

WETLAND DELINEATION REPORT

TOWN OF KEARNY
CITY OF JERSEY CITY
CITY OF BAYONNE
CITY OF HOBOKEN
TOWNSHIP OF WEEHAWKEN
HUDSON COUNTY, NEW JERSEY

Prepared For:

New Jersey Transit
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March 31, 2017

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1.0 INTRODUCTION

This Wetland Delineation Report (Report) was prepared by BEM Systems, Inc. (BEM) for New Jersey Transit Corporation (NJT), and is based on review of previous confirmed delineations-Jurisdictional Determinations (JD), baseline presence/absence of state and federal wetland and waters map review, 2016 and 2017 field wetland delineation efforts, and photo documentation of areas with characteristic wetland or upland vegetation within access restrictive active NJT rail corridors, where accessibility was limited. This report is focused on the Evaluation Limits (**Figure 1**), which encompasses the accessed rail corridor and immediately adjoining areas initiated at the western limits at Cedar Creek Marsh South proceeding east to the Koppers Koke property along the Morris and Essex Line in Kearny, crossing the Hackensack River to the Morris and Essex line connection at Hoboken Rail Yard, and into Jersey City along the rail corridor of the Hudson Bergen Light Rail (HBLR).

2.0 REGULATORY JURISDICTION

The Evaluation Limits are partially located within the New Jersey Sports and Exposition Authority (NJSEA) Meadowlands District bound limits, as shown on **Figure 1**. Wetland/waters of the United States identified within the Meadowlands District and tidal waters of the United States outside of the Meadowlands District up to the high water line¹ and 1,000 feet landward of the high water line, fall under the regulatory jurisdiction of the United States Army Corps of Engineers (USACE) - New York District. Whereas, the New Jersey Department of Environmental Protection (NJDEP) maintains regulatory jurisdiction over fresh water wetlands and state open waters identified outside the Meadowlands District boundaries.

For the western portion of the Evaluation Limits within the Meadowlands District, the USACE regulates wetlands and activities within wetlands pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), and Section 404 of the Clean Waters Act (33 U.S.C. 1344). For the eastern portion of the Evaluation Limits outside the Meadowlands District, the NJDEP regulates wetlands pursuant to the Freshwater Wetland Protection Act Rules (N.J.A.C. 7:7A).

3.0 EVALUATION LIMITS AND CONDITIONS

The Evaluation Limits extend from its western most limits at Cedar Creek Marsh South in the Town of Kearny (**Figure 1**), through the southern limits of the Koppers Koke property along the Morris and Essex Line, and proceeds across the Hackensack River, and into Jersey City at the Henderson Street Substation, located within the Hoboken Rail Yard.

¹ High tide line is the line of intersection of the land with the water's surface at the maximum height reached by a rising tide (<http://www.nwp.usace.army.mil/Missions/Regulatory/Jurisdiction.aspx>)

The Evaluation Limits are focused within an existing active NJT Morris and Essex rail corridor (**Figure 1**), excluding the Koppers Koke Site and the six-acre parcel that expanded analysis beyond the rail corridor. The Evaluation Limits also extend along the developed (ballast/impervious) and active rail corridor along the northern and the southern segments of the HBLR Line, terminating at the existing Port Imperial Station in Weehawken, and the Liberty State Park Station in Jersey City. Please see **Attachment C** for a full list of municipal tax block and lot designations this Report covers.

3.1 Cedar Creek Marsh South

As discussed, Cedar Creek Marsh South is located at the westernmost portion of the Evaluation Limits (**Figure 1**), and is bound by the Morris and Essex Line to the south and the Amtrak Northeast Corridor rail line to the north. This portion of the marsh area does not include Cedar Creek Marsh North, which is located to the north of the Amtrak Northeast Corridor.

3.1.1 Cedar Creek Marsh Fragmentation and Infrastructure

Historically, Cedar Creek Marsh was once a larger contiguous land mass that was directly hydrologically connected to the Hackensack River. Based on review of historic aerials, preceding the 1930s the contiguous Cedar Creek Marsh was filled, and fragmented/diked by man-made access roads and installed engineered drainage features. In addition Cedar Creek Marsh South had a pump station implemented to manipulate water levels and protect adjoining rail infrastructure from flooding, for this southern portion which functioned like an area of storm water detention. These fragmented areas of Cedar Creek Marsh are restricted from direct tidal influence from the Hackensack River. Due to the presence of tide gates Cedar Creek Marsh South is predominately supported by groundwater/water table of the Hackensack and overland surface water contributions from rain events. The tide gates also influence habitat function and value in Cedar Creek Marsh South. These fragmented marsh areas due to presence of tide gates restrict access for aquatic species that migrate up and down the Hackensack River. When comparing the habitat function, value and utilization between Cedar Creek Marsh South and the larger contiguous areas of marsh located within the meadowlands district boundary, Cedar Creek Marsh South is limited to aquatic species introduced and translocated by avian species when they forage and defecate eggs or inbreeding that occurs from isolated specimens.

Amtrak's Substation No. 41 is also located within Cedar Creek Marsh South, and is connected to multiple utility lines which traverse the Marsh. Additionally, multiple

utility towers have been placed within Cedar Creek Marsh South to energize Amtrak's Substation No. 41 and portions of the Northeast Corridor.

3.1.2 Cedar Creek Marsh South Hydrology

Cedar Creek Marsh South is hydrologically connected to the Cedar Creek Marsh North area via a concrete culvert located to the left of the existing parking lot to the east of the Marsh, and is connected to the wetlands to the east of the northern portion of the Cedar Creek Marsh via an existing drainage swale. The Marsh is also hydrologically maintained to minimize flooding to rail infrastructure by an existing pump station that diverts waters.

3.1.3 Cedar Creek Marsh South Vegetation

Cedar Creek Marsh South is comprised of a non-tidal open water resource, with an emergent/scrub shrub fringe area located around the perimeter of the Marsh. Scrub shrub and emergent non-native vegetation are also present on smaller elevated landmasses within the Marsh. The vegetation observed along the waters of Cedar Creek Marsh South is common to historically altered wetland/water areas of the Meadowlands.

In 2009, a Wetland Delineation Report was prepared for the Portal Bridge Capacity Enhancement Project for NJT, which included a review of wetlands/waters in Cedar Creek Marsh South. The report was then submitted to the USACE and wetland/water limits were confirmed via a USACE JD (File No. NAN-2009-012220W CA).

As wetland/water resources in Cedar Creek Marsh South were already jurisdictionally confirmed by the USACE, and no development change has occurred to change the extent of resources, and the fact that it is a highly active rail corridor, it was determined that no field analysis or further review would be required as part of this Report to define wetland/waters in Cedar Creek Marsh South.

3.2 Main Evaluation Area

The Main Evaluation Area encompasses and is located north of the Morris and Essex Line and west of the Hackensack River, and includes a portion of the property owned by the Hudson County Improvement Authority (HCIA), commonly referred to as the Koppers Koke Site, and the six-acre parcel, also located in the Town of Kearny (**Figure 1**).

The Koppers Koke Site was once used as a coal tar processing plant in the early 1900s. Throughout the 1900s, the Koppers Koke Site had been redeveloped and repurposed for industrial activities, up until the 1990s when use of the Koppers Koke Site was discontinued (**Figures 3 and 4**). From the 1990s until 2008, the land was left unused, and successional vegetation and wetland environments began to reclaim the maintained land. However, in 2008 remediation activities commenced, as outlined in the 2007 Remedial Action Work Plan Addendum (RAWPA), and included the placement of Processed Dredge Material (PDM) across the majority of the property in order to raise the surface elevation to at least 10 feet above mean seal level to minimize flood risk on the property, as the property is located within the floodplain of the Hackensack River. However, the PDM fill was not placed along the northern and southern boundary of the Main Evaluation Area, which is where BEM wetland scientists field verified the presence/absence of wetlands/waters during a 2016 field investigation.

As the remedial fill activities were located within a portion of wetland resources in the Meadowlands District, the activities were authorized under a USACE Individual Permit (File No. 1999-02120-2). The 7.3 acres of impacts to these wetlands were mitigation through the purchase of wetland mitigation bank credits from the MRI-3 mitigation bank. Additionally, and a NJDEP Multi-Permit under the Flood Hazard Area Control Act Rules (N.J.A.C. 7:13) and Coastal Zone Management Rules (N.J.A.C. 7:7), as the work was proposed within the floodplain of the Hackensack River and the NJDEP-regulated Waterfront Development Zone, (File No. 0907-08-0001.1) in 2008 and 2009.

The NJDEP's Land Use Land Cover 2015 data identifies freshwater wetlands along the southwestern border of the Koppers Koke property, while the NJDEP does not map wetlands on the six-acre parcel (**Figure 5**). The NWI (National Wetlands Inventory) Wetlands WebMapper identifies wetlands throughout the Koppers Koke Site (**Figure 6**). BEM field verified these data to be inaccurate, as PDM fill was placed onsite in 2008, filling the majority of wetlands (PEM5R, E2EM5P, PEM5As) shown on **Figure 6** within the property. The identified wetlands onsite were confirmed to be linear fragments of the original wetland that were previously present, before the PDM fill was placed onsite.

3.3 Hackensack River Crossing Area / Morris and Essex Line

Within the Evaluation Limits, the Morris and Essex Line extends from Cedar Creek Marsh South, and crosses the Hackensack River along the Lower Hackensack Bridge,

extending to the Hoboken Rail Yard (**Figure 1**). The dimensions of the Evaluation Limits along the Hackensack River Crossing area are 170 feet from the Kearny shore of the Hackensack River to the Jersey City shore, and 70 feet in width, as shown on **Drawing NR-002**.

In the 2016 *Morris and Essex Rail Line Wetland Delineation Report* prepared by Amy S. Greene Environmental Consultants, Inc. (**Attachment C**), assets along the Morris and Essex Line were field investigated for the presence or absence of wetlands within and adjacent to the line's right-of-way. During the field delineation, no wetland resources were observed at the location of the Hackensack Crossing area, both directly adjacent to the Hackensack River, and upland of the River (**Figure 1, Drawing NR-002**). Additionally, the NJDEP does not identify freshwater wetlands at this location, and the NWI Wetland Mapper does not identify wetlands along the banks of the Hackensack River at this location (**Figures 5 and 6**).

However, the Hackensack River channel itself is a regulated feature by the USACE New York District. Upon review of 40 CFR 230.3 – The Clean Water Act Definitions, the Hackensack River is classified as a water of the United States and is under the jurisdiction of the USACE, as it is subject to the ebb and flow of the tides. As shown on Drawing NR-002, 2.083 acres of the Hackensack River channel, or waters of the United States, are located within the Evaluation Area. Please see Section 5.0 of this Report for further discussion of the Hackensack River Crossing Area waters of the United States.

Proceeding east of the Hackensack River, the active Morris and Essex Line is entirely surrounded by densely developed urban areas in Jersey City, Hoboken and Weehawken. No wetlands are identified by the NJDEP or NWI along this rail right-of-way/corridor. The highly developed urban portion Evaluation Limits of the Morris and Essex Line proceeding east of the Hackensack River corridor did not include mapped State or Federal wetland resources. There is one mapped water body the Jersey City Reservoir #3 that is located north of the Evaluation limits and is a water body that is isolated by 14 foot high retaining walls. No further field survey of the Morris and Essex Line corridor was warranted.

3.4 HBLR Line

The HBLR Line extends from Tonnel Avenue in North Bergen to 8th Street in Bayonne, including one spur through West Bergen to West Avenue Station. The HBLR is owned and operated by NJT for commuter rail service.

The 17.5-mile HBLR system is predominantly located within highly urban, developed areas along the Hudson River. While the majority of the rail right-of-way and ballasts are comprised of or adjacent to impervious urban surfaces such as sidewalks, roads, parking areas and buildings, specific areas along the rail line in Jersey City are adjacent to vegetation and stormwater drainage swales. NJDEP's GeoWeb, depicts mapped fragmented wetlands to be in these areas. As such, the HBLR Line was deemed to require additional field investigations, further discussed in **Section 6.0** of this Report.

4.0 MAIN EVALUATION AREA WETLAND EVALUATION

As previously noted, prior to the start of the field delineation effort, BEM wetland scientists completed a desktop due diligence review of the Main Evaluation Area (**Figure 1**). In conjunction with BEM wetland scientist's extensive knowledge of New Jersey wetlands, other resources utilized included NJDEP's GeoWeb environmental mapper, the United States Fish and Wildlife Service (USFWS)-NWI's Wetland Mapper, the Natural Resource Conservation Service's (NRCS) Web Soil Survey mapper, historic aerial imagery, and recent aerial imagery. BEM's summary of the existing wetland/water conditions observed in the field is as follows:

4.1 Hydrology

The Hackensack River flows to the north and east of the property. The tidally-influenced Hackensack River is approximately 45 miles (72 km) long, and its fresh headwater contributions converge with tidal inputs from the Atlantic Ocean and Newark Bay, resulting in a brackish mix at the Meadowlands wetland preservation area-NJSEA. Waters from the Hackensack River ultimately discharge into Newark Bay (a sub-estuary of New York Harbor), when the tide recedes. These waters are classified by the NJDEP's Surface Water Quality Standards (N.J.A.C. 7:9B) as a Saline Estuary (SE1) (**Figure 5**).

The Main Evaluation Area is supported by groundwater inputs of the Hackensack and eventually drains precipitation and overland stormwater via a network of drainage swales and engineered pipes back to the Hackensack River. Due to present development and fill actions between the inland wetland areas and the Hackensack River, its hydrologic influence on the wetlands onsite is minimal, and these areas are primarily sourced by precipitation. Furthermore, the inland wetland area is surrounded by other contributing impervious surfaces (Route 7, adjacent industrial features), which act as a source of surface runoff water during precipitation events.

4.2 Vegetation

As the Koppers Koke property has been redeveloped under remedial brownfield permitted actions by others, and is currently filled with PDM, the wetland area identified on the property is one of the few remnant original fragmented vegetated areas on the Koppers Koke Site. The wetland area consists primarily of common reed (*Phragmites australis*), tree of heaven (*Ailanthus altissima*) and poison sumac (*Toxicodendron vernix*), as shown in **Attachment B**. Vegetation growing along the bulkheaded shoreline consists of successional native herbaceous and scrub shrub upland vegetation common to disturbed areas.

Vegetation surrounding the existing onsite stormwater detention basin consists of hydrophytic species, including common reed (*Phragmites australis*) and cattail (*Typha angustifolia*).

4.3 Soils

As shown on **Figure 7**, the property was previously dominated by the Secaucus and Westbrook soil series (SecA, SecB, [hydric] and WectA [non-hydric]). Per the NRCS Soil Series Description:

The Secaucus series consists of very deep, moderately well drained soils with moderately low through moderately high saturated hydraulic conductivity. These soils formed in a thick mantle of anthropogenically transported material consisting of a mixture of construction debris and other fill materials. These soils occur on anthropogenic landforms in and near major urbanized areas of the Northeast. Slope ranges from 0 to 8 percent.

And,

The Westbrook series consists of very deep, very poorly drained soils formed in organic deposits over loamy mineral material. They are in tidal marshes subject to inundation by salt water twice daily. Saturated hydraulic conductivity is moderately high to very high in the organic layers and low too high in the underlying mineral sediments.

Historically, the property was created by placing fill materials into open water or wetland areas prior to site operations in the early 1900s, as shown on **Figure 8**. Through time, the Secaucus and Westbrook soil series became the primary soil types

onsite, both of which are hydric, and supported the presence of wetlands on the property prior to the 2008 PDM discharge. With the PDM fill material discharges across the majority of the Koppers Koke Site in 2008, the previously existing mapped soil series were covered with PDM fill material. PDM has since become the primary soil type observed onsite during the delineation efforts.

