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# Evergreen Mill Creek Point Mitigation Bank

JUL - 8 2014

## 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**



**Submitted by:**



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## **1.0 Introduction**

Evergreen Environmental (“Evergreen”) proposes to develop a mitigation bank on the Hackensack River in the Town of Secaucus, Hudson County, New Jersey. The proposed Evergreen Mill Creek Point Mitigation Bank site (“bank site”) consists of open water, wetland and upland habitats (See Figure 1 and Photographs). The habitat value of the site is diminished by the colonization of the invasive common reed *Phragmites australis* (“Phragmites”), which covers the wetland portions of the site in dense, monotypic stands. The upland edge of the marsh contains disturbed lands adjacent to ballfields on the western portion of the site. The habitat value of the proposed bank site could be improved with the establishment of native vegetation and increased tidal flow.

### **1.1 Project Location**

The proposed bank site is a portion of a 35.24 acre parcel (Block 225, Lot 12) flanked by on the east and south sides by Mill Creek and Millridge Road on the west (Figure 2). The proposed restoration area is 23.96 acres of degraded tidal wetlands on the eastern portion of the lot. The remaining 11.28 acres of the lot are recreational ballfields on western upland portion of the lot.

### **1.2 Project Background**

A preliminary assessment of the Mill Creek Point site in the Town of Secaucus, Hudson County, New Jersey was conducted in September and October of 2013 with the objective of evaluating the site’s potential to serve as a viable mitigation bank site. The site consists of *Phragmites* dominated tidal wetlands associated with Mill Creek and the Hackensack River, open water (Mill Creek), and upland habitats.

The proposed mitigation bank site is located in the Hackensack Meadowlands, 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 establishment of the proposed 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), 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 include: (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. The 2007 Target Ecosystem Characteristics for the Hudson Raritan Estuary report developed by Cornell University and the Hudson River Foundation set the goal and objectives for the HRE Study. 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 Meadowland Commission (NJMC) are conducting a focused study on possibilities to restore degraded habitat within the Hackensack Meadowlands. The Meadowlands Comprehensive Restoration Implementation Plan will identify specific sites to restore the Target Ecosystem Characteristic habitats. The proposed project is also consistent with and supportive of wetland restoration initiatives proposed and planned by the NJMC including the Mill Creek Marsh (128 acres; constructed in 1999) and Secaucus High School Marsh (38 acres; 2005) projects. In addition, the proposed project 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 a mitigation bank in this region is not only consistent with existing restoration initiatives, but will help to improve the overall value of the region's habitat by contributing to a large expanse of connected fish and wildlife habitat. The following sections describe the existing conditions of the proposed bank site.

Evergreen met with the standing Interagency Review Team (IRT) in the Meadowlands, the Meadowlands Interagency Mitigation Advisory Committee (MIMAC) on December 4, 2013 (conference call) and January 15, 2014. The IRT provided advice, direction and offered comments. Evergreen submitted to the MIMAC a Site Assessment Report in November 2013. Evergreen met with NJDEP Land Use and the Bureau of Environmental Evaluation and Risk Assessment (BEERA) in December 2013.

### **1.3 Regulatory Framework**

The mitigation 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 mitigation bank will provide mitigation for impacts to aquatic resources including impacts to wetlands.

The mitigation bank will be developed in accordance with the following 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 state.

- 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.)
- Rules on Coastal Zone Management (N.J.A.C. 7:7E-1.1 et seq.)

Federal rules for a complete Prospectus detail requirements as follows:

*(2) Prospectus*

*A complete prospectus includes the following information:*

- (i) The objectives of the proposed mitigation bank or in-lieu fee program.*
- (ii) How the mitigation bank or in-lieu fee program will be established and operated.*
- (iii) The proposed service area.*
- (iv) The general need for and technical feasibility of the proposed mitigation bank or in-lieu fee program.*
- (v) The proposed ownership arrangements and long-term management strategy for the mitigation bank or in-lieu fee project sites.*
- (vi) The qualifications of the sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the sponsor.*
- (vii) For a proposed mitigation bank, the prospectus must also address:*
  - (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;*

## **2.0 Prospectus**

Pursuant to the federal rules, this section provides the information necessary for a Prospectus and associated public notice. Details of the proposed mitigation plan are provided in Section 3.0 - Mitigation Plan.

### **(i) Objectives of the proposed mitigation bank**

The applicant and Bank Sponsor, Evergreen, has requested Department of the Army approval of the Prospectus to establish a mitigation bank. The Bank would establish and maintain 24 acres of wetland and upland habitat and provide wetland and aquatic resource mitigation for

permitted projects within the region as defined by the service area. The area currently consists of tidally restricted and filled marsh dominated by Phragmites.

