team will continually conduct EPW evaluations. This will allow for consistent develop plan out further, we'd continue to run the method. The methodology for how credit generation was determined is in the report which the project team will share.

USFWS, Michael Ciappi and Ross Conover stated that the USFWS agrees that every scenario should use a different evaluation methodology. However, there are major concerns on recontamination. They agreed each scenario is case-by-case, but they would need to look into it further and have internal discussions before making a decision.

Evergreen concluded by again stating they are looking for the IRT to help provide guidance. If a site has contamination and is, therefore deemed not suitable for tidal mitigation, then the project team is asking what would happen for a permitted action that requires mitigation in this situation. Evergreen and HDR aren't sure how to do tidal marsh estuary mitigation in urban areas if it cannot be done here. If it's not allowed at the proposed location, then it is highly likely no one will do it in an urban area.

USACE requested the presentation be sent to everyone and confirmed there would be IRT meetings as well as agency internal meetings to come up with answers. A site visit will be coordinated for next month. Evergreen suggests May 15, 2024.



March 25, 2024

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**Re: Evergreen Mill Creek Point Mitigation Bank  
Evaluation for Planned Wetlands (EPW) - Response to Comments  
Formerly NAN-2014-00955-WCA**

Dear Mr. Ryba:

Enclosed please find the above-mentioned response to comments received from the IRT relative to the functional value assessment report of 9/22/23 for the proposed Evergreen Mill Creek Point (MCP) Mitigation Bank employing the Evaluation for Planned Wetlands (EPW) methodology (IRT letter 1/30/24). IRT comments are presented in bold followed by our response in regular font. Pursuant to the IRT letter, no comments were received from the EPA or NJDEP. An on site field meeting was held 11/27/23, however, only the NJSEA and USFWS attended. As a result, we request an in person meeting of the MIMAC April 17, 2024 at NJSEA offices followed by a field meeting to the mitigation bank site.

**The MIMAC members, and specifically the NJSEA, recognize that additional in depth analysis of the existing data on both recontamination and Phragmites in the Meadowlands District are merited because of the recent Superfund designation of the Lower Hackensack River. The comments in this letter are preliminary only, as the MIMAC was specifically requested in the September 22, 2023 email to provide consultation regarding the submitted Evaluation for Planned Wetlands (EPW) methodology documenting the ecological uplift of the proposed Evergreen Mill Creek Point Mitigation Bank. The MIMAC team will be working together to gather needed information and will begin internal discussions in the near future to develop an agreed path forward that can be utilized in our future project reviews.**

Noted.

**Comments from The U.S. Fish and Wildlife Service (USFWS):**

**The U.S. Fish and Wildlife Service New Jersey Field Office (Service) has reviewed the proposed Evergreen Mill Creek Point Mitigation Bank Evaluation for Planned Wetlands (EPW) Assessment. The Service is concerned that the EPW Assessment prepared excludes other factors to consider while evaluating what mitigation bank**

crediting ratios are appropriate. This includes, but is not limited to, the viability of the proposed bank, climate change, and environmental contaminants. Chapter 5.3 of the EPW Assessment explains the credits proposed as part of the mitigation bank creation. This includes 8.86 credits from “wetland restoration” and 1.19 credits from “open water restoration”. However, the mitigation bank appears to have the goal of improving the aquatic resource functions that are currently existing at the site. Additionally, there will be no gain of aquatic resource areas. As such, enhancement appears to be the more appropriate form of mitigation that should be proposed. Due to our concerns presented below, the Service believes that there is not enough information to currently support creation of additional mitigation bank credits (as explained in chapter 5.3) from the standard enhancement ratio of 3:1.

We concur that the regulatory category of wetland mitigation proposed could be classified as enhancement. However, the ecological uplift of the mitigation bank site is not typical or standard as compared to wetland mitigation sites in New Jersey or the HMD. As a result, our assessment indicates a mitigation value greater than a 3:1 ratio for the wetland enhancement proposed. The 3:1 ratio is not standard, based on review of mitigation sites in the state and HMD, not reflective of this mitigation bank site or proposed mitigation plan, and not consistent with state or federal regulations which direct assessment of enhancement on a case-by-case basis based on functional value uplift.

*NJDEP regulations: (c) If enhancement is the mitigation alternative, the Department shall determine on a case-by-case basis the amount of enhancement required to ensure that the mitigation results in wetlands of equal functions and values to those lost.*

Additionally, review of the limited mitigation banks of New Jersey in RIBITS indicates that a 3:1 ratio has not been typical or standard in mitigation banks of the state or the HMD.

**Additionally, the Service will not support development of a future wetland mitigation bank without further information addressing our concerns below:**

**1. As climate change progresses and sea levels rise, storms and coastal flooding in areas such as the Meadowlands are expected to increase. For example, climate scientists have projected that New Jersey coastal areas are likely to experience sea level rise of 0.5 to 1.1 feet between 2000 and 2030, and 0.9 to 2.1 feet between 2000 and 2050, regardless of whether future emissions increase or decrease (Kopp et al. 2019). The baseline for coastal flooding will increase as sea levels rise. The proposed mitigation bank would create low marsh in areas that appear to currently be high marsh. With the projected rise of sea levels, the low marsh proposed may not be a viable option when considering an effective mitigation strategy. When compared to current conditions, the Service is concerned that the creation of low marsh will, in the long-term, result in a loss to total wetland area due to sea level rise.**

Agreed and the mitigation bank design plan will address these issues.

**2. While *Phragmites australis* dominated wetlands do not provide the best quality habitat and functions, recent studies have explained that those benefits are not entirely absent. Depending on the location of *Phragmites australis* populations, this could include increased protection to communities and marsh areas from the effects of flooding from storms and potential sea level rise due to climate change.**

The possible functions and benefits that the *Phragmites australis* dominated wetlands at the proposed mitigation bank are currently providing should be analyzed/considered to provide further clarity on whether the proposed mitigation bank and usage of crediting is appropriate. There does not appear to be a discussion about if the sediment stabilization and shoreline bank erosion control that the planned wetlands are proposed to provide will be more effective than the current *Phragmites australis* dominated wetlands, when considering future climate change scenarios (e.g., greater storms, erosional forces, etc.).

Agreed and the mitigation bank design plan will address these issues.

**3. The EPW Assessment discusses that the sediment located at the proposed mitigation bank site contains mercury and other contaminants at levels that will likely require remediation. The Lower Hackensack River (located approximately 800-feet upstream Mill Creek) was recently designated a superfund site and is tidally connected to the proposed mitigation bank (U.S. Environmental Protection Agency [EPA] 2022). Sediments in the Hackensack River are known to be contaminated with arsenic, chromium, lead, and mercury (EPA 2022). The Service has significant concerns about potential recontamination of the mitigation bank site. Recontamination may occur through a combination of processes including, but not limited to, tidal inundation and biotranslocation. Ultimately, if recontamination levels reach those that are harmful to fish and wildlife resources, the mitigation bank will not be achieving its intended purposes; would not be ecologically sustainable; and would represent an attractive nuisance to wildlife. Without further information documenting that the site will not result in recontamination after construction, the Service is not likely to support its development. Additionally, the potential for recontamination does not appear to be a factor considered when the “planned wetland” rankings were developed for the EPW Assessment. Please refer to the Services 2015 white paper on recontamination of mitigation sites in the Meadowlands for additional information and concerns that the Service will likely have if the project progresses.**

EPW, like all FVA methods has limitations, including those noted by USFWS. Tidal marsh mitigation in the HMD will result in wetlands exposed to waters of the Hackensack River or its tributaries. Measures to address recontamination potential will be incorporated into the mitigation design.

#### **Comments from National Oceanic and Atmospheric Administration (NOAA):**

**NOAA fisheries has reviewed the EPW functional assessment report for the proposed Evergreen MCP Mitigation Bank. We share a number of concerns similar to our partner agencies, and provide the following questions and comments:**

**1. What is the rationale for proposing the use of the EPW method to determine credits when there are already accepted mitigation ratios that can be used and have been used for other approved banks in the District? These accepted ratios were based on a peer reviewed functional assessment known as the Indicator Value Assessment (IVA) methodology developed in partnership with the members of MIMAC and state biologists, as well as the relevant NJ DEP wetlands regulations.**

The EPW method was selected primarily because of the Corps' use of the EPW functional valuation to assess numerous wetland restoration sites in the Hudson Raritan Estuary as part of the 2020 HRE (*Hudson-Raritan Estuary Ecosystem Restoration*

*Feasibility Study (2020)*), that proposes several wetland restoration sites in the Meadowlands. The New York Corps employed detailed baseline field data collection and mitigation designs sensitive to regional aquatic habitat losses and restoration needs, all assessed for functional value ecological uplift and mitigative value using a standardized scientific method, the EPW.

At the MCP Bank site HDR as Evergreen's consultant, replicated these field studies, the assessment of the MCP mitigation design, and functional value uplift using the EPW as employed in the 2020 HRE Report. Results generated appear reflective of mitigation value based on science, and results were compared to and found to be consistent with those generated by the New York Corps at the nearby Metromedia Wetland Restoration Site.

The mitigation ratios proposed are consistent with those developed by the IVA method and employed at the Marsh Resources Meadowlands Mitigation Bank Phases 1 and 2 (MRI 1 and 2). Ratios such as 3:1 for enhancement are not standard, based on review of mitigation sites in the state and HMD, not reflective of this mitigation bank site or proposed mitigation plan, and not consistent with state or federal regulations which assess enhancement on a case-by-case basis based on functional value uplift.

*NJDEP regulations: (c) If enhancement is the mitigation alternative, the Department shall determine on a case-by-case basis the amount of enhancement required to ensure that the mitigation results in wetlands of equal functions and values to those lost.*

Additionally, review of the limited mitigation banks of New Jersey in RIBITS, indicates, that a 3:1 ratio has not been typical or standard in mitigation banks of the state or the HMD.

**2. The EPW method was not intended to be used to calculate the ratios or credits generated for banks. Compared to the 2016 draft final MBI for the project, using the EPW method, as presented, lacks a number of functions and values considered in the original prospectus. The 2016 MBI included consideration of water quality, wetland hydrology, flood storage, sediment/toxicant retention, nutrient exchange sediment transport, sediment and shoreline stabilization, production export, finfish habitat, invertebrate community, wildlife habitat, plant community composition, endangered species habitat, and social significance. The EPW method only considers shoreline bank erosion control, sediment stabilization, water quality, wildlife, fish, and uniqueness. It appears that there are a number of functions and values no longer considered, calls into question the applicability of this method.**

We agree that EPW pre-dates mitigation banking and does not detail a method to determine mitigation credits. However, EPW does assess (Evaluate) the required attributes and size of a wetland mitigation site (Planned Wetland) intended to compensate for a wetland impacted by a permitted action. As a result, this wetland mitigation acreage and attribute output from the EPW can be quantitatively assessed in terms of acres of planned wetland (i.e., wetland mitigation acreage) required to offset an impact. A ratio analysis to a per acre unit, results in an amount of mitigation acreage required to offset an acre of impact; essentially, the definition of a mitigation credit. EPW, like all FVA methods has limitations, including those noted, but use by the NYD in the HRE as noted above to determine major wetland restoration project viability in the national interest indicates this is a good tool to measure relative functional uplift value. The EPW method also applied scientific analysis and quantitative valuation based on field measurements

and a scoring system. That said, each mitigation site is unique, and professional judgement also should be applied.

**3. The EPW method is based on scoring and best professional judgement by the applicant. If scoring is to be used, then the MIMAC should be involved in developing the values associated with the scores to ensure values are agreed upon.**

Agreed. We would welcome MIMAC involvement.

**4. Should the EPW method be used to determine credits, projects that intend to use the bank will be subject to the same process to determine appropriate credits to purchase, which can be quite time consuming. This was a similar challenge faced when the use of the IVA was standard practice and why the standard accepted ratios were developed. The accepted ratios allow more certainty in the number of acres of impact a bank can offset and does not require that the functional assessment be done on the impact site.**

See response to numbers 1 and 2 above. The IVA was used in limited fashion in the 1990's as a result of the SAMP and the ICWMA that formed the MIMAC in 1996. At MRI 1 and 2, each credit transaction employed the IVA to determine the number of acre-credits to be applied to offset the permitted impact. To date MRI 1 and 2, with 206 acre-credits (a system not supported since 1999), has conducted approximately 50 credit transactions since 1999. Please note, all 206 acre-credits of the mitigation bank were valued the same regardless of category such as preservation of open water or wetland fill to create upland island habitats on site. Conducting an IVA for each credit transaction was not time consuming, as Evergreen staff were responsible for many of these IVA assessments when working on the MRI 1 and 2 mitigation bank project. The resultant overall mitigation valuation of MRI 1 and 2 to date is a 1.5:1 ratio, see RIBITS.

MCP is proposed to generate approximately 10 credits. The Evergreen MRI3 Mitigation Bank, at 22 credits, has conducted fewer than 30 credit transactions since 2012. The effort to assess credit transactions using EPW or IVA for a 10-credit mitigation bank would be relatively limited and not time consuming and borne by the Permittee and Banker. That said, Evergreen has proposed that credits be assessed and utilized in a manner where one credit mitigates for one acre of impact to allow the certainty cited.

**5. We don't currently support the use of the standard EPW method to determine credits, but would be open to considering a modified method that incorporates more functions and values and some overall quantifiable elements.**

Noted. We agree that professional judgment should be added to the functional value equation regardless of the prescribed methodology employed.

**Please note that our comments are specific to the use of the EPW and are not all encompassing of the comments we may have in the future, should the bank progress.**

Noted.

**U.S. Army Corps of Engineers Comments (USACE):**

**In response to the Evergreen September 22, 2023 letter, stating that "Evergreen consulted with the MIMAC at an April 19, 2023 meeting...Evergreen sought MIMAC**

advice and counsel as to the bank approval process, wetland restoration design objectives, mitigation concerns endemic to the Meadowlands such as pervasive contamination and scientifically-based ecological uplift methodologies to address mitigation value, ultimately distilled into units of mitigation or mitigation credits.”, the USACE would like to reiterate the statements made previously within their August 2, 2016 letter regarding the generation of credits:

**The preamble of the Compensatory Mitigation for Losses of Aquatic Resources: Final Rule (33 CFR Parts 325 and 332) provides the rationale used by the Corps and EPA in the development of the concepts of aquatic resource functions, services and values in the final rule language. Specifically the preamble states that the “credit valuation must be based on ecological functions and services provided by the compensatory mitigation project, not the difficulty or cost of siting and constructing it.” As the proposed project is a mitigation bank designed to offset the loss of permanent wetland impacts, the cost to offset those losses should be included in the cost of the credits and accepted by those entities impacting wetlands. Since the majority of the compensatory mitigation undertaken is rehabilitation of degraded wetlands, not creation or re-establishment, there remains a net loss in wetland acreage in the system even with compensatory mitigation for the permanent losses. Granting additional credits for remediating a site will result in additional net losses of wetland acreages and the net additional increase in functions cannot be quantified.**

Noted. Evergreen contends that based on the EPW, professional judgement, and mitigation valuation precedent in New Jersey as well as the HMD, the wetland mitigation valuation of the uplift generated at the MCP Mitigation Bank can be quantified and is approximately 10 credits. This functional valuation assessment is not based on cost of implementation, but rather on degree of wetland degradation today versus the degree of functional value uplift resulting from the wetland enhancement and restoration in the future condition.

Tidal marsh restoration in areas subject of contaminated sediments provides increased functional value uplift and is consistent with state and federal regulations.

State regulations recognize contamination as a major cause of wetland degradation as follows:

#### **7:7-17.1 Definitions**

*“Degraded wetland” means a wetland in which there is impaired surface water flow or groundwater hydrology, or excessive drainage; a wetland that has been partially filled or excavated, contaminated with hazardous substances, or that has an ecological function substantially less than that of undisturbed wetlands in the region.*

As it relates to “remediating” as mentioned in the comment, removal of contaminated sediments and replacement with clean substrate has many functional value benefits to marsh ecosystems as follows:

Improved Water Quality: Contaminated sediments contain pollutants that can impact water quality and aquatic life. By removing these sediments, the water quality can improve, which can benefit the marsh ecosystem.

Enhanced Habitat: Removing contaminated sediments can create enhanced habitat for aquatic species as part of a healthy ecosystem.

Mitigation of Climate Change: Tidal marshes are also important in mitigating climate change as they sequester carbon dioxide from the atmosphere. By removing contaminated sediments, the health and productivity of the marsh can improve, which can enhance the marsh's ability to sequester carbon.

Overall, contaminated sediment removal can help to improve the health and productivity of tidal marsh wetlands, which can benefit both the ecosystem and the human communities that depend on them.

The 2008 Federal Rules for Aquatic Resource Mitigation do not prevent wetland mitigation credit for contamination removal and reduction in wetland systems. The Corps evaluates each wetland mitigation project on a case-by-case basis, and the approval of functional value uplift credit for contamination removal would depend on the specific details of the project. The Corps has recognized the potential benefits of removing contaminants from wetland systems, including the enhancement of water quality, the restoration of ecological processes, and the improvement of habitat quality for wildlife.

Therefore, if a project can demonstrate that the removal of contaminants will lead to a measurable improvement in the functional value of the wetland mitigation site we believe the Corps may approve functional value uplift credit.

**Additionally, the goals and objectives for the site should probably be described as enhancement rather than rehabilitation as defined in the Final Rule for Compensatory Mitigation for Losses of Aquatic Resources, released on April 10, 2008.**

Noted.

We look forward to working with the Corps and MIMAC on this mitigation banking initiative in the Meadowlands. We request an in person IRT meeting and field tour to discuss and resolve interagency differences related to tidal mitigation in the HMD. Mitigation needs in the region are growing and the challenges to mitigation implementation continue to become greater over time. We think that consideration of the EPW method makes a valuable additional tool available to the MIMAC. On the issue of recontamination, we would appreciate guidance from the MIMAC, specifically, "does the MIMAC intend to permit or prohibit future mitigation to be performed on sites that will be flowed by the tide?"

Should you have any questions please do not hesitate to contact me at 973/356-7164 or [mrenna@evergreenenv.com](mailto:mrenna@evergreenenv.com).

Sincerely,  
EVERGREEN ENVIRONMENTAL, LLC



Mark Renna  
President

\cc: MIMAC



**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT  
JACOB K. JAVITS FEDERAL BUILDING  
26 FEDERAL PLAZA  
NEW YORK NY 10278-0090

Regulatory Branch

January 30, 2024

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC., Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

Evergreen Environmental, LLC  
Mr. Mark Renna  
709 Natures Way  
Franklin Lakes, New Jersey 07417

Dear Mr. Renna:

On September 22, 2023, Evergreen Environmental, LLC provided the New York District of the U.S. Army Corps of Engineers (USACE), the New Jersey Department of Environmental Protection (NJDEP), and the Meadowlands Interagency Mitigation Advisory Committee Team (MIMAC) with an updated functional value assessment report for the proposed Evergreen Mill Creek Point (MCP) Mitigation Bank employing the Evaluation for Planned Wetlands (EPW) method. The MCP Mitigation Bank had previously been reviewed by MIMAC and advanced through Draft Final MBI in 2016.

A presentation was made to the MIMAC members November 15, 2023. A site visit was conducted November 27, 2023 by some of the MIMAC members, specifically, the US Fish and Wildlife Service (USFWS) and the New Jersey Sports and Exposition Authority (NJSEA). On December 20, 2023, the entire MIMAC discussed the updated proposal, and the site visit and comments are being submitted for your review and response.

The MIMAC members, and specifically the NJSEA, recognize that additional in-depth analysis of the existing data on both recontamination and *Phragmites* in the Meadowlands District are merited because of the recent Superfund designation of the Lower Hackensack River. The comments in this letter are **preliminary** only, as the MIMAC was specifically requested in the September 22, 2023 email to provide consultation regarding the submitted Evaluation for Planned Wetlands (EPW) methodology documenting the ecological uplift of the proposed Evergreen Mill Creek Point Mitigation Bank. The MIMAC team will be working together to gather needed information and will begin internal discussions in the near future to develop an agreed path forward that can be utilized in our future project reviews.

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

### **Comments from The U.S. Fish and Wildlife Service (USFWS):**

The U.S. Fish and Wildlife Service New Jersey Field Office (Service) has reviewed the proposed Evergreen Mill Creek Point Mitigation Bank Evaluation for Planned Wetlands (EPW) Assessment. The Service is concerned that the EPW Assessment prepared excludes other factors to consider while evaluating what mitigation bank crediting ratios are appropriate. This includes, but is not limited to, the viability of the proposed bank, climate change, and environmental contaminants. Chapter 5.3 of the EPW Assessment explains the credits proposed as part of the mitigation bank creation. This includes 8.86 credits from “wetland restoration” and 1.19 credits from “open water restoration”. However, the mitigation bank appears to have the goal of improving the aquatic resource functions that are currently existing at the site. Additionally, there will be no gain of aquatic resource areas. As such, enhancement appears to be the more appropriate form of mitigation that should be proposed. Due to our concerns presented below, the Service believes that there is not enough information to currently support creation of additional mitigation bank credits (as explained in chapter 5.3) from the standard enhancement ratio of 3:1. Additionally, the Service will not support development of a future wetland mitigation bank without further information addressing our concerns below:

1. As climate change progresses and sea levels rise, storms and coastal flooding in areas such as the Meadowlands are expected to increase. For example, climate scientists have projected that New Jersey coastal areas are likely to experience sea level rise of 0.5 to 1.1 feet between 2000 and 2030, and 0.9 to 2.1 feet between 2000 and 2050, regardless of whether future emissions increase or decrease (Kopp *et al.* 2019). The baseline for coastal flooding will increase as sea levels rise. The proposed mitigation bank would create low marsh in areas that appear to currently be high marsh. With the projected rise of sea levels, the low marsh proposed may not be a viable option when considering an effective mitigation strategy. When compared to current conditions, the Service is concerned that the creation of low marsh will, in the long-term, result in a loss to total wetland area due to sea level rise.
2. While *Phragmites australis* dominated wetlands do not provide the best quality habitat and functions, recent studies have explained that those benefits are not entirely absent. Depending on the location of *Phragmites australis* populations, this could include increased protection to communities and marsh areas from the effects of flooding from storms and potential sea level rise due to climate change. The possible functions and benefits that the *Phragmites australis* dominated wetlands at the proposed mitigation bank are currently providing should be analyzed/considered to provide further clarity on whether the proposed mitigation bank and usage of crediting is appropriate. There does not appear to be a

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

discussion about if the sediment stabilization and shoreline bank erosion control that the planned wetlands are proposed to provide will be more effective than the current *Phragmites australis* dominated wetlands, when considering future climate change scenarios (e.g., greater storms, erosional forces, etc.).