4.4 FIELD DELINEATION RESULTS

On April 21st, July 2nd and September 16th 2016, BEM wetland scientists completed field investigations of the Main Evaluation Area, which included a walk-through of the property, and specifically, delineating the wetlands along the southwestern portion of the property. The field investigation and delineation tasks were completed pursuant to the USACE's Wetland Delineation Manual of 1987, which requires the evaluation of onsite hydrology, vegetation and soil characteristics present at the time of delineation, to accurately determine the location of wetlands onsite. Included with this Wetland Delineation Report are USACE-standard Data Forms, which document BEM's field results. See **Attachment B** for the Site Photograph Log, and **Attachment C** for the Wetland Data Forms.

The majority of the property consists of PDM fill, and while undeveloped, remains generally devoid of vegetation and standing surface water. While the entire property was examined, BEM wetland scientists focused their field investigation to three portions of the property, based on desktop guided research.

4.4.1 Northern Bulkheaded Shoreline

The majority of the property consists of PDM fill, and while undeveloped, this area remains primarily devoid of vegetation. The bulkheaded area along the northern shoreline is located at the base of the PDM fill, and is bounded by the sheet metal bulkhead, approximately 10 feet higher than the water level of the Hackensack River as observed during low tide conditions. Property investigations found that this northern area is not a wetland, but is comprised of altered successional urban non-native upland vegetation, as discussed below.

Hydrology

This northern area was once a part of the property-wide wetland and upland complex that claimed the undeveloped abandoned land in the 1990s. Once PDM fill material was placed onsite, effectively filling and covering the wetlands, this northern portion was one of the few areas that remained unfilled. This area was historically and currently remains hydrologically isolated from the adjacent Hackensack River.

Vegetation

Vegetation observed along the northern bulkheaded area consisted primarily of invasive herbaceous and scrub shrub species including common reed (*Phragmites australis*), marsh elder (*Iva frutescens*) and groundseltree (*Baccharis halimifolia*). As the area is not hydrologically connected to a water source, and depends on overland surface run off and precipitation as its main water source, hydrophytic vegetation was not observed.

Soils

As the property was covered by PDM fill material, the NRCS soil mapping is not applicable for the majority of the property. However, as the northern area is one of the few areas to remain uncovered, the NRCS identified Westbrook Series area remains consistent, and the upland environment this northern area displays. Auger soil samples revealed the soils to be of loose consistency, with visible fill debris and organic composition comprising the surface of the sampled locations.

4.4.2 Southwestern Wetland Area (Wetland Lines A and B)

The southwestern portion of the property is a vegetated area with standing water, located between the existing NJT Morris and Essex Line tracks, and the onsite PDM fill material. As a portion of this area was mapped by NJDEP to contain inland freshwater wetlands, BEM wetland scientists focused on this area during field delineation efforts. As a result of field analysis, BEM wetland scientists delineated 3.27 acres of wetland resources along the southwestern portion of the property (**Drawing NR-001**). See **Attachment C** for the corresponding Wetland Delineation Forms. Please note that during field investigation activities, a silt fence was observed at the toe of slope, demarking that those areas were being protected from filling actions onsite.

Hydrology

The southwestern area is shown to have standing water and seems to connect to a northern Hudson River tributary through stormwater drainage ditches, according to preliminary research using current aerial imagery and NJDEP's GeoWeb Environmental Mapper. Upon field inspection, this area remained consistent with aerial imagery. Standing surface water varied in depth throughout the length of the wetland area, ranging from approximately 5 inches to 4 feet.

Vegetation

Vegetation in this area is dominated by common reed (*Phragmites australis*), with Japanese knotweed (*Fallopia japonica*) and tree of heaven (*Ailanthus altissima*) interspersed throughout. These species are indicative of a disturbed or altered wetland and upland areas, especially along the silt fence perimeter of the PDM fill. No vegetation was observed within the areas filled with PDM.

Soils

At the beginning of the B and A lines, soils were consistently loose, with organics and debris throughout the auger sample, remaining in the 2.5YR, dusky red to very dusky red and dark reddish brown. As this area is the primary wetland area on the Project site, and was not covered by PDM fill material, soil samples in this area are comprised of soil characteristics consistent with wetland environments.

4.4.3 Six-acre Parcel Wetland Area (Wetland Line C)

The six-acre parcel is located directly to the south/southeast of the main property area, across the Morris and Essex Line tracks and adjacent to Fish House Road. As within the main portion of the property, the six-acre parcel was elevated in grade using PDM fill material. However, historic aerials do not show wetlands to be present onsite prior to the placement of fill. Nonetheless wetland characteristics have developed within underlying drainage areas. BEM wetland scientists delineated 0.26 acres of wetland environment on this portion of the property (**Drawing NR-001**). See **Attachment C** for the corresponding Wetland Delineation Forms.

Hydrology

Upon field delineation activities, BEM wetland scientists observed stormwater ditches along the northern and southern borders of the parcel, which flow towards the Hackensack River. Additionally, current aerial imagery show standing water on the southeastern portion of the parcel, which, through historic aerials, was revealed to be a former stormwater basin, which has since become inactive. There was no observed standing water during field delineation investigations.

Vegetation

Vegetation on the unmaintained parcel is heavily dominated by common reed (*Phragmites australis*). During the field investigation, common reed occurred along the perimeter of the parcel. However, during later site visits, common reed had overgrown to encompass the majority of the land surface on the parcel. As there is a formerly active stormwater basin on the parcel, hydrophytic vegetation in that area

observed include American hornbeam, or musclewood (*Carpinus caroliniana*), high tide bush (*Iva frutescens*) and Japanese knotweed (*Fallopia japonica*). The rest of the property remains primarily devoid of vegetation due to the placed PDM.

Soils

This parcel is mapped by the NRCS as Urban Land, which is qualified as being primarily covered with impervious surfaces in developed areas. No hydric soils are mapped onsite by the NRCS. As field observed, soil samples within the parcel primarily remained loose, in the 7.5YR category, varying in the brown classification. Furthermore, samples taken around the stormwater basin and stormwater ditches varied from 7.5YR dark brown to very dark brown, and 5YR dark reddish brown. Hydric soils were observed during field delineation.

5.0 HACKENSACK RIVER CROSSING AREA WETLAND EVALUATION

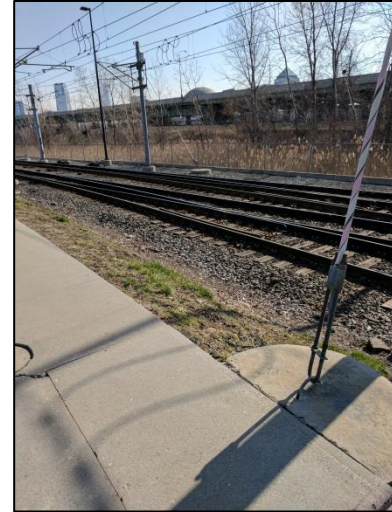
The portion of the Evaluation Limits that crosses that Hackensack River is located within the USACE's regulatory jurisdiction. Per 40 CFR 230.3 – The Clean Water Act Definitions, the Hackensack River is classified as a water of the United States, of which 2.083 acres are encompassed by the Evaluation Limits (**Drawing NR-002**). No shoreline wetland areas are along the Hackensack River at this location, as the shores are primarily comprised of developed asphalt and gravel lined areas. Based on review of NJDEP Submerged Aquatic Vegetation (SAV) maps there are no recorded detailed maps for this area of the State or the Hackensack River and observations in the field did not confirm the presence of SAV establishment.

6.0 HBLR LINE FIELD WETLAND EVALUATION

In addition to review of the Main Evaluation Area, a visual investigation was completed in February 2017 along the HBLR Line corridor, based on the above discussed review of state and federal wetland mapping information. Upon completion of a 2017 field investigation, wetlands were observed in one area along the HBLR Line, adjacent to the Liberty State Park Station. Due to safety precautions, wetland scientists were not able to access the vegetated area between the HBLR Line and the New Jersey Turnpike, as shown below.



Photograph 1 – Field verified wetland area between the HBLR Line and the New Jersey Turnpike.



Photograph 2 – Cattail present and depression in elevation.

While the area is not mapped, it was investigated due to the presence of a stormwater conveyance pipe located at the northeast portion of the wetland area, which goes beneath Wilson Street at the intersection of CommuniPaw Avenue in Jersey City, as shown. Additionally, the area is located between two elevated structures, creating a depression, which acts as a stormwater drainage ditch, but could also develop wetland characteristics. Upon investigation, cattail was present, which is a common vegetative indicator for the presence of wetlands.

While wetlands were observed, the wetland area is bound from the HBLR right-of-way by a concrete retaining wall and chain link fence. Furthermore, the wetlands are anticipated to be either ordinary or intermediate resource value (N.J.A.C. 7:7A-2.4), with 50-foot transition areas. As such, in this location of the HBLR Line characteristic wetlands are found adjoining the HBLR ROW and but the wetland transition area is already an altered and ballasts developed area.

7.0 RECOMMENDATIONS AND REGULATORY REQUIREMENTS

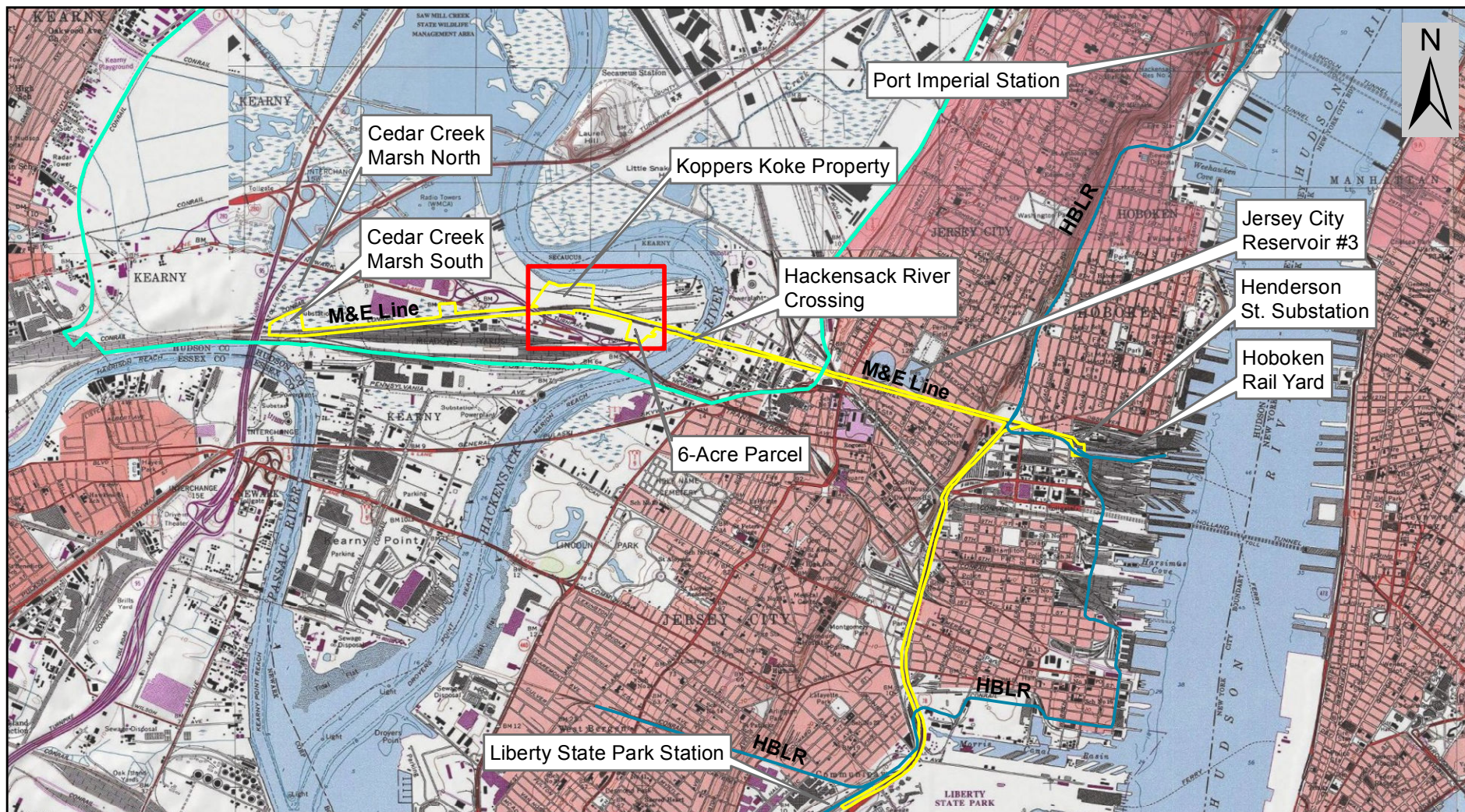
A USACE JD and/or a USACE Section 10/404 Individual Permit is recommended to be submitted prior to the start of any future development for areas in the Meadowlands District that are enveloped under USACE jurisdiction. A USACE JD or the wetland data presented herein will allow the agency to confirm the presence and location of wetlands onsite, but will not authorize the commencement of any work within those wetlands. A USACE Section 10/404 Individual Permit will authorize work within the regulated resources wetlands and waters of the US.

A NJDEP Presence/Absence Letter of Interpretation is not recommended for a corridor that is developed with rail infrastructure and ballasts. The wetland data provided herein should be

enclosed if it is determined that a Freshwater Wetland General Permit is needed in a specific location for areas outside the Meadowlands District.

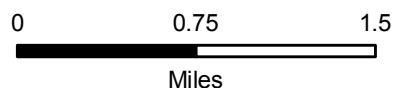
The primary areas warranting regulatory verification or potential for future regulated actions in the Evaluation Limits exist in the Cedar Creek Marsh and the Koppers Koke property and its immediate surrounding area. This wetland report based on map review, field analysis and photo documentation depicts specific areas of potential regulated wetland/waters that should serve to guide future design or required improvements to this rail corridor and immediate areas in the Evaluation Limits. Should, the Evaluation Limits change, an investigation should be completed to define wetland presence or absence in those locations.