**(ii) How the mitigation bank will be established and operated**

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.

The acres of wetland habitat implemented by the establishment of the Bank will be categorized as restoration and subcategories rehabilitation and re-establishment. A ratio of acres of habitat by wetland category to mitigation credits generation will be a 2:1 ratio for restoration / rehabilitation of tidal marsh and a 1:1 ratio for restoration/re-establishment of wetland. The 2:1 ratio for restoration/rehabilitation is consistent with Corps' guidance for emergent wetland habitat as well as ratios employed by NJDEP for other wetland mitigation sites and banks in the state and reflects the contaminant removal component of the mitigation initiative. The mitigation complies with the federal definition of restoration/rehabilitation as a degraded wetland system, cut off from natural tidal hydrology and invaded by non-native species will have its hydrology and native plant community restored and sediments with elevated levels of contaminants removed and replaced with clean fill.

The 1:1 ratio for restoration/re-establishment is consistent with Corps' guidance for emergent wetland habitat as well as ratios employed at other mitigation sites and banks where restoration results in a net gain of wetland acreage. The mitigation complies with the federal definition of restoration/re-establishment as a man-filled wetland system, currently uplands composed of fill will be removed and have its hydrology and native plant community restored.

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. At present, Evergreen anticipates the following mitigation acres and credits on-site as a result of this mitigation plan.

**Table 1: Wetland Mitigation Acres and Credits for the Evergreen Mill Creek Point Mitigation Bank**

<b>Mitigation Category</b>	<b>Acres</b>	<b>Ratio</b>	<b>Credits</b>
Wetland Reestablishment	0.40	1 :1	0.40
Open Water/Mudflat Reestablishment	0.20	1 :1	0.20
Wetland Rehabilitation	17.66	2 :1	8.83
Open Water/Mudflat Rehabilitation	0.40	2 :1	0.20
Upland Enhancement	0.70	6 :1	0.12
Open Water/Mudflat Preservation	3.80	27 :1	0.14
Upland Preservation	0.80	27 :1	0.03
<b>Total</b>	<b>23.96</b>		<b>9.92</b>

Permitted projects proposed for utilization of 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 Interagency Review Team (IRT) each time credits are debited or additional credits are approved.

Upon submittal of all appropriate documentation by the Sponsor and subsequent approval by the IRT, it is agreed that credits will become available for use by the Sponsor for sale to approved permittees, or for transfer to a third party in accordance with the credit totals presented in Table 1. Table 2 presents acres of existing habitat on site.

**Table 2: Existing Vegetative Community Acreages**

Habitat	Acres
Phragmites Wetlands	17.66
Open Water/Mudflat	4.00
Phragmites Uplands	1.50
Uplands Scrub	0.80
<b>Total</b>	<b>23.96</b>

**(iii) The proposed service area**

The proposed Service Area is depicted on Figure XX. The service area includes the Hackensack Meadowlands District (HMD) and HUC-11 hydrologic unit code watershed numbers as follows:

- 020-30-103-170
- 020-30-103-180 (Bank location)
- 020-30-104-010
- 020-30-101-170
- 020-30-103-150 (portion in HMD)

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.

**(iv) The general need for and technical feasibility of the proposed mitigation bank**

There is a general need for wetland mitigation in the Meadowlands region. Mitigation for permitted projects in need of such mitigation is limited in the region. The proposed wetland mitigation 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. The earthwork and hydrologic impediment removal will restore tidal flow and exchange. Non-native invasive species currently dominating the site including Phragmites will be treated with herbicides and native plantings will be introduced to restore the wetland habitat.

The concept described above has been implemented on many tidal restoration sites in the state and in the Meadowlands and is 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.

**(v) The proposed ownership arrangements and long-term management strategy for the mitigation bank site**

The mitigation bank property is owned by Secaucus Township. The mitigation bank would be monitored and maintained by the Sponsor through a monitoring period until performance metrics are achieved. The entire Bank area would be protected in perpetuity under a Conservation Deed Restriction/Easement.

Upon completion of the monitoring period, the Sponsor will monitor and maintain the Bank until all credits are sold or for 10 years which is later. Subsequently, the bank will be owned by Secaucus Township and protected under the Conservation Deed Restriction.

**(vi) The qualifications of the sponsor**

The Sponsor has implemented mitigation banks and mitigation sites in the state for several years. These projects have been approved by the regulatory agencies and have passed monitoring and maintenance periods successfully. The Sponsor has developed other wetland mitigations bank in the HMD, Cape May, Gloucester and Hunterdon Counties. The Evergreen MRI3 Mitigation Bank, which is a tidal wetland mitigation bank, is a state and federally approved bank as per the U.S. Army Corps of Engineers. The Sponsor is qualified to implement a mitigation bank. Resumes will be supplied upon request.