Some studies and information on *Phragmites* (please search for other information on this topic, as appropriate) and its potential functions/benefits that should be analyzed/considered can be found at Kiviat (2013), Sheng *et al.* (2021), Maryland Department of Natural Resources (2020), and Weis *et al.* (2021).

3. The EPW Assessment discusses that the sediment located at the proposed mitigation bank site contains mercury and other contaminants at levels that will likely require remediation. The Lower Hackensack River (located approximately 800-feet upstream Mill Creek) was recently designated a superfund site and is tidally connected to the proposed mitigation bank (U.S. Environmental Protection Agency [EPA] 2022). Sediments in the Hackensack River are known to be contaminated with arsenic, chromium, lead, and mercury (EPA 2022). The Service has significant concerns about potential recontamination of the mitigation bank site. Recontamination may occur through a combination of processes including, but not limited to, tidal inundation and biotranslocation. Ultimately, if recontamination levels reach those that are harmful to fish and wildlife resources, the mitigation bank will not be achieving its intended purposes; would not be ecologically sustainable; and would represent an attractive nuisance to wildlife. Without further information documenting that the site will not result in recontamination after construction, the Service is not likely to support its development. Additionally, the potential for recontamination does not appear to be a factor considered when the “planned wetland” rankings were developed for the EPW Assessment. Please refer to the Services 2015 white paper on recontamination of mitigation sites in the Meadowlands for additional information and concerns that the Service will likely have if the project progresses at: [https://www.fws.gov/sites/default/files/documents/MitigationMeadowlands2015\\_508.pdf](https://www.fws.gov/sites/default/files/documents/MitigationMeadowlands2015_508.pdf)

The Service is likely to have additional comments/concerns on the mitigation bank if it progresses. The comments above do not preclude additional Service comments on potential future phases of the proposed project.

#### **Literature Cited:**

Kiviat. 2013. Ecosystem services of *Phragmites* in North America with emphasis on habitat functions. *AoB Plants* 5. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4104640/>

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

Kopp, R. E., C. Andrews, A. Broccoli, A. Garner, D. Kreeger, R. Leichenko, N. Lin, C. Little, J.A. Miller, J.K. Miller, K.G. Miller, R. Moss, P. Orton, A. Parris, D. Robinson, W. Sweet, J. Walker, C.P. Weaver, K. White, M. Campo, M. Kaplan, J. Herb, L. Auermuller. 2019. New Jersey's Rising Seas and Changing Coastal Storms: Report of the 2019 Science and Technical Advisory Panel. Rutgers, The State University of New Jersey. Prepared for the New Jersey Department of Environmental Protection. Trenton, New Jersey. Available at: [https://climatechange.rutgers.edu/images/STAP\\_FINAL\\_FINAL\\_12-4-19.pdf](https://climatechange.rutgers.edu/images/STAP_FINAL_FINAL_12-4-19.pdf).

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Sheng, Y.P., A.A. Rivera-Nieves, R. Zou, V.A. Paramygin, C. Angelini, S.J. Sharp. 2021. Invasive *Phragmites* provides superior wave and surge damage protection relative to native plants during storms. *Environmental Research Letters* 16. Available at: <https://iopscience.iop.org/article/10.1088/1748-9326/abf288>.

U.S. Environmental Protection Agency. 2022. National Priorities List Lower Hackensack River New Jersey Bergen and Hudson Counties. Available at: <https://semspub.epa.gov/work/HQ/403040.pdf>.

Weis, J.S., E.B. Watson, B. Ravit, C. Harman, M. Yepsen. 2021. The status and future of tidal marshes in New Jersey faced with sea level rise. *Anthropocene Coasts* 4: 168-192. Available at: <https://cdnsiencepub.com/doi/pdf/10.1139/anc-2020-0020>.

### **Comments from National Oceanic and Atmospheric Administration (NOAA):**

NOAA fisheries has reviewed the EPW functional assessment report for the proposed Evergreen MCP Mitigation Bank. We share a number of concerns similar to our partner agencies, and provide the following questions and comments:

1. What is the rationale for proposing the use of the EPW method to determine credits when there are already accepted mitigation ratios that can be used and have been used for other approved banks in the District? These accepted ratios were based on a peer reviewed functional assessment known as the Indicator Value Assessment (IVA) methodology developed in partnership with the members of MIMAC and state biologists, as well as the relevant NJ DEP wetlands regulations.
2. The EPW method was not intended to be used to calculate the ratios or credits generated for banks. Compared to the 2016 draft final MBI for the project, using the EPW method, as presented, lacks a number of functions and values considered in the original prospectus. The 2016 MBI included consideration of water quality, wetland hydrology, flood storage, sediment/toxicant retention,

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

nutrient exchange sediment transport, sediment and shoreline stabilization, production export, finfish habitat, invertebrate community, wildlife habitat, plant community composition, endangered species habitat, and social significance. The EPW method only considers shoreline bank erosion control, sediment stabilization, water quality, wildlife, fish, and uniqueness. It appears that there are a number of functions and values no longer considered, calls into question the applicability of this method.

3. The EPW method is based on scoring and best professional judgement by the applicant. If scoring is to be used, then the MIMAC should be involved in developing the values associated with the scores to ensure values are agreed upon.
4. Should the EPW method be used to determine credits, projects that intend to use the bank will be subject to the same process to determine appropriate credits to purchase, which can be quite time consuming. This was a similar challenge faced when the use of the IVA was standard practice and why the standard accepted ratios were developed. The accepted ratios allow more certainty in the number of acres of impact a bank can offset and does not require that the functional assessment be done on the impact site.
5. We don't currently support the use of the standard EPW method to determine credits, but would be open to considering a modified method that incorporates more functions and values and some overall quantifiable elements.

Please note that our comments are specific to the use of the EPW and are not all encompassing of the comments we may have in the future, should the bank progress.

### **U.S. Army Corps of Engineers Comments (USACE):**

In response to the Evergreen September 22, 2023 letter, stating that "Evergreen consulted with the MIMAC at an April 19, 2023 meeting...Evergreen sought MIMAC advice and counsel as to the bank approval process, wetland restoration design objectives, mitigation concerns endemic to the Meadowlands such as pervasive contamination and scientifically-based ecological uplift methodologies to address mitigation value, ultimately distilled into units of mitigation or mitigation credits.", the USACE would like to reiterate the statements made previously within their August 2, 2016 letter regarding the generation of credits:

The preamble of the Compensatory Mitigation for Losses of Aquatic Resources: Final Rule (33 CFR Parts 325 and 332) provides the rationale used by the Corps and EPA in the development of the concepts of aquatic resource functions, services and values in the final rule language. Specifically the preamble states that the "credit valuation must be based on ecological functions and services provided by the

SUBJECT: Permit Application Number NAN-2014-00955-WCA by Evergreen Environmental, LLC. Mill Creek Point Mitigation Bank in the Town of Secaucus, Hudson County, NJ

compensatory mitigation project, not the difficulty or cost of siting and constructing it.” As the proposed project is a mitigation bank designed to offset the loss of permanent wetland impacts, the cost to offset those losses should be included in the cost of the credits and accepted by those entities impacting wetlands. Since the majority of the compensatory mitigation undertaken is rehabilitation of degraded wetlands, not creation or re-establishment, there remains a net loss in wetland acreage in the system even with compensatory mitigation for the permanent losses. Granting additional credits for remediating a site will result in additional net losses of wetland acreages and the net additional increase in functions cannot be quantified.

Additionally, the goals and objectives for the site should probably be described as enhancement rather than rehabilitation as defined in the Final Rule for Compensatory Mitigation for Losses of Aquatic Resources, released on April 10, 2008.

Please provide a comments response back within 30-days of receipt of this letter, or, let us know if additional time is needed. Your responses may also be incorporated into our analysis for future Bank development and planning. If any questions should arise concerning this matter, please contact Danielle Courtois, at (347) 439-9343 or [Danielle.R.Courtois@usace.army.mil](mailto:Danielle.R.Courtois@usace.army.mil)

Sincerely,

 Date: 2024.01.30  
13:48:50 -05'00'

Danielle R. Courtois  
Chair, Meadowlands IRT  
Project Manager, Western Section

Attachments: None

Cc: NJSEA: Terry Doss, Drew McQuade  
NJDEP: Jessica Klein, Chivon Kistic  
USEPA: Marco Finocchiaro, Jaclyn Woollard  
NOAA: Jessie Murray, Karen Greene  
USFWS: Michael Ciappi



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## Interagency Review Team (IRT) Meeting Minutes Evergreen Mill Creek Point (MCP) Mitigation Bank November 15, 2023

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**Attendees:** USACE/IRT Chair: Danielle Courtois  
NMFS: Jessie Murray  
USFWS: Michael Ciappi  
NJDEP: Jessica Klein  
EPA: Marco Finocchiaro  
NJSEA: Terry Doss, Sharon Mascaro, Drew McQuade  
HDR: David Brizzolara, Dr. David Yozzo  
Evergreen Environmental: Mark Renna, Ryan Scerbo

### 1.0 Introductions and Project History (Presenter David Brizzolara)

Mark Renna, Evergreen Environmental, provided an introduction and update since the last time this project was in front of the MIMAC in April 2023. Evergreen consulted with the IRT/MIMAC to find a scientifically-based functions and values methodology consistent with the federal and state rules addressing mitigation valuation. After much research, and also review of the HRE Ecosystem Restoration Feasibility Study of 2020, Evergreen and HDR have performed a functional value assessment using the New York District's Evaluation for Planned Wetlands (EPW) methodology. The EPW method is tested, repeatable, scientific and implemented by the NY USACE in the Hudson Raritan Estuary Comprehensive Restoration Plan Feasibility Study (2020).

David Brizzolara, HDR, provided an introduction of himself and a brief history of the project going back to 2014. Baseline site investigation activities were conducted in 2014 and 2015. This site is almost entirely made-up of a dense monoculture of *Phragmites*, not uncommon in the Meadowlands. The site is made up of 22.38 acres of wetlands and open waters. The Project intent would be to restore 16.84 acres of wetlands and 2.27 acres of open water/mudflat - the remainder of the site would be preserved.

In early 2015, the mitigation bank Prospectus was approved by MIMAC. Late 2015, a final Mitigation Bank Instrument (MBI) was submitted. Design was advanced to 95% providing detailed design for grading plans and cut/fill estimates, mitigation plans, planting plans, etc. In 2016, the mitigation bank project was put on hold indefinitely due to differences in approaches used to determine mitigation valuation.

Mitigation valuation under state and federal regulations is intended to be based on functions and values gained by a mitigation project on a case-by-case basis. However, more often than not, mitigation ratios are employed based on regulatory precedent without scientific basis, that have been established on sites located elsewhere in the region with different features and restoration methods and goals. HDR pointed to multiple regulations that cite functions

and values gained should dictate the amount of compensatory mitigation and the ratios to be used.

## **2.0 Methodology Overview and Results** (Presenter David Yozzo)

Dr. David Yozzo, HDR, described the selection of the EPW methodology for this assessment as it is a proven scientific method to measure functional value uplift and it has been used by the NYD Corps to assess wetland mitigation functional uplift in the region including within the Meadowlands (e.g., Metromedia Tract) as part of the Hudson Raritan Estuary Comprehensive Restoration Plan Feasibility Study (2020).

The EPW methodology provides a science-based and data driven functional value alternative to acreage-based mitigation requirements (Bartoldus et al. 1994) by presenting a range of ecological metrics rather than solely acreage-based mitigation ratios to yield a compensatory mitigation assessment. EPW is more robust than “checklist-based” assessment methods that are simply based on observations of a site’s potential to perform certain functions due to presence/absence of certain features or attributes. EPW rely on scaling of variables (through desktop and field-based measurements) as well as the use of mathematical relationships among variables that represent interactions believed to occur in natural (or man-made) wetlands systems (e.g., compensatory, cumulative, additive, etc.).

The six ecological/social functions used in the EPW model are Shoreline Bank Erosion, Sediment Stabilization, Water Quality, Wildlife, Fish Habitat, and Uniqueness/Heritage. Each function has 7-20 elements that are scored on a scale of 0 to 1 with 0 being poor and 1 being optimal, which drive a functional capacity index (FCI) score for each function. Each FCI is then multiplied by the acreage of the area evaluated to assign an area unit score. This assessment was performed on the future without project scenario and the proposed restoration scenario.

## **3.0 EPW Assessment of the MCP Bank Site** (Presenter: Dr. David Yozzo and David Brizzolara)

Baseline conditions observed include steep shorelines, undercut banks, high rates of sedimentation and erosion, high turbidity, unvegetated banks, poor wildlife habitat due to dense stands of *Phragmites*, compromised hydroperiod due to higher-than-normal marsh surface elevations because of *Phragmites* detrital mat, restricted access to suitable foraging habitat on the marsh surface.

Restoration would result in many benefits and ecological uplift across the entire suite of functions that EPW evaluates. These beneficial interventions and their outcomes include regrading and revegetating banks, lowering elevation of marsh surface to increase hydroperiod, replanting with native species, decreased erosion rates into surrounding waterways, shoreline debris removal, expanding open water areas within the marsh, and increasing sinuosity of tidal creeks, increase in the number of vegetative cover types and improving wildlife and fish habitat, and providing a unique marsh with native vegetation within the Meadowlands. Full detail can be found within the EPW report provided to the MIMAC in September.

EPW scores from future without the project (WAA) and the proposed wetland restoration (Planned Wetland) can be found in table below.

Function	WAA			Planned Wetland		
	FCI	AREA	FCUs*	FCI	Area	FCUs*
Shoreline Bank Erosion Control	0.267	22.38	5.98	0.794	22.38	17.77
Sediment Stabilization	0.55	22.38	12.31	0.75	22.38	16.79
Water Quality	0.763	22.38	17.08	0.838	22.38	18.75
Wildlife	0.137	22.38	3.07	0.28	22.38	6.27
Fish (Tidal)	0.344	22.38	7.70	0.483	22.38	10.81
Uniqueness/Heritage	0.9			0.967		
<b>Function Average FCU</b>			<b>9.23</b>			<b>14.08</b>

Future with project conditions would result in 52.6% Ecological Uplift (14.08 Mitigation FCUs/9.23 Existing FCUs = 1.526 or 52.6% Uplift), which is validated by the comparable scores from the HRE CRP Feasibility Study EPW Assessment scores for the Metromedia Tract's 58.1% increase.

Applying a 52.6% ecological uplift to the 19.11 acres of *Phragmites*-dominated wetlands subject of wetland restoration would be equivalent to 29.16 functional acres of wetlands in the watershed - an excess of 10.05 acres or "credits" for which there is regulatory precedent (more detail provided in the EPW report).

Mitigation Category	Acres	Percent Uplift	Mitigation Credits
Wetland Restoration	16.84	52.6	8.86
Open Water Restoration	2.27	52.6	1.19
Wetland Preservation	3.27	N/A	-
Upland Preservation	0.23	N/A	-
<b>Total</b>	<b>22.61</b>		<b>10.05</b>

In summary, EPW was chosen as a science-based approach to quantify functional uplift and mitigation value it is consistent not only with the federal rules, but also has regulatory regional precedent. The EPW evaluation of the MCP site showed improvements across all functions that were evaluated including significant improvement of 4 functions. These improvements resulted in a 52.6% increase in ecological uplift and an excess of 10.05 acres of mitigation value, which we have translated to credits. Evergreen seeks feedback from MIMAC so that we may assess the submittal of a new prospectus to advance the mitigation bank process. Evergreen would be happy to facilitate a field visit to the site.

### 3.0 Discussion

Terry Doss, NJSEA expressed no problem with EPW approach. However, would like to take a closer look at the proposed restoration design and potentially discuss the restoration plans further as restoration approaches across the Meadowlands have been changing recently.

Specifically, details regarding recent data collected by NJSEA at the MCP site may dictate marsh restoration techniques.

Mark Renna, Evergreen, responded that we'd be happy to discuss incorporating new mitigation techniques particularly regarding EPW approach, and that the current design addresses relatively recent MIMAC concerns related to high marsh communities that address sea level rise, habitat value and contamination/recontamination reduction. Through the current assessment of the site using EPW, we believe the proposed site restoration has been previously significantly undervalued.

Marco Finocchiaro, EPA, inquired about prior approach utilized for mitigation ratios in the approved Prospectus and Mitigation Banking Instrument previously submitted. Mark Renna responded that while best professional analysis was utilized to describe the ecological benefits and functions/values gained, standard mitigation ratios were applied based on precedent.

Marco Finocchiaro then inquired about precedent for using EPW approach to generate credits ratios. Dave Brizzolara responded that there is some regulatory precedent for using functional assessments similar to EPW to generate credits and referenced the report submitted to MIMAC for further detail. Dr. David Yozzo added that there is precedent from the Pacific Northwest region which is presented in the report.

Marco Finocchiaro requested further explanation of how quantitative field assessment is measured and performed. Dr. David Yozzo responded referencing the EPW manual and explained the process of site assessment of each element that derives the functional assessment valuation that leads to quantified functional uplift. Mark Renna reiterated the EPW methodology, a quantitative unit driven determination, was utilized as the USACE's preferred functional assessment approach at the Metromedia site to determine a wetland restoration valuation consistent with the national interest to invest an HRE-estimated \$43M.

Danielle Courtois, USACE requested further explanation of how existing condition values are derived in the field. Dr. David Yozzo responded that the EPW manual guides the assessment of each element and assigns a value based on how each question is answered. Although room for subjective analysis, field practitioners and senior reviewers evaluate each score to ensure objectivity. David Brizzolara added that datasheet scores can be found in Appendix B of report for further detailed review of technical process.

Jessica Klein, NJDEP, stated that at this time, NJDEP had no comment. Any change in status quo would have to be reviewed and commented on by upper management (Chivon Kistic).

Jessie Murray, NMFS, added that she did not believe the EPW methodology was originally designed or utilized for mitigation bank purposes and that she would like to look more at documents previously presented to MIMAC and compare to previous mitigation assessments. Mark Renna responded that the EPW methodology was specifically designed for the purpose of assessing a planned restored wetland (aka a mitigation site) and reiterated that this methodology has regional agency precedent. He also noted that there are few mitigation site and bank examples in the region with MRI3 being the last mitigation bank approved in the region in 2012. The ledger for Marsh Resources Mitigation Bank Phases 1

and 2, per RIBITS, has mitigated 122 acres of impact with 186 acre-credits or an effective mitigation ratio of 1.5:1.

Danielle Courtois, USACE indicated the presentation was helpful and stated that she will discuss with the IRT and upper management to provide further guidance on mitigation valuation approach before advancing to new Prospectus. She anticipates written comments within 30 days. Further consideration will be given to a field visit before winter weather begins.

Following the meeting, Danielle consulted with the IRT who determined they would like to visit the site prior to submission of a written response to Evergreen. Mark Renna responded that that was acceptable, however, were the field trip to be delayed until 2024, Evergreen requests written comments in 2023 and prior to the field tour.

From: Aspinwall, Jill [<mailto:Jill.Aspinwall@dep.nj.gov>]

Sent: Tuesday, July 25, 2017 2:02 PM

To: Mark Renna <[mrenna@evergreenenv.com](mailto:mrenna@evergreenenv.com)>; MIRANDA, Rosita (Rosie) CIV USARMY CENAN (US) <[Rosita.Miranda@usace.army.mil](mailto:Rosita.Miranda@usace.army.mil)>; Cannon, James H CIV CENAN CENAD (US) <[James.H.Cannon@usace.army.mil](mailto:James.H.Cannon@usace.army.mil)>  
Cc: Ryba, Stephan A CIV CPMS (US) <[Stephan.A.Ryba@usace.army.mil](mailto:Stephan.A.Ryba@usace.army.mil)>; Mallery, Christopher S CIV USARMY CENAN (US) <[Christopher.S.Mallery@usace.army.mil](mailto:Christopher.S.Mallery@usace.army.mil)>; [Brett.Bragin@njmeadowlands.gov](mailto:Brett.Bragin@njmeadowlands.gov); Dan Montella <[Montella.Daniel@epa.gov](mailto:Montella.Daniel@epa.gov)>; [Karen.Greene@noaa.gov](mailto:Karen.Greene@noaa.gov); Robert Nyman <[Nyman.Robert@epa.gov](mailto:Nyman.Robert@epa.gov)>; Ross Feltes <[Ross.Feltes@njmeadowlands.gov](mailto:Ross.Feltes@njmeadowlands.gov)>; Stephanie Andreescu <[Andreescu.Stephanie@epa.gov](mailto:Andreescu.Stephanie@epa.gov)>; Steve Mars <[Steve\\_Mars@fws.gov](mailto:Steve_Mars@fws.gov)>; D'Ambrosio, James CIV CENAN CENAD (US) <[James.DAmbrosio@usace.army.mil](mailto:James.DAmbrosio@usace.army.mil)>; Springer, Kim <[Kim.Springer@dep.nj.gov](mailto:Kim.Springer@dep.nj.gov)>; Aspinwall, Jill <[Jill.Aspinwall@dep.nj.gov](mailto:Jill.Aspinwall@dep.nj.gov)>

Subject: RE: Evergreen Mill Creek Point Mitigation Bank Ecological Receptor Evaluation - Evergreen Response to Corps Response 6-28-17

Mark,

As per your request below, the NJDEP has reviewed the ecological receptor evaluation. The NJDEP coordinated our review with USFWS. NJDEP and USFWS agree that a 1-foot cap is acceptable provided the design is high marsh.