FIGURES



Legend

- Evaluation Limits
- Meadowlands Boundary
- Main Evaluation Area
- HBLR Line Alignment



Service Layer Credits:
 Project Area: BEM Systems, Inc. (2015)
 Meadowlands: NJMC (2015)
 Rail: NJ TRANSIT (2017)
 Copyright: © 2013 National Geographic Society, i-cubed



Wetland Delineation Report

Figure 1: USGS Site Location Map

Project No.: TierIII-1041	Date: March 2017	Created By: AM
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100 Passaic Avenue
 Chatham, NJ 07928
 P. (908)598-2600

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Hackensack River

Legend

 Evaluation Limits

0 500 1,000
Feet

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Project Area: BEM Systems, Inc. 2015
Aerial: USGS (1953)



Wetland Delineation Report
Main Evaluation Area

Figure 2: Aerial Photograph

Project No.:
TierIII-1041

Date:
March 2017

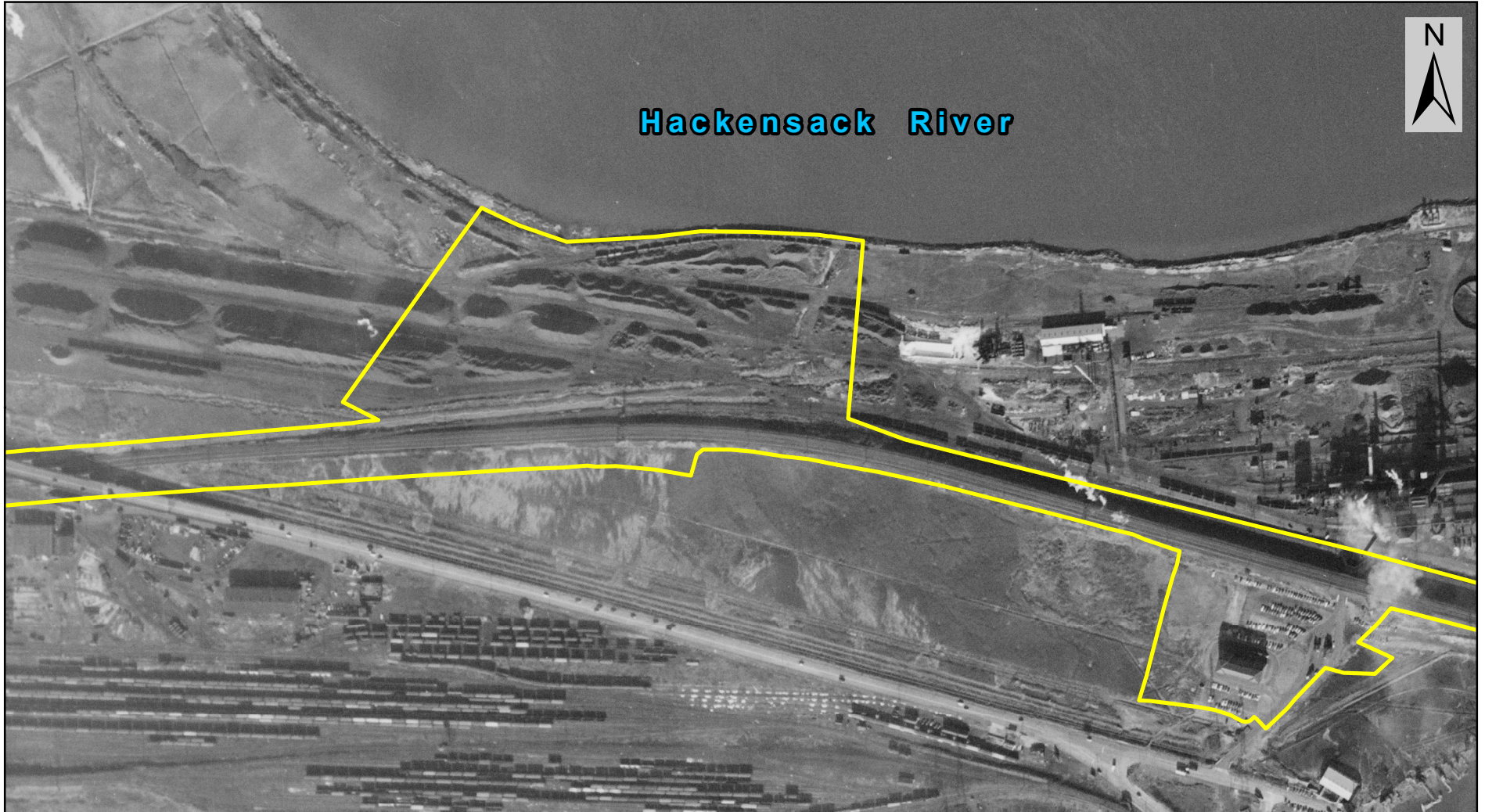
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AM



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Hackensack River



Legend

 Evaluation Limits

0 500 1,000
Feet


*Service Layer Credits:
Project Area: BEM Systems, Inc. 2015
Aerial: USGS (1953)*



**Wetland Delineation Report
Main Evaluation Area**

Figure 3: Historic Aerial - 1953

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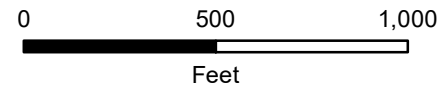
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Hackensack River

Legend

 Evaluation Limits



Service Layer Credits:
Project Area: BEM Systems, Inc. (2015)
Aerial: USGS (2002)



Wetland Delineation Report
Main Evaluation Area

Figure 4: Historic Aerial - 2002

Project No.: TierIII-1041	Date: March 2017	Created By: AM
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100 Passaic Avenue
Chatham, NJ 07928
P. (908)598-2600

Document Path: W:\Projects\NJ_Transit\Tier3\TransitGrid\2016_WetlandDelineationReport\Final\Figure4_2002_HistoricAerial.mxd

THIS MAP AND ALL INFORMATION CONTAINED HEREIN IS AUTHORIZED FOR USE ONLY BY OUR CLIENT AND CLIENT-DESIGNATED PARTIES. ONCE REPRODUCED THE ACCURACY OF THIS DRAWING CANNOT BE VERIFIED.



Map ID	Wetland Type
1	Deciduous Scrub / Shrub Wetlands
2	Herbaceous Wetlands
3	Herbaceous Wetlands
4	Herbaceous Wetlands
5	Phragmites Dominate Interior Wetlands

Surface Water Classifications
FW2-NT/SE2
SE2

Legend

- NJDEP Surface Waters
- NJDEP Wetlands
- Evaluation Limits

0 500 1,000
Feet

Service Layer Credits:
Project Area: BEM Systems, Inc. (2015)
Municipalities: NJGIN (2015)
Aerial: NJGIN (2015)
NJDEP Wetlands: NJDEP (2012)
Surface Water: NJDEP (2010)



Wetland Delineation Report

Figure 5: NJDEP Surface Waters And Wetlands Map

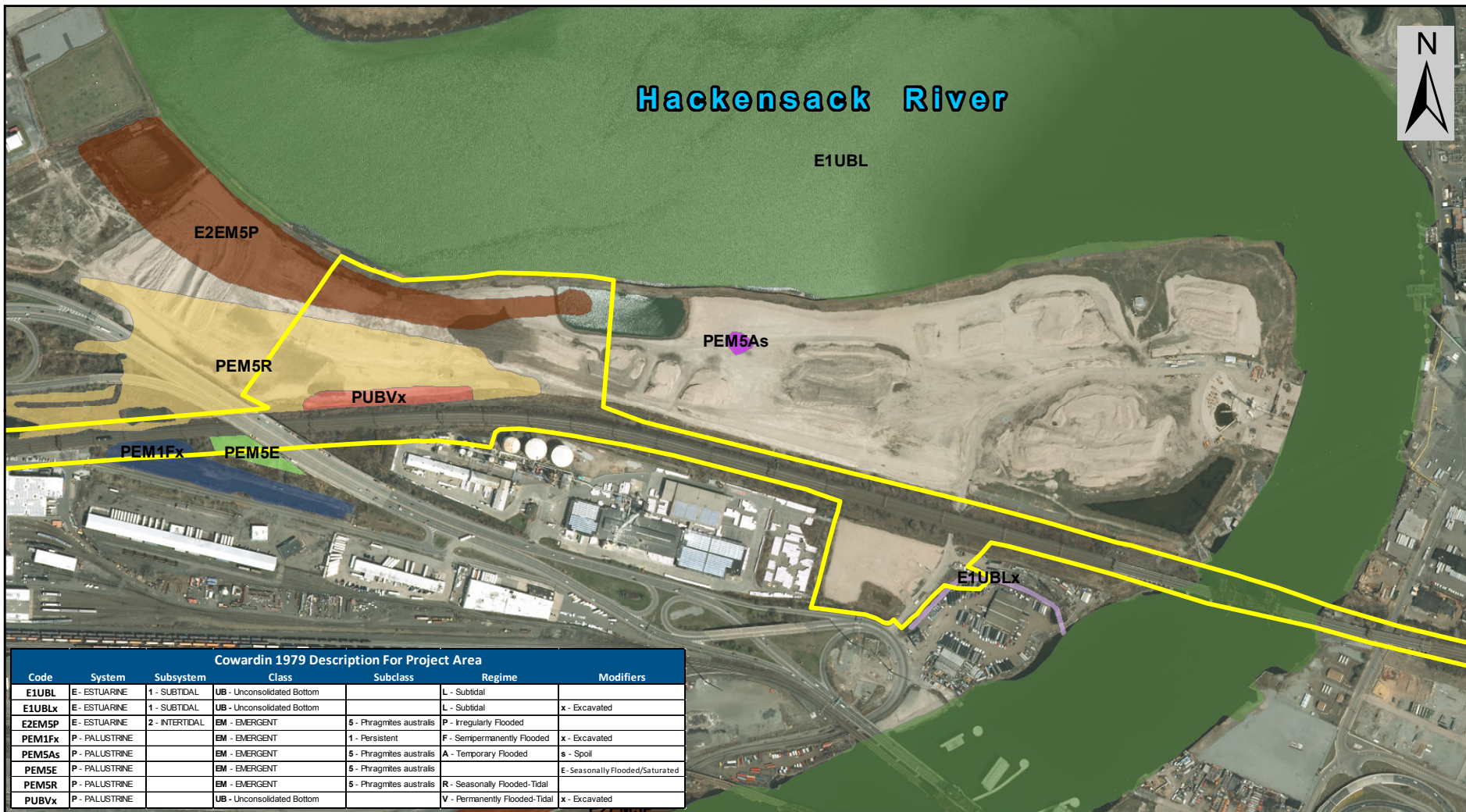
Project No.:
TierIII-1041

Date:
March 2017

Created By:
AM



100 Passaic Avenue
Chatham, NJ 07928
P. (908)598-2600



Legend

Evaluation Limits

NWI Wetlands By Code

 E1UBL	 PEM5As
 E1UBLx	 PEM5E
 E2EM5P	 PEM5R
 PEM1Fx	 PUBVx

0 500 1,000
Feet

Service Layer Credits:
Project Area: BEM Systems, Inc. (2015)
Aerial: NJGIN (2015)
NWI Wetlands - USGS NWI (2015)



Wetland Delineation Report

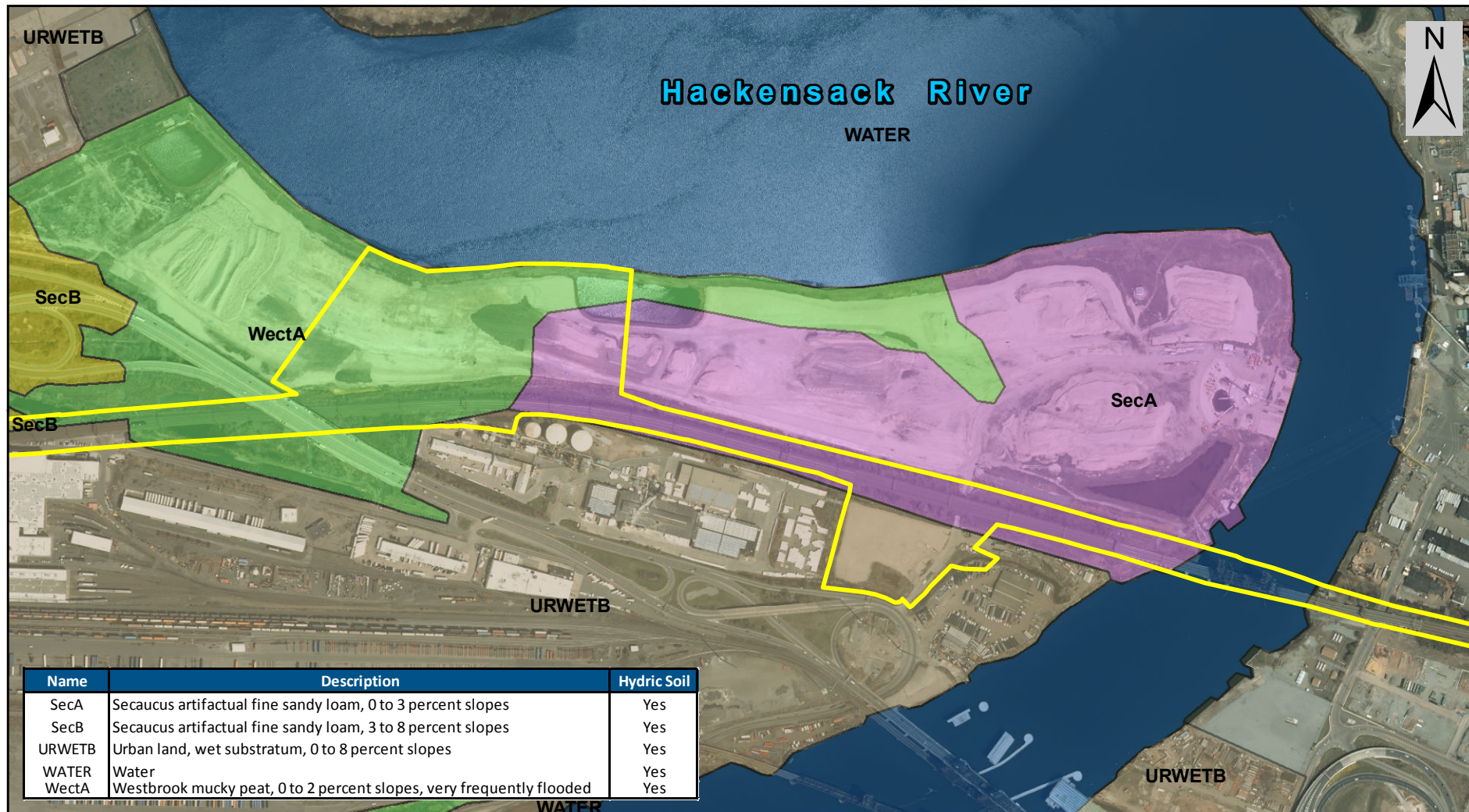
Figure 6: NWI Wetlands Map

Project No.: TierIII-1041	Date: March 2017	Created By: AM
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Chatham, NJ 07928
P. (908)598-2600

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Legend

Evaluation Limits

NRCS Soil Classification

Secaucus artifactual fine sandy loam, 0 to 3 percent slopes

Secaucus artifactual fine sandy loam, 3 to 8 percent slopes

Urban land, wet substratum, 0 to 8 percent slopes

Water

Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded

0 500 1,000
Feet

Service Layer Credits:
Project Area: BEM Systems, Inc. (2015)
Aerial: NJGIN (2015)
Soils: USDA NRCS (January 19, 2016)



Wetland Delineation Report

Figure 7: NRCS Soils Map

Project No.:
TierIII-1041

Date:
March 2017

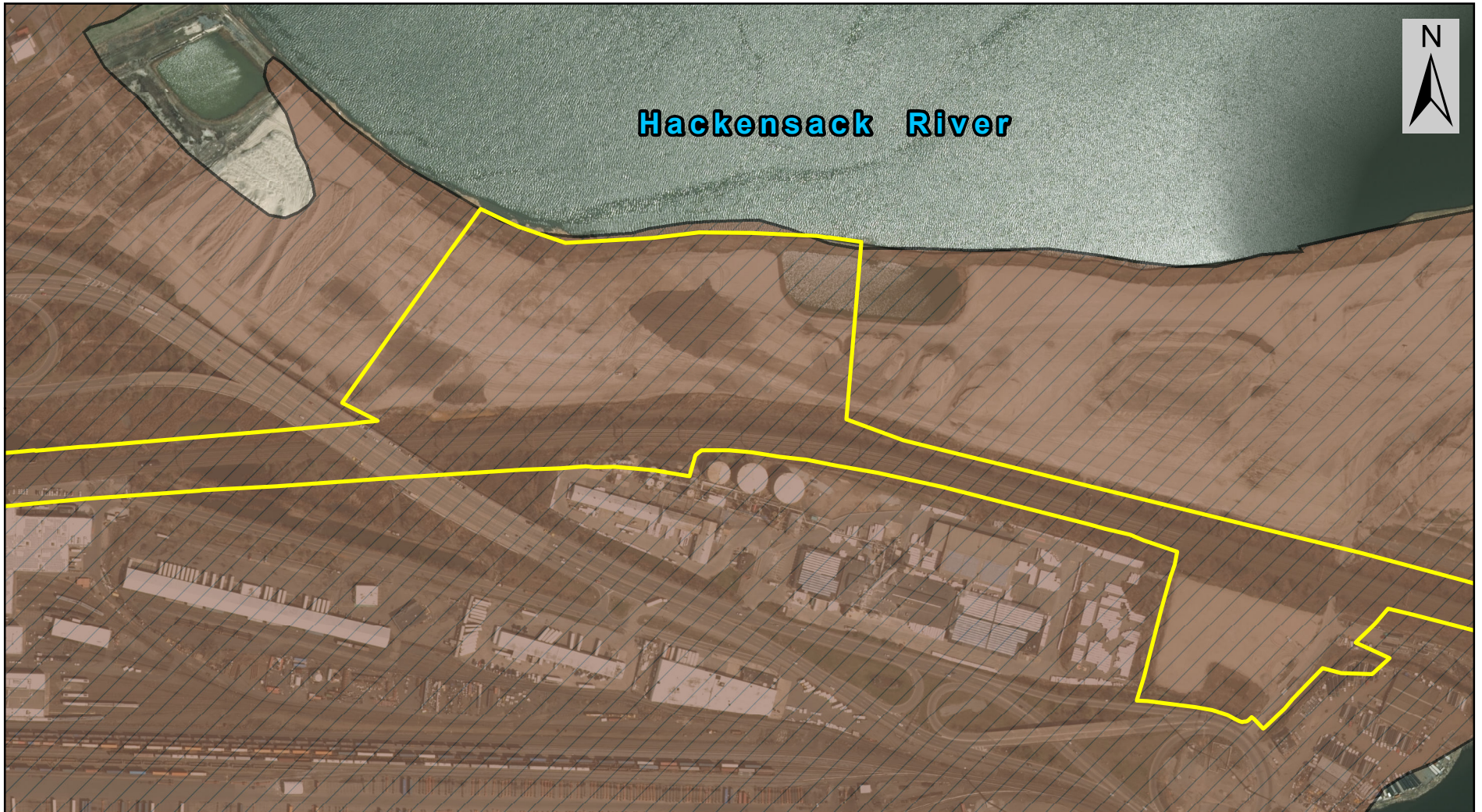
Created By:
AM



100 Passaic Avenue
Chatham, NJ 07928
P. (908)598-2600

Document Path: \\atlantis\GISDATA\Projects\NJ_Transit\Tier3\TransitGrid2016_WetlandDelineationReport\Final\Figure7_NRCSSoils.mxd

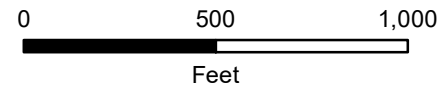
THIS MAP AND ALL INFORMATION CONTAINED HEREIN IS AUTHORIZED FOR USE ONLY BY OUR CLIENT AND CLIENT-DESIGNATED PARTIES. ONCE REPRODUCED THE ACCURACY OF THIS DRAWING CANNOT BE VERIFIED.