**(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 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. Removal of the sediments will remove contaminant loadings from the watershed and provide for 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, open water and mudflat habitat, generally inundated twice a day during the tidal cycle. 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 site will be enhanced with excavated material and planted and seeded with native species.

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 tides with the marsh plain vegetated with native species. Wildlife and fish habitat including habitat for threatened and endangered species will be restored in the aquatic community as well as 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.

See **Attachment 1 - Functional Value Assessment** for a complete analysis of existing and proposed functions, values and services.

Details regarding the mitigation bank's existing conditions, design, mitigation benefits, functions and services provided are presented in the following section, Section 3.0 - Mitigation Plan.

### **3.0 Mitigation Plan**

**3.1 (1) Objectives. A description of the resource type(s) and amount(s) that will be provided, the method of compensation (i.e., restoration, establishment, enhancement, and/or preservation).**

The acres of wetland habitat implemented by the establishment of the Bank will be categorized as restoration and subcategories rehabilitation and re-establishment. A ratio of acres of habitat by wetland category to mitigation credits generation will be a 2:1 ratio for restoration / rehabilitation of tidal marsh and a 1:1 ratio for restoration/re-establishment of wetland. The 2:1 ratio for restoration/rehabilitation is consistent with Corps' guidance for emergent wetland habitat as well as ratios employed by NJDEP for other wetland mitigation sites and banks in the state and reflects the contaminant removal component of the mitigation initiative. The mitigation complies with the federal definition of restoration/rehabilitation as a degraded wetland system, cut off from natural tidal hydrology and invaded by non-native species will have its hydrology and native plant community restored and sediments with elevated levels of contaminants removed and replaced with clean fill.

The 1:1 ratio for restoration/re-establishment is consistent with Corps' guidance for emergent wetland habitat as well as ratios employed at other mitigation sites and banks where restoration results in a net gain of wetland acreage. The mitigation complies with the federal definition of restoration/re-establishment as a man-filled wetland system, currently uplands composed of fill will be removed and have its hydrology and native plant community restored.

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. At present, Evergreen anticipates the following mitigation acres and credits on-site as a result of this mitigation plan.

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Permitted projects proposed for utilization of 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 IRT each time credits are debited or additional credits are approved. Upon submittal of all appropriate documentation by the Sponsor and subsequent approval by the IRT, it is agreed that credits will become available for use by the Sponsor for sale to approved permittees, or for transfer to a third party in accordance with the credit totals presented in Table 1.

**3.2 (2) Site selection. A description of the factors considered during the site selection process.**

The bank site was selected in the Meadowlands region based on previous land use and degradation of wetlands and proximity to other successful wetland restoration sites. The site is restricted from the tides and partially filled. The site is a tidally restricted, human-altered and partially filled wetland ideally suited for classic marsh restoration implementation through removal of fill material resulting in marsh restoration and reconnection. The proposed mitigation site is also adjacent to several successful mitigation sites such as Secaucus High School and Mill Creek providing biobenchmarks and affirmation that mitigation can be successful in this location of the watershed.

**3.3 (3) Site protection instrument. A description of the legal arrangements and instrument, including site ownership.**

The bank site will be protected under a conservation deed restriction as employed by NJDEP.

**3.4 (4) Baseline information. A description of the ecological characteristics of the proposed compensatory mitigation project site.**

**3.4.1 Existing Conditions/Site Survey**

As stated above, the proposed mitigation bank site is on a 23.96 acre portion of Block 225, Lot 12 in the Town of Secaucus, New Jersey. The site consists of predominantly wetland and open

water habitats with upland areas along the western portion of the site adjacent to recreational ballfields. The bank site is shown on the tax map presented in Figure 2.

### 3.4.2 Topography

Topographic elevation at the bank site ranges from 3 to 13 feet based on USACE 2012 Post Sandy LIDAR (elevations relative to NGVD29 feet). During a 2013 visit to the bank site, a high accuracy Trimble RTK GeoXR GPS was utilized to obtain spot elevations across the proposed bank site. These elevations confirm LIDAR elevations and ranged from 2.65 to 12.29 (Figure 3).

### 3.4.3 Hydrology

Located within the Hackensack River watershed, the proposed 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 4). 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. Tide information from the MERI Mill Creek and Secaucus High School sites is available to estimate the local regime at the proposed 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 proposed 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).

**Table 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

### 3.4.4 Wetlands and Vegetation Communities

As discussed above, the proposed bank site has upland and wetland areas. The NJDEP classifies the site as saline marshes (Figure 5). 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.