If you have any additional questions, please let me know.

Thanks  
Jill



## State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Division of Land Use Regulation  
Mail Code 501-02A, P.O. Box 420, Trenton, NJ 08625-0420  
Fax # (609) 777-3656  
[www.state.nj.us/dep/landuse](http://www.state.nj.us/dep/landuse)

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

BOB MARTIN  
*Commissioner*

May 9, 2016

Mr. James Cannon  
U.S. Department of the Army  
Army Corps of Engineers  
Address Javits Center  
New York, NY Zip

Re: Proposed Evergreen Mill Creek Mitigation Bank  
File #0909-13-0007.1  
Town of Secaucus, Hudson County

Dear Mr. Cannon:

It has come to our attention that despite numerous discussions regarding the proposed Mill Creek Bank at MIMAC meetings, the Department had not, in writing, expressed our interests and concerns. Please note that by way of a letter to Evergreen Environmental that was copied to the MIMAC, the Department did outline the steps that would have to be taken to address onsite eco-risk concerns for this project. However, the Department would also like to comment on the other critical issue at the proposed Mill Creek Bank: credit ratios.

Specifically, in the latest version of the MBI, Evergreen proposes a ratio of 2:1 for "Wetland Rehabilitation" and "Open Water/Mudflat Rehabilitation."

"Rehabilitation" under the Federal wetland mitigation rules means an increase in function of a wetland area but not an increase in area. Therefore, under the State's rules, "rehabilitation" would be equivalent to "enhancement."

As a policy, under the State's Freshwater Wetlands rules, the largest enhancement ratio that may be applied to any mitigation site is 3:1. That is, at least three acres of wetlands must be enhanced for each acre of wetland impacts. However, under the State's Coastal Zone Management rules which contain requirements for mitigation of tidally influenced wetlands, the amount of mitigation required to replace tidal wetlands using wetland enhancement is unspecified (see N.J.A.C. 7:7-17.12(c)). Although, the ratios of 2:1 and 1:1 are discussed in relation to "creation" and "restoration" of wetlands, the enhancement ratio is to be determined "on a case by case basis."

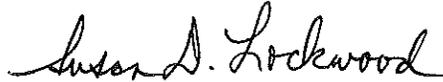
The Department has actively participated in the MIMAC discussions regarding the relative value associated with enhancing the Mill Creek bank site to a "high marsh"

condition instead of a "low marsh" condition. We concur that "high marsh" would provide more ecological diversity and is more desirable, since the majority of restoration projects undertaken in that area have been low marsh. We also understand the banker's concern that "high marsh" may be more difficult to achieve without invasive species, although it may require less removal and disposal of material.

After considering all of the above factors, the Department supports the Banker's request for a 2:1 ratio assuming the site will be enhanced to a high marsh condition. We believe that, in this case, there would be sufficient ecological uplift to support a 2:1 ratio, and that there is value in having the site mitigated. This position is consistent with the opinions expressed at the MIMAC meetings.

Thank you for allowing us to supplement the record. If you have any questions, please let me know.

Sincerely,

A handwritten signature in cursive script that reads "Susan D. Lockwood". The signature is written in black ink and is positioned above the printed name.

Susan D. Lockwood



## State of New Jersey

### DEPARTMENT OF ENVIRONMENTAL PROTECTION

State Forestry Services  
Mail Code 501-04

ONLM - Natural Heritage Program  
P.O. Box 420

Trenton, NJ 08625-0420  
Tel. #609-984-1339  
Fax. #609-984-1427

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

BOB MARTIN  
*Commissioner*

February 10, 2015

David Brizzolara  
HDR Engineering, Inc.  
1 International Boulevard, 10th Fl., Suite 1000  
Mahwah, NJ 07495-0027

Re: Mill Creek Point Mitigation Bank

Dear Mr. Brizzolara:

Thank you for your data request regarding rare species information for the above referenced project site in Secaucus Town, Hudson County.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.1) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for all occurrences of rare wildlife species or wildlife habitat within one mile of the referenced site. Please refer to Table 2 (attached) to determine if any rare wildlife species or wildlife habitat is documented within one mile of the project site. Detailed reports are provided for each category coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

For requests submitted as part of a Flood Hazard Area Control Act (FHACA) rule application, we report records for all rare plant species and ecological communities tracked by the Natural Heritage Program that may be on your project site. (In some borderline cases these records may be described as on or in the immediate vicinity of your project site.) A subset of these plant species are also covered by the FHACA rules when the records are located within one mile of the project site. One mile searches for plant species will only report occurrences for those plant species identified under the FHACA regulations as being critically dependent on the watercourse. Please refer to Table 2 (attached) to determine if any rare plant species covered by the FHACA rules have been documented. Detailed reports are provided for each category coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1 and 2 (attached) to determine if any priority sites are located on or within one mile of the project site.

A list of rare plant species and ecological communities that have been documented from the project site, referenced above, can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html>. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from [http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes\\_2010.pdf](http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf).

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive NJ-GeoWeb website at the following URL, <http://www.state.nj.us/dep/gis/geoweb splash.htm> or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf>.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,



Robert J. Cartica  
Administrator

c: NHP File No. 15-4007471-7085

**Table 1: On Site Data Request Search Results (7 Possible Reports)**

<b><u>Report Name</u></b>	<b><u>Included</u></b>	<b><u>Number of Pages</u></b>
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. On or In the Immediate Vicinity of the Project Site Based on Search of the Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
3. Natural Heritage Priority Sites On Site	No	0 pages included
4. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches	Yes	1 page(s) included
5. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.1	No	0 pages included
6. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Stream Habitat File	No	0 pages included
7. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

**Rare Wildlife Species or Wildlife Habitat on the Project  
Site Based on Search of  
Landscape Project 3.1 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
Aves	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Northern Harrier	Circus cyaneus	Non-breeding Sighting	2	NA	Special Concern	G5	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N

**Table 2: Within 1 Mile for FHACA Searches (6 possible reports)**

<b><u>Report Name</u></b>	<b><u>Included</u></b>	<b><u>Number of Pages</u></b>
1. Rare Plant Species Covered by the Flood Hazard Area Control Act Rule Within One Mile of the Project Site Based on Search of Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within 1 mile	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.1	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.1 Stream Habitat File	No	0 pages included
6. Other Animal Species Within One Mile of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	Yes	1 page(s) included

**Rare Wildlife Species or Wildlife Habitat Within One  
Mile of the Project Site Based on Search of  
Landscape Project 3.1 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Barn Owl	Tyto alba	Non-breeding Sighting	2	NA	Special Concern	G5	S3B,S3N
	Canada Warbler	Wilsonia canadensis	Breeding Sighting	2	NA	Special Concern	G5	S3B
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Northern Harrier	Circus cyaneus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Northern Harrier	Circus cyaneus	Non-breeding Sighting	2	NA	Special Concern	G5	S1B,S3N
	Peregrine Falcon	Falco peregrinus	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N
	Yellow-crowned Night-heron	Nyctanassa violacea	Nesting Colony	3	NA	State Threatened	G5	S2B,S2N

**Other Animal Species  
Within One Mile of the Project Site Based on  
Additional Species Tracked by  
Endangered and Nongame Species Program**

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Scientific Name	Common Name	Federal Protection Status	State Protection Status	Grank	Strank
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***Vertebrate Animals***

Malaclemys terrapin terrapin

Northern Diamondback Terrapin

G4T4Q S3

Total number of records: 1

**ATTACHMENT 4**

**FUNCTIONAL VALUE ASSESSMENT –  
EVALUATION FOR PLANNED WETLAND  
ASSESSMENT**

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# Evergreen Mill Creek Point Mitigation Bank Evaluation for Planned Wetlands Assessment

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Submitted to:

Interagency Review Team  
c/o U. S. Army Corps of  
Engineers New York District  
26 Federal Plaza  
New York, New York 10278

Submitted by:



HDR Engineering,  
Inc. 50 Tice Blvd,  
Suite 210 Woodcliff  
Lake, NJ 07677

On Behalf of:



Evergreen Environmental, LLC

September 2023



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- Appendix A. Site Photos
- Appendix B. EPW Data Sheets
- Appendix C. Agency Correspondence
- Appendix D. Mill Creek Point Mitigation Bank Site Design Plans

## 1.0 INTRODUCTION

HDR Engineering, Inc. (HDR) conducted a functional value assessment (FVA) using the Evaluation for Planned Wetlands (EPW) methodology for the proposed Evergreen Mill Creek Point Mitigation Bank in the Town of Secaucus, New Jersey. The purpose of the FVA using EPW was to determine the potential ecological uplift quantified through the predicted increase in Functional Capacity Units (FCU) of the 22.38-acre Wetland Assessment Area (WAA) under its current baseline condition, and an improved/restored condition based on plans developed by HDR in January 2016 (Appendix D). The field data collection associated with the functional value assessment was performed on May 19, 2023, by wetland scientists, David Brizzolara, PWS, Julie Gifford, WPIT, and Sr. Environmental Scientist Casey Stokes of HDR Inc. Dr. David Yozzo, PhD served as a senior estuarine ecologist and technical reviewer for site assessment EPW results and report preparation. Dr. Yozzo is a nationally recognized environmental scientist in the fields of urban ecology, estuary science, wetland community ecology, and ecosystem restoration and resiliency. His work has included designing and conducting environmental assessments for compensatory mitigation, habitat restoration, transportation, navigation, and power delivery programs throughout estuaries of the United States. The following report has been prepared in support of the findings.

As indicated by Evergreen at the IRT/MIMAC Meeting of April 19, 2023, Evergreen proposes to advance the mitigation bank in accordance with federal and state rules that determine mitigation value and mitigation credit value based on functional value uplift supported by sound science using current and applicable methods. The goal of the EPW FVA is to present a science-based assessment of mitigation value to the IRT as part of the mitigation bank consultation process associated with a Prospectus, Mitigation Banking Instrument, and ultimately the required state and federal permits.

The EPW has been selected as it is employed by the US Army Corps of Engineers, New York District to evaluate wetland mitigation functional value uplift for planned wetland restoration projects associated with the Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study (2020), that proposes several projects in the Hackensack Meadowlands similar to Mill Creek Point.

## 2.0 BACKGROUND AND OVERVIEW

The Evergreen Mill Creek Point Mitigation Bank Site is 22.38 acres in size and is a common reed (*Phragmites australis*) dominated wetland located in Secaucus, Hudson County, New Jersey (Figure 1). The New Jersey Department of Environmental Protection (NJDEP) Wetlands Land Use/Land Cover Map shows a wetland classified as Saline Marshes (Figure 2). Using the Cowardin classification system, the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map classifies the wetland as estuarine, intertidal, emergent, *Phragmites australis* dominant, irregularly flooded, and partially ditched/drained (E2EM5Pd) (Figure 3).

The Bank Site contains degraded coastal wetlands that are dominated by a monotypic stand of *Phragmites australis* (common reed) and the tidal exchange is extremely limited in the portions of the Bank Site with higher elevations. Higher low tide elevations have been caused by *Phragmites* litter/detritus accumulation, along with an increase in tidal sediment deposition caused by the dense stem canopy. The dense stem canopy slows tidal velocity, which promotes deposition of fine organic and inorganic matter onto the vegetated marsh surface. This process promotes rapid vertical accretion raising elevation of the marsh plain and reducing frequency of tidal inundation. The sediments on the Bank Site contain mercury and other contaminants at levels exceeding the Effects Range Median (ERM) concentrations due to an extended history of non-point source pollution in the Meadowlands. The proposed project consists of treating the *Phragmites* with herbicide, removing the *Phragmites* rhizome mat, and grading the site to elevations subject to enhanced tidal influence. Grading will result in the removal of sediment to 1-foot below design grade. Design grade will be achieved through the backfilling and placement of clean substrate from an off-site location. The marsh plain will include emergent tidal marsh with a characteristic tidal gradient encompassing zones of lower and higher elevation (e.g., regularly and irregularly flooded) that would be planted with native vegetation species.

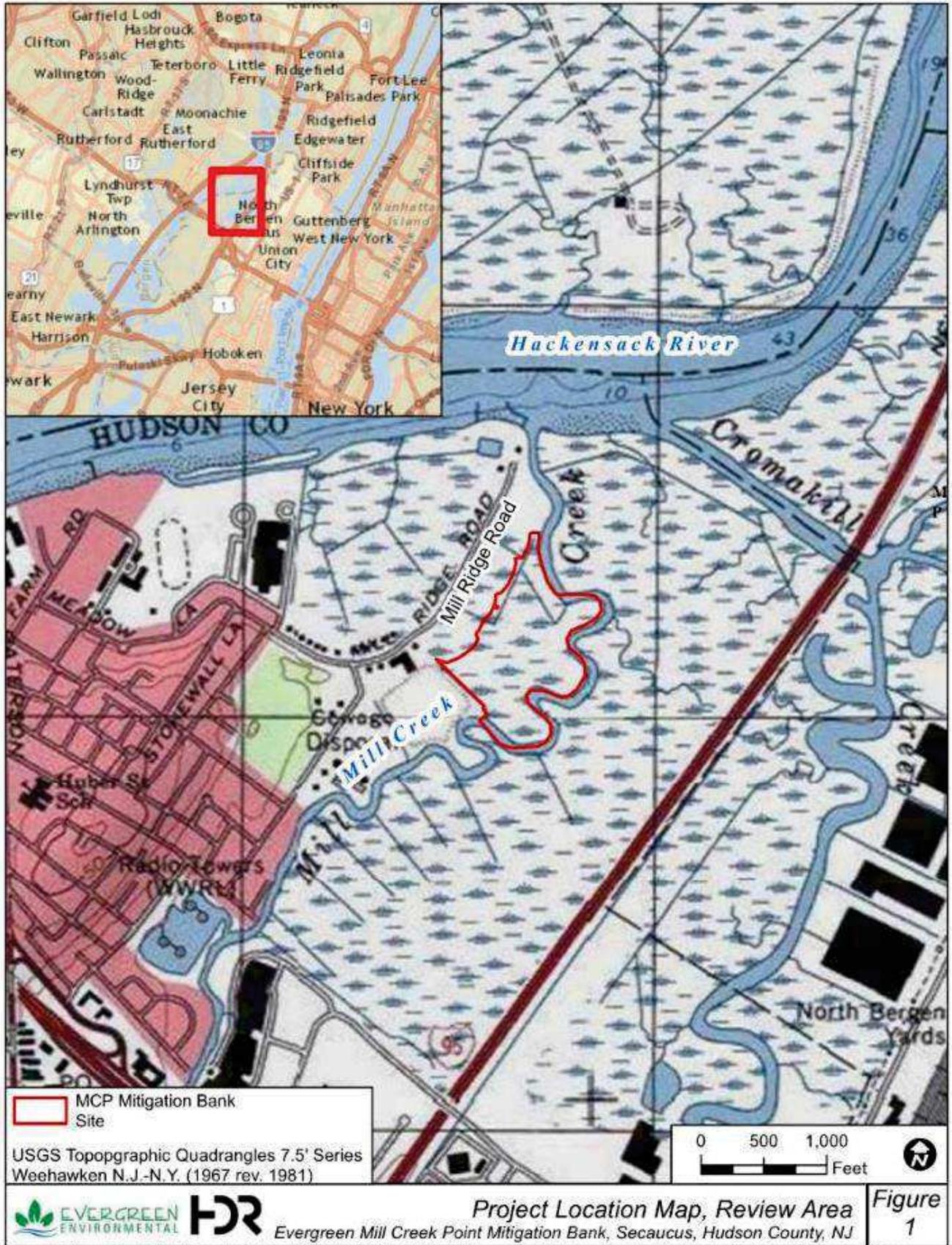
### 3.0 METHODOLOGY

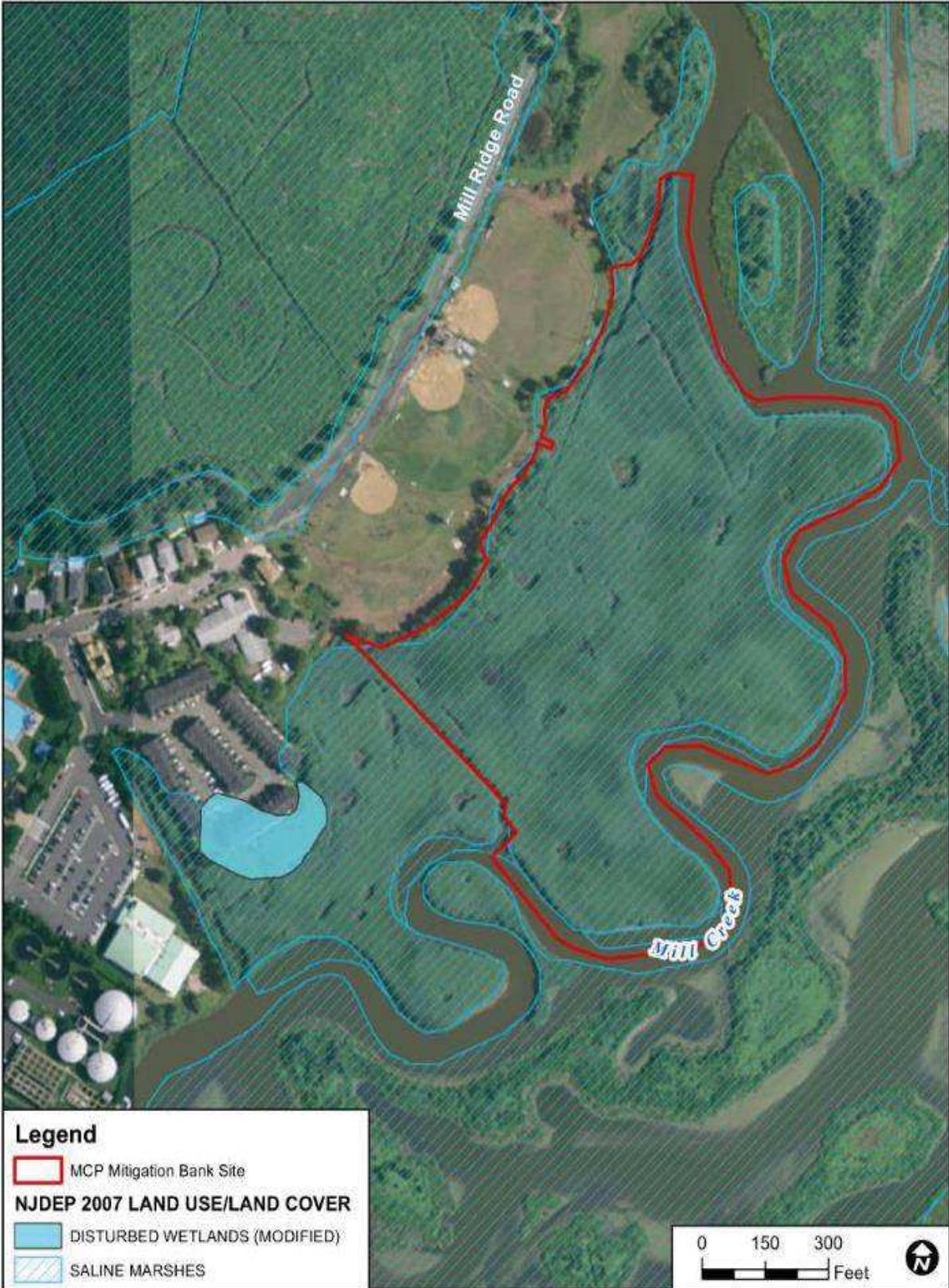
The EPW methodology provides a science-based and data driven functional value alternative to acreage-based mitigation requirements (Bartoldus et al. 1994) by presenting a range of ecological metrics rather than solely acreage-based mitigation ratios to yield a compensatory mitigation assessment. The purpose of the EPW methodology is to enable planning and regulatory actions such as wetland creation, restoration, mitigation banking, impact analysis, and watershed planning, using a quantifiable numerical modeling approach.

The six ecological/social metrics used in the EPW model are Shoreline Bank Erosion, Sediment Stabilization, Water Quality, Wildlife, Fish Habitat, and Uniqueness/Heritage. These six functions were selected due to the straightforward nature of their field evaluation procedures and the extensive literature available outlining the relationships between their elements. Each metric is quantified through 7-20 elements that undergo field and desktop assessment. In the field, a variable is assigned for each element on a numeric scale of 0, for a low level of function, to 1.0, for a high level of function (Bartoldus et al. 1994). The Functional Capacity Index (FCI) is the single “score” for the functional capacity per unit area of the wetland, calculated for each function by mathematically combining element variables in a way that accounts for the interactive relationships between elements represented. A more comprehensive explanation on the modeling of element interactions (fully or partially compensatory, cumulative, limiting, controlling, etc.) is provided in Bartoldus (1994). The FCI and WAA are then used to derive the functional capacity units (FCUs). FCUs are calculated by multiplying FCI by the area of the planned/anticipated impacts. Using Table 1, the overall potential of the Bank Site to support maximum wetland functions and values is classified as Optimal, Moderate, Low, or Poor-None. (Table 1).