Hackensack River

Legend

- Evaluation Limits
- Area Of Historic Fill



*Service Layer Credits:
Project Area: BEM Systems, Inc. 2015
Aerial: NJGIN (2015)
Historic Fill: NJDEP (2005)*



**Wetland Delineation Report
Main Evaluation Area**

Figure 8: New Jersey Historic Fill Map

Project No.: TierIII-1041	Date: March 2017	Created By: AM
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100 Passaic Avenue
Chatham, NJ 07928
P. (908)598-2600



Wetland Area	Area (Square Feet)	Area (Acres)
A and B Lines	142,441.20	3.27
C Line	11,325.00	.26
Total	153,766.80	3.53

				DRAWN BY	A.R.L.
				DESIGNED BY	A.R.L.
				CHECKED BY	
				REVISION NO	0
REV.	DESCRIPTION	DATE	BY		
IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF ALTERATION.				SCALE	AS SHOWN

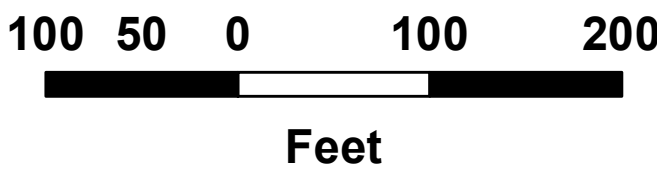
Legend

- Project Area
- Project Property Parcels
- Hudson County Tax Parcels
- Wetland Data Points
- Wetland Flags
- Wetland Delineation Line
- Off-Site Wetland Delineation Line
- Delineated Wetland Area

NOTES:

1. THE TOPOGRAPHIC INFORMATION WAS DERIVED FROM USGS NATIONAL MAP DEM FILE: USGS_NED_13_n41w075_IMG. THE DEM FILE WAS PUBLISHED ON 04/30/2015, AND ACQUIRED BY BEM VIA THE USGS NATIONAL MAP PRODUCT DOWNLOAD WEBPROGRAM, AND MANIPULATED INTO CONTOURS USING ERSIS ARCMAP AND SPATIAL ANALYST TOOLS.

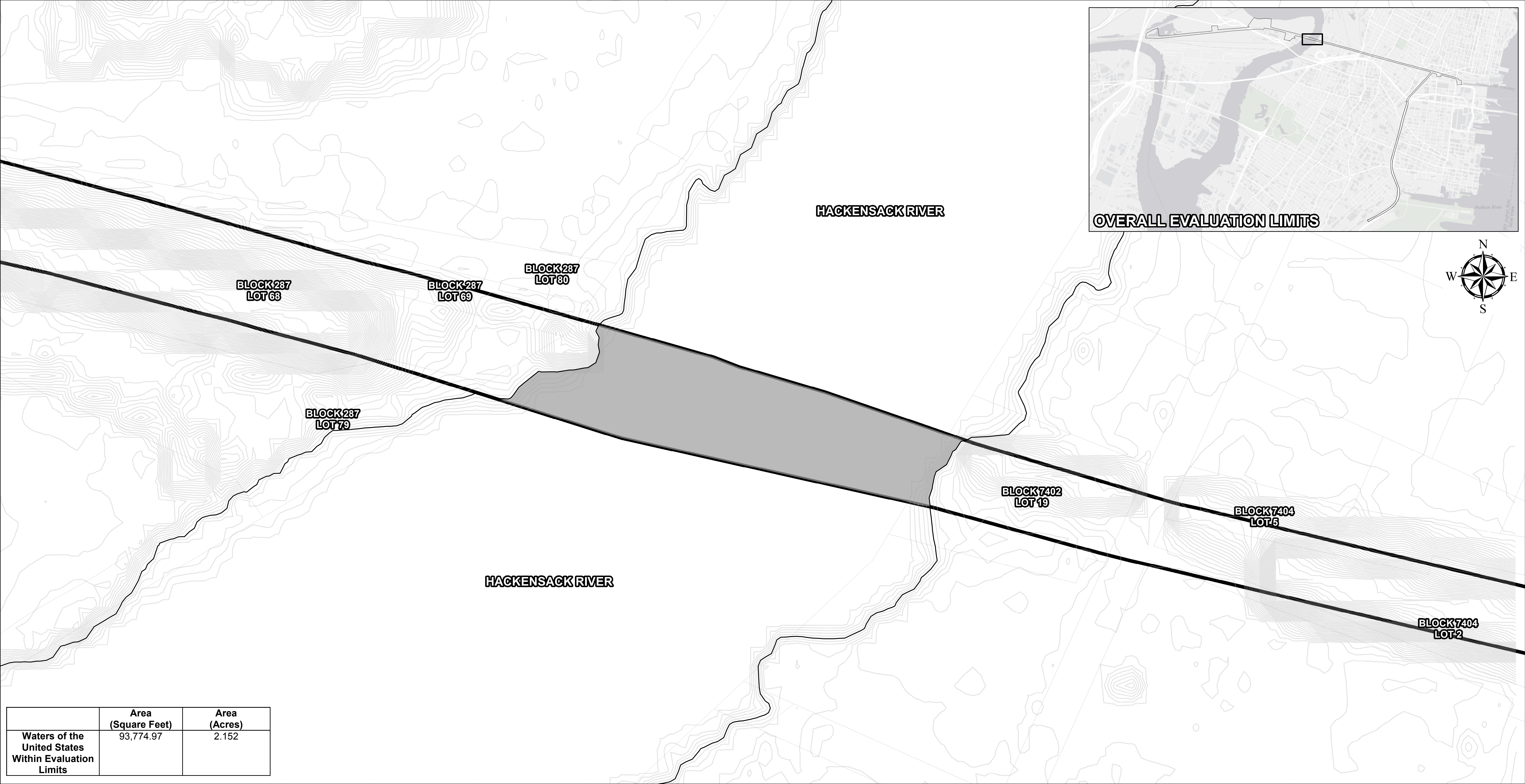
2. THE SHOWN WETLAND FLAGGING WAS COMPLETED BY BEM WETLAND SCIENTISTS IN APRIL AND JUNE 2016, AND DOCUMENTED IN AN ACCOMPANYING WETLAND DELINEATION REPORT, DATED OCTOBER 14, 2016, ALSO PREPARED BY BEM SYSTEMS, INC.



PREPARED BY:
BALANCED ENVIRONMENTAL MANAGEMENT

BEM SYSTEMS

NR - 001
WETLAND DELINEATION PLAN
DRAWING 1 OF 2



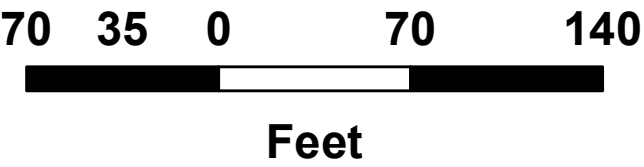
	Area (Square Feet)	Area (Acres)
Waters of the United States Within Evaluation Limits	93,774.97	2.152

				DRAWN BY	A.R.L.
				DESIGNED BY	A.R.L.
				CHECKED BY	
				REVISION NO	0
REV.	DESCRIPTION	DATE	BY		
IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF ALTERATION.				SCALE	AS SHOWN

Legend

- Evaluation Limits
- Waters of the United States Within the Evaluation Limits
- Mean High High Water Line - 2.28 feet
- Hudson County Tax Parcels

- NOTES:
1. THE TOPOGRAPHIC INFORMATION WAS DERRIVED FROM USGS NATIONAL MAP DEM FILE: USGS_NED_13_n41w075_IMG. THE DEM FILE WAS PUBLISHED ON 04/30/2015, AND ACQUIRED BY BEM VIA THE USGS NATIONAL MAP PRODUCT DOWNLOAD WEBPROGRAM, AND MANIPULATED INTO CONTOURS USING ERSI'S ARCMAP AND SPATIAL ANALYST TOOLS.
 2. THE MEAN HIGH HIGH WATER LINE WAS PROVIDED BY NOAA'S THE BATTERY TIDE STATION, DATA DATED 05/01/2014.
 3. NO WETLAND FRINGE VEGETATION OR SAVS WAS IDENTIFIED DURING MAP REVIEW OR OBSERVED DURING THE 2016 AND 2017 FIELD VISITS.



PREPARED BY:
BALANCED ENVIRONMENTAL MANAGEMENT
BEMSYSTEMS

NR - 001
WETLAND DELINEATION PLAN
DRAWING 1 OF 2

Attachment A Agency Correspondence

Attachment A: Agency Correspondence

- *NJDEP Natural Heritage Program (NHP) Response Letter- March 8, 2016*
- *National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Threatened and Endangered Species Determination Response Letter- August 4, 2016*
- *U.S. Fish and Wildlife Services (USFWS) Information Planning and Conservation (IPaC) System Report- April 20, 2017*

Attachment A: Agency Correspondence

NJDEP Natural Heritage Program (NHP) Response Letter- March 8, 2016



State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION Division of Parks & Forestry

State Forestry Service
Mail Code 501-04
Office of Natural Lands Management – Natural Heritage Program
P.O. Box 420
Trenton, NJ 08625-0420
Tel. (609) 984-1339 FAX (609) 984-1427

BOB MARTIN
Commissioner

March 8, 2016

Anna Loss
BEM Systems, Inc.
100 Passaic Avenue
Chatham, NJ 07928

Re: NJ TransitGrid Traction Power System
Kearny Town and Jersey City, Hudson County

Dear Ms. Loss:

Thank you for your data request regarding rare species information for the above referenced project site in Kearny Town and Jersey City, 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.

NHP File No. 16-4007461-9466

A list of rare plant species and ecological communities that have been documented from the county (or counties), 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.

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,

A handwritten signature in blue ink, appearing to read 'R. Cartica', with a horizontal line extending to the right.

Robert J. Cartica
Administrator

c: NHP File No. 16-4007461-9466

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

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
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

<p>Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches</p>
--

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<hr/>								
<i>Aves</i>								
	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
	Osprey	Pandion haliaetus	Foraging	3	NA	State Threatened	G5	S2B
	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

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

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
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	Yes	1 page(s) 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	2 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 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**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Regional Status	Grank	Srank	Identified	Last Observed
<i>Vascular Plants</i>								
Ptelea trifoliata var. trifoliata	Wafer-ash		E	LP, HL	G5T5	S1	Y - Yes	2010-07-28
Total number of records:		1						

**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	Strank
Aves								
	Barn Owl	Tyto alba	Non-breeding Sighting	2	NA	Special Concern	G5	S3B,S3N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Bittern	Ixobrychus exilis	Breeding Sighting-Confirmed	2	NA	Special Concern	G5	S3B,S3N
	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
	Osprey	Pandion haliaetus	Foraging	3	NA	State Threatened	G5	S2B
	Osprey	Pandion haliaetus	Nest	3	NA	State Threatened	G5	S2B
	Peregrine Falcon	Falco peregrinus	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Pied-billed Grebe	Podilymbus podiceps	Breeding Sighting-Confirmed	4	NA	State Endangered	G5	S1B,S3N

<p align="center">Rare Wildlife Species or Wildlife Habitat Within One Mile of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches</p>

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
<i>Osteichthyes</i>	Saltmarsh Sharp-tailed Sparrow	Ammodramus caudacutus	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N
	Sedge Wren	Cistothorus platensis	Breeding Sighting	4	NA	State Endangered	G5	S1B,S1N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N
	Shortnose Sturgeon	Acipenser brevirostrum	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1

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

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Grank	Srank
-----------------	-------------	---------------------------	-------------------------	-------	-------

Vertebrate Animals

Malaclemys terrapin terrapin	Northern Diamondback Terrapin			G4T4Q	S3
------------------------------	-------------------------------	--	--	-------	----

Total number of records: 1

Attachment A: Agency Correspondence

National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Threatened and Endangered Species Determination Response Letter- August 4, 2016

Sandra Peterson

From: Edith Carson - NOAA Federal <edith.carson@noaa.gov>
Sent: Thursday, August 04, 2016 2:31 PM
To: Deidra Friedhoff
Cc: Karen Greene - NOAA Federal
Subject: BEM Power System Hackensack NJ
Attachments: esa info request hackensack.pdf

Ms. Friedhoff,

We received your letter
on

August 4, 2016

(attached), regarding

several projects occurring in the Hackensack River

In your letter, you requested a list of any Endangered Species Act (ESA) listed threatened or endangered species under our jurisdiction.

No federally listed or proposed threatened or endangered species under our jurisdiction are known to exist in or on the site of your proposed project. Based on this, no consultation in accordance with section 7 of the ESA is necessary. As such, no further coordination on this activity with the NMFS Protected Resources Division is necessary at this time. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. Please contact me ([978-282-8490](tel:978-282-8490) or Edith.Carson@noaa.gov), should you have any questions regarding these comments.

Magnuson-Stevens Fishery Conservation and Management Act

The project area has been designated as Essential Fish Habitat (EFH) for a number of federally managed species. Consultation between the lead federal action agency and NOAA Fisheries Habitat Conservation Division will be required as part of the federal permitting process. Additional information on EFH can be found on our website at: <http://www.greateratlantic.fisheries.noaa.gov/habitat>. Please contact Karen Greene (732) 872-3023 or Karen.Greene@noaa.gov if you have any questions or need additional information regarding EFH.

Thank you,

Edith

Edith Carson, M.Sc.
Section 7/Shortnose Sturgeon Fish Biologist
NOAA Fisheries
U.S. Department of Commerce
Greater Atlantic Regional Fisheries Office
Phone: 978-282-8490
edith.carson@noaa.gov



NOAA FISHERIES

Attachment A: Agency Correspondence

U.S. Fish and Wildlife Services (USFWS) Information Planning and Conservation (IPaC) System Report- April 20, 2017



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New Jersey Ecological Services Field Office
4 EAST JIMMIE LEEDS ROAD UNIT 4
GALLOWAY, NJ 08205

PHONE: (609)382-5273 FAX: (609)646-0352

URL: www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

Consultation Code: 05E2NJ00-2017-SLI-0566

February 20, 2017

Event Code: 05E2NJ00-2017-E-00897

Project Name: TransitGrid

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species that may occur in your proposed action area and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*)

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: <http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html>

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA

is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic change, chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably foreseeable future that would not occur without ("but for") the project that is currently being proposed.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Official Species List

Provided by:

New Jersey Ecological Services Field Office

4 EAST JIMMIE LEEDS ROAD UNIT 4

GALLOWAY, NJ 08205

(609) 382-5273

<http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html>

Consultation Code: 05E2NJ00-2017-SLI-0566

Event Code: 05E2NJ00-2017-E-00897

Project Type: DEVELOPMENT

Project Name: TransitGrid

Project Description: Transportation Systems Improvements

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Hudson, NJ



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Endangered Species Act Species List

There are a total of 0 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

There are no listed species identified for the vicinity of your project.