#### 3.4.5 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 6).

#### 3.4.6 Contamination

Sediment sampling was conducted during field investigations of this site in September and October of 2013 and a Site Assessment Report was submitted to the IRT in November 2013. (Figure 3). 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 site is connected to the Hackensack River known to contain and convey regional 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 man-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).

#### 3.4.7 Threatened and Endangered Species

The proposed mitigation bank is within the habitat range of several protected wildlife species (Figure 7). The New Jersey Landscape Project indicates that the emergent wetlands on the bank site can provide habitat for many of these species, including glossy ibis (NJ-special concern [SC]), little blue heron (NJ-SC), northern Harrier (NJ-endangered), Savannah sparrow (NJ-threatened), snowy egret (NJ-SC), and yellow-crowned night heron (NJ-threatened).

**3.5 (5) Determination of credits. A description of the number of credits to be provided, including a brief explanation of the rationale for this determination.**

**3.5.1 Credit Generation**

Credit generation is based on the value of the site in current baseline condition, the mitigation design, the ecological uplift from existing baseline conditions and regulatory definitions of mitigation. Determination of credits is determined with the IRT who often base credit ratios on ecological factors as well as policy and regulatory dictates as well as precedent established at other mitigation banks and sites in the state.

Credit generation is also predicated on the functional value assessment of the mitigation design as presented in Attachment 1 - Functional Value Assessment. The following section presents a description of each mitigation category ratio and a brief explanation of the rationale for this determination. The complete assessment of credit ratios entails a review of baseline conditions, the mitigation design plan, 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.

- **Wetland Restoration/Rehabilitation 2:1**

The predominant wetland mitigation category in the bank is restoration/rehabilitation of tidal marsh. The restoration activity is conducted pursuant to the federal definition of restoration as per the federal rules of 2008 as follows:

*“Restoration means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: reestablishment and rehabilitation. Re-establishment means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions. Rehabilitation means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/ historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.”*

The restoration/rehabilitation of the Mill Creek Point (MCP) site has a high probability of successfully restoring the tidal marsh as removal of the tidal restrictions and excavation of the site to tidal inundation range is highly feasible with adjacent sources of tidal hydrology readily available. As indicated above in the Federal Rules, alteration of the “chemical” characteristics of the site is a valuable component to the aquatic ecosystem. Removal of sediments laden with contaminants and exposure of clean sediments or importation of clean sediments will drastically alter the chemical characteristics of the site with the goal of returning natural/historical functions to a former and degraded aquatic resource. On an acre-for-acre quantitative basis, the mitigation bank has the potential to result in restoration and replacement of lost wetlands in the service area on an acre-for-acre (1:1) basis; however the 2:1 mitigation ratio reflects the

regulatory classification of the restricted and degraded wetlands on-site and the restoration of these wetlands to functioning tidal wetland. The high probability of successful restoration is also predicated on the Evergreen MRI3 Mitigation Bank and Secaucus High School Mitigation Site.

- **Wetland Restoration/Re-establishment 1:1**

Wetland restoration/re-establishment entails the conversion of manmade upland areas to wetland resulting in a net gain of wetland acreage, function and value. The MCP Bank contains uplands which are the result of historical manmade activities at elevations above tidal inundation. The removal of tidal restrictions and the lowering of upland elevations to the tidal inundation range will serve to re-create wetlands where they once existed. A 1:1 ratio is proposed consistent with the net gain of wetland acreage and replacement of lost functions and values, regulatory applications, and precedent at many wetland mitigation sites and banks in the state.

- **Upland Enhancement 6:1**

The review of the baseline analysis for this mitigation bank project, the SAMP and AVID, studies of the Meadowlands, and discussions with naturalists expert in the habitats of the Meadowlands all note the unique nature of available upland habitat in the middle of the wide expanse of marsh and water referred to as the Meadowlands. It is apparent in general ecological terms and in terms of the specific site characteristics that uplands in the tidal marsh environment provide nesting, resting and breeding habitat and refuge for many wildlife species. Raptors use the uplands for roosting. Passerines perch and nest in upland trees and use these areas to forage and rest during migrations. Waterfowl use such areas for nesting. Terrapins also nest in uplands.

The mitigation plan in general removes much of the manmade fill and restores wetland in a classic restoration implementation plan. However, the design also recognizes that the upland habitat is of value and some areas should remain or be enhanced. In the category of enhancement it is proposed that upland edges of the site be raised in elevation and vegetated with native species.

- **Preservation 27:1**

Several areas of the site are to remain and will serve as protected buffer. These extant habitats will be protected under a conservation deed restriction in perpetuity. These preservation areas are valuable in and of themselves, but could be subject to development threat were the Town to propose expanding the adjacent recreation fields. 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 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.