**Table 1: Wetland Functions and Values rating 0.00-1.00**

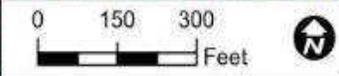
Functional categories based on FCI index scores	
Corresponding Index Score	Potential to Provide Desirable Wetland Functional Capacity
$0.75 \leq X \leq 1.00$	Optimal
$0.50 \leq X \leq 0.75$	Moderate
$0.25 \leq X \leq 0.50$	Low
$0.00 \leq X \leq 0.25$	Poor-None





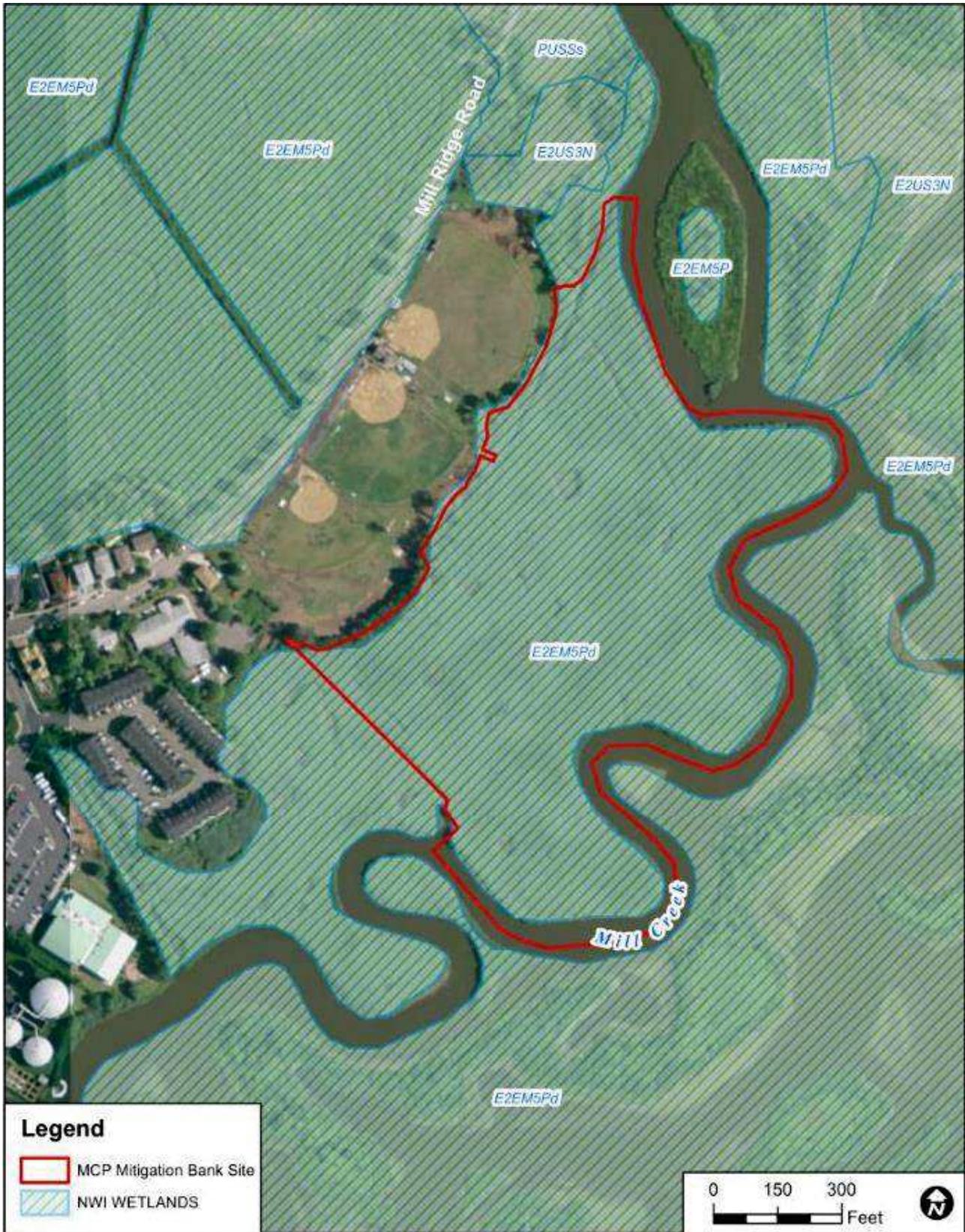
**Legend**

- MCP Mitigation Bank Site
- NJDEP 2007 LAND USE/LAND COVER**
- DISTURBED WETLANDS (MODIFIED)
- SALINE MARSHES



**EVERGREEN ENVIRONMENTAL** **HDR** **NJDEP 2007 Land Use/Land Cover Map** *Figure 2*  
 Evergreen Mill Creek Point Mitigation Bank, Secaucus, Hudson County, NJ

Document Path: \\malki-rtlab\GIS\Projects\0117\EVERGREEN ENVIRONMENTAL LLC\Secaucus\_Mill\_Ridge\_Road\_Site\GIS\_Map\_Docs\Draw\Fig\_XX\_NJDEP\_wetlands.mxd



**Legend**  
 MCP Mitigation Bank Site  
 NWI WETLANDS

0 150 300 Feet

**USFWS National Wetlands Inventory Map** **Figure 4**  
 Evergreen Mill Creek Point Mitigation Bank, Secaucus, Hudson County, NJ

Document Path: \\naakp1-filer01\GIS\Projects\111111\EVERGREEN ENVIRONMENTAL\111111\Secaucus\_Mill\_Ridge\_Road\_Site\GIS\Map\_0001\Draw\Fig\_XX\_NWI\_wetlands.mxd

## 4.0 RESULTS AND FINDINGS

In general, the value of the existing wetland in the Wetland Assessment Area is severely diminished by invasive plant species, limited lower shore zone sediment availability, and shoreline bank erosion rates, which decreases the availability of suitable intertidal habitat for native emergent vegetation to stabilize banks and offer wildlife foraging and habitat opportunities. Results of the EPW methodology are presented for the Bank Site in **Table 2**. The Bank Site showed high potential to support a variety of characteristic wetland functions/values. Pictures of the Bank Site were taken during monitoring activities to help visualize the potential benefits (**Appendix A**). EPW data sheets are provided in **Appendix B**.

**Table 2: Mill Creek Point Bank Site FCU Ranking WAA vs. Planned Wetland FCU Ranking**

Mill Creek Point Bank Site <b>WAA</b> FCU Ranking				
Function	FCI Score	Acres	FCU	Relative Rank
Shoreline Bank Erosion Control (SB)	0.267	22.38	5.97	Low
Sediment Stabilization (SS)	0.550	22.38	12.31	Moderate
Water Quality (WQ)	0.763	22.38	17.06	Optimal
Wildlife (WL)	0.137	22.38	3.06	Poor
Fish (Tidal)	0.344	22.38	5.97	Low
Uniqueness/Heritage	0.900	22.38	N/A	Optimal
Mill Creek Point Bank Site <b>Planned Wetland</b> FCU Ranking				
Function	FCI Score	Acres	FCU	Relative Rank
Shoreline Bank Erosion Control (SB)	0.794	22.38	17.90	Optimal
Sediment Stabilization (SS)	0.750	22.38	17.90	Optimal
Water Quality (WQ)	0.838	22.38	17.90	Optimal
Wildlife (WL)	0.280	22.38	6.71	Low
Fish (Tidal)	0.483	22.38	11.19	Moderate
Uniqueness/Heritage	0.967	22.38	N/A	Optimal

### 4.1 Ecological Functions

**Shoreline Bank Erosion Control (SB)** –The future without project (FWOP) conditions at the Bank Site exhibit a low FCI value of 0.267 The FWOP is the FCI score that is assigned to the site should the proposed restoration not take place. Due to severe undercutting of the creekbanks within and around the perimeter of the Bank Site in its current state cut, regrading to soften bank slopes would improve water contact with the toe-of-bank and reduce bank erosion rates. In addition, shoreline debris removal would decrease existing anthropogenic disturbances, and replanting of native marsh vegetation in the lower shore zone will bind and stabilize marsh soils, which will also minimize the potential for creekbank erosion.

Shorelines with a steep ascending slope are prone to increased erosion rates. A moderately

sloping shoreline reduces wave and hydrodynamic energy, effectively reducing erosion rates. Replanting of native vegetation will promote the development of extensive root and rhizome systems which stabilize soils and reduce sheet erosion. . Unless effective shoreline bank erosion controls are implemented (e.g., grading, remedial seeding, and planting) to stabilize and provide viable habitat for emergent vegetation to reduce erosive wave energy and support the retention of existing sediments within the wetland, erosion rates will continue to intensify.

Under proposed restored conditions, the potential or capacity to control shoreline bank erosion is high in the Planned Wetland. The proposed restoration effort has the potential to increase the Bank Site to an optimal FCI value of 0.794.

**Sediment Stabilization (SS)** - The future without project (FWOP) conditions at the Bank Site exhibit a moderate FCI value of 0.550. Existing conditions are ecologically compromised with the presence of an unvegetated wetland bank slope. This is indicated by the observed loss of bank soils and indications of wave scouring exposing the existing *Phragmites* root mats a long creekbanks.

Shoreline sediment integrity will be restored by regrading, reseeding, and replanting of native marsh vegetation in the lower shore zone.

The capacity of the restored wetland to stabilize and retain sediments will likely increase during future growing seasons as native vegetation coalesces and develops a robust root/rhizome system within the Bank Site. Dense stands of native marsh vegetation will limit the capacity of flowing water to erode soil particles and decrease sediment transport by limiting runoff volume and velocity.

Under restored conditions, the potential or capacity to control sediment stabilization is high in the Planned Wetland. The restoration effort has the potential to increase the Bank Site to an optimal FCI value of 0.750.

**Water Quality (WQ)** - The future without project (FWOP) conditions at the Bank Site exhibit a moderate FCI value of 0.763. Current water quality-related elements are comprised of moderate shoreline disturbances, accumulations of tidal debris, as well as waterfowl grazing and disturbance of lower shoreline vegetation. Also, as previously stated, eroded shoreline slopes are degrading the Bank Site's sediment retention capacity and increasing suspended solids within the water column.

Under proposed restored conditions, the potential or capacity to improve water quality is high in the Planned Wetland. Although the Planned Wetland FCI value does not reflect a significant positive uplift (FCI uplift value of only 0.075), the restoration effort still has the potential to maintain an already optimal FCI value. The existing dominant substrate type of the Bank Site is fine-grained, contaminated mineral soils, during marsh restoration, medium sized clean substrate will be brought in to replace the existing substrate. By comparison to fine mineral organic soil, medium sized clean substrate has a lower FCI score due to moderate potential for substrate contact. Fine-grained organic soils permit more water substrate contact enhancing bacterial action, chemical precipitation, and absorption onto the substrate matrix. However, the EPW Assessment methods do not account for the value of contaminated sediment removal.

Additional improvements will be made through channel re-contouring and sediment stabilization

best practices (e.g., grading, native seeding and planting) to reduce bank undercutting that is contributing to elevated suspended solids in the water column. Replanting native tidal marsh vegetation will enhance water quality by reducing tidal velocity and filtering suspended solids through the emergent plant canopy when the marsh is inundated. Planting emergent native vegetation along the shoreline will also provide resistance to erosive wave action along creekbanks.

Under both existing and proposed restored conditions, the potential or capacity to improve water quality is high at the Bank Site. However, the proposed restoration effort has the potential to slightly increase the Bank Site's FCI value of 0.838.

**Wildlife (WL)** – - The future without project (FWOP) conditions at the Bank Site exhibit a low FCI value of 0.137. Presently, wildlife habitat at the Bank Site is greatly compromised due tidal flow restrictions and the presence of dense *Phragmites* and sediments with contaminant levels above NJDEP's ecological screening criteria. The sediments within the Bank Site contain mercury and other contaminants at levels exceeding the Effects Range Median (ERM) concentrations due to an extended history of non-point source pollution in the Meadowlands region. Toxic contamination within the wetland can have direct and indirect wildlife degrading impacts (e.g., illness, deformities, and/or mortality). In addition, current cover types are limited to invasive herbaceous – tall persistent vegetation (*Phragmites*) and open water. The absence of a range of cover types reduces wildlife habitat value at the Bank Site by only providing breeding, nesting and foraging habitat for a limited number or wildlife species.

Under the proposed restored condition, the potential or capacity to improve wildlife habitat is enhanced but remains somewhat impaired due to the continued presence of watershed contaminants, including mercury and other heavy metals in the surrounding estuary, which will continue to impact soils, vegetation and wildlife throughout the proposed project life span as a result of tidal inundation and sediment transport processes (e.g. marsh accretion) although at lower levels than experienced under the future without project condition in the Planned Wetland. The restoration effort has the potential to increase the Bank Site FCI value to a total FCI value of 0.280. This will be in part due to the removal of one foot of sediment across the entire site, removal of *Phragmites* (and replanting native vegetation), an increase in the diversity of cover types, and improved tidal channel/drainage network interspersion within the interior of the Planned Wetland. Recontouring eroded/scoured banks, channel deepening and recreation of natural patterns of tidal creek sinuosity will also increase open water and “aquatic edge” within the interior of the Bank Site. The proposed restoration design for the Planned Wetland would introduce the following three native cover types: (1) herbaceous - tall persistent emergent vegetation; (2) herbaceous short persistent emergent vegetation; and (3) open water.

In addition, the EPW methodology indicates that installing wildlife attractors would greatly contribute to enhancing wildlife habitat at the Bank Site such as the addition of bird boxes to enhance nesting habitat within the Planned Wetland. During field observations, eleven bird species were observed (**Table 3**). In addition, a snapping turtle (*Chelydra serpentina*) and its burrow was observed along the Bank Site shoreline and a woodchuck and multiple burrows were observed along the upland/wetland sloping boundary. Mummichog (*Fundulus heteroclitus*) or other characteristic marsh forage fish species were not observed but likely present in the Bank Site. However, no evidence of common mammals typical to a highly functioning salt marsh habitat, such as muskrat dens, deer bedding or fox tracks, was observed inside the WAA.

<b>Species Observed within the vicinity of the WAA on 5/19/2023</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>Observed Location</b>	<b>Conservation Status</b>
Snowy Egret	<i>Egretta thula</i>	Overhead	NJ Species of Special Concern
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Overhead	
Mallard	<i>Anas platyrhynchos</i>	Overhead	
Herring Gull	<i>Larus argentatus</i>	Overhead	
Song Sparrow	<i>Melospiza melodia</i>	Overhead	
European Starling	<i>Sturnus vulgaris</i>	Bank	
Tree Swallow	<i>Tachycineta bicolor</i>	Overhead	
Barn Swallow	<i>Hirundo rustica</i>	Island bird house	
American Goldfinch	<i>Spinus tristis</i>	Overhead	
American Robin	<i>Turdus migratorius</i>	Overhead	
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Overhead	
<b>State and/or Federally Threatened, Endangered, or Species of Concern potentially within the WAA</b>			
Tri-colored bat	<i>Perimyotis subflavus</i>	Not observed	USFWS Proposed Endangered NJDEP NHP Species of Interest
Monarch Butterfly	<i>Danaus plexippus</i>	Not Observed	USFWS Candidate Species NJENSP Species of Interest
Osprey	<i>Pandion haliaetus</i>	Not Observed	State Threatened
Yellow-crowned Night heron	<i>Nyctanassa violacea</i>	Not Observed	State Threatened
Glossy Ibis	<i>Plegadis falcinellus</i>	Not Observed	State Species of Special Concern
Little Blue Heron	<i>Egretta caerulea</i>	Not Observed	State Species of Special Concern
Northern Harrier	<i>Circus cyaneus</i>	Not Observed	State Threatened

**Table 3: Observed wildlife and T/E species potentially present within the WAA. Source: USFWS IPaC 2023, NJ NHP 2023**

**Tidal Fish Habitat (FS)** - The future without project (FWOP) conditions at the Bank Site exhibit a low FCI value of 0.344. Existing conditions are ecologically compromised in the lower shore zone, on the marsh surface, and within the few existing channels due to the dominance of a thick

monoculture of common reed. The existing conditions of the Bank Site restrict access to suitable foraging habitat on the marsh surface due to eroded banks and excessive elevation, which reduces the tidal hydroperiod, and therefore limits forage time for marsh-dependent fish and other natant macrofauna.

Under proposed restored conditions, a moderate FCI value of 0.483 can be achieved by implementing the following elements: Planting native vegetation to improve shoreline bank stability. Propagation and coalescence of native vegetation plantings will offset future sediment erosion. Natural creekbank and channel geomorphic characteristics will be restored, enhancing aquatic edge and facilitating access to the flooded marsh surface by forage fish species. Rechanneling will increase the upland/wetland edge area and improve spatial heterogeneity and structurally complex microhabitats. Diverse tidal fish habitats provide refuge from predators (i.e., piscivorous fish and wading birds) (Scharf et al. 2006). Creation of interior marsh open water habitat will increase tidal inundation in low marsh areas within the Planned Wetland. The removal of dense *Phragmites* stands and associated sediment and root/rhizome mats will enhance tidal fish habitat via increased hydroperiods (e.g., flooding depth and duration) open water cover across the marsh surface. Sediment removal and introduction of clean substrate will reduce future impacts on the benthic prey assemblage within the marsh, and therefore reduce ecological risk and trophic transfer to forage fish and piscivorous predators,

**Uniqueness/Heritage** - The Uniqueness/Heritage FCI indicates the presence of characteristics that distinguish a wetland as unique, uncommon, and/or valuable. Elements used in this function describe special designations established by wetland scientists to recognize the importance of preserving or protecting particular wetland resources. The primary goals of the Planned Wetland will be to promote ecologically beneficial habitat for native flora and fauna, improve outdoor recreational opportunities, and promote blue carbon sequestration<sup>1</sup>.

Threatened and endangered species habitat is directly related to the wildlife function described above. However, in relation to the uniqueness and heritage function of the Bank Site, threatened and endangered species serve a unique and valuable role. The Endangered Species Act of 1973 (16 U.S.C. Section 1531 *et seq.*) and similar legislation in many states substantiates the value society has placed on these protected species (Bartoldus et al. 1994). The uniqueness and heritage function of the WAA is optimal with an FCI of 0.900 as entire site is documented to potentially support or provide suitable habitat for NJDEP threatened species osprey (*Pandion haliaetus*), Yellow-crowned night heron (*Nyctanassa violacea*), and Northern harrier (*Circus cyaneus*). Although the Bank Site may not directly provide suitable foraging habitat, the USFWS IPaC report identified the federally proposed endangered species tri-colored bat (*Perimyotis subflavus*), and the federal candidate species monarch butterfly (*Danaus plexippus*) as both listed as Federal Species of Special Concern to be potentially present within the Bank Site and/or vicinity (**Appendix C**).

The future without project (FWOP) conditions at the Bank Site exhibit an optimal FCI value of 0.900. Under restored conditions, the uniqueness and heritage function of the Planned Wetland would slightly increase to 0.967. The Planned Wetland would be a unique tidal wetland restoration effort that replaces sediments with clean substrate fill and be locally beneficial by enriching

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<sup>1</sup> NOAA. What is eutrophication? National Ocean Service website, <http://oceanservice.noaa.gov/facts/eutrophication.html>, 10/05/17.

ecological value, promoting access to nature, and provide the community of Secaucus, NJ an opportunity to promote climate change mitigation action through carbon sequestration.

**Total Functional Uplift** - The assessment of the future Bank Site under the proposed restored conditions across the average of all six functions described will provide a 52.6% ecological uplift. This uplift is calculated by taking the percent change of the average for the future without the project (0.412) and the uplifted FCI (0.629) multiplied by the site's planned wetland acreage (again, 22.38). For more information, please refer to Section 4.3.

## 5.0 EPW FUNCTIONAL CAPACITY UNITS TO MITIGATION CREDIT APPROACH

### 5.1 Regulatory Background

Mitigation valuation by the U.S. Army Corps of Engineers and Environmental Protection Agency (Final Rule, 2008) and the New Jersey Department of Environmental Protection (N.J.A.C. 7:7A and 7:7) is intended to be based on the functional value assessment of the ecological uplift that a mitigation project has from its baseline to proposed enhanced conditions on a case-by-case basis. However, more often than not, the functional value assessment is largely based on accepted mitigation ratios based on regulatory precedent without scientific basis, that have been established on sites located elsewhere in the region with different features and restoration methods and goals.

The 2008 Final Rule established that the district engineer must require a mitigation ratio "greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or the distance between the affected aquatic resource and the compensation site." The rationale for the required replacement ratio must be documented in the administrative record for the permit action (40 CRF 230.93(f)(2)).

State regulations have also similarly established that the ratio for enhancement of wetlands is determined on a case-by-case basis; If enhancement is the mitigation alternative, the Department shall determine, on a case-by-case basis, the amount of enhancement required to ensure that the mitigation results in wetlands of equal or better functions and values to those lost (N.J.A.C 7:7A-11.12(d) and N.J.A.C 7:7-17.13(c)).

### 5.2 Regulatory Precedent

Regionally, EPW is recognized as an accepted method of assessing functional uplift utilized by USACE - New York District. The Hudson-Raritan Estuary Ecosystem Restoration Feasibility Report ("HRE Report") describes this functional assessment as the basis of assessing restored and unrestored sites within a project footprint to gain a full picture of the benefits, assigning benefit scores (the average annual functional capacity units) at different intervals following construction

(USACE 2020<sup>2</sup>). Within the New York/New Jersey region, precedent has not been established for translating EPW's FCU uplift to mitigation ratios. However, each potential restoration site scored within the HRE Report does establish a baseline and a restored FCU score, which can be translated to a numerical ratio or an area-based functional increase. Such scores have been used in the HRE to determine which mitigation sites and designs warrant advancement to implementation in the national interest.

Beyond the New York District, EPW precedent for translating this area-based increase to mitigation valuation and credits has been established elsewhere in the United States. As noted in the New York District HRE report, the Department of Ecology (DOE) in the State of Washington essentially utilizes the same methodology for estimating whether a plan for compensatory mitigation will adequately replace the functions and values lost when a wetland is altered due to a permitted action. The DOE methodology is also designed to provide guidance for regulators and applicants to estimate the gain in functions and values that result from the mitigation. The gains in function described in the mitigation plans are calculated as "credits" whereas the losses in function from impacts to wetlands are calculated the same way and categorized as "debits". These credits and debits are established with "acre-points" (comparable to EPW FCUs), which represent a score for a rating of wetland function assigned to one acre. The size of the proposed mitigation area multiplied by the score for a function to determine how many acre-points are credited or debited. The credits are calculated based on the conditions in the wetland expected at the time when all structural and hydrologic elements proposed in the plan have reached maturity (State of Washington Department of Ecology, 2012<sup>3</sup>).