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Critical habitats that lie within your project area

There are no critical habitats within your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Appendix A: FWS National Wildlife Refuges and Fish Hatcheries

There are no refuges or fish hatcheries within your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Appendix B: FWS Migratory Birds

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no otherwise lawful activities. For more information regarding these Acts see: <http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>
<http://www.fws.gov/birds/policies-and-regulations/laws-legislations/bald-and-golden-eagle-protection-act.php>

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to:

<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>

For information about conservation measures that help avoid or minimize impacts to birds, please visit:

<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tools at:

<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php>



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Migratory birds that may be affected by your project:

There are 30 birds on your migratory bird list. The list may include birds occurring outside this FWS office jurisdiction.

Species Name	Bird of Conservation Concern (BCC)	Seasonal Occurrence in Project Area
American bittern (<i>Botaurus lentiginosus</i>)	Yes	On Land: Breeding
American Oystercatcher (<i>Haematopus palliatus</i>)	Yes	On Land: Year-round
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Yes	On Land: Year-round
Black Skimmer (<i>Rynchops niger</i>)	Yes	On Land: Breeding
Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	Yes	On Land: Breeding
Blue-winged Warbler (<i>Vermivora pinus</i>)	Yes	On Land: Breeding
Canada Warbler (<i>Wilsonia canadensis</i>)	Yes	On Land: Breeding
cerulean warbler (<i>Dendroica cerulea</i>)	Yes	On Land: Breeding
Fox Sparrow (<i>Passerella liaca</i>)	Yes	On Land: Wintering
Golden-Winged Warbler (<i>Vermivora chrysoptera</i>)	Yes	On Land: Breeding
Gull-billed Tern (<i>Gelochelidon nilotica</i>)	Yes	On Land: Breeding
Hudsonian Godwit (<i>Limosa haemastica</i>)	Yes	At Sea: Migrating
Kentucky Warbler (<i>Oporornis formosus</i>)	Yes	On Land: Breeding
Least bittern (<i>Ixobrychus exilis hesperis</i>)	No	On Land: Breeding
Least tern (<i>Sterna antillarum</i>)	Yes	On Land: Breeding



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Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Yes	On Land: Year-round
Peregrine Falcon (<i>Falco peregrinus</i>)	Yes	On Land: Wintering
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	Yes	On Land: Year-round
Prairie Warbler (<i>Dendroica discolor</i>)	Yes	On Land: Breeding
Purple Sandpiper (<i>Calidris maritima</i>)	Yes	On Land: Wintering
Red Knot (<i>Calidris canutus rufa</i>)	Yes	On Land: Wintering
Rusty Blackbird (<i>Euphagus carolinus</i>)	Yes	On Land: Wintering
Saltmarsh Sparrow (<i>Ammodramus caudacutus</i>)	Yes	On Land: Breeding
Seaside Sparrow (<i>Ammodramus maritimus</i>)	Yes	On Land: Year-round
Short-eared Owl (<i>Asio flammeus</i>)	Yes	On Land: Wintering
Snowy Egret (<i>Egretta thula</i>)	Yes	On Land: Breeding
Upland Sandpiper (<i>Bartramia longicauda</i>)	Yes	On Land: Breeding
Willow Flycatcher (<i>Empidonax traillii</i>)	Yes	On Land: Breeding
Wood Thrush (<i>Hylocichla mustelina</i>)	Yes	On Land: Breeding
Worm eating Warbler (<i>Helmitheros vermivorum</i>)	Yes	On Land: Breeding



United States Department of Interior
Fish and Wildlife Service

Project name: TransitGrid

Appendix C: NWI Wetlands

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of



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this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following NWI Wetland types intersect your project area in one or more locations. To understand the NWI Classification Code, see <https://ecos.fws.gov/ipac/wetlands/decoder>. To view the National Wetlands Inventory on a map go to <http://www.fws.gov/wetlands/Data/Mapper.html>.

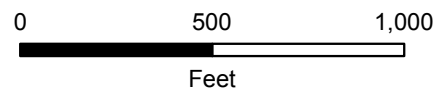
Wetland Types	NWI Classification Code
Estuarine and Marine Deepwater	E1UBL
Estuarine and Marine Deepwater	E1UBL6x
Estuarine and Marine Deepwater	E1UBLx
Estuarine and Marine Wetland	E2EM5P6
Freshwater Emergent Wetland	PEM1Fx
Freshwater Emergent Wetland	PEM5E
Freshwater Pond	PUBF
Freshwater Pond	PUBVx
Riverine	R1UBVx

Attachment B Wetland Delineation Photograph Log



Legend

- ▴ WetlandDelineationPoints
- Photograph Locations
- Wetland Area
- Evaluation Limits



Service Layer Credits:
Project Area: BEM Systems, Inc. (2015)
Aerial: NJGIN (2015)



Wetland Delineation Report

Photograph Location Map

Project No.:
TierIII-1041

Date:
March 2017

Created By:
ARL



100 Passaic Avenue
Chatham, NJ 07928
P. (908)598-2600

Document Path: \\Atlas\gisdata\Projects\NJ_Transit\Tier3\TransitGrid\2016_WetlandDelineationReport\Final\PhotoLog.mxd

THIS MAP AND ALL INFORMATION CONTAINED HEREIN IS AUTHORIZED FOR USE ONLY BY OUR CLIENT AND CLIENT-DESIGNATED PARTIES. ONCE REPRODUCED THE ACCURACY OF THIS DRAWING CANNOT BE VERIFIED.



Photograph No. 1 – Taken near Flag A3, Data Point 1 Upland is surrounded by Poison Sumac and Common Reed, down a slight slope from the adjacent gravel maintenance road.



Photograph No. 2 – Taken near Flag A3, Data Point 1 Upland is surrounded by Poison Sumac and Common Reed, down a slight slope from the adjacent gravel maintenance road.



Photograph No. 3 – Gravel maintenance road adjacent to Wetland Line A, where maintained vegetation covers the slight downgrade slope to the wetland area on the right.



Photograph No. 4 – Taken near Flag A14, Data Points 2, Upland and Wetland, are located directly adjacent to the gravel maintenance road, and are surrounded by Common Reed and Tree of Heaven. Standing water occurs at the base of the vegetation downslope.



Photograph No. 5 – Taken near Flag A14, Data Points 2, Upland and Wetland, are located directly adjacent to the gravel maintenance road, and are surrounded by Common Reed and Tree of Heaven. Standing water occurs at the base of the vegetation downslope.



Photograph No. 6 – Taken near Flag B2, Wetland Lines A and B are located between the gravel maintenance road, and the Processed Dredge Material (PDM) fill, as shown in the picture.



Photograph No. 7 – Taken near Flag B4, the majority of Wetland Line B, until Flag B 13, is similar to the picture, where PDM fill slopes up from the vegetation line of the adjacent wetland area.



Photograph No. 8 – Taken near Flag B13, the PDM fill slope begins to show debris adjacent to the Wetland Line B.



Photograph No. 9 – Overview of Wetland Line B, with PDM fill adjacent to the Line in the background, consisting of debris and maintained grass growth in the foreground.



Photograph No. 10 – Taken near Flag B14, this portion of Wetland Line B consists of standing water with Common Reed dominating the surrounding vegetation. Data point 3 Wetland was taken here.



Photograph No. 11 – Taken near Flag B15, this is a continuation of the standing water wetland area, with debris and PDM fill along the adjacent slope.



Photograph No. 12 – Taken near Flag B15, debris and PDM fill along the adjacent slope.



Photograph No. 13 – Taken near Flag B18, offsite wetlands beneath the Route 7 overpass. Standing water was present, and at the time, Common Reed was growing as well. On later site visits, Common Reed overgrew the wetland area, dominating the landscape.



Photograph No. 14 – Taken in the center of the site on top of the PDM fill placed in 2008, facing north.



Photograph No. 15 – Taken in the center of the site on top of the PDM fill placed in 2008, facing northeast.



Photograph No. 16 – Taken in the center of the site, the man-made stormwater basin located directly adjacent to the Hackensack River.



Photograph No. 17 – The entrance of the site along Fish House Road, with the 6 acre parcel in the background.



Photograph No. 18 – The 6 Acre Parcel, with the Wetland Line C area overgrown with Common Reed, as seen from Fish House Road.



Photograph No. 19 – The 6 Acre property, devoid of vegetation where PDM fill is present. Wetland Line C and the far slopes along the perimeter of the area contain vegetation.



Photograph No. 20 – Wetland Line C is consistent with a manmade stormwater basin, which was at extremely low water elevations during the site visit. The stormwater outlet feature is surrounded and overgrown with Common Reed.

Attachment C Wetland Delineation Data Forms and Support Documentation

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TransitGrid City/County: Kearny, Hudson County Sampling Date: 4/21/16
 Applicant/Owner: New Jersey Transit State: New Jersey Sampling Point: DP1 Up
 Investigator(s): BEM Systems, Inc. Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Adjacent to rail ROW Local relief (concave, convex, none): None Slope (%): 1%
 Subregion (LRR or MLRA): LRR 144A Lat: 40° 44' 45.603" Long: -74° 5' 7.4436" Datum: _____
 Soil Map Unit Name: Secaucus artificial fine sandy loam, 0 to 3% slopes (SecA) NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Near Flag A3. Please see accompanying Wetland Delineation Report, 2016 for additional information.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See accompanying Wetland Delineation Photograph Log and Figures for background data and information		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Poison Sumac - <i>Toxicodendron vernix</i></u>	15%	no	OBL	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>15%</u></td> <td>x 1 = <u>15%</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>30%</u></td> <td>x 4 = <u>120%</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>45%</u> (A)</td> <td><u>145%</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.22</u>	Total % Cover of:	Multiply by:	OBL species <u>15%</u>	x 1 = <u>15%</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>30%</u>	x 4 = <u>120%</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>45%</u> (A)	<u>145%</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>15%</u>	x 1 = <u>15%</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>30%</u>	x 4 = <u>120%</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>45%</u> (A)	<u>145%</u> (B)																	
_____ = Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)																		
1. <u>Japanese knotweed - <i>Polygonum cuspidatum</i></u>	15%	no	FACU															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: _____)																		
1. <u>Groundsel weed - <i>Senecio vulgaris</i></u>	15%	no	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																		
				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														
Remarks: (Include photo numbers here or on a separate sheet.) See accompanying Wetland Delineation Photograph Log for area documentation																		

SOIL

Sampling Point: _____

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TransitGrid City/County: Kearny, Hudson County Sampling Date: 4/21/16
Applicant/Owner: New Jersey Transit State: New Jersey Sampling Point: DP2 Up
Investigator(s): BEM Systems, Inc. Section, Township, Range: _____
Landform (hillslope, terrace, etc.): Adjacent to rail ROW Local relief (concave, convex, none): None Slope (%): 1%
Subregion (LRR or MLRA): LRR 144A Lat: 40° 44' 45.603" Long: -74° 5' 7.4436" Datum: _____
Soil Map Unit Name: Secaucus artificial fine sandy loam, 0 to 3% slopes (SecA) NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Near Flag A14. Please see accompanying Wetland Delineation Report, 2016 for additional information.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u>X</u> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<u>X</u> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<u>X</u> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____		
Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____		
Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See accompanying Wetland Delineation Photograph Log and Figures for background data and information		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. Poison Sumac - <i>Toxicodendron vernix</i>	10%	no	OBL	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. Tree of Heaven - <i>Ailanthus altissima</i>	20%	no	FACU															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
		30% = Total Cover																
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. Japanese knotweed - <i>Polygonum cuspidatum</i>	20%	no	FACU	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>10%</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>50%</u></td> <td>x 2 = <u>100</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species <u>40%</u></td> <td>x 4 = <u>40%</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>100%</u> (A)</td> <td><u>150%</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.5</u>	Total % Cover of:	Multiply by:	OBL species <u>10%</u>	x 1 = <u>10</u>	FACW species <u>50%</u>	x 2 = <u>100</u>	FAC species _____	x 3 = _____	FACU species <u>40%</u>	x 4 = <u>40%</u>	UPL species _____	x 5 = _____	Column Totals: <u>100%</u> (A)	<u>150%</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>10%</u>	x 1 = <u>10</u>																	
FACW species <u>50%</u>	x 2 = <u>100</u>																	
FAC species _____	x 3 = _____																	
FACU species <u>40%</u>	x 4 = <u>40%</u>																	
UPL species _____	x 5 = _____																	
Column Totals: <u>100%</u> (A)	<u>150%</u> (B)																	
2. Common Reed - <i>Phragmites australis</i>	50%	yes	FACW															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
		70% = Total Cover																
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
		_____ = Total Cover																
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
		_____ = Total Cover																
Remarks: (Include photo numbers here or on a separate sheet.) See accompanying Wetland Delineation Photograph Log for area documentation				Hydrophytic Vegetation Present? Yes <u>X</u> No _____														

SOIL

Sampling Point: _____

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TransitGrid City/County: Kearny, Hudson County Sampling Date: 4/21/16
 Applicant/Owner: New Jersey Transit State: New Jersey Sampling Point: DP2 Wet
 Investigator(s): BEM Systems, Inc. Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Adjacent to rail ROW Local relief (concave, convex, none): None Slope (%): 1%
 Subregion (LRR or MLRA): LRR 144A Lat: 40° 44' 45.603" Long: -74° 5' 7.4436" Datum: _____
 Soil Map Unit Name: Secaucus artificial fine sandy loam, 0 to 3% slopes (SecA) NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Near Flag A14. Please see accompanying Wetland Delineation Report, 2016 for additional information.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply)		<u>Secondary Indicators</u> (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>10'</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>5'</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See accompanying Wetland Delineation Photograph Log and Figures for background data and information		
Remarks: Wetland area contained standing water, at least 10 inches deep around the perimeter, anticipated to be deeper towards the center of the wetland area. Soil samples resulted in saturation starting at 5 inches deep.		

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. Poison Sumac - <i>Toxicodendron vernix</i>	5%	no	OBL	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. Tree of Heaven - <i>Ailanthus altissima</i>	10%	no	FACU															
3. River birch - <i>Betula nigra</i>	10%	no	FACW															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
25% = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>5%</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>50%</u></td> <td>x 2 = <u>100</u></td> </tr> <tr> <td>FAC species <u>10%</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>35%</u></td> <td>x 4 = <u>140%</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100%</u> (A)</td> <td><u>275%</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.75</u>	Total % Cover of:	Multiply by:	OBL species <u>5%</u>	x 1 = <u>5</u>	FACW species <u>50%</u>	x 2 = <u>100</u>	FAC species <u>10%</u>	x 3 = <u>30</u>	FACU species <u>35%</u>	x 4 = <u>140%</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100%</u> (A)	<u>275%</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>5%</u>	x 1 = <u>5</u>																	
FACW species <u>50%</u>	x 2 = <u>100</u>																	
FAC species <u>10%</u>	x 3 = <u>30</u>																	
FACU species <u>35%</u>	x 4 = <u>140%</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100%</u> (A)	<u>275%</u> (B)																	
Sapling/Shrub Stratum (Plot size: _____)																		
1. Japanese knotweed - <i>Polygonum cuspidatum</i>	15%	no	FACU															
2. Common Reed - <i>Phragmites australis</i>	50%	yes	FACW															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
65% = Total Cover																		
Herb Stratum (Plot size: _____)																		
1. Groundsel weed - <i>Senecio vulgaris</i>	10%	no	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. Musclewood, American hornbeam <i>Carpinus caroliniana</i>	10%	no	FAC															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
20% = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																		
Remarks: (Include photo numbers here or on a separate sheet.) See accompanying Wetland Delineation Photograph Log for area documentation																		

SOIL

Sampling Point: _____

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TransitGrid City/County: Kearny, Hudson County Sampling Date: 4/21/16
 Applicant/Owner: New Jersey Transit State: New Jersey Sampling Point: DP3 Wet
 Investigator(s): BEM Systems, Inc. Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Adjacent to rail ROW Local relief (concave, convex, none): None Slope (%): 10%
 Subregion (LRR or MLRA): LRR 144A Lat: 40° 44' 45.603" Long: -74° 5' 7.4436" Datum: _____
 Soil Map Unit Name: Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Near Flag B14. Please see accompanying Wetland Delineation Report, 2016 for additional information.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply)		<u>Secondary Indicators</u> (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>10'</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>2'</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See accompanying Wetland Delineation Photograph Log and Figures for background data and information		
Remarks: Wetland standing water was discolored, a yellow-orange, with what looked to be oils mixed in. The standing water area is located at the bottom of the PDM slope, and adjacent to the Morris and Essex Rail Line.		