### 3.5.2 Credit Release Schedule

Subject to review and approval by the Corps and NJDEP in consultation with the IRT, credits from the bank will be released for use according to the following schedule:

1. Ten (10) percent of the credits shall be released upon completion of both of the following:
  - i. Signing of the Mitigation Banking Instrument; and
  - ii. Compliance with all pre-release credit sale conditions in the MBI approving the bank, such as securing all permits, posting adequate and effective financial assurance, and completing the conservation restriction;
2. Up to twenty (20) percent of the credits shall be released upon successful establishment of the approved hydrologic regime, so that this regime will remain over time under normal hydrologic conditions;
3. Up to ten (10) percent of the credits shall be released upon completion of planting as required in the Mitigation Banking Instrument (MBI) approving the bank;
4. Up to twenty (20) percent of the credits shall be released when monitoring indicates that the performance standards in the MBI approving the bank have been met for one year;
5. Up to ten (10) percent of the credits shall be released when monitoring indicates that the performance standards in the MBI approving the bank have been met for two years; and
6. Up to ten (10) percent of the credits shall be released when monitoring indicates that the performance standards in the MBI approving the bank have been met for three years; and
7. Up to ten (10) percent of the credits shall be released when monitoring indicates that the performance standards in the MBI approving the bank have been met for four years; and
8. Up to ten (10) percent of the credits shall be released when monitoring indicates that the performance standards in the MBI approving the bank have been met for five years.

### **3.6 (6) Mitigation work plan and Bank Service Area. Detailed written specifications and work descriptions for the compensatory mitigation project.**

The bank mitigation plan focuses on the restoration of tidal hydrology, removal of sediment with elevated contaminant levels, and native tidal marsh vegetation. Target vegetative communities include brackish marsh species such as Smooth cordgrass (*Spartina alterniflora*).

All areas of *Phragmites australis* will be treated with herbicide and excavated to lower the elevation to within the low to mean spring high water mark tidal range. The excavated material would be reused in upland areas or transported off site. These areas would be converted to emergent marsh of native species such as *S. alterniflora*, Saltmeadow cordgrass (*S. patens*), spike grass (*Distichlis spicata*) and saltmeadow rush (*Juncus gerardii*). Mudflat and open water habitats would also be restored.

The acreage of existing wetland and upland habitats that could be restored is estimated in Table 2.

#### • **Service Area**

The proposed service area is depicted on Figure XX. The Service Area includes the Hackensack Meadowlands District (HMD) and HUC-11 hydrologic unit code watershed numbers as follows:

020-30-103-170  
020-30-103-180 (Bank location)  
020-30-104-010  
020-30-101-170  
020-30-103-150 (portion in HMD)

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.

### **3.7 (7) Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.**

The mitigation bank would be monitored for a five year performance period. 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. 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 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 remedial 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.

### **3.7.1 Phragmites australis Control**

During the monitoring and maintenance period, the applicant will conduct a *P. australis* control program as deemed necessary by monitoring data. This program will consist of herbicide spot treatment applications of *P. australis* plants within affected areas of the wetland. If Phragmites exceeds 5 percent of the vegetative cover, the applicant will initiate control measures.

### **3.8 (8) Performance standards. Ecologically-based standards that will be used to determine whether the compensatory mitigation project is achieving its objectives.**

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 2 increasing from 65 percent to 85 percent in Years 3 through 5. Invasives will be kept below 10 percent at all times.

All monitoring and maintenance conducted for the MCP 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 mitigation bank's success relative to performance standards and goals developed and to identify any problems requiring remedial action.

The success of the mitigation bank will be measured by performance standards. Post-construction monitoring and maintenance of the mitigation bank will be performed for three to five consecutive years, beginning with the first full growing season following completion of construction of the mitigation bank. The growing season is defined to begin June 1. If all plants are installed by June 1; that year will be considered Year 1 in the Bank's monitoring period subject to fall monitoring results demonstrating achievement of required success criteria of survival and coverage. The IRT reserves the right to assess the completion of planting based on a percentage of plants installed by the June 1 cutoff date and release a commensurate prorated proportional amount of credits.

If all plants are not installed by June 1 and the IRT chooses not to assess the partial completion of planting based on a percentage of plants installed by the June 1 cutoff date and release a commensurate prorated proportional amount of credits, the planting year will be considered Year 0 and Year 1 will not begin until the following calendar year. The IRT will inform the Sponsor of their decision upon receipt of the As-Planted Report.