### 5.2.1 Regulatory Precedent

The *Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study*<sup>3</sup> proposes several wetland restoration projects in the Hackensack Meadowlands similar to Mill Creek Point. The 63-acre Metromedia Marsh restoration project is located directly across the Hackensack River from the Mill Creek Point Mitigation Bank (**Figure 4**). Bordered on the east and south by the Hackensack River, and on the north by Marsh Resources Meadowlands Mitigation Bank, the Metromedia Tract restoration site surrounds the Metromedia Broadcast site and towers. Similar to Mill Creek Point, this restoration site is undeveloped and characterized as generally poor habitat, largely dominated by invasive common reed (*Phragmites australis*).

The wetland restoration design for Metro Media Marsh is similar to that of Mill Creek Point in that 38,000 CY of material will be excavated and replaced with 41,000 CY of clean growing media. Excavation assumes clearing and grubbing to a depth of six inches, and the material will be removed offsite and taken to an appropriate upland disposal facility. A one-foot layer of clean growing media will be placed in the high marsh and upland areas.

The recommended plan will increase diversity and improve fish and wildlife habitat as well as providing secondary benefits of improving flood storage and water quality. This plan includes wetland restoration, including low marsh, high marsh, and scrub/shrub habitats. In addition, the

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<sup>2</sup> USACE and PANYNJ. 2020. Hudson Raritan Estuary Ecosystem Restoration Feasibility Study, Appendix E Benefits. Prepared by the New York District U.S. Army Corps of Engineers

<sup>3</sup> Hruby, T. 2012. Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington, Final Report, March 2012. Washington State Department of Ecology publication #10-06-11.

plan includes the restoration of tidal channels. The design includes the excavation of new tidal channels and the enhancement of existing tidal channels. In total this design, depicted below, will restore 26.5 acres of low marsh, 11.7 acres of high marsh, and 13.8 acres of scrub shrub. The HRE assessed the ecological uplift of the restoration design using EPW. When comparing the un-restored score (future without project) at post-restoration target year 20 (T20) of 36.37 to the restored score of 57.85, it yields an uplift of 21.48 FCUs or a 59% functional value uplift, very similar to the ecological uplift assessed for the Mill Creek Point Bank Site.



**Figure 4: Employing the EPW FVA, the Metromedia Marsh is predicted to generate a wetland functional value uplift of 21.5 FCUs, as presented in the following table.**

**Table E-38. EPW Output Summary Metromedia Tract**

	Year	Output	FWOP	Alt A	Alt B	Alt C	Optimized FWOP	Optimized Alt A
Unrestored	T0	FCI-SB	0.63	0.63	0.63	0.63	0.63	0.63
		FCI-SS	1	1	1	1	1	1
		FCI-WQ	0.59	0.59	0.59	0.59	0.59	0.59
		FCI-WL	0.23	0.23	0.23	0.23	0.23	0.23
		FCI-FS	0.41	0.41	0.41	0.41	0.41	0.41
		Area	59.5	59.5	59.5	59.5	59.5	59.5
	T2	FCI-SB	0.63	0.63	0.63	0.63	0.63	0.63
		FCI-SS	1	1	1	1	1	1
		FCI-WQ	0.59	0.59	0.59	0.59	0.59	0.59
		FCI-WL	0.23	0.23	0.23	0.23	0.23	0.23
		FCI-FS	0.41	0.41	0.41	0.41	0.41	0.41
		Area	62.67	12.14	0	0	62.67	12.14
	T20	FCI-SB	0.63	0.63	0.63	0.63	0.63	0.63
		FCI-SS	1	1	1	1	1	1
		FCI-WQ	0.59	0.59	0.59	0.59	0.59	0.59
FCI-WL		0.23	0.23	0.23	0.23	0.23	0.23	
FCI-FS		0.41	0.41	0.41	0.41	0.41	0.41	
Area		63.58	10.05	0	0	63.58	10.05	
T50	FCI-SB	0.63	0.63	0.63	0.63	0.63	0.63	
	FCI-SS	1	1	1	1	1	1	
	FCI-WQ	0.59	0.59	0.59	0.59	0.59	0.59	
	FCI-WL	0.23	0.23	0.23	0.23	0.23	0.23	
	FCI-FS	0.41	0.41	0.41	0.41	0.41	0.41	
	Area	64.67	4.53	0	0	64.67	4.53	
Restored	T0	FCI-SB	0.63	0.63	0.63	0.63	0.63	0.63
		FCI-SS	1	1	1	1	1	1
		FCI-WQ	0.59	0.59	0.59	0.59	0.59	0.59
		FCI-WL	0.23	0.23	0.23	0.23	0.23	0.23
		FCI-FS	0.41	0.41	0.41	0.41	0.41	0.41
		Area	0	0	0	0	0	0
	T2	FCI-SB	0.63	0.63	0.63	0.63	0.63	0.63
		FCI-SS	1	0.64	0.64	0.64	1	0.64
		FCI-WQ	0.59	0.76	0.76	0.76	0.59	0.76
		FCI-WL	0.23	0.62	0.49	0.62	0.23	0.62
		FCI-FS	0.41	0.56	0.45	0.56	0.41	0.56
		Area	0	50.53	61.78	60.58	0	57.2
	T20	FCI-SB	0.63	0.82	0.82	0.83	0.63	0.82
		FCI-SS	1	1	1	1	1	1
		FCI-WQ	0.59	0.96	0.89	0.96	0.59	0.96
FCI-WL		0.23	0.8	0.69	0.74	0.23	0.8	
FCI-FS		0.41	0.63	0.63	0.63	0.41	0.63	
Area		0	53.53	65.18	62.86	0	61.88	
T50	FCI-SB	0.63	0.98	0.98	0.83	0.63	0.98	
	FCI-SS	1	1	1	1	1	1	
	FCI-WQ	0.59	1	0.93	1	0.59	1	
	FCI-WL	0.23	0.86	0.75	0.75	0.23	0.86	
	FCI-FS	0.41	0.63	0.63	0.63	0.41	0.63	
	Area	0	60.14	65.62	64.45	0	62.53	
<b>Total</b>	<b>T0</b>	<b>FCU</b>	<b>34.03</b>	<b>34.03</b>	<b>34.03</b>	<b>34.03</b>	<b>34.03</b>	<b>34.03</b>
	<b>T2</b>	<b>FCU</b>	<b>35.85</b>	<b>39.38</b>	<b>36.7</b>	<b>38.89</b>	<b>35.85</b>	<b>43.67</b>
	<b>T20</b>	<b>FCU</b>	<b>36.37</b>	<b>50.82</b>	<b>52.54</b>	<b>52.3</b>	<b>36.37</b>	<b>57.85</b>
	<b>T50</b>	<b>FCU</b>	<b>36.99</b>	<b>56.36</b>	<b>56.3</b>	<b>54.27</b>	<b>36.99</b>	<b>58.49</b>

**Table 4: EPW Output Summary Metromedia Tract**

### 5.3 Application to the Mill Creek Point Mitigation Bank Site

Adopting the principles from the USACE HRE Report and State of Washington DOE and applying them to the proposed Mill Creek Point Bank Site represents a viable approach to determining uplift and calculating mitigation credits. After assessing the EPW functions and their elements, the proposed restoration of the site yields significant ecological uplift. Taking the average of FCI scores across each functional category for the future without the project (0.412) and multiplying it by the acreage of the WAA of the Bank Site (22.38) results in a baseline FCU of 9.225. The assessment of the future Bank Site under the proposed restored conditions takes an average uplifted FCI (0.629) multiplied by the site's planned wetland acreage (again, 22.38) and yields a planned wetland FCU of 14.077, a 52.6% increase of 4.852 FCU. This 52.6% functional uplift is comparable to the Metromedia Tract target of 59%.

**Table 4: Functional Value Assessment comparison of WAA and Planned Wetland**

Table A.1. Comparison of WAA and planned wetland: calculations of FCIs and FCUs						
Project Title: Mill Creek Marsh EPW						
Comparison between WAA# <u>Baseline</u> and wetland # <u>Planned Wetland</u>						
Function	WAA			Planned Wetland		
	FCI	AREA	FCUs*	FCI	Area	FCUs*
SB	0.267	22.38	5.97	0.794	22.38	17.77
SS	0.550	22.38	12.31	0.750	22.38	16.79
WQ	0.763	22.38	17.06	0.838	22.38	18.75
WL	0.137	22.38	3.06	0.280	22.38	6.27
FS (Tidal)	0.344	22.38	7.71	0.483	22.38	10.81
UH	0.900			0.967		
*FCUs	=	FCI x AREA				
**Target FCI	=	goal established by decision makers				
R	=	multiplying factor established by decision makers				
Target FCUs	=	FCU <sub>WAA</sub> x R (i.e., planned wetland goal)				
Predicted FCI	=	FCIs which designers presume planned wetland may achieve at a particular site (Note this may be				
Minimum Area	=	Target FCUs/Predicted FCI				

When applying the 52.6% ecological uplift increase to the 19.11 acres of wetland and open water restoration of the Mill Creek Point Bank Site, excluding 3.5 acres of preserved lands, results in an excess (uplifted) acreage of 29.16 acres, or an increase of 10.05 acres, or credits. Therefore, the restored MCP Bank Site could replace 10.05 acres of impacted wetlands in the service area.

**Table 5: Proposed Mitigation Credits of the MCP Bank Site based on its EPW functional uplift.**

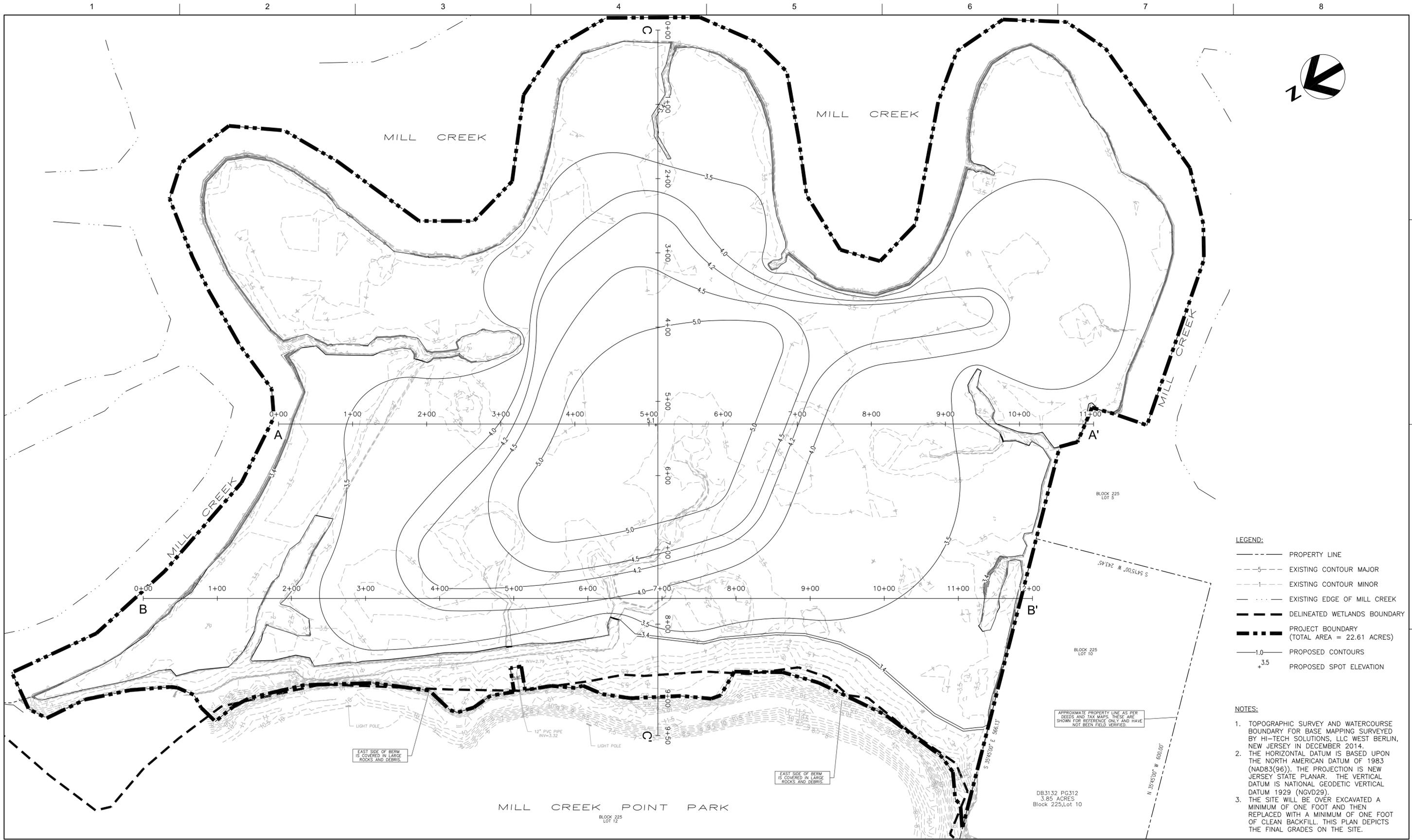
Mitigation Category	Acres	Percent Uplift	Mitigation Credits
Wetland Restoration	16.84	52.6	8.86
Open Water Restoration	2.27	52.6	1.19
Wetland Preservation	3.27	N/A	-
Upland Preservation	0.23	N/A	-
Total	22.61		10.05

## 6.0 CONCLUSIONS

The field observations at Mill Creek Point Bank Site indicate the Planned Wetlands would provide significantly improved functional capacity for four EPW indices: Shoreline Bank Erosion Controls, Sediment Stabilization, Wildlife Habitat Restoration, and improved Tidal Fish Habitat. The Water Quality FCI maintained its already optimal relative ranking score under Planned Wetland conditions. It is anticipated that the ability of the Bank Site to stabilize and promote fish and wildlife biodiversity will increase over time as the newly constructed Bank Site develops a functional equivalency trajectory comparable to that of natural tidal marshes in the regional reference domain (i.e., The Hackensack Meadowlands District). Because the restoration goal is to create an herbaceous emergent tidal marsh, the vegetation coverage and the functional target condition will be attained in as few as three growing seasons. This increase in ecological function equates to a 52.6% increase from baseline conditions. Based on the EPW FVA the Evergreen Mill Creek Point Mitigation Bank mitigation design increases the functional value of the wetland by 10.05 acres of additional mitigation value for impacted wetlands in the service area.

# **ATTACHMENT 5**

# **MITIGATION DESIGN PLAN**



- LEGEND:**
- PROPERTY LINE
  - - - EXISTING CONTOUR MAJOR
  - - - EXISTING CONTOUR MINOR
  - - - EXISTING EDGE OF MILL CREEK
  - - - DELINEATED WETLANDS BOUNDARY
  - - - PROJECT BOUNDARY (TOTAL AREA = 22.61 ACRES)
  - - - PROPOSED CONTOURS
  - +3.5 PROPOSED SPOT ELEVATION

- NOTES:**
1. TOPOGRAPHIC SURVEY AND WATERCOURSE BOUNDARY FOR BASE MAPPING SURVEYED BY HI-TECH SOLUTIONS, LLC WEST BERLIN, NEW JERSEY IN DECEMBER 2014.
  2. THE HORIZONTAL DATUM IS BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD83(96)). THE PROJECTION IS NEW JERSEY STATE PLANAR. THE VERTICAL DATUM IS NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD29).
  3. THE SITE WILL BE OVER EXCAVATED A MINIMUM OF ONE FOOT AND THEN REPLACED WITH A MINIMUM OF ONE FOOT OF CLEAN BACKFILL. THIS PLAN DEPICTS THE FINAL GRADES ON THE SITE.



ISSUE	DATE	DESCRIPTION

<b>PROJECT MANAGER</b>	D. BRIZZOLARA
<b>DEPUTY MANAGER</b>	D. VALIANTI
<b>DESIGNED BY</b>	K. VERWEIRE
<b>REVIEWED BY</b>	M. SPINA
<b>DRAWN BY</b>	J. WYNOHRADNYK
<b>PROJECT NUMBER</b>	10372000

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINAL SIGNED AND SEALED BY  
 MICHAEL SPINA  
 LICENSED LANDSCAPE ARCHITECT  
 N.J. # 24GE03036000

**EVERGREEN MILL CREEK POINT  
 MITIGATION BANK  
 TOWN OF SECAUCUS  
 HUDSON COUNTY, NEW JERSEY**

**MITIGATION DESIGN PLAN  
 06/27/2024**



FILENAME | 003-C-01-GRADING PLAN.dwg | SHEET  
 SCALE | 1" = 60'

# **ATTACHMENT 6**

# **CONSERVATION RESTRICTION**

Prepared by: \_\_\_\_\_  
NJDEP File No.: \_\_\_\_\_

GRANT OF CONSERVATION RESTRICTION/  
(Non-Routine Mitigation Site/Mitigation Banks)

This Grant of Conservation Restriction is made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, by \_\_\_\_\_, whose address is \_\_\_\_\_, Borough/Township, County of \_\_\_\_\_, State of New Jersey, hereinafter referred to as "Grantor", in favor of the State of New Jersey Department of Environmental Protection, hereinafter referred to as the "Grantee".

WITNESSETH:

**WHEREAS**, the Grantor is the owner in fee simple of certain real property located in the Township/Borough of \_\_\_\_\_, County of \_\_\_\_\_, New Jersey, designated as Lot(s) \_\_\_\_\_, Block(s) \_\_\_\_\_ on the official Tax Map of the Township/Borough of \_\_\_\_\_, County Clerk or Recorder's Deed Book Number \_\_\_\_\_, Page Number \_\_\_\_\_, (hereinafter "the Property"); and

**WHEREAS**, the Grantor has obtained a (choose applicable permit type) Coastal Wetlands Permit, Freshwater Wetlands Permit NJDEP File No. \_\_\_\_\_, pursuant to the (choose applicable statute(s)) Wetlands Act of 1970, N.J.S.A. 13:9A, the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1, and (choose applicable rule(s)) the Coastal Zone Management Rules, N.J.A.C. 7:7, the Freshwater Wetlands Protection Act Rules, N.J.A.C. 7:7A, for a land use development, attached hereto as Exhibit A, and a United States Army Corps of Engineers (USACE) Permit, USACE Permit File No. \_\_\_\_\_, pursuant to the Rivers and Harbors Act of 1899, 33 U.S.C. 403, the Clean Water Act, 33 U.S.C. 1344, and regulations at 33 C.F.R. 320-331, attached hereto as Exhibit B; and

**WHEREAS**, the Permits issued to the Grantor are conditioned upon the Grantor's recording of a Grantee and USACE approved conservation restriction/easement, pursuant to (choose applicable rule) N.J.A.C. 7:7-18, N.J.A.C. 7:7A-12 for the mitigation site area (hereinafter the "Restricted Area" or "mitigation site area") as shown on a plan, entitled \_\_\_\_\_, prepared by \_\_\_\_\_, dated \_\_\_\_\_, attached hereto as Exhibit C, (hereinafter the "Plan"), and more particularly described on a legal description of the Restricted Area, attached hereto as Exhibit D; and

**WHEREAS**, wetlands play a significant role in the maintenance of environmental quality on a community, regional, statewide, and national level; and

**WHEREAS**, wetland mitigation site areas are a significant natural area and are an integral portion of a wetlands ecosystem; and

(Choose following paragraph for wetlands construction, restoration, enhancement; delete if preservation)

**WHEREAS**, the Grantor, having the authority to do so, intends to construct a wetland mitigation project, known as (insert name of mitigation bank/site), at the wetland mitigation site; and

**WHEREAS**, the Grantee and the USACE desire to preserve the wetland mitigation site area in its (choose applicable state) natural state, enhanced state, so as to preserve and protect wetlands, open waters, and resident animal and plant species on the Restricted Area, including the air space and subsurface forever in its natural state; and

**WHEREAS**, the Grantee is authorized by N.J.S.A. 13:1D-9 to formulate comprehensive policies for the conservation of the natural resources, to promote environmental protection and prevent pollution of the environment of the State by N.J.S.A. 13:9A and N.J.S.A. 13:9B, and is authorized by N.J.S.A. 13:8B-3 to acquire and enforce conservation restrictions; and USACE policy provides for protection of aquatic resources in perpetuity pursuant to Regulatory Guidance Letter 02-02; and

**WHEREAS**, the Grantor, having the authority to do so, intends to enter into this Conservation Restriction in order to grant to the Grantee a Conservation Restriction on the Property to restrict subsequent development and disturbance of the Restricted Area.

**NOW THEREFORE**, in consideration for the issuance of the Permit and for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and the facts recited above and the terms, conditions and restrictions contained herein, the Grantor hereby agrees that the Property shall be subject in perpetuity to the following conveyances, covenants and restrictions in favor of the Grantee and the USACE:

1. Grantor hereby conveys, transfers, assigns and grants to the Grantee a Conservation Restriction with respect to that portion of the Property as designated as the Restricted Area shown in Exhibit C and as described in Exhibit D.
  
2. The Grantor shall ensure that the following activities shall not occur within the Restricted Area, with the exception of those activities that are specifically a construction or maintenance component of the mitigation plan approved as part of the DEP Permit or USACE Permit and/or shown on the Plan (Exhibit C):
  - a. Removal, excavation, or disturbance of the soil;
  - b. Dumping or filling with any materials;
  - c. Installation of structures;
  - d. Placement of pavement or other impervious surface;
  - e. There shall be no removal, destruction or cutting of trees or plants, planting of trees or plants, introduction of non-native animals and plants, grazing of domestic animals, or disturbance or change in the natural habitat in any manner, except as provided in par. 8 (c) below.
  - f. The use of fertilizers, herbicides or pesticides that are not specifically approved under the wetlands mitigation plan;
  - g. Taking any action to alter the hydrology of the Restricted Area; (choose condition (h) or (i) with applicable statute(s) & rule(s))
  - h. Any other activities constituting a regulated activity under the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 et seq. or N.J.A.C. 7:7A-2.2 as amended (“Regulated

activities in freshwater wetlands and State open waters”). Any other activities constituting a regulated activity under N.J.A.C. 7:7A- 2.3, as amended, (“Regulated activities in transition areas”);

- i. Any other activities constituting a regulated activity under the Wetlands Act of 1970, N.J.S.A. 13:9A-1 et seq. or N.J.A.C. 7:7-2.3, as amended; or
- j. Any other activities constituting a regulated activity under the Rivers and Harbors Act of 1899, 33 U.S.C. 403, the Clean Water Act, 33 U.S.C. 1344 or USACE Regulations at 33 C.F.R. Parts 320-331 as amended.