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Tree of Heaven - <i>Ailanthus altissima</i></u>	10%	no	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		10% = Total Cover		Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x 1 = _____ FACW species <u>70%</u> x 2 = <u>140</u> FAC species _____ x 3 = _____ FACU species <u>10%</u> x 4 = <u>40%</u> UPL species _____ x 5 = _____ Column Totals: <u>80%</u> (A) <u>180%</u> (B) Prevalence Index = B/A = <u>2.25</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Common Reed - <i>Phragmites australis</i></u>	70%	yes	FACW	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		70% = Total Cover		
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
		_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
		_____ = Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.) See accompanying Wetland Delineation Photograph Log for area documentation				

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
 ___ 2 - Dominance Test is >50%
 ___ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 5	Organic							Soil is saturated at about 2 inches below the top of soil. Soil is intermixed with organics and gravel debris from the adjacent maintenance roadway.
5 +	7.5YR 4/6							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils³:		
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____		
Depth (inches): _____		

Remarks:

This data point is located at the bottom of the PDM fill slope, adjacent to the Morris and Essex Rail Line. The water was observed to be discolored, and yellow-orange, with oils intermixed. Vegetation was dominated by Common reed, and at the time of delineation, it looked like the water area was at a low-elevation, compared to normal, as the water line extended over a cracked

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TransitGrid City/County: Kearny, Hudson County Sampling Date: 4/21/16
 Applicant/Owner: New Jersey Transit State: New Jersey Sampling Point: DP4 Wet
 Investigator(s): BEM Systems, Inc. Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Adjacent to rail ROW Local relief (concave, convex, none): None Slope (%): 1%
 Subregion (LRR or MLRA): LRR 144A Lat: 40° 44' 45.603" Long: -74° 5' 7.4436" Datum: _____
 Soil Map Unit Name: Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Near Flag C9. Please see accompanying Wetland Delineation Report, 2016 for additional information.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply)		<u>Secondary Indicators</u> (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>5'</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>5'</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See accompanying Wetland Delineation Photograph Log and Figures for background data and information		
Remarks: This wetland area is associated with a stormwater basin feature previously constructed onsite, which, at the time of delineation, does not extend to the extents as shown on current aerial imagery. Precipitation and stormwater runoff control the extents of the basin, and during the time of delineation, rainfall had not recently occurred, meaning the basin was currently at a low water		

VEGETATION – Use scientific names of plants.

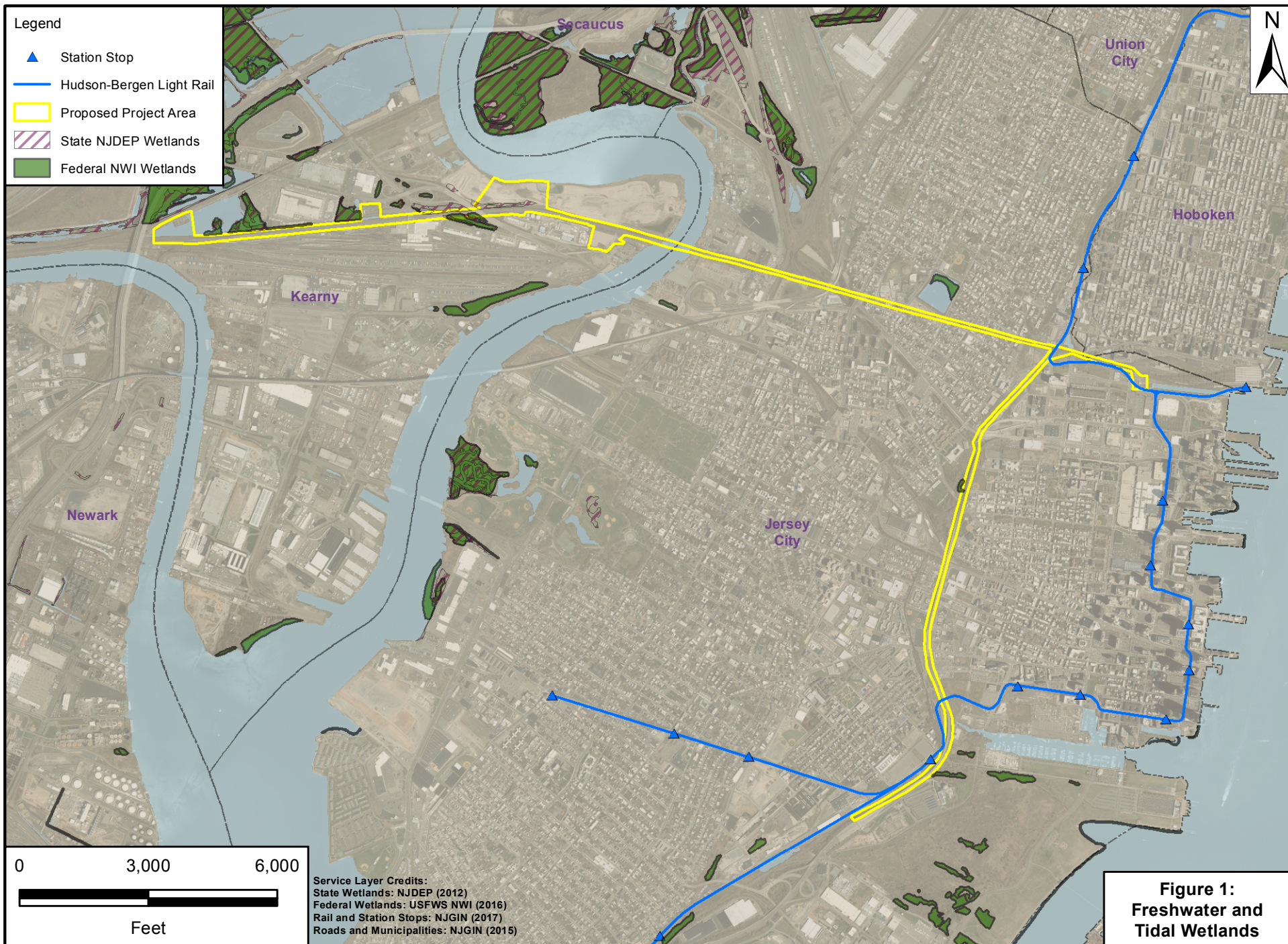
Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
10% = Total Cover				Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: Multiply by: </div> OBL species _____ x 1 = _____ FACW species <u>90%</u> x 2 = <u>180</u> FAC species _____ x 3 = _____ FACU species <u>10%</u> x 4 = <u>40</u> UPL species _____ x 5 = _____ Column Totals: <u>100%</u> (A) <u>220</u> (B) Prevalence Index = B/A = <u>2.2</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Common Reed - <i>Phragmites australis</i></u>	<u>90%</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Groundsel weed - <i>Senecio vulgaris</i></u>	<u>10%</u>	<u>no</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
100% = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) See accompanying Wetland Delineation Photograph Log for area documentation				Hydrophytic Vegetation Present? Yes <u>X</u> No _____

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 5	Organic						Soil is saturated at about 5 inches, and very loose, with organics intermixed. Fill debris and asphalt debris also occurred
5 - 10	7.5YR 3/4						
10 +	10YR 3/4						
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.				² Location: PL=Pore Lining, M=Matrix.			
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils³:			
<input checked="" type="checkbox"/> Histosol (A1)		<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)		<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)		<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Loamy Gleyed Matrix (F2)		<input type="checkbox"/> Dark Surface (S7) (LRR K, L)			
<input type="checkbox"/> Stratified Layers (A5)		<input type="checkbox"/> Depleted Matrix (F3)		<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)		<input type="checkbox"/> Redox Dark Surface (F6)		<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)		<input type="checkbox"/> Depleted Dark Surface (F7)		<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)		<input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed):							
Type: _____				Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Depth (inches): _____							
Remarks:							
The basin area and adjacent stormwater ditch wetland areas are almost entirely covered by Common reed vegetation. As shown on the current aerial imagery, the 6 Acre Parcel is maintained, so the vegetation is controlled and kept at bay.							





WETLAND DELINEATION REPORT

For

New Jersey Transit Train Controls- Wayside Signals

Morris and Essex Line

Towns of Kearny and Harrison, Hudson County, New Jersey

September 16, 2015

PREPARED FOR:

BEM Systems, Inc.
1000 Passaic Avenue
Chatham, New Jersey 07928

PREPARED BY:

Amy S. Greene Environmental Consultants, Inc.
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Flemington, NJ 08822
ASGECI #3868

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SECTION #1

WETLAND DELINEATION SUMMARY

I. INTRODUCTION

AMY S. GREENE ENVIRONMENTAL CONSULTANTS, INC. (ASGECI) performed an investigation for wetlands and regulated waters at twenty-nine asset locations along the Morris and Essex rail line located in the towns of Kearny and Harrison in Hudson County New Jersey. New Jersey Transit is proposing to elevate vulnerable assets along the Morris and Essex rail line to the appropriate elevation so that they are not adversely affected by flood waters. The asset locations were identified by BEM Systems Inc. (See Section 7) and each location was inspected by ASGECI for the presence of wetlands and regulated waters. Any wetlands or regulated waters that were identified were flagged in the field and located by GPS by ASGECI during June and July of 2015. GPS coordinates were forwarded to BEM Systems and Jacobs Engineering for inclusion in the asset survey. The wetland delineation mapping was prepared by ASGECI (See Figure 9a-9j). A total of 29 assets were identified and investigated for the presence of wetlands or regulated waters. Of those 29 assets 10 had wetlands or open waters in close proximity to the asset. These assets are the focus of this report. There were also 27 assets that are located within the regulatory floodplain.

.II. WETLANDS DEFINITION AND METHODOLOGY

2.1 WETLAND DEFINITION

Wetlands of the United States are defined by the United States Army Corps of Engineers and the United States Environmental Protection Agency as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Wetlands generally include swamps, marshes, bogs, and similar areas." The methodology below is used to determine the extent of wetlands at a specific location.

2.2 WETLAND METHODOLOGY

The potential for the presence of wetlands within the project study area was determined from the review of existing published information including the US Fish and Wildlife Service National Wetlands Inventory Maps, the NJDEP Freshwater Wetland Maps, and a field investigation of the study area conducted by ASGECI. Wetlands were identified and delineated within, and immediately adjacent to the existing assets identified by the project mapping (See Section 6).

Wetlands were delineated and documented by Amy Greene Environmental Consultants, Inc. (ASGECI) in June and July of 2015. Vegetation, soils and hydrology were examined for evidence of wetland characteristics according to methodologies outlined in the Corps of Engineers Wetlands Delineation Manual (Department of the Army, US Army Corps of Engineers, 1987). Use of the US Army Corp of Engineers (USACE) Manual is required for this project because the all of the Assets adjacent to wetlands were located within areas under the

jurisdiction of the Hackensack Meadowlands Development Commission and are exempt from regulation under New Jersey's Freshwater Wetlands Protection Act.

At the time of the delineation palustrine emergent (PEM) wetlands and open waters were identified on and immediately adjacent to the existing identified assets. In accordance with the methodology described above, areas which contained hydrophytic vegetation, hydric soils, and wetland hydrology were identified as wetlands. Water areas that did not contain either wetland soils or hydrophytic vegetation were mapped as open waters and are considered regulated Waters of the United States. Descriptions of the vegetation, soils and hydrologic characteristic of the delineated wetlands are presented below. Sampling Station data and photographs of representative wetlands and uplands are located in Sections 3 and 4 respectively.

2.3 WETLAND VEGETATION

The wetland areas are mostly dominated by common reed (*Phragmites australis*) in the herbaceous layer and Chokecherry (*Prunus virginica*) in the shrub layer. Only a few trees were observed and they did not make up the dominate layer in any of the wetlands that were identified. Wetland vegetation was present at the toe of slope of the rail lines that were apparently constructed in former PEM wetlands. All of the wetland areas are part of larger remnant wetland areas or are fringe wetlands located along open water areas such as those shown at Assets 14, 15 and 16 (Photos E, F and G). All of the wetland areas are part of a tidally influenced system.

The dominant vegetation identified within the wetland areas described above is classified as hydrophytic by the USACOE. Site data sheets containing lists of vegetation identified at each sampling location are included in Section 3.

Upland communities within the project area consist of early successional vegetation characteristic of maintained railroad beds. Evidence of herbicide control was prevalent. Little if any vegetation was present in the upland areas. This is due to herbicide control and because little if any soil is present in the upland. The Upland areas were largely made up of railroad ballast. Various grasses were present in these upland areas and the dominant species was Common reed (*Phragmites australis*). Other species such as Japanese knotweed (*Polygonum cuspidatum*) and panic grass (*Panicum virgatum*) Common Horsetail (*Equisetum arvense*) were also present. There are no forest communities within or in close proximity to the assets identified in the project area.

2.4 HYDRIC SOILS

Soil sampling with a hand-held auger was performed during the field investigations within the study area. All sampled soils identified within the study area appeared to be composed of muck and varying degrees of fill materials. Hydric soil characteristics including a low chroma matrix and redoximorphic features were identified in those areas classified as wetlands. Soil textures within the wetland areas identified were generally classified as sandy muck with some gravel fill present. Given the saturated nature of the soils (most assets were adjacent to tidal waters) soil borings below 18 inches produced mostly liquid soil samples that could not be reliably described. Upland soils were composed primarily of rail road ballast fill material. These upland areas rarely had anything that could be described as soil. The areas were primarily rock fill (rail road ballast). Therefore soil borings in this loose rock fill were not possible and attempts to take

soil boring resulted in refusal of the auger at the surface. No indicators of hydric soils were present in the upland areas. Site data sheets containing a description of the soil profiles are included in Section 3.

According to the State Soil Geographic (STATSGO) Database of New Jersey, there is one soil type identified within the project limits. This is the Sulfaquents-Udorthents-Psamments (NJ036) soil unit. According to STATSGO, this non-hydric soil is present throughout the project area. These soils are nearly level to steep, well drained to very poorly drained, very deep mineral and organic soils on tidal flats.

2.5 HYDROLOGY

All wetland areas exhibited wetland hydrology. Wetland hydrology was indicated by a high water table, the presence of standing water within the areas identified as wetlands and soil saturation within the upper 18" of the soil profile. Other indicators of wetland hydrology include water-stained vegetation, silt deposits, and drift lines. The major hydrologic input to the wetlands is the tidal nature of the adjacent waterways. These water areas are connected to the Hackensack River through direct connections via various pipes culverts and bridges. Evidence of drift lines were present at several location as were silt deposits and water stained vegetation.

Wetlands were flagged in the field with blaze orange flags and numbered consecutively beginning with a letter designation (e.g. A-1). Wetland flag locations were located in the field using GPS equipment or were surveyed by Naik Engineering and are shown on the maps in Figures 9a-9j.