The mitigation bank will be designed and implemented to meet performance standards that will serve as success criteria. Monitoring will measure the performance of the mitigation bank and results will be compared to performance standards. If the mitigation bank meets performance standards, success will be achieved. If the mitigation 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. If all milestone task success criteria and performance standards are achieved, the Corps and NJDEP in consultation with the IRT will release all eligible credits in accordance with the credit release schedule. However, in cases where some aspects of the mitigation bank have met success criteria, but others have not, the Corps and NJDEP in consultation with the IRT may assess discrete aspects of annual monitoring performance and authorize a partial release of credits based on proportional achievement of milestone task success criteria. This discretionary authority may be employed by the Corps and NJDEP in consultation with the IRT based on a prorated, proportional assessment of the numerous success criteria and performance standards to derive a partial credit release.

The Corps and NJDEP, in consultation with the IRT, will confirm within 60 days whether or not the tasks are successfully completed for purposes of releasing credits.

Performance Standards by designed habitat zone are described below:

### 3.8.1 Emergent Marsh

- Establish Hydrologic Regime

Demonstrate the grading has been implemented as per the approved design plans and the emergent marsh is saturated or inundated by the daily tides.

- Completion of Planting

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

- Hydrologic Performance Standard

Years 1 through 3 to 5; demonstrate daily tidal saturation or inundation.

- Vegetative Performance Standard

Years 1 through 3 to 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 3 to 5; demonstrate invasive cover is less than 10 percent.

Basis:

Vegetative survival of plantings will be based on the target planting density of 4840 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) and *Rosa multiflora* (Multiflora rose). Cattails are expected to colonize the site and are not considered invasive.

### 3.8.2 Open Water and Mudflat

- Establish Hydrologic Regime

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

- Hydrologic Performance Standard

Years 1 through 3 to 5; demonstrate daily tidal saturation or inundation.

- Vegetative Performance Standard

Years 1 through 3 to 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) and *Rosa multiflora* (Multiflora rose). Cattails are expected to colonize the site and are not considered invasive.

### 3.8.3 Upland Island Habitat

- Completion of Planting

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

- Vegetative Performance Standard

Years 1 through 3 to 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 75 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 320 woody plants per acre. The edges at the perimeter of the bank will be seeded and planted with woody species to develop habitat for terrapins, 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) and *Rosa multiflora* (Multiflora rose).

**3.9 (9) Monitoring requirements. A description of parameters to be monitored in order to determine if the compensatory mitigation project is on track to meet performance standards.**

The following monitoring and maintenance plan establishes guidelines to measure success of the mitigation bank relative to performance standards. The plan also includes monitoring and maintenance requirements to uncover and correct deficiencies. Access to the mitigation bank site will be conducted by foot and through the use of kayaks as necessary in the future. Monitoring will address wetland and upland plant communities by zone as well as hydrology of the wetland community. Herbaceous cover will be monitored to determine coverage and survival. Woody species of the uplands will be monitored for survival and coverage. Hydrology of the tidal marsh will be monitored via daily observations and time lapse photography. Invasive species will be monitored based on percent cover.

Monitoring will be conducted until such time that the Corps and NJDEP are confident that success is being achieved (i.e., performance standards are attained). The period for monitoring is three to five years; however, it may be necessary to extend this period if the mitigation bank does not achieve performance standards within that time period.

As-built drawings of the wetland construction activities and a post-construction report will be submitted to the Corps and NJDEP within 60 days from the date of the completion of construction and planting. The as-built drawings shall include all aspects of the final grading elevations and planting arrangements of the wetland mitigation bank. Annual reports will be submitted to the Corps and NJDEP no later than December 31 of each year, for three to five years following the first full growing season after completion of construction of the wetland mitigation and/or initiation of the wetland planting activities.

In accordance with anticipated permit requirements, annual reports will include:

1. A bank plan showing the grading, hydrologic and planting changes, if any, made during the year that is the subject of the report.
2. A detailed narrative summarizing the condition of the mitigation bank and all regular maintenance activities;
3. Identification of plant species, along with their estimated relative percent cover, along transects using plots measuring one meter square with at least one representative transect located in each habitat ecotone within the bank.
4. Photographs showing all representative areas of the bank taken at least once each year during the period between June 1 and November 1.

### **3.9.1 Monitoring Of Vegetation Establishment**

- **3.9.1.1 Emergent Marsh**

Standard statistical methods will be employed to monitor the development of vegetative cover and dominance patterns within the emergent marsh portions of the bank. The vegetation sampling program will be conducted once yearly in late summer/early fall throughout the monitoring period. Permanent transects will be established within the emergent wetland 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, as well as a visual estimate of the ground cover by individual species. Using these data, the following statistics will be generated: the total percent ground cover of live vegetation and percent cover by individual species for each transect, 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.

- **3.9.1.4 Vegetation Mapping**

Within the first annual report, an "as-built" drawing will be included that depicts final grading elevations and planting arrangements of the wetland mitigation bank. Vegetation cover maps at a scale of 1 inch equals 100 feet or larger will be prepared for subsequent monitoring years.