3. The Restricted Area, including its air space and its subsurface, and any portion thereof shall not be included as part of the gross area of other property not subject to this Conservation Restriction for the purpose of determining density, lot coverage, or open space requirements, under otherwise applicable laws, regulations or ordinances controlling land use and building density.

4. There shall be no other acts or uses detrimental to the preservation of the Restricted Area, including its air space and its subsurface in their natural state as a valuable component of a wetlands ecosystem.

5. The Grantor shall mark the boundaries of the Restricted Area using unobtrusive, permanent visual markers in a manner of the Grantee's and the USACE choosing, and to the Grantee's and the USACE satisfaction, within 30 days of recording this Grant. Grantor shall thereafter maintain such markers in good condition. Examples include fence post, pipe in the ground, and survey markers.

6. This Conservation Restriction shall be a burden upon and shall run with the Property, and shall bind Grantor, its successors and assigns, in perpetuity. The Grantor shall give notice of this Conservation Restriction to all holders of any easements in the Restricted Area within 30 days of recording by the County Clerk or Recorder.

7. It is the purpose of this Conservation Restriction to assure that the Restricted Area will be maintained as such and to prevent any disturbance or development to that portion of the Property. To carry out this purpose, the following rights are granted to Grantee, and to the USACE as third-party rights of enforcement, by this Conservation Restriction:

- a. To enter upon the Property in a reasonable manner and at reasonable times so as to assure compliance with the provisions of this Conservation Restriction;
- b. In addition to the exercise of any other statutory or common law right, to enjoin any activity on, or use of, the Restricted Area that is inconsistent with the purpose of this Conservation Restriction and to enforce the restoration of such areas or features of the Restricted Area that may be damaged by inconsistent activity or use;
- c. The right, but not the obligation, to monitor the condition of the rare plant and animal populations, plant communities, and natural and/or constructed habitats on the Restricted Area, and to manage them, if necessary, for their continued survival and quality on the Restricted Area. Such activities shall be in accordance with management practices of the Department of Environmental Protection, which may include, but not be limited to, mowing, fencing, trapping, or prescribed burning, but these practices shall not be inconsistent with the maintenance or monitoring obligations under the (reference the appropriate mitigation proposal or permit condition) approving the mitigation.

8. Grantor shall provide the Grantee and the USACE telephonic and written notice of any transfer or

change in ownership of any portion of the Restricted Area, including but not limited to the name and address of the new owner, and including but not limited to any later-formed condominium association, at least one month prior to the day of the signing of those documents accomplishing the actual transfer or change in ownership.

9. In addition to, and not in limitation of, any other rights of the Grantee or the USACE hereunder or at law or in equity, if the Grantee or the USACE determines that a breach, default or violation ("Violation") of this Conservation Restriction has occurred or that a Violation is threatened, the Grantee or the USACE shall give written notice to Grantor of such Violation, setting forth the specifics thereof, and demand corrective action sufficient to cure the Violation. If the Grantor fails to cure the Violation after receipt of notice thereof from the Grantee or USACE, or under circumstances where the Violation cannot reasonably be cured within a time period dictated by the Grantee or USACE fails to begin curing such Violation within the time period dictated by the Grantee or USACE, or fails to continue diligently to cure such Violation until finally cured, the Grantee or the USACE may bring an action at law or in equity in a court of competent jurisdiction:

- a. To enjoin and/or cure such Violation,
- b. To enter upon the Restricted Area and to take action to terminate and/or cure such Violation and/or to cause the restoration of that portion of the Restricted Area affected by such Violation to the condition that existed prior thereto, or
- c. To seek or enforce such other legal and/or equitable relief or remedies as the Grantee or USACE deems necessary or desirable to ensure compliance with the terms, conditions, covenants, obligations and purpose of this Conservation Restriction.

10. If the Grantee or the USACE, in either agency's discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the Restricted Area, the Grantee or the USACE may pursue its remedies under paragraph 10 above without prior notice to Grantor or without waiting for the period provided for cure to expire. The Grantee's or the USACE's rights under this paragraph shall apply equally in the event of either actual or threatened Violations of the terms of this Conservation Restriction. Grantor agrees that the Grantee's or USACE remedies at law for any Violation of the terms of this Conservation Restriction / Easement are inadequate and that the Grantee or USACE shall be entitled to the injunctive relief described in this paragraph, both prohibitive and mandatory, in addition to such other relief to which the Grantee or USACE may be entitled, including specific performance. The above language shall in no event be interpreted to derogate or diminish the Grantee's rights and powers under the laws of the State of New Jersey for the protection of public health, safety and welfare.

11. Enforcement of the terms of this Conservation Restriction shall be at the discretion of the Grantee or the USACE and any forbearance by the Grantee or the USACE to exercise its rights under this Conservation Restriction in the event of any Violation by Grantor shall not be deemed or construed to be a waiver by the Grantee or USACE of such term or of any subsequent Violation or of any of the Grantee's or USACE's rights under this Conservation Restriction. No delay or omission by the Grantee or the USACE in the exercise of any right or remedy upon any Violation by Grantor shall impair such right or remedy or be construed as a waiver of such right or remedy.

12. Grantor agrees to reimburse the Grantee or the USACE for any costs incurred by the Grantee or USACE in enforcing the terms of this Conservation Restriction against Grantor, including, without limitation, the reasonable costs of suit and attorneys' fees.

13. Subject to the provisions of paragraph 21 of this Grant, the Grantee and the USACE reserve the right to transfer, assign, or otherwise convey this Conservation Restriction to any other entity or person to facilitate the operation of and/or public use and enjoyment of the Restricted Area.

14. Any notice, demand, request, consent, approval or communication under this Conservation Restriction shall be sent by certified mail, return receipt requested or reliable overnight courier, addressed as follows:

To Grantor:

To the Grantee:

State of New Jersey  
Department of Environmental Protection  
and its successors and assigns

As of this date of this Conservation Restriction, Grantee's address for the purposes of notice is:

For mitigation sites other than a mitigation bank:

N.J. Department of Environmental Protection  
Division of Land Use Regulation  
Mail Code 501-02A; P.O. Box 420  
Trenton, NJ 08625-0420  
Attention: Director, Division of Land Use Regulation

For mitigation bank sites:

N.J. Department of Environmental Protection  
Office of Policy Implementation  
Mail Code 401-07B, P.O. Box 420  
Trenton, New Jersey 08625-0420  
Attn: Jill Aspinwall

To the United States Army Corps of Engineers:

Philadelphia District  
Regulatory Branch  
The John Wanamaker Building  
100 Penn Square East  
Philadelphia, Pennsylvania 19107  
Attention: Chief, Regulatory Branch

OR:

New York District  
Regulatory Branch  
Room 1937, 26 Federal Plaza  
New York, NY 10278-0090  
Attention: Chief, Regulatory Branch

15. A party may change the address or person to whom notices to it are required to be given by notice

given in the manner above provided.

16. Reserved.

17. This instrument conveys no additional right of access by the general public to any portion of the Property.

18. The Grantor agrees to bear all costs and liabilities of any kind related to the operation, upkeep and maintenance of the Restricted Area, including any required fencing of the Restricted Area, as stated or shown in Exhibits A or B. The Grantor shall be responsible for acts of its own negligence consistent with the provisions of the New Jersey Tort Claims Act, N.J.S.A. 59:8-1 et seq.

19. The Grantor agrees that the terms, conditions, restrictions and purposes of this Conservation Restriction will be inserted in any subsequent deed, subdivision deed, lease, sub-lease or other legal instrument by which the Grantor divests itself of any interest in any portion of the Property. Notwithstanding the failure of the Grantor to include the terms and restrictions of this instrument, it shall run with the land and be binding on all heirs, successors and assigns.

20. The Grantee agrees that it will assign its rights under this Conservation Restriction only to another governmental body or a charitable conservancy, and only in accordance with N.J.S.A. 13:8B-1 et seq. and N.J.S.A. 13:9B-1 et seq.

21. Notwithstanding anything contained herein to the contrary, any modification or termination of this Conservation Restriction shall require the prior written approval of the Grantee and the USACE, their successors or assigns.

22. This Conservation Restriction shall survive any merger of the fee and restriction interest in the Restricted Area.

23. In the event of a conflict between this Conservation Restriction, the Grantee or USACE's permit (Exhibits A and B), and/or plan(s) depicting the required Restricted Area, Exhibit C, the plan(s) shall govern over the permit(s) and Conservation Restriction; and the permit(s) shall govern over the Conservation Restriction, until the mitigation has been declared successful in accordance with (choose applicable rule(s)) the Coastal Zone Management Rules, N.J.A.C. 7:7, the Freshwater Wetlands Protection Act Rules, N.J.A.C. 7:7A, Flood Hazard Area Control Act Rules, N.J.A.C. 7:13, at which time the Conservation Restriction shall govern over the permit(s).

24. Taxes, Liens.

- a. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep and maintenance of the Property and Restricted Area. Grantor shall keep the Property and Restricted Area free of any liens arising out of any work performed for, materials furnished to, or obligations incurred by Grantor.
- b. The Grantor agrees to pay any real estate taxes or other assessments levied on the Property and Restricted Area. If the Grantor becomes delinquent in payment of said taxes or assessments, such that a lien against the land is created, the Grantee, at its option, shall, after written notice to the Grantor, have the right to purchase and acquire the Grantor's interest in said Property and Restricted Area or to take such other actions as may be necessary to protect the Grantee's interest in the Restricted Area and to assure the continued enforceability of this Conservation

Restriction.

25. Miscellaneous.

- a. Unless superseded by federal law, the laws of the State of New Jersey shall govern the interpretation and performance of this Conservation Restriction.
- b. If any provision of this Conservation Restriction or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions of this Conservation Restriction, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.
- c. This Conservation Restriction and the Permit set forth the entire agreement of the parties with respect to the Conservation Restriction and supersede all prior discussions, negotiations, understandings or agreements relating to the easement, all of which are merged herein. No alteration or variation of this Conservation Restriction shall be valid or binding unless contained in writing executed by the parties hereto.
- d. Should there be more than one Grantor, the obligations imposed by this Conservation Restriction upon each Grantor shall be joint and several.
- e. The covenants, terms, conditions and restrictions of this Conservation Restriction shall be binding upon, and inure to the benefit of, the parties hereto and all parties having or acquiring any right, title or interest in any portion of the Property, including holders of subdivision deeds, and shall continue as a servitude running in perpetuity with the Property.
- f. The captions in this Conservation Restriction have been inserted solely for convenience of reference and are not a part of this Conservation Restriction and shall have no effect upon construction or interpretation.
- g. Execution of this Conservation Restriction does not constitute a waiver of the rights or ownership interest of the State of New Jersey in public trust property.
- h. This Conservation Restriction may be executed in any number of counterparts, all of which, taken together, shall constitute one and the same instrument.

26. Except if the Restricted Area is a mitigation site under the Freshwater Wetlands Protection Act Rules, N.J.A.C. 7:7A, the Grantor may undertake *de minimis* modifications of the Restricted Area that are approved by the Grantee and the USACE in writing prior to commencement of the modification. The Grantee and the USACE may approve a modification under the following conditions and with the following documentation:

- a. The modification results in an increased level of protection of the regulated resource; or
- b. The modification results in equivalent areas of resources protected; and
- c. The modification does not compromise the original protected resource.

27. If the Grantee and the USACE approves the Grantor's modification, the Grantor shall amend this instrument by preparing and submitting to the Grantee and USACE for review and approval:

- a. A revised plan and metes and bounds description for the area to be preserved under the modified Conservation Restriction (hereinafter the "Modification Documents"); and
- b. An Amended Conservation Restriction that reflects the modifications to the original Conservation Restriction and the justification for the modification, and that also includes the deed book and page of the title deed for the property or properties subject to the modified Conservation Restriction set forth in the Modification Documents.

28. The Grantor shall record the documents listed in paragraph 28, above, in the same manner and place as this original Conservation Restriction was recorded.

29. This Grant of Conservation Restriction may only be removed pursuant to N.J.S.A. 13:8B-1 et seq.

30. The Grantor reserves unto itself the right to abandon the project entitled \_\_\_\_\_, Permit File Number \_\_\_\_\_ (the "Project" as depicted and described in Exhibits B and C, respectively), whereupon the Grantee shall execute an appropriate release of this Conservation Restriction without the need for a public hearing that might otherwise be required under N.J.S.A. 13:8B-1 et seq. Abandonment of the approved Project shall include a relinquishment of the Project's associated permits and any and all rights thereto. The right to this release of the Conservation Restriction may only be undertaken prior to any site disturbance, pre-construction earth movement or construction within any regulated land and water areas governed by this instrument. Any such release shall be effectuated by the recordation of a Release of Conservation Restriction which has been duly executed by Grantor and Grantee.

31. Pursuant to N.J.A.C. 7:7A-12.1(d), each owner of the Property is required to notify the county and/or municipality of the Conservation Restriction whenever any application for a local approval involving this Property is submitted.

TO HAVE AND TO HOLD unto the State of New Jersey, Department of Environmental Protection, its successors and assigns forever. The covenants, terms, conditions, restrictions and purposes imposed with this Conservation Restriction shall not only be binding upon the Grantor but also upon its agents, personal representatives, assigns and all other successors to it in interest, and shall continue as a servitude running in perpetuity with the Property.

IN WITNESS WHEREOF, the Grantor has set its hand and seal on the day and year first above written, and directs that this instrument be recorded in the office of the \_\_\_\_\_ County Clerk or Recorder.

\_\_\_\_\_ (Grantor)

By: \_\_\_\_\_ (Signature names and title)

ATTEST:

\_\_\_\_\_, Secretary

(Seal)

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

Be it remembered that on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_, before me, the subscriber, a Notary Public of New Jersey, personally appeared: \_\_\_\_\_, and he thereupon acknowledged that he signed the foregoing instrument (in such capacity, that the seal affixed to said instrument is the corporate seal of said corporation), and that said instrument is the voluntary act of deed of said person (or corporation, made by virtue of authority from its Board of Directors).

\_\_\_\_\_

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A Notary Public of \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

Attachments required: NJDEP Approved Permit  
USACE Approved Permit  
NJDEP Approved Restricted Area Plan  
Metes and Bounds description schedule

# **ATTACHMENT 7**

## **QUALIFICATIONS AND EXPERIENCE**

## **Qualifications and Experience**

Evergreen is the largest mitigation banker in New Jersey with fifteen (15) approved and constructed banks and four (4) proposed banks in the review/permitting process (see Figure 8.1). Evergreen has also performed turnkey mitigation on more than 25 wetland and riparian zone sites owned or optioned in the State of New Jersey. Total restored and preserved lands in New Jersey are approximately 1,500 acres.

Evergreen is staffed by restoration and asset management experts skilled in the acquisition of property suitable for mitigation (see attached key staff resumes). We blend solid eco-restoration science with land management and risk assessment skills to develop successful quality mitigation. The foundation of a good mitigation project is solid science and engineering, but the key to successful mitigation is finding the right site and performing that science and engineering analysis on land that is in the right landscape position. Our experience goes beyond site selection, permits and design to hands-on experience with land acquisition, construction, planting, monitoring and managing of environmental assets such as riparian zone buffers and wetland mitigation sites and banks.

Evergreen currently owns and maintains environmental assets in New Jersey, Pennsylvania and Virginia. In New Jersey, Evergreen has acquired more than 63 properties comprising 1900 acres of ecological restoration lands since our inception in 2006. Evergreen takes pride in our ability to find and acquire property, protect it through conservation easements and deed restrictions and manage the asset to the point of disposition to an approved land trust for perpetual preservation.

Evergreen's staff is comprised of eco-restoration experts with more than 60 years of experience working for the top environmental engineering firms in the region and financial and land acquisition asset management experts with more than 33 years' experience managing financial assets and conducting risk analysis, and legal experts with more than 30 years' experience specializing in environmental permitting and regulatory matters as well as land acquisition, investigation, management and preservation.

Evergreen is qualified to implement wetland mitigation banks in New Jersey and our most relevant and proximate example is our Evergreen MRI3 Mitigation Bank in the Meadowlands. This successful mitigation bank has met all success criteria and credit release milestones. Established in 2012, it is still the most recent mitigation bank approved in the Meadowlands.

With our staff, knowledge and experience, Evergreen brings the combination of the key skills required to ensure the success of the Evergreen Mill Creek Point Mitigation Bank.

**James R. Holt, Jr.**  
**Chief Financial Officer, Evergreen Environmental, LLC**

*Education*

B.A., English Harvard College, 1981

Mr. Holt is a founding partner and the Chief Financial Officer of Evergreen Environmental, LLC. Evergreen is the leading wetland mitigation banking firm in New Jersey. Mr. Holt is responsible for coordination with Evergreen's legal and accounting advisors, restoration site selection, landowner negotiations, acquisition proceedings, rights-of-entry, and due diligence period assessment of site suitability. As a risk analysis expert, he has 33 years of experience analyzing contracts and assessing liabilities as they relate to various activities, including real estate holdings, construction operations, pollution liability and environmental assets. He is an expert in asset management, conservation easements, deed restrictions, land donations and the establishment of endowments for secure disposition and protection of ecological assets. Relevant projects include:

**Garden State Parkway Milepost 30 to Milepost 80 Widening, New Jersey.** Principal-in-Charge for site acquisition, landowner negotiations and due diligence period property assessment. Mr. Holt managed conservation easement and conservation restriction recording and land transfer proceedings for more than 700 acres of mitigation lands. *Client: New Jersey Turnpike Authority*

**Evergreen MRI3 Mitigation Bank, Bergen County.** Task Manager for the land acquisition and development of a 51-acre tidal mitigation bank in the Hackensack Meadowlands. This federally approved wetland bank provides credits in the highly urbanized Hackensack Meadowlands District. Design and construction challenges included mercury remediation, removal of berms and a tide gate, restoration of tidal flow and establishment of native marsh grass species. Credits from this bank are used by permittees in the watershed.

**Global Marine Terminals Mitigation Site, Bergen County.** Task Manager for the land acquisition and development of a 16-acre tidal mitigation bank in the Hackensack Meadowlands along Moonachie Creek and the Hackensack River. Design and construction challenges included mercury remediation, removal of berms and a tide gate, restoration of tidal flow and establishment of native marsh grass species.

**Evergreen Abbot Creek Mitigation Bank, Cumberland County.** Task Manager for a 250-acre federal wetland mitigation bank along Delaware Bay. The Bank was built and planted in 2016 to restore a diked tidal marsh and create 76 mitigation credits.

**Evergreen Whale Creek Mitigation Bank.** Task Manager for land acquisition for a 18-acre tidal wetland mitigation bank along Raritan Bay in Monmouth County New Jersey. Advanced this proposed mitigation bank through Prospectus, Public Notice and Draft MBI with NYD IRT.

**Stipson's Island Mitigation Bank, Cape May County, NJ.** Principal-in-Charge for the site identification, selection, acquisition and development of a 35-acre tidal and freshwater mitigation bank. Managed land acquisition and financial analysis. Developed a market analysis of impacts in the region, assessed mitigation ratios, determined the bank service area and established a design/build team to implement the project. Presented the project to the NJDEP Freshwater Wetlands Mitigation Council and achieved all approvals.

**Atlantic City Expressway Third Lane Widening.** Principal-in-Charge for riparian zone mitigation for permanent and temporary impacts. Mitigation entails two mitigation sites of more than 60 acres in WMA-15. *Client: South Jersey Transportation Authority.*

**Evergreen Great Egg Harbor River Mitigation Bank.** Task Manager for a 103-acre wetland mitigation bank planting and implementation in Gloucester County, WMA-15 in the Pinelands Preservation Area. This mitigation bank preserved and restored wetland mitigation lands in a forested system along a Pinelands creek.

**Evergreen Oldmans Creek Mitigation Bank.** Task Manager for site identification, selection, acquisition and development of this 68-acre wetland and riparian zone mitigation bank located in Salem County, WMA 18. This wetland and riparian zone mitigation bank preserved previously farmed lands along a tributary of the Oldmans Creek and restored the area to a combination of forested wetland and grassland habitats.

**Mark Renna, PWS, C.E.**  
**President and Partner, Evergreen Environmental, LLC**

*Education*

M.S., Zoology and Physiology, Rutgers University, 1982

B.S., Biology, Fairfield University, 1979

*Professional Registrations/Certifications*

Society of Wetland Scientists, Professional Wetland Scientist, #000785

Certified Ecologist, Ecological Society of America

Certified in U.S. Fish & Wildlife Service Habitat Evaluation Procedures

Member: New Jersey Wetlands Mitigation Council (2016-2020), National Mitigation Banking Association

With more than 30 years of experience, Mr. Renna is a Professional Wetland Scientist and specializes in ecological restoration, wetland mitigation banks and implementation of ecological mitigation. At Evergreen Mr. Renna has designed, built, planted, monitored, and maintained numerous wetland mitigation sites and banks in New Jersey. Along with his two partners at Evergreen, Mr. Renna owns and operates more wetland mitigation banks in New Jersey than any other entity representing habitats in diverse watersheds across the state including freshwater and tidal wetlands. Beyond wetland mitigation banking, Mr. Renna has secured, designed and implemented more than 2,000 acres of lands in the state for turnkey mitigation of wetlands, riparian buffer, critical wildlife habitat, and T&E habitat. He is skilled in the assessment of wetland mitigation value in terms of ecological uplift and economic cost and value. Examples of relevant experience include:

**Evergreen MRI3 Mitigation Bank, Bergen County.** Project Manager for the development of a 51-acre tidal mitigation bank in the Hackensack Meadowlands. This federally approved wetland bank provides credits in the highly urbanized Hackensack Meadowlands District. Design and construction challenges included mercury remediation, removal of berms and a tide gate, restoration of tidal flow and establishment of native marsh grass species. Credits from this bank are used by permittees in the watershed.