2.6 WETLAND PERMIT REQUIREMENTS

The delineated wetlands are under the jurisdiction of the USACE pursuant to the Federal Clean Water Act. Any activities proposed in wetland areas or in Waters of the US will require approval of the US Army Corp of Engineers either under a Nationwide Permit or an Individual Permit. Until the specific methods of elevating the assets is determined it is not possible to determine if the activities qualify for a Nationwide permit or an Individual permit. It is highly likely that Nationwide permit #3 for maintenance activities will be available for the majority of the assets but further information on the method of elevation is needed to make this determination.

In addition a NJDEP Water Quality Certificate and Coastal Zone Consistency Determination will be needed for any activities that are proposed within Waters of the United States including wetlands. The USACOE will not issue their permit without these state approvals. The NJDEP uses the Rules on Coastal Zone Management 7:7E to review activities proposed in Waters of the United States. Additional information on the method of elevation is needed to determine the need for the Water Quality Certificate and Coastal Consistency Determination and which Rules on Coastal Zone Management will need to be addressed.

III. OTHER REGULATED AREAS

The NJDEP also regulates activities in regulated streams, their flood hazard areas and riparian zones under the New Jersey Flood Hazard Area Control Act (FHACA) Rules (N.J.A.C. 7:13). Therefore, in addition to wetlands and State open waters, ASGECI identified the locations of non-wetland drainage ditches, stream channels, and other features that may also contain an associated riparian zone. Please note that the NJDEP *does not* regulate a segment of water that has a drainage area of less than 50 acres, provided one or more applies:

- The water has no discernable channel;
- The water is confined within a lawfully existing, manmade conveyance structure or drainage feature, such as a pipe, culvert, ditch, channel, or basin; and
- The water is not connected to a regulated water by a channel or pipe, such as an isolated pond or depression that has no outlet.

All of the water areas ASGECI has identified appear to be regulated waters under the FHACA rules because they are within a tidal floodplain and appear to be tidally influenced. Further investigation of the connections of the various waterways to tidal waters may be necessary to determine if any of these waterways are not connected by a channel or pipe to the Hackensack River or if they do not have an outlet area. XXX assets are located in the regulated flood plain. In addition 14 assets (Assets #'s 1,2,3,4,6,10,11,14,15,16,17,19,20 and 21) appear to be located within a regulated riparian zone. A riparian zone exists adjacent to all regulated waters and can be either 50 feet, 150 feet or 300 feet in width. The width of a riparian zone is determined by the FHACA rule at N.J.S.A. 7:13-4.1. The riparian zone adjacent to a Category One Water is 300 feet. There are no Category One waters in the project area. The riparian zone is 150 feet in width adjacent to trout production waters or within one mile of a trout maintenance water or its tributaries. There are no trout waters in the project area or within one mile upstream of the project area. In addition the riparian zone is 150 feet in width along any segment of water flowing through an area that contains documented habitat for a threatened or endangered species, which is critically dependent on the water for survival and all upstream waters within one mile of the project area. There are no threatened or endangered species located close enough to the project which would cause a 150 foot riparian zone within the project area. Therefore the riparian zone adjacent to any regulated water within the project is 50 feet in width.

Any regulated activities as defined by the FHACA rules, within the flood plain or the riparian zone will require a permit under the FHACA rules. The type of permit required to elevate the various assets will depend on the manner in which the assets are elevated. If the assets are elevated on poles or structures in the same footprint as the existing structure they may be eligible for permits by rule. If the assets are moved or are placed on fill or other solid structure they may require a general permit or an individual permit. Any vegetation cleared cut or removed in the riparian zone may also need to be compensated. However, there are certain amounts of vegetation that can be removed without compensation but the amount allowed to be removed depends on the type of activity proposed. It is not possible to determine the specific permit requirements without knowing the types of structures or fill that is proposed.

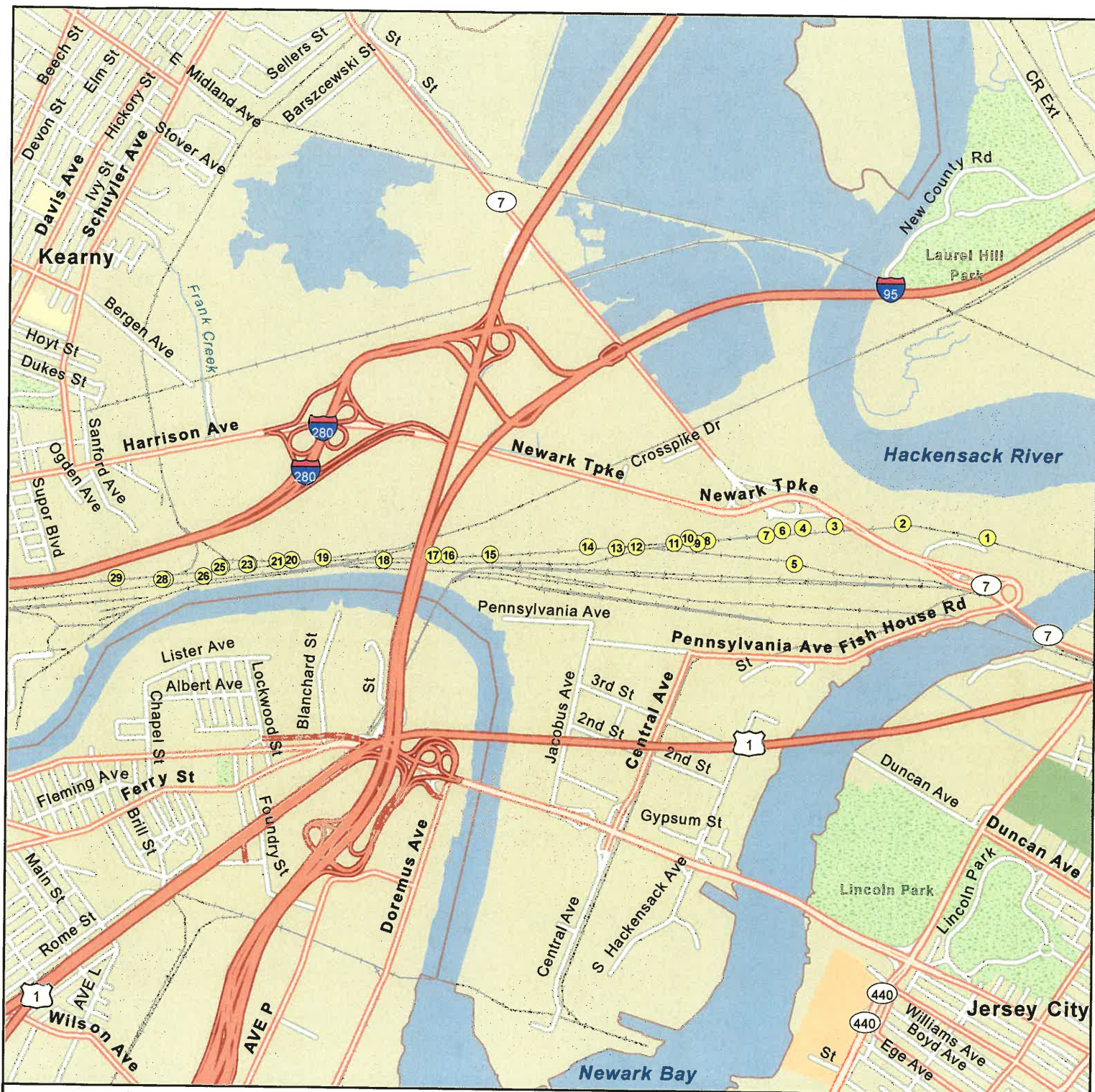
The NJDEP also regulates any activities proposed at or below the mean high waterline under the Waterfront Development Act and the Rules on Coastal Zone Management 7:7E. There are eleven assets in close proximity to the water's edge (Asset #'s 2, 3, 4, 10, 14, 15, 16, 17, 19, 20 and 21).

Further investigation will be needed to determine the exact location of the regulatory Mean High Water line. Depending upon the method proposed to elevate each of these assets a waterfront development permit may or may not be required.

SECTION #2

SITE MAPS MORRIS and ESSEX LINE

- Figure 1 – County Road Map, Overall Location Map
- Figures 2 a & b–Aerial Location Maps
- Figure 3 USGS Topographic Map
- Figure 4 NJ Hackensack Meadowlands District Map
- Figures 5 a – 5 f – SSURGO Soils Maps
- Figures 6 a – 6 f – NJDEP Wetlands & Streams Maps
- Figures 7 a – 7-k – FEMA Preliminary DFIRM Floodplain Map
- Figures 8 a – 8 f NJDEP Landscape Project Maps
- Figures 9a -9j Wetland Delineation Maps
- Figure 10 Geology with the Potential for Acid Producing Soil



Legend

- Asset Location

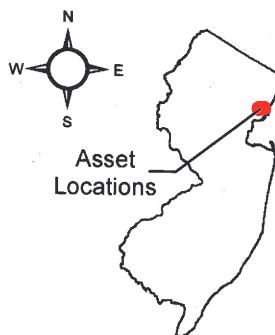


Figure 1
Overall Location Map

Assets M&E 1 to 29
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

2,500



Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



Legend

 Asset Location

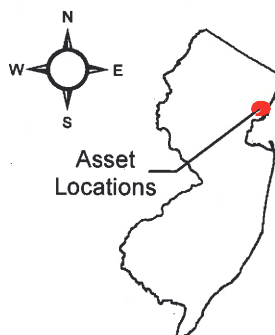


Figure 2a
Aerial Location Map

Assets M&E 1 to 14
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

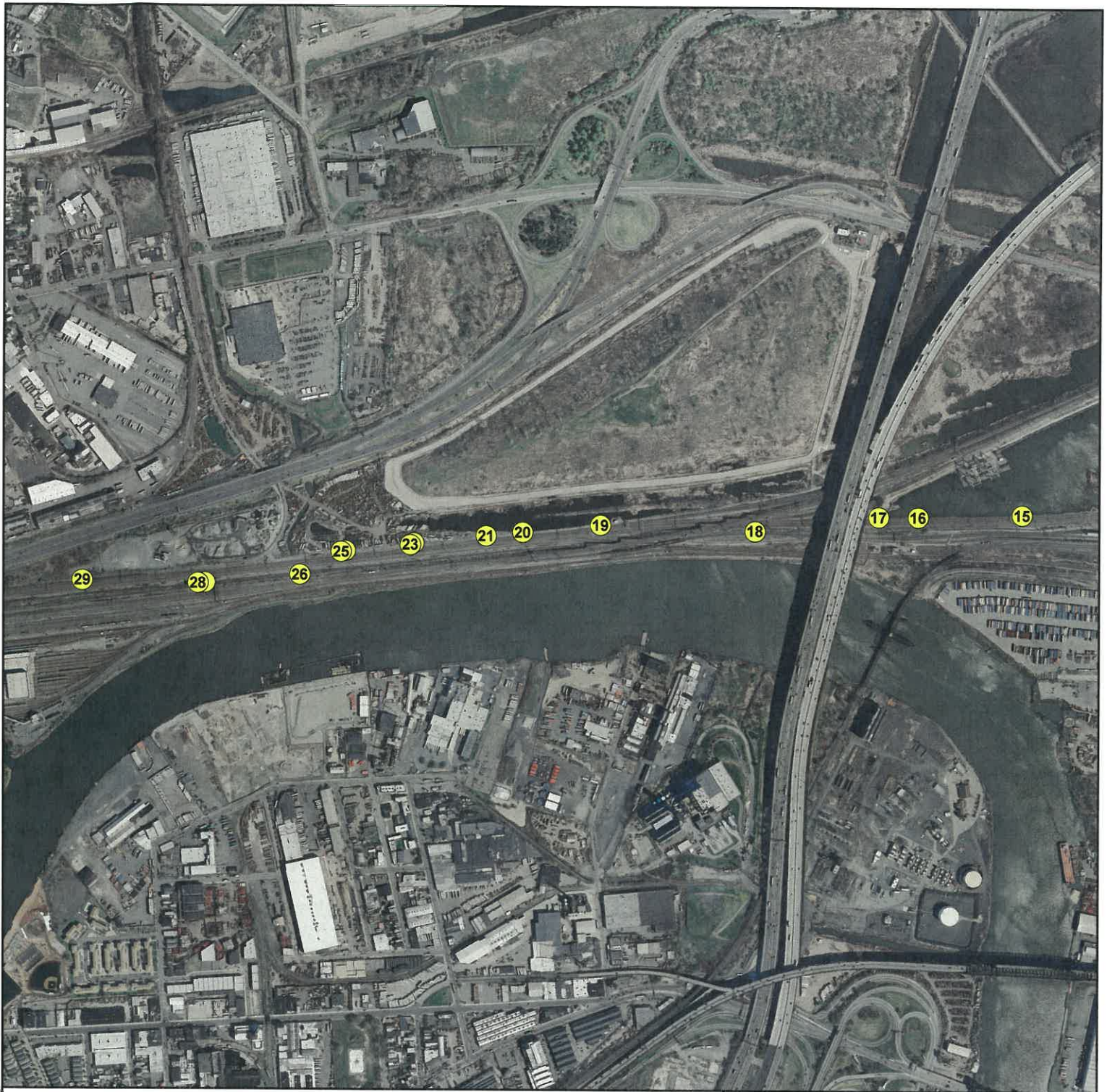
ASGECI Project # 3868

1,000

Feet

 **AMY S. GREENE**
 **ENVIRONMENTAL**
 **CONSULTANTS.**

Source:
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey -
Office of Information Technology (NJOTT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.



Legend

 Asset Location

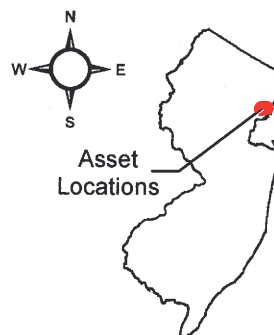


Figure 2b
Aerial Location Map

Assets M&E 15 to 29
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

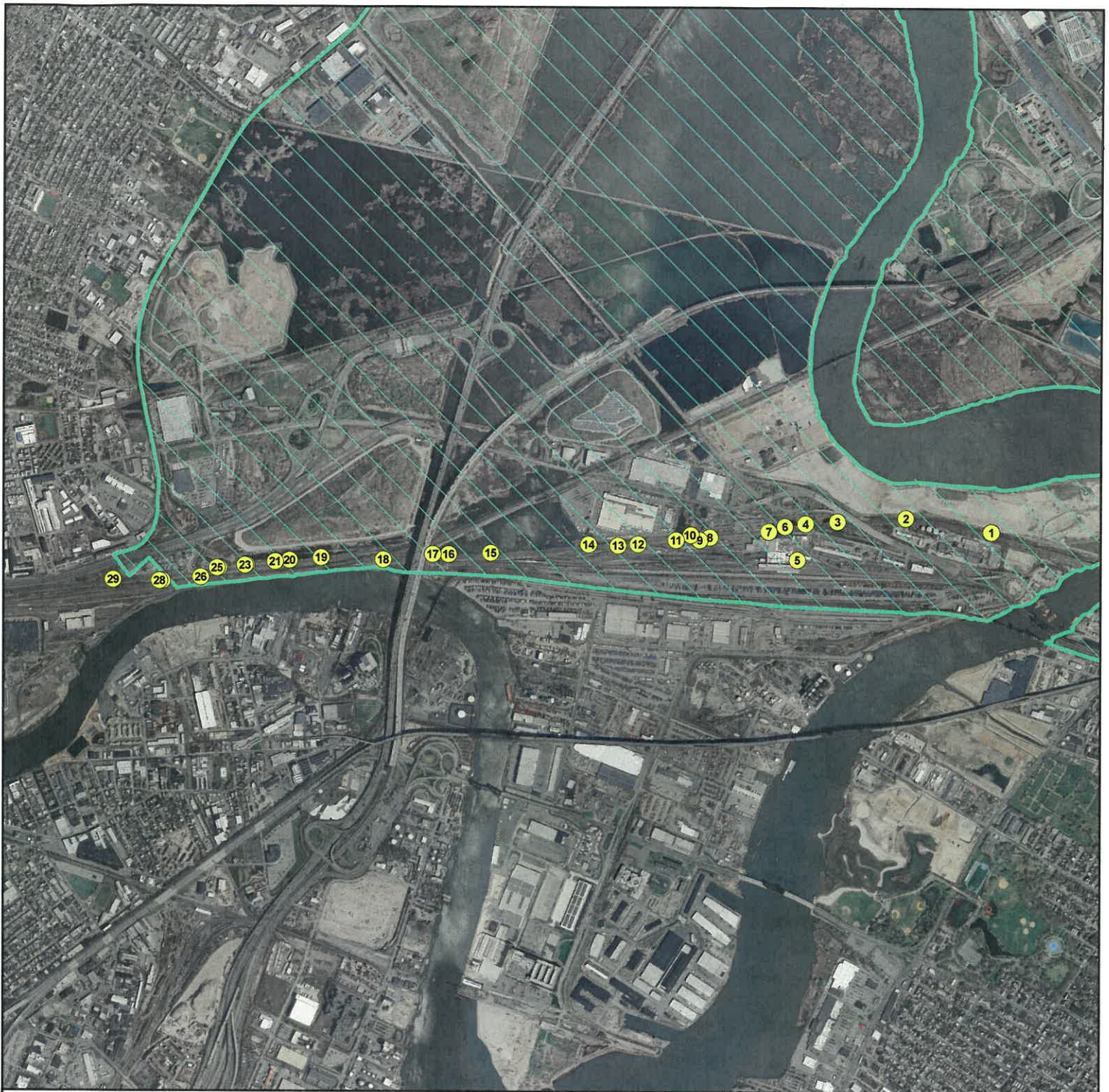
1,000

Feet

 **AMY S. GREENE**
ENVIRONMENTAL
CONSULTANTS.

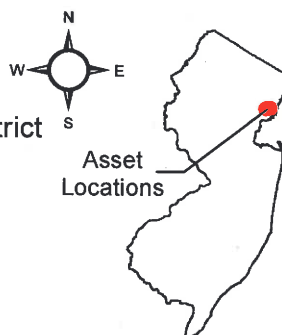
Source:
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey -
Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.