- **3.9.1.5 Bank Photographs**

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.

### **3.9.2 Monitoring Of Hydrology Establishment**

- **3.9.2.1 Emergent Marsh**

Field observations and photographic documentation on the establishment of tidal flow, including vegetative response to hydrology, will be made during the monitoring period. During the first year monitoring period, time-lapse photographs will be taken of the movement of the tide through channels and across the marsh plain throughout one complete tidal cycle to illustrate that tidewaters flood and ebb on a typical day. Additionally, field observations will be augmented by the placement of a calibrated tidal staff gage at a representative location within the emergent marsh portion of the mitigation bank to monitor tidal inundation and tide height. Observations of erosion will be made, if any.

- **3.9.2.3 Open Water Mudflat**

This area will consist of tidal channels and associated mudflat. These areas will not be planted. Field observations and photographic documentation on the establishment of tidal flow, including

vegetative response to hydrology, will be made during the monitoring period. During the first year monitoring period, time-lapse photographs will be taken of the movement of the tide through channels and across the marsh plain throughout one complete tidal cycle to illustrate that tidewaters flood and ebb on a typical day. Additionally, field observations will be augmented by the placement of a calibrated tidal staff gage at a representative location within the open water mudflat portion of the mitigation bank to monitor tidal inundation and tide height. Observations of erosion will be made, if any.

### **3.9.3 Conclusions and Recommendations**

Each annual monitoring report will include a conclusions and recommendations section consisting of professional observations. General observations of wildlife utilization of the mitigation bank will be made, as well as observations of herbivory pressures and any encroachment of common reed (*Phragmites australis*). Statistical data developed from monitoring activities will be evaluated and discussed relative to anticipated performance standards. Recommendations for maintenance and corrective measures relative to anticipated performance standards will be included in this section of each annual monitoring report.

### **3.10 (10) Long-term management plan. A description of how the compensatory mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource.**

After the initial three to five year monitoring period beginning upon completion of construction and planting, the Sponsor shall continue to provide annual monitoring reports to the Corps and NJDEP on the long term success of the Bank and to identify any problems requiring remedial action. Any such remedial action shall be taken in accordance with the Banking Instrument. The Bank will be protected in perpetuity by recording a Conservation Deed Restriction / Easement on the property.

Long term monitoring refers to the time period subsequent to mitigation bank performance attainment of milestones and commensurate credit release. Long term monitoring begins subsequent to the bank achieving all milestones and the IRT approving the release of all bank credits. At this juncture of the mitigation bank, the sponsor will continue monitoring until all credits are sold or for a total of ten years, whichever comes last. Under the anticipated schedule the long term monitoring will begin in Year 6, after the bank has met all performance standards and all credits have been released in Year 5. At the time of commencement of long-term monitoring the bank will have met all success criteria and a wetland delineation of the bank site will have been conducted to confirm the jurisdictional limits of wetlands established within the bank. As a result, the long term monitoring data provided will be used to ensure that the bank continues to meet the achieved performance standards. The monitoring program will be less rigorous than the milestone monitoring program of the first five years, but serve to provide the IRT a concise assessment of bank status and condition.

Annual reports will be submitted to the Corps and NJDEP no later than December 31 of each year, until either all credits are sold or until the tenth year following construction and planting, whichever comes last.

### **3.10.1 Monitoring of Vegetation and Hydrology**

#### **• 3.10.1.1 Estuarine Emergent Wetland**

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 yearly 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.

#### **• 3.10.1.2 Site Photographs**

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.

### **3.10.2 Conclusions and Recommendations**

Each long term monitoring report will include a conclusions and recommendations section consisting of professional observations. General observations of wildlife utilization of the bank will be made, as well as observations on herbivory pressures and any encroachment of invasive species. Statistical data developed from monitoring activities will be evaluated and discussed relative to achieved milestones. Recommendations for maintenance and corrective measures relative to achieved milestones will be included in this section of each monitoring report.

### **3.10.3 Long Term Maintenance Plan**

During the long term monitoring period, the Sponsor shall also be responsible for long term maintenance. The primary focus of the long-term maintenance plan will be to initiate management and remedial actions necessary to maintain the bank at the level of achieved milestones as specified in the performance standards. Maintenance efforts will be designed to ensure maintenance of the target vegetation types, the prevention of invasive species encroachment within the tidal marsh zone, and curtailment of herbivory. Maintenance tasks detailed below will be undertaken as directed by the results of the long term monitoring program.

### **3.10.3.1 Invasive Species Control**

During the long term 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 of invasive species plants within affected areas of the wetland. If invasive species exceed 5 percent of the vegetative cover, the Sponsor will initiate control measures.