**Global Marine Terminals Mitigation Site, Bergen County.** Project Manager for the development of a 16-acre tidal mitigation bank in the Hackensack Meadowlands along Moonachie Creek and the Hackensack River. Design and construction challenges included mercury remediation, removal of berms and a tide gate, restoration of tidal flow and establishment of native marsh grass species.

**Evergreen Abbot Creek Mitigation Bank, Cumberland County.** Project Manager for a 250-acre federal wetland mitigation bank along Delaware Bay. The Bank was built and planted in 2016 to restore a diked tidal marsh and create 76 mitigation credits.

**Evergreen Whale Creek Mitigation Bank.** Project Manager for a 18-acre tidal wetland mitigation bank along Raritan Bay in Monmouth County New Jersey. Advanced this proposed mitigation bank through Prospectus, Public Notice and Draft MBI with NYD IRT.

**Stipson's Island Mitigation Bank, Cape May County.** Project Manager for the development of a 35-acre tidal and freshwater mitigation bank; the first approved in the Philadelphia District of the U.S. Army Corps of Engineers. Credits were used to mitigate for the Garden State Parkway 9, 10, 11 Interchanges Improvements project.

**Evergreen Great Bay Mitigation Bank, Burlington County.** Project Manager for a 108-acre federal wetland mitigation bank in Bass River. The Bank was built and planted in 2023 to restore a former confined disposal facility to tidal marsh and create 26 mitigation credits.

**Garden State Parkway Milepost 30 to Milepost 80 Widening.** Project Manager for the wetland (tidal and freshwater), threatened and endangered species, critical wildlife habitat and CAFRA public access to the waterfront mitigation for this 50 mile widening project. Mitigation entailed full delivery acquisition, implementation and maintenance of more than 750 acres of mitigation at seven locations in Ocean, Burlington and Atlantic Counties, NJ. At the Bass River 85-acre tidal marsh, built and planted a restored tidal marsh inclusive of terrapin habitat and a public access fishing pier.

## **PUBLICATIONS/PRESENTATIONS**

“Turnkey Environmental Mitigation in New Jersey”, American Society of Highway Engineers, December 13, 2011, Invited Speaker

“Stipson’s Island Mitigation Bank: A Case Study from New Jersey” 12<sup>th</sup> National Mitigation & Ecosystem Banking Conference, May 5-8, 2009, Salt Lake City, Utah. The presentation presented a case study of the first federal wetland mitigation bank approved in the Philadelphia District.

“The Plan to Restore the Meadowlands to Health (not Youth)” at the Meadowlands Symposium sponsored by the Meadowlands Environmental Research Institute held October 10, 2003 at the New Jersey Meadowlands Environmental Center.

Renna, Mark, invited speaker. February 2002. *Banking on Streams and Air*. Terrene Institute 5<sup>th</sup> National Wetland Banking Conference, Washington, D.C.

Renna, Mark, moderator and featured speaker. October 2001. *Is Wetland Restoration Overrated: The Debate Over Creation Versus Restoration*. Wetland Restoration in the NY/NJ Harbor Estuary Conference.

Renna, Mark, Discovery Channel featured interview. First aired September 10, 1998. *Eco-Technology Today*. Filmed and interviewed on-location at a wetland creation site. The segment presented the Eagle Run wetland mitigation site in Delaware, a former auto junkyard transformed into a tidal freshwater emergent marsh.

Weis, J.S., P. Weis, M. Renna, S. Vaidya, 1985. *Search for a Physical Component of Methylmercury Tolerance in a Mummichog, Fundulus heteroclitus*. In: *Marine Pollution Physiology Recent Advances*. Edited by Vernberg, Thruberg, Calabrese and Vernberg, University of South Carolina Press.

Renna, Mark, N. Makofka, J. Maser, 1987. *Aquatic Biota of the Hackensack Meadowlands: An Environmental Survey Conducted for the New Jersey Turnpike Widening Project*, Presentation, New Jersey Academy of Sciences.

Renna, Mark, 1982. Masters Thesis Rutgers University. “*The Effect of Polluted Water and Methyl Mercury on Fin Regeneration and Swimming Stamina of Killifish (Fundulus heteroclitus): A Comparison Between Two Populations*”. Piles Creek tributary to the Arthur Kill and Southampton, Long Island, New York.

**James R. Ingram**  
**Partner, Evergreen Environmental, LLC**

*Education*

B.S., Environmental Studies, Youngstown State University Education  
Post Graduate Work, Environmental Studies, Temple University, 1985

*Professional Registrations*

Society of Wetland Scientists

Mr. Ingram is responsible for technical aspects of wetland, stream, and riparian mitigation, site selection, permitting, design and monitoring, and management. Areas of expertise include forested and freshwater systems, banking instrument development, and stream and riparian buffer restoration. He has been a Project Manager and consultant on construction, planting, maintenance and management of wetland and stream mitigation banks in Pennsylvania, New Jersey and Virginia. Mr. Ingram performs and manages regulatory compliance and coordination. He leads land acquisition and analysis efforts, as well as field studies and landscape plans. Relevant projects include:

**Back Brook Mitigation Site, New Jersey.** Project Manager for riparian zone mitigation for permanent and temporary impacts associated with a gas pipeline project. Coordinated site search and property owner agreements. Responsible for project design and agency correspondence/meetings. Construction and planting oversight.

**Game Creek Mitigation Site.** Project Manager for 13-acres of wetland and riparian zone mitigation in southern New Jersey for permanent and temporary impacts associated with a gas pipeline project. Coordinated site search and property owner agreements. Responsible for project design and agency correspondence/meetings in addition to construction and planting oversight.

**Garden State Parkway Milepost 30 to Milepost 80 Widening, New Jersey.** Task Manager for the Pinelands T&E and Critical Wildlife Habitat and CAFRA T&E and CWH mitigation at the Ballanger Creek and Turtle Creek mitigation sites where more than 315 acres were secured and preserved as mitigation pursuant to the NJDEP permit and the Pinelands MOA. Land ownership has been transferred to an approved land steward. Task Manager for the planting implementation of the Gunning River wetland mitigation site forested system. *Client: New Jersey Turnpike Authority*

**Pike Run Riparian Mitigation Site.** Project Manager for identification and selection of a riparian site including property owner coordination and land transfer documents. Other duties included obtaining permit approvals and overseeing design, planting and monitoring of the site. He also developed the planting plan and obtained NJDEP approval. *Client: Transco*

**Stipson's Island Mitigation Bank, Cape May County, NJ.** Task Manager for the development of a 35-acre tidal and freshwater mitigation bank. Managed technical studies, as well as approvals through a joint MBRT-Council process to address federal and state jurisdiction. Oversaw forested plant material installation.

**Atlantic City Expressway Third Lane Widening.** Project Manager for riparian zone mitigation for permanent and temporary impacts. Mitigation entails two mitigation sites of more than 60 acres in WMA-15. *Client: South Jersey Transportation Authority*

**Morristown Municipal Airport Runway Alpha Bravo Mitigation.** Task Manager for 137-acres of wetland mitigation in the Upper Passaic River Basin associated with permitted impacts resulting from runway improvements. Mitigation lands were acquired, evaluated and surveyed prior to approval by the Mitigation Council in Morris and Essex Counties. Lands include Natural Heritage Priority sites with documented T&E species. Lands transferred to the Natural Lands Trust.

**Evergreen Nishisakawick Creek Mitigation Bank, Hunterdon County.** Task Manager for a 13-acre wetland mitigation bank in Hunterdon County. The mitigation design restored wetlands and riparian zone buffer along a Category 1 stream in WMA-11. Credits were used for regional bridge projects.

**Evergreen Great Egg Harbor River Mitigation Bank.** Task Manager for a 103-acre wetland mitigation bank planting and implementation in Gloucester County, WMA-15 in the Pinelands Preservation Area. This mitigation bank preserved and restored wetland mitigation lands in a forested system along a Pinelands creek.

**Tennessee Gas Pipeline 300 Line.** Task Manager for full delivery wetland and riparian mitigation for a 16-mile gas pipeline in northern New Jersey. Secured mitigation sites, conducted site investigations, developed landscape concept plans, built and planted mitigation sites including creation of vernal habitat pools, and received all NJDEP approvals.

**Evergreen Oldmans Creek Mitigation Bank.** Project Manager for the design, planting and management of this 68-acre wetland and riparian zone mitigation bank located in Salem County, WMA 18. This wetland and riparian zone mitigation bank preserved previously farmed lands along a tributary of the Oldmans Creek and restored the area to a combination of forested wetland and grassland habitats.

**Ryan J. Scerbo, Esq.**  
**General Manager / General Counsel, Evergreen Environmental, LLC**

*Education*

J.D., Pace University School of Law, 1999

B.S., Environmental Management, University of Rhode Island, 1996

Bar Admissions: New Jersey (1999) and New York (2000)

Prior to joining Evergreen in 2023, Mr. Scerbo was a Partner at the DeCotiis, FitzPatrick, Cole and Giblin, LLP law firm where was a member of the firm's Environmental Law and Green Practice Groups. Mr. Scerbo joined DeCotiis in 1999, became a Partner in 2003, and was elevated to equity partnership in 2011. Mr. Scerbo has represented a variety of public and private clients in matters ranging from transportation infrastructure, public procurement, complex multi-use developments, potable water treatment and supply, wastewater treatment, site remediation and renewable energy. Mr. Scerbo is experienced in applying for, obtaining, defending, appealing and complying with nearly every type of State and local environmental and land use permits and approvals, as well as many Federal environmental permits and approvals. Since joining Evergreen Mr. Scerbo has assisted with the following matters:

**Evergreen Mill Creek Point Proposed Mitigation Bank** – Mr. Scerbo has assisted with advancing this proposed 22-acre bank located in Secaucus, New Jersey through the review process administered by the Interagency Review Team (IRT), led by the Army Corps of Engineers. Mr. Scerbo has assisted with and participated in multiple meetings and site visits with the agencies that comprise the IRT. Presently, Mr. Scerbo is assisting with the preparation of a Mitigation Bank Prospectus necessary to advance this proposed bank closer to final approval.

**Site Searches and Interactions with Landowners** – Since joining Evergreen, Mr. Scerbo has been engaged in the search for new mitigation sites and potential bank locations in multiple regions of the State, reviewing nearly 100 sites and locating, contacting and interacting with landowners interested in working with Evergreen.

Examples of Mr. Scerbo's relevant experience prior to joining Evergreen include:

**Garden State Parkway Milepost 30 to Milepost 80 Widening** – This \$800 million project consisted of the design and permitting of a third travel lane and shoulders northbound and southbound on the Garden State Parkway between South Toms River and Somers Point, equivalent to over 100 lane miles, as well as the construction of new bridge crossings over the Mullica and Bass Rivers. Mr. Scerbo, as the lead attorney for this project, worked closely with the Authority and its professional consultants over three years to obtain 14 State and Federal permits and approvals from nine State and Federal regulatory agencies, and multiple parcels of new right of way. Mr. Scerbo also assisted the Authority with a first of its kind procurement for comprehensive turnkey mitigation. The procurement and contracting structure required the full delivery acquisition, implementation and maintenance of more than 750 acres of mitigation, as well as a public access to the waterfront mitigation project at seven locations in Ocean, Burlington and Atlantic Counties, NJ.

**New Jersey Turnpike Authority Interchange 6 to Interchange 9 Widening** – Mr. Scerbo also served as lead legal counsel to the New Jersey Turnpike Authority in connection with the design and permitting of the \$2.75 billion widening of the New Jersey Turnpike from Interchange 6 to Interchange 9. Mr. Scerbo worked closely with the Authority and its professional consultants to obtain multiple state permits and approvals and over 350 parcels of additional right of way, including Preserved Farmlands, Green Acres Property, and State-owned lands ahead of

schedule, one of the many factors that allowed the Authority to complete the project on-time and under budget.

**Renewable Energy** – Mr. Scerbo has been working with clients to pursue and secure long-term contracts for clean, reliable and inexpensive renewable energy since 2006. Some of Mr. Scerbo's more recent matters include: (1) **Rutgers University** – Mr. Scerbo assisted Rutgers with contracting and construction-related issues in connection with the development of 17 carport canopy solar arrays, totaling 14.8 MWs and offsetting millions of dollars in energy costs for the University, (2) **Duke Farm / Dorris Duke Foundation** – Mr. Scerbo assisted Duke Farms with the procurement and contracting for an innovative on-site ground-mounted solar renewable energy project paired with an on-site energy storage system, one of only a few such systems in the entire State, and (3) **Princeton Landfill** – Mr. Scerbo assisted the municipality of Princeton in devising a joint procurement with Stoney Brook Regional Sewerage Authority to utilize Princeton's closed municipal landfill to house a 2.7 MW solar renewable energy project that feeds low-cost reliable power to the adjacent Sewerage Authority's facilities for 15 years. Under this approach Princeton receives a lease payment from a private solar developer to lease the space on the landfill for the solar project and the Sewerage Authority receives low-cost power for 15 years from the project, generating long-term revenue for Princeton and predictable energy savings for Stoney Brook. In all, Mr. Scerbo has assisted public and private clients with the procurement, contracting, financing, permitting and management of more than 625 MWs of ground-mounted, floating, rooftop and carport canopy solar renewable energy projects. In addition, Mr. Scerbo has assisted public and private clients with the procurement, financing, permitting and administration of energy savings improvement programs, offshore wind development, combined heat and power facilities, landfill waste gas to energy facilities and aggregated energy purchasing.

**Open Space Acquisitions** – Mr. Scerbo represented the municipality of Princeton in connection with the acquisition of critically important tracts of open space facing a significant threat of development. Several of these parcels comprise what is referred to as "Princeton's Emerald Necklace". One parcel, the 153-acre Lanwin Parcel representing the largest remaining undeveloped tract in Princeton, was acquired for \$8.775 million following years of negotiations. Mr. Scerbo was also responsible for developing a multi-party agreement between Princeton and multiple nonprofit organizations, including The Watershed Institute, Friends of Princeton Open Space, The Ridgeview Conservancy, and New Jersey Conservation Foundation, to compile the funding necessary to complete the acquisition.

**New Jersey Conservation Foundation** – Mr. Scerbo assisted NJCF in connection with acquisition of land and easement for conservation, management and enforcement of easement terms and conditions, analysis of new legislation allowing commercial activities on preserved farmland easements, and development and evaluation of property usage policies related to access and hunting.

## **PUBLICATIONS/PRESENTATIONS**

"Environmental Law Turning Toward the Sun", New Jersey Law Journal (July 2011)

"Local Renewables: An emerging Model for Green Power", Public Utilities Fortnightly (March 2010)

"Public-Private Partnership for Renewable Energy: A Case Study" New Jersey Law Journal (March 2010)

**Linda Salvati, PWS, CWB**  
**Senior Biologist, Evergreen Environmental, LLC**

*Education*

M.S., Environmental Engineering Science, Pennsylvania State University, 1998

B.S., Wildlife and Fisheries Science, Pennsylvania State University, 1990

A.S., Animal Science, Manor Junior College, 1988

*Professional Registrations/Certifications*

Society of Wetland Scientists, Professional Wetland Scientist, #1698

Certified Wildlife Biologist, The Wildlife Society

Member: National Mitigation Banking Association

With more than 30 years of experience, Ms. Salvati is a Professional Wetland Scientist and biologist with Evergreen Environmental and is responsible for wetland and stream monitoring and mitigation, project permitting, design, and site maintenance. Areas of expertise include forested and freshwater systems, banking instrument development, and riparian buffer restoration. Ms. Salvati leads efforts in field studies, design plans, and Geographical Information Systems (GIS). She has been a Project Manager and consultant on various construction, planting, maintenance and management of wetland and stream mitigation projects in New Jersey and Pennsylvania. Examples of relevant experience include:

**Evergreen MRI3 Mitigation Bank, Bergen County.** Perform monitoring inspection of 51-acre tidal mitigation bank in the Hackensack Meadowlands. Prepare GIS graphics for report submissions.

**Evergreen Wickecheoke Creek Mitigation Bank and Site, Hunterdon County.** Project Manager for the development of a 46-acre parcel used as a riparian zone preservation turnkey project and a mitigation bank. Approximately 21 acres were allocated as riparian preservation for a bridge project. The remaining 25 acres are used a freshwater wetland and riparian zone mitigation bank. Oversight of stream restoration along an unnamed tributary to a Category 1 stream and planting of the bank site. Prepared MBI and Construction Completion reports. Responsible for construction and planting oversight, and annual monitoring/maintenance.

**Evergreen Nishisakawick Creek Mitigation Bank, Hunterdon County.** Task Manager for a 13-acre wetland mitigation bank in Hunterdon County. The mitigation design restored palustrine wetlands and riparian zone buffer along a Category 1 stream in WMA-11. Credits were used for bridge projects.

**Evergreen Back Brook Mitigation Bank and Site, Hunterdon County.** Project Manager for the development of a 27-acre parcel used as a wetland and riparian zone enhancement turnkey project and a riparian zone mitigation bank. Approximately 13 acres were allocated as wetland and riparian zone enhancement for a gas pipeline project. The remaining 14 acres are used a riparian zone mitigation bank. Prepared MBI and Construction Completion reports. Responsible for construction and planting oversight, and annual monitoring/maintenance.

**Evergreen Abbot Creek Mitigation Bank, Cumberland County.** Task Manager for a 250-acre wetland mitigation bank along Delaware Bay. Prepared MBI and Construction Completion reports. Oversight of bank construction and planting. The Bank has been permitted and the MBI approved to restore a diked tidal marsh and create 76 mitigation credits.

**Evergreen Great Bay Mitigation Bank, Burlington County.** Task Manager for a 108-acre federal wetland mitigation bank in Bass River. Prepared MBI and Construction Completion reports. Oversight of bank construction and planting. The Bank was built and planted in 2023 to restore a former confined disposal facility to tidal marsh and create 26 mitigation credits.

**Evergreen Rio Grande Swamp Mitigation Bank, Cape May County.** Task manager for 16-acre federal wetland mitigation bank in Cape May County. Prepared MBI and Construction Completion reports. Oversight of bank construction and planting. Perform annual monitoring and reporting. Oversight of threatened and endangered species surveys. The Bank has been permitted and the MBI approved for the restoration, creation, enhancement, and preservation of wetlands. The project also included construction of a vernal pool for the preservation of two state endangered amphibians.

**Stipson's Island Mitigation Bank, Cape May County.** Task Manager for the monitoring and maintenance of a 35-acre tidal and freshwater mitigation bank; the first approved in the Philadelphia District of the U.S. Army Corps of Engineers. Credits were used to mitigate for the Garden State Parkway 9, 10, 11 Interchanges Improvements project.

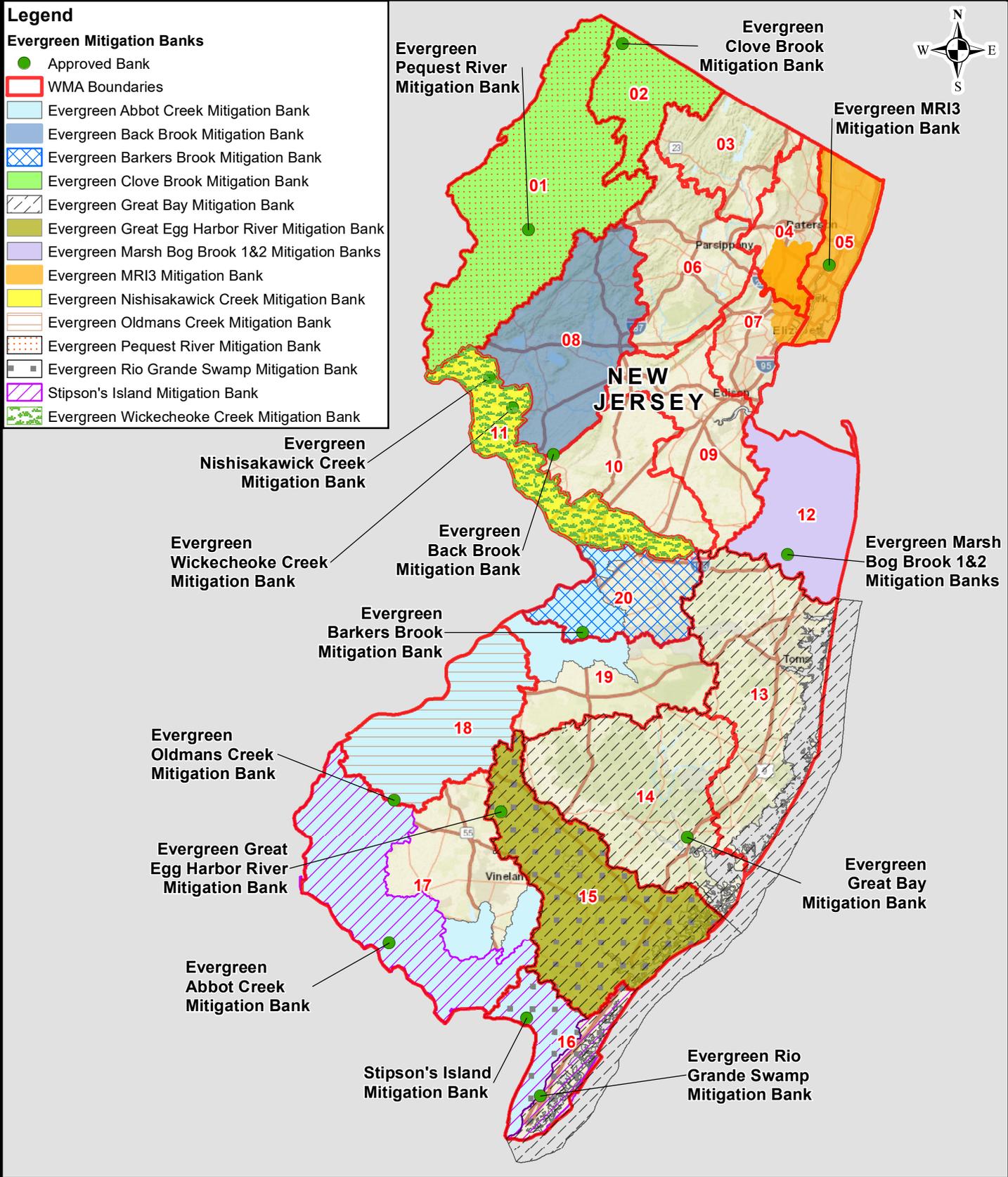
**Evergreen Great Egg Harbor River Mitigation Bank, Gloucester County.** Task Manager for a 103-acre wetland mitigation bank planting and implementation in Gloucester County, WMA-15 in the Pinelands Preservation Area. This mitigation bank preserved and restored wetland mitigation lands in a forested system along a Pinelands Creek. Credits were used to mitigate for the Atlantic City Expressway Widening.