### **3.10.4 Long Term Stewardship**

Long term management will be conducted after the five year monitoring performance period until the bank credits are sold. After the bank is sold out of credits, the bank will be protected under the CDR. The Town of Secaucus 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."

### **3.11 (11) Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project.**

The bank will be monitored annually. Evergreen will work with the IRT to make field adjustments and decisions based on interim observations. Some adaptive management initiatives may include mid-season re-planting, treatment of Phragmites or seeding of an unstable slope. Adaptive management will be conducted in consultation with the IRT to make field adjustments based on site microtopography or specific issues.

### **3.12 (12) Financial assurances. A description of financial assurances that will be provided.**

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 IRT. 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 and applied to a permitted project or for a total of 10 years after the date of completion of construction and initial planting, whichever comes last.

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 mitigation project 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 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 mitigation 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.

#### **4.0 Conclusion**

Evergreen Environmental, LLC ("Evergreen") proposes to develop the Evergreen Mill Creek Point Mitigation Bank. The mitigation 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 mitigation bank will provide mitigation for impacts to aquatic resources including impacts to wetlands.

The mitigation bank will be developed in accordance with the following 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 state.

- 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.)
- Rules on Coastal Zone Management (N.J.A.C. 7:7E-1.1 et seq.)

Once implemented, the bank will be a combination of brackish emergent marsh, open water channels and mudflat habitat, generally exposed twice a day during the tidal cycle. 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. As has been observed at other restoration sites in the HMD, it is expected that brackish species will volunteer including cattail, a native species endemic to the Meadowlands. The upland habitat will be enhanced with excavated material and planted and seeded with native species. 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 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 tides with the marsh plain vegetated with native species. Wildlife and fish habitat, including habitat for threatened and endangered species, will be enhanced in the aquatic community as well as 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.

Emergent wetland areas will be planted with tidal marsh herbaceous species such as *Spartina* species. Uplands will be planted with bayberry, red cedar, gray birch, sweet gum, cottonwood and *Baccharis* and a seed mix of coastal species such as *Panicum*.

Some of the excavated material may be re-used off-site at an approved location. Some of the excavated material may be re-used onsite within upland areas to enhance upland habitat. The design plan will restore the tidal wetland function and value of the site. Increased exposure to tidal flushing will improve the ability of the marsh to ameliorate water quality and make the marsh more available to estuarine aquatic life. The native plants will improve the foraging habitat for shore birds, water fowl and long-legged wading birds such as yellow-crowned night heron.

The acres of wetland habitat implemented by the establishment of the Bank will be categorized as restoration and subcategories rehabilitation and re-establishment. A ratio of acres of habitat by wetland category to mitigation credits generation will be a 2:1 ratio for restoration / rehabilitation of tidal marsh and a 1:1 ratio for restoration/re-establishment of wetland. The 2:1 ratio for restoration/rehabilitation is consistent with Corps' guidance for emergent wetland habitat as well as ratios employed by NJDEP for other wetland mitigation sites and banks in the state. The mitigation complies with the federal definition of restoration/rehabilitation as a degraded wetland system, cut off from natural tidal hydrology and invaded by non-native species will have its hydrology, chemical characteristics and native plant community restored.

The 1:1 ratio for restoration/re-establishment is consistent with Corps' guidance for emergent wetland habitat as well as ratios employed at other mitigation sites and banks where restoration results in a net gain of wetland acreage. The mitigation complies with the federal definition of restoration/re-establishment as a man-filled wetland system will be excavated and have its hydrology and native plant community restored.

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. At present, Evergreen anticipates the following mitigation acres and credits on-site as a result of this mitigation plan.

There is a great need for wetland mitigation in the Meadowlands region. Mitigation for permitted private sector projects in need of such mitigation is lacking in the region. Currently there are 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 whose projects have a component within the HMD. The other bank (MRI3) is much smaller and only releases between 2 and 4 credits per year pending performance metric attainment. The proposed Mill Creek Point wetland mitigation bank is technically feasible and incorporates design concepts applied successfully to other mitigation sites in the state over the past several decades. The proposed concept involves the removal of tidal restrictions, excavation of fill material and incorporation of tidal channels so as to establish a tidal regime suitable for emergent marsh habitat.

Evergreen as Sponsor will secure sufficient funds and financial assurances 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 IRT. 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 and applied to a permitted project or for a total of 10 years after the date of completion of construction and initial planting, whichever comes last.

Long term management will be conducted after the five year monitoring performance period until the bank credits are sold. After the bank is sold out of credits, the majority of the bank will be maintained under the CDR. The Town of Secaucus 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."

Subsequent to the Corps' prospectus public notice comment period, Evergreen will respond to comments, if any, and prepare a Mitigation Banking Instrument for the implementation and operation of the Evergreen Mill Creek Point Mitigation Bank.