**Game Creek Mitigation Site, Salem County.** Task Manager for 13-acres of wetland and riparian zone mitigation in southern New Jersey for permanent and temporary impacts associated with a gas pipeline project. Assisted in site search, project design, agency correspondence/meetings, and annual site monitoring/maintenance.

**Tennessee Gas Pipeline 300 Line.** Task Manager for full delivery wetland and riparian zone mitigation for a 16-mile gas pipeline in northern New Jersey. Conducted site investigations, assisted in design of several mitigation sites which included vegetative planting and habitat pool creation, and perform annual monitoring/maintenance of the sites.

**Tennessee Gas NEUP Pipeline.** Task Manager for wetland and riparian zone mitigation for permanent and temporary impacts. Project Manager for annual site monitoring and maintenance of multiple mitigation sites in New Jersey and Pennsylvania.

**Mannington Mills Wetland Restoration, Salem County.** Prepared NJDEP multi-permit application for an Individual Coastal Wetland permit and Freshwater Wetland General permit related with remedial activities within and adjacent to a tidal waterbody. Approximately 5 acres of coastal and freshwater wetlands were disturbed and restored in-place. Designed wetland restoration and creation plan to compensate for the impacts and monitored area in accordance with permit conditions.



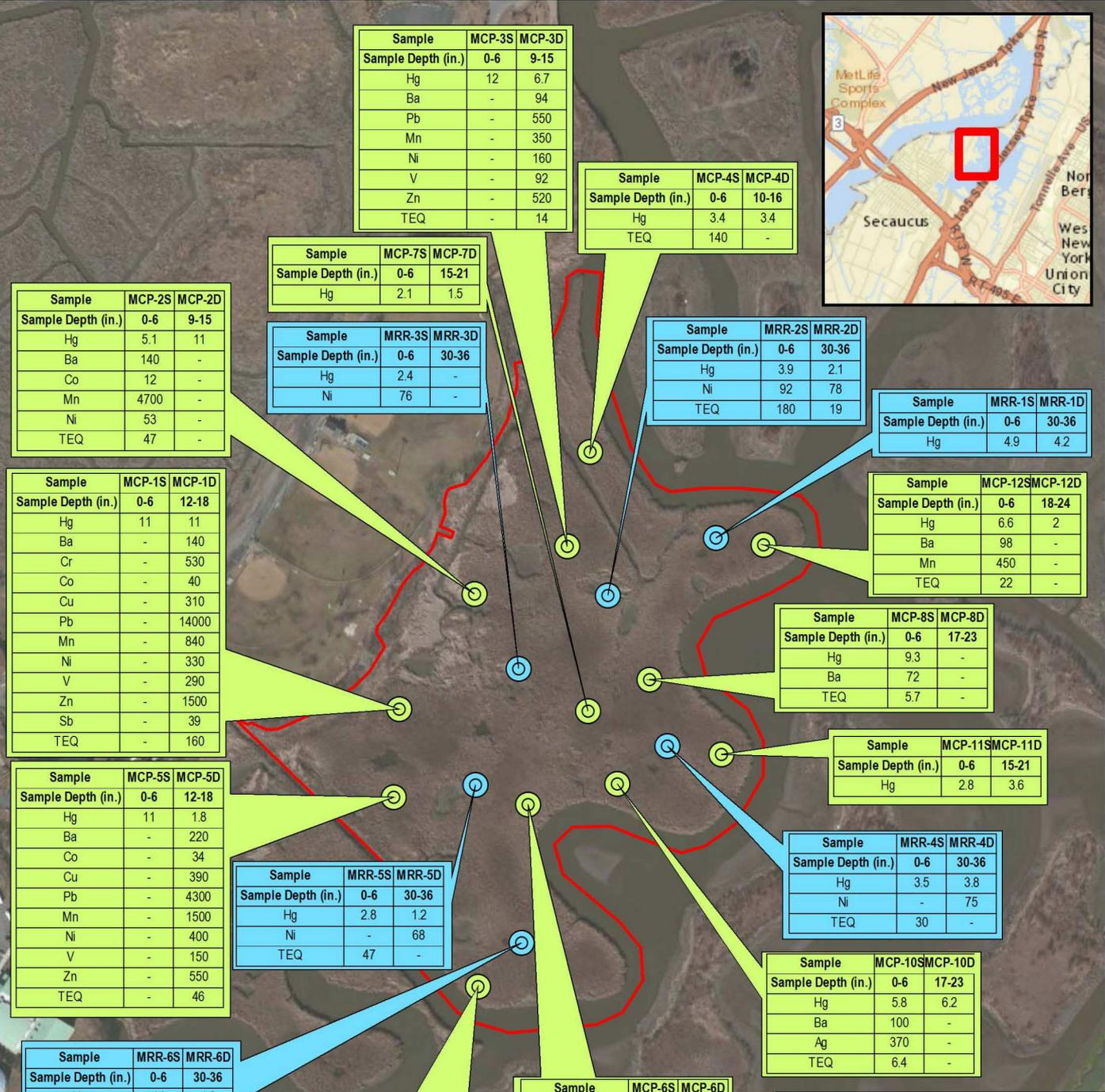
**EVERGREEN ENVIRONMENTAL, LLC  
MITIGATION BANKS  
NEW JERSEY  
SERVICE AREA OF APPROVED BANKS**



**FIGURE  
8.1**

# **ATTACHMENT 8**

# **SEDIMENT SAMPLE RESULTS**



ER-M		ER-M	
Hg	0.71	Ni	52
Ba	48	V	57
Cr	370	Zn	410
Co	10	Sb	9.3
Cu	270	Ag	3.7
Pb	218	TEQ	3.6
Mn	260		

For sample locations with a shallow and deep sample the concentrations for the same analyte are separated by a comma. "-" signifies concentration for that sample does not exceed ER-M criteria. Analytes not exceeding ER-M criteria for a given sample location are not listed. \*Metals concentrations reported in mg/kg \*\*TEQ reported in ng/kg

**Legend**

- 2013 Sediment Samples
- 2015 Sediment Samples
- MCP Bank Site

0 150 300 Feet

Aerial: (c) 2010 Microsoft Corporation and its data suppliers

Table 1: Metal Concentrations Detected in September 2013 sediment samples at the Evergreen Mill Creek Point Mitigation Bank site.

SAMPLE ID		MMR-1S	MMR-1D	MMR-2S	MMR-2D	MMR-3S	MMR-3D	MMR-4S	MMR-4D	MMR-5S	MMR-5D	MMR-6S	MMR-6D
LAB ID		AC74580-001	AC74580-002	AC74902-003	AC74902-004	AC74902-001	AC74902-002	AC74580-003	AC74580-004	AC74580-005	AC74580-006	AC74902-005	AC74902-006
Sample Depth (feet below surface)		0-0.5	2.5-3.0	0-0.5	2.5-3.0	0-0.5	2.5-3.0	0-0.5	2.5-3.0	0-0.5	2.5-3.0	0-0.5	2.5-3.0
Analyte	ER-M (mg/kg)	Concentration (mg/Kg)											
Mercury	0.71	4.9	4.2	3.9	2.1	2.4	0.66	3.5	3.8	2.8	1.2	14	1.9
Arsenic	70	13	21	14	23	21	ND	ND	16	ND	22	39	18
Cadmium	9.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	370	190	230	250	170	130	58	140	180	140	89	760	130
Copper	270	130	110	120	84	110	44	99	98	92	89	230	72
Lead	218	120	190	170	150	130	87	120	160	110	240	390	120
Nickel	52	35	34	92	78	76	51	50	75	39	68	150	38
Zinc	410	260	150	300	230	380	150	340	250	220	240	440	160
Percent Solids (%)	NC	28	17	37	22	22	13	16	15	18	13	20	26

-Results dry weight

-All results in parts per million (mg/kg)

= above Effects Range - Median (ERM)

ND = not detected above the reporting limit

NC = no criteria established

-Only 50% of surface and deep samples were analyzed for all metals in accordance to workplan.

Table 2: Metal Concentrations Detected in January 2015 sediment samples at the Evergreen Mill Creek Point Mitigation Bank site.

SAMPLE ID	MCP-1S	MCP-1D	MCP-2S	MCP-2D	MCP-3S	MCP-3D	MCP-4S	MCP-4D	MCP-5S	MCP-5D	MCP-6S	MCP-6D	
LAB ID	AC82907-005	AC82907-006	AC82985-012	AC82907-002	AC82907-003	AC82907-004	AC83010-001	AC83010-002	AC82907-007	AC82907-008	AC82985-015	AC82985-016	
Sample Depth (inches below Surface)	0-6	12-18	0-6	9-15	0-6	9-15	0-6	10-16	0-6	12-18	0-6	14-20	
Analyte	Concentration (mg/Kg)												
Metals	ER-M												
Mercury	0.71	11	11	5.1	11	12	6.7	3.4	3.4	11	1.8	5.8	6.2
Aluminum	18000		14,000	13,000			9,500	9,800			16,000	10,000	
Barium	48		140	140			94	46			220	100	
Calcium	NC		11,000	9,400			ND	ND			11,000	ND	
Chromium	370		530	200			200	110			340	110	
Cobalt	10		40	12			ND	ND			34	8.4	
Copper	270		310	100			240	85			390	75	
Iron	NC		42,000	24,000			22,000	16,000			28,000	20,000	
Lead	218		14,000	150			550	86			4,300	93	
Magnesium	NC		13,000	6,000			8,700	5,300			11,000	5,500	
Manganese	260		840	4,700			350	180			1,500	370	
Nickel	52		330	53			160	30			400	42	
Potassium	NC		ND	2,400			ND	2,300			2,900	2,100	
Sodium	NC		38,000	5,100			27,000	6,300			25,000	7,500	
Vanadium	57		290	41			92	ND			150	34	
Zinc	410		1,500	260			520	120			550	260	
Antimony	9.3		39	ND			ND	ND			ND	ND	
Arsenic	70		66	7.9			33	6.7			26	20	
Beryllium	NC		ND	ND			ND	ND			ND	ND	
Cadmium	9.6		6.7	ND			ND	ND			2.5	2.3	
Selenium	1		ND	ND			ND	ND			ND	ND	
Silver	3.7		3.3	2.9			1.9	2.4			1.6	3.5	
Thallium	3.4		ND	ND			ND	ND			ND	ND	
Percent Solids (%)	NC	17	26	35	26	17	17	25	17	19	25	32	36

-Results dry weight

-All results in parts per million (mg/kg)

  = above Effects Range - Median (ERM)

ND = not detected above the reporting limit

NC = no criteria established

-Only 50% of surface and deep samples were analyzed for all metals in accordance to workplan.

Table 2: Metal Concentrations Detected in January 2015 sediment samples at the Evergreen Mill Creek Point Mitigation Bank site (continued).

SAMPLE ID	MCP-7S	MCP-7D	MCP-8S	MCP-8D	MCP-9S	MCP-9D	MCP-10S	MCP-10D	MCP-11S	MCP-11D	MCP-12S	MCP-12D	
LAB ID	AC82985-017	AC82985-018	AC82985-001	AC82985-002	AC82985-003	AC82985-004	AC82985-005	AC82985-006	AC82985-003	AC82985-008	AC82985-009	AC82985-010	
Sample Depth (inches below Surface)	0-6	15-21	0-6	17-23	0-6	9-15	0-6	17-23	0-6	15-21	0-6	18-24	
Analyte	Concentration (mg/Kg)												
Metals	ER-M												
Mercury	0.71	2.1	1.5	9.3	0.54	6.3	0.74	3.7	6	2.8	3.6	6.6	2
Aluminum	18000		2,300	9,500			17,000	8,000			7,500	13,000	
Barium	48		43	72			71	54			39	98	
Calcium	NC		ND	ND			3,500	ND			ND	ND	
Chromium	370		44	120			67	87			61	130	
Cobalt	10		ND	ND			9	ND			ND	ND	
Copper	270		70	85			46	61			51	90	
Iron	NC		5,000	11,000			22,000	11,000			11,000	20,000	
Lead	218		170	81			78	78			100	120	
Magnesium	NC		2,600	5,200			7,200	3,800			4,200	6,300	
Manganese	260		75	140			490	200			240	450	
Nickel	52		29	31			47	22			30	34	
Potassium	NC		ND	ND			3,000	1,700			ND	2,900	
Sodium	NC		11,000	9,900			8,300	5,400			10,000	6,100	
Vanadium	57		36	ND			46	ND			ND	42	
Zinc	410		170	76			130	79			150	210	
Antimony	9.3		ND	ND			ND	ND			ND	ND	
Arsenic	70		8.8	11			23	6.6			24	14	
Beryllium	NC		ND	ND			ND	0.59			0.72	0.83	
Cadmium	9.6		ND	ND			ND	ND			ND	ND	
Selenium	1		ND	ND			ND	ND			ND	ND	
Silver	3.7		ND	3.3			0.69	4.2			0.87	2.6	
Thallium	3.4		ND	ND			ND	ND			ND	ND	
Percent Solids (%)	NC	24	35	19	39	36	41	37	30	17	28	30	31

-Results dry weight

-All results in parts per million (mg/kg)

  = above Effects Range - Median (ERM)

ND = not detected above the reporting limit

NC = no criteria established

-Only 50% of surface and deep samples were analyzed for all metals in accordance to workplan.

Table 3: Dioxin and Furan concentrations detected in September 2013 sediment samples at the Evergreen Mill Creek Point Mitigation Bank site.

SAMPLE ID		AC74902-003 MRR-2	AC74902-004 MRR-2	AC74580-003 MRR-4	AC74580-004 MRR-4	AC74580-005 MRR-5	AC74580-006 MRR-5
LAB ID		10244353001	10244353002	10242345001	10242345002	10242345003	10242345004
Sample Depth (feet below surface)		0-0.5	2.5-3.0	0-0.5	2.5-3.0	0-0.5	2.5-3.0
Analyte	ER-M (ppt)	Concentration (parts per trillion)					
2,3,7,8-TCDF	NC	24.0	4.4	5.3	<2.5	8.4	4.4
Total TCDF	NC	330.0	51.0	130.0	8.1	140.0	88.0
2,3,7,8-TCDD	NC	120.0	12.0	19.0	<2.5	29.0	<2.3
Total TCDD	NC	220.0	31.0	48.0	3.5	51.0	46.0
1,2,3,7,8-PeCDF	NC	15.0	<5.9	<10.0	<13.0	<9.0	<12.0
2,3,4,7,8-PeCDF	NC	31.0	<5.9	<10.0	<13.0	12.0	<12.0
Total PeCDF	NC	370.0	50.0	100.0	<13.0	110.0	<12.0
1,2,3,7,8-PeCDD	NC	7.9	<5.9	<10.0	<13.0	<9.0	<12.0
Total PeCDD	NC	72.0	<5.9	11.0	<13.0	11.0	<12.0
1,2,3,4,7,8-HxCDF	NC	130.0	28.0	55.0	<13.0	63.0	<12.0
1,2,3,6,7,8-HxCDF	NC	42.0	15.0	16.0	<13.0	11.0	<12.0
2,3,4,6,7,8-HxCDF	NC	12.0	<5.9	<10.0	<13.0	<9.0	<12.0
1,2,3,7,8,9-HxCDF	NC	5.6	<5.9	<10.0	<13.0	<9.0	<12.0
Total HxCDF	NC	460.0	25.0	160.0	<13.0	180.0	14.0
1,2,3,4,7,8-HxCDD	NC	8.4	<5.9	<10.0	<13.0	<9.0	<12.0
1,2,3,6,7,8-HxCDD	NC	60.0	<5.9	<10.0	<13.0	9.1	<12.0
1,2,3,7,8,9-HxCDD	NC	18.0	<5.9	<10.0	<13.0	<9.0	<12.0
Total HxCDD	NC	300.0	34.0	31.0	<13.0	52.0	<12.0
1,2,3,4,6,7,8-HpCDF	NC	690.0	95.0	220.0	<13.0	280.0	380.0
1,2,3,4,7,8,9-HpCDF	NC	21.0	<5.9	<10.0	<13.0	<9.0	<12.0
Total HpCDF	NC	730.0	110.0	290.0	<13.0	370.0	380.0
1,2,3,4,6,7,8-HpCDD	NC	550.0	77.0	140.0	13.0	160.0	26.0
Total HpCDD	NC	1200.0	170.0	320.0	33.0	370.0	57.0
OCDF	NC	920.0	110.0	360.0	<2.5	460.0	34.0
OCDD	NC	6700.0	1100.0	1700.0	320.0	2100.0	430.0
Total 2,3,7,8-TCDD (TEQ)	3.6	<b>180.0</b>	<b>19.0</b>	<b>30.0</b>	<b>0.23</b>	<b>47.0</b>	<b>1.2</b>

Table 4: Dioxin and Furan concentrations detected in January 2015 sediment samples at the Evergreen Mill Creek Point Mitigation Bank site.

SAMPLE ID		MCP-1D	MCP-2S	MCP-3D	MCP-4S	MCP-5D	MCP-6S	MCP-7D	MCP-8S	MCP-9D	MCP-10S	MCP-11D	MCP-12S
Hampton-Clark Lab ID		AC82907-006	AC82985-012	AC82907-004	AC83010-001	AC82907-008	AC82985-015	AC82985-018	AC82985-001	AC82985-004	AC82985-005	AC82985-008	AC82985-009
Pace Analytical Lab ID		10294332002	10294755006	10294332001	10294928001	10294332003	10294755007	10294755008	10294755001	10294755002	10294755003	10294755004	10294755005
SAMPLE INTERVAL (inches below ground surface)		12-18	0-6	9-15	0-6	12-18	0-6	15-21	0-6	9-15	0-6	15-21	0-6
ANALYTE (EPA Method 8290)	ER-M (ppt)	Concentration (parts per trillion [ppt] or nanograms per kilogram [ng/kg])											
2,3,7,8-TCDF	NC	28	8.4	9.8	32	14	<2.8	7.9	<4.0	<1.4	6.6	<3.1	5.5
Total TCDF	NC	600	160	270	600	290	21	150	16	5.6	110	21	80
2,3,7,8-TCDD	NC	130	36	8.1	89	31	5.3	<5.4	4.6	<1.4	36	<3.1	15
Total TCDD	NC	230	66	84	220	110	9	29	4.6	2.1	59	4.4	28
1,2,3,7,8-PeCDF	NC	<15.0	<12.0	<15.0	16	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
2,3,4,7,8-PeCDF	NC	32	<12.0	<15.0	34	17	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
Total PeCDF	NC	400	120	92	510	180	<14.0	72	<20.0	<6.8	69	<15.0	51
1,2,3,7,8-TCDD	NC	<15.0	<12.0	<15.0	<9.0	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
Total PeCDD	NC	57	<12.0	23	93	19	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
1,2,3,4,7,8-HxCDF	NC	58	53	19	120	35	<14.0	<27.0	<20.0	<6.8	58	<15.0	38
1,2,3,6,7,8-HxCDF	NC	23	<12.0	<15.0	34	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
2,3,4,6,7,8-HxCDF	NC	25	<12.0	<15.0	25	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
1,2,3,7,8,9-HxCDF	NC	<15.0	<12.0	<15.0	<9.0	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
Total HxCDF	NC	330	150	67	450	150	<14.0	<27.0	<20.0	<6.8	130	<15.0	77
1,2,3,4,7,8-HxCDD	NC	ND	<12.0	<15.0	9.3	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
1,2,3,6,7,8-HxCDD	NC	19	<12.0	<15.0	39	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
1,2,3,7,8,9-HxCDD	NC	<15.0	<12.0	<15.0	19	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
Total HxCDD	NC	170	69	64	370	91	<14.0	<27.0	<20.0	9.1	54	<15.0	41
1,2,3,4,6,7,8-HpCDF	NC	340	220	110	620	230	56	43	63	11	230	19	150
1,2,3,4,7,8,9-HpCDF	NC	<15.0	<12.0	<15.0	18	<14.0	<14.0	<27.0	<20.0	<6.8	<15.0	<15.0	<16.0
Total HpCDF	NC	450	280	140	840	310	72	43	63	11	290	19	190
1,2,3,4,6,7,8-HpCDD	NC	280	160	120	790	200	42	51	34	22	140	<15.0	93
Total HpCDD	NC	540	360	210	1700	400	95	130	80	59	320	17	210
OCDF	NC	280	360	110	840	250	100	<54.0	110	15	390	<31.0	250
OCDD	NC	2700	2000	1300	7000	2400	570	680	460	730	1800	200	1200
Total 2,3,7,8-TCDD Equivalence	3.6	160	47	14	140	46	6.4	1.9	5.7	0.56	47	0.25	22

**Notes:**

- Results dry weight.
- All results reported in parts per trillion (mg/kg)
- ER-M = Effects Range - Median; Estuarine/ Marine Screening Criteria, NJDEP, 2009
- NC = No Criteria established

**Exceeds ER-M**