Source:
 Bit-Mapped 7.5 Minute Color Topographic Images of New Jersey, United States Geological Survey (USGS), Digital Raster Graphic (DRG) Topographic Series Map, Elizabeth NJ/NY, Jersey City NJ/NY, Weehawken NJ/NY, and Orange NJ Quadrangle, USGS, Reston, Va., January 9, 1996.



Legend

- Asset Location
- New Jersey Hackensack Meadowlands District



Asset
Locations

Figure 4 - NJ Hackensack Meadowlands District Map

Assets M&E 1 to 29
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

2,500
Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS

Sources:

New Jersey Hackensack Meadowlands District Boundary from Planning Areas of the NJ State Development and Redevelopment Plan, adopted March 1, 2001, NJ Department of State, Office for Planning Advocacy, Trenton, NJ, last revised January 2013.
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
This (map/publication/report) was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.



Legend

 M&E Line Asset Structure

SOILS LIST:

SecA - Secaucus artifactual fine sandy loam, 0 to 3 percent slopes
 SecB - Secaucus artifactual fine sandy loam, 3 to 8 percent slopes
 URTILB - Urban land, till substratum, 0 to 8 percent slopes
 URWETB - Urban land, wet substratum, 0 to 8 percent slopes
 WectA - Westbrook mucky peat

Sources:

Soil Survey Geographic (SSURGO) Database for Hudson County, New Jersey,
 U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas, November 2013.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey -
 Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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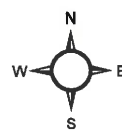



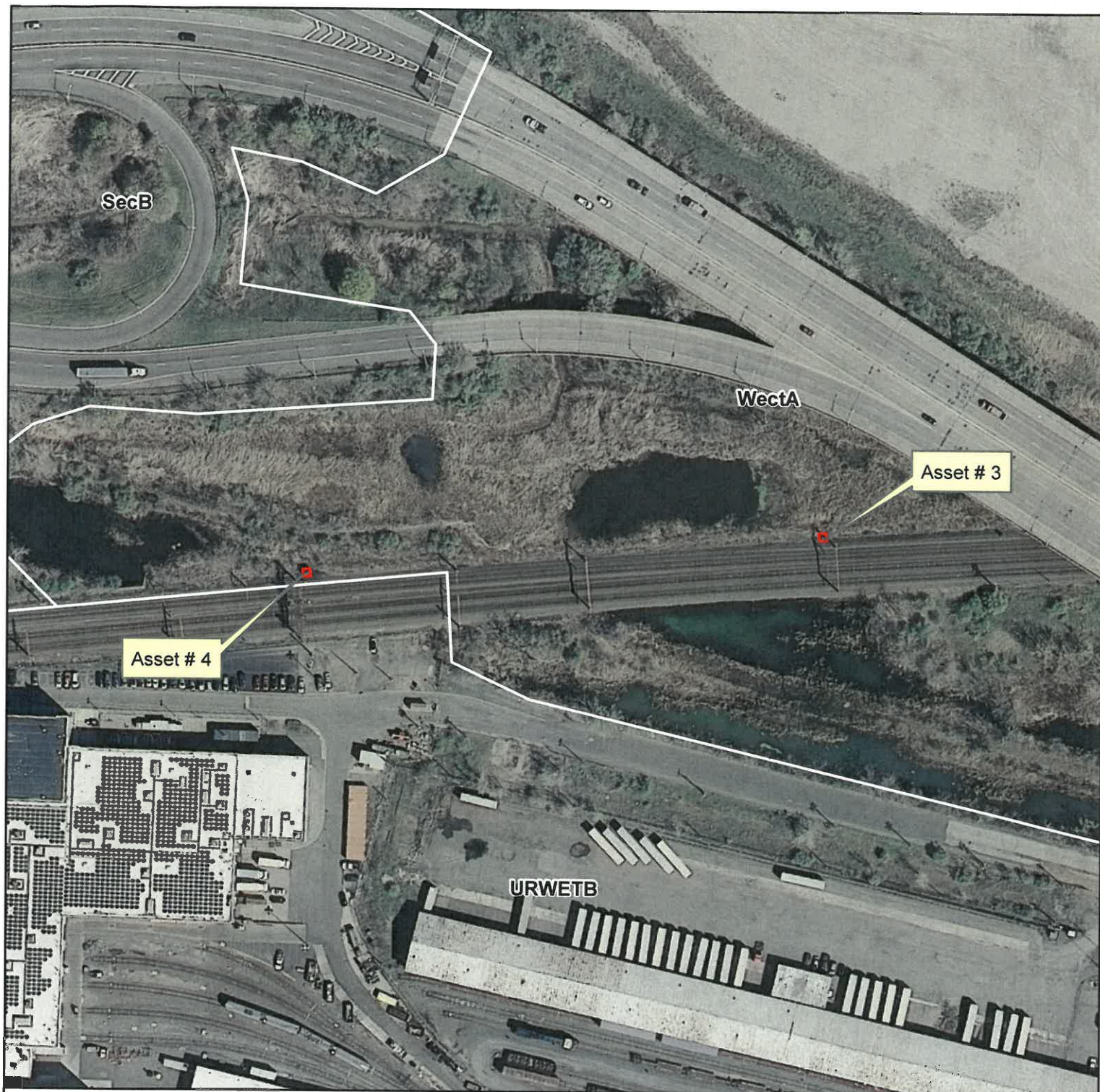
Figure 5a
SSURGO Soils Map

Asset M&E 2
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

 Feet

 **AMY S. GREENE**
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CONSULTANTS



Legend

 M&E Line Asset Structure

SOILS LIST:

SecA - Secaucus artifactual fine sandy loam, 0 to 3 percent slopes
 SecB - Secaucus artifactual fine sandy loam, 3 to 8 percent slopes
 URTILB - Urban land, till substratum, 0 to 8 percent slopes
 URWETB - Urban land, wet substratum, 0 to 8 percent slopes
 WectA - Westbrook mucky peat

Sources:

Soil Survey Geographic (SSURGO) Database for Hudson County, New Jersey,
 U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas, November 2013.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey -
 Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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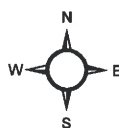


Figure 5b SSURGO Soils Map

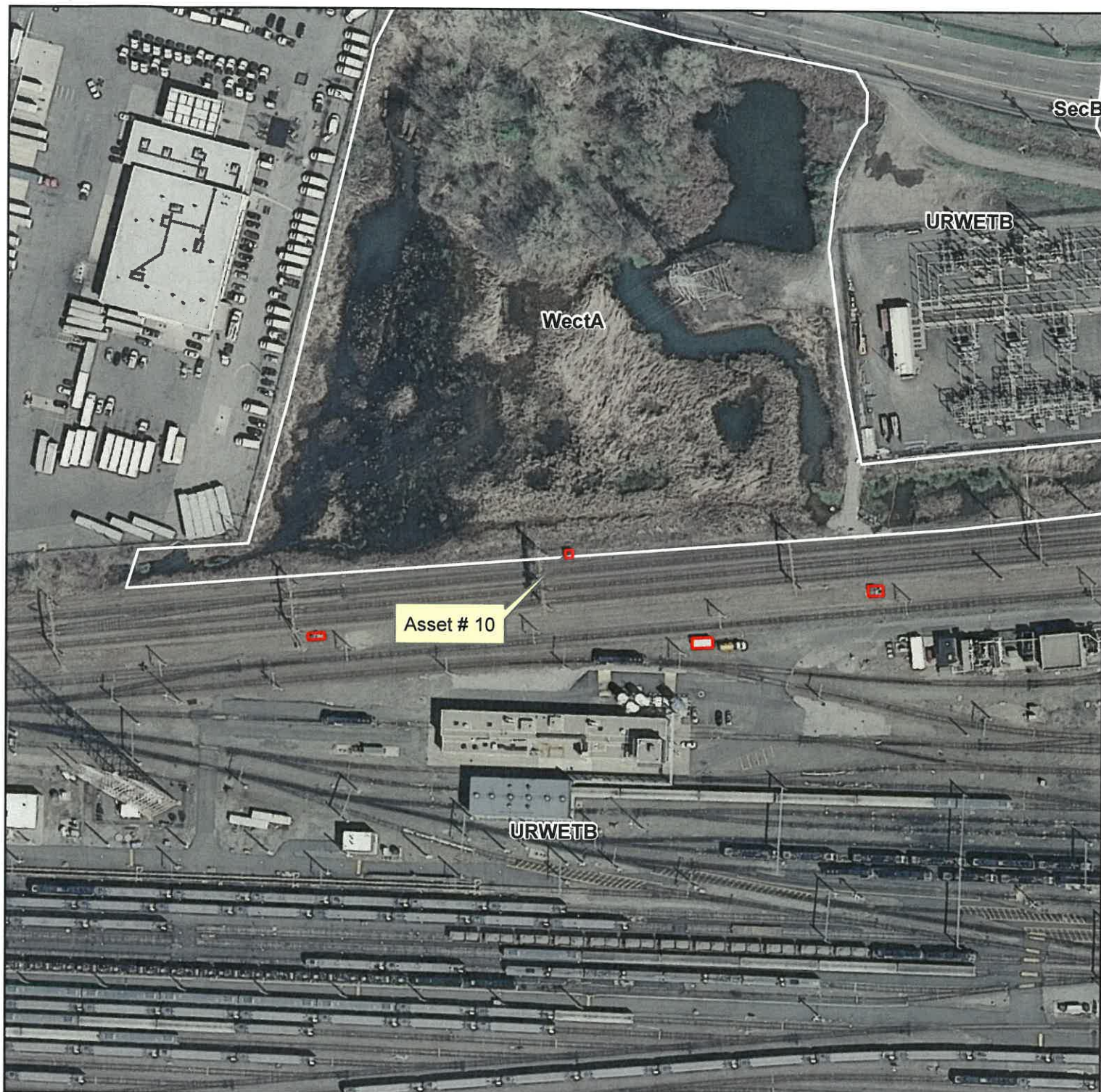
Assets M&E 3 and 4
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

 **AMY S. GREENE**
ENVIRONMENTAL
CONSULTANTS.



Legend

◆ M&E Line Asset Structure

SOILS LIST:

SecA - Secaucus artifactual fine sandy loam, 0 to 3 percent slopes
 SecB - Secaucus artifactual fine sandy loam, 3 to 8 percent slopes
 URTILB - Urban land, till substratum, 0 to 8 percent slopes
 URWETB - Urban land, wet substratum, 0 to 8 percent slopes
 WectA - Westbrook mucky peat

Sources:

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 U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas, November 2013.
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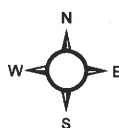


Figure 5c
SSURGO Soils Map

Asset M&E 10
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

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Legend

 M&E Line Asset Structure

SOILS LIST:

SecA - Secaucus artifactual fine sandy loam, 0 to 3 percent slopes
 SecB - Secaucus artifactual fine sandy loam, 3 to 8 percent slopes
 URTILB - Urban land, till substratum, 0 to 8 percent slopes
 URWETB - Urban land, wet substratum, 0 to 8 percent slopes
 WectA - Westbrook mucky peat

Sources:

Soil Survey Geographic (SSURGO) Database for Hudson County, New Jersey,
 U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas, November 2013.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey -
 Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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Figure 5d SSURGO Soils Map

Asset M&E 14
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

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Legend

 M&E Line Asset Structure

SOILS LIST:

SecA - Secaucus artifactual fine sandy loam, 0 to 3 percent slopes
 SecB - Secaucus artifactual fine sandy loam, 3 to 8 percent slopes
 URTILB - Urban land, till substratum, 0 to 8 percent slopes
 URWETB - Urban land, wet substratum, 0 to 8 percent slopes
 WectA - Westbrook mucky peat

Sources:

Soil Survey Geographic (SSURGO) Database for Hudson County, New Jersey,
 U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas, November 2013.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey -
 Office of Information Technology (NJ/OIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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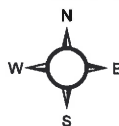


Figure 5e SSURGO Soils Map

Assets M&E 15 and 16
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150
 Feet

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Legend

 M&E Line Asset Structure

SOILS LIST:

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 SecB - Secaucus artifactual fine sandy loam, 3 to 8 percent slopes
 URTILB - Urban land, till substratum, 0 to 8 percent slopes
 URWETB - Urban land, wet substratum, 0 to 8 percent slopes
 WectA - Westbrook mucky peat

Sources:

Soil Survey Geographic (SSURGO) Database for Hudson County, New Jersey,
 U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas, November 2013.
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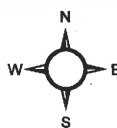


Figure 5f SSURGO Soils Map

Assets M&E 19, 20, and 21
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

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Feet

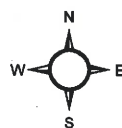
 **AMY S. GREENE**
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Legend

-  M&E Line Asset Structure
-  Streams with Water Quality
-  NJDEP Freshwater Wetlands
-  NJDEP Tidal Wetlands
-  NJDEP Linear Wetlands

WETLAND CLASSIFICATIONS:
 PEM1B - Palustrine, Emergent, Persistent, Saturated
 PEM1E - Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
 PEM1Jr - Palustrine, Emergent, Persistent, Intermittently Flooded, Artificial
 R3UB3x - Riverine, Upper Perennial, Unconsolidated Bottom, Mud, Excavated





Sources:
 NJDEP Surface Water Quality Standards of New Jersey, NJ Department of Environmental Protection (NJDEP), Water Monitoring & Standards, Bureau of Freshwater and Biological Monitoring, Trenton, NJ, December 2010.
 NJDEP Wetlands of Hudson County, New Jersey 1986, New Jersey Department of Environmental Protection (NJDEP), Office of Information Resources Management, Bureau of Geographic Information and Analysis, NJDEP, Trenton, November 1999.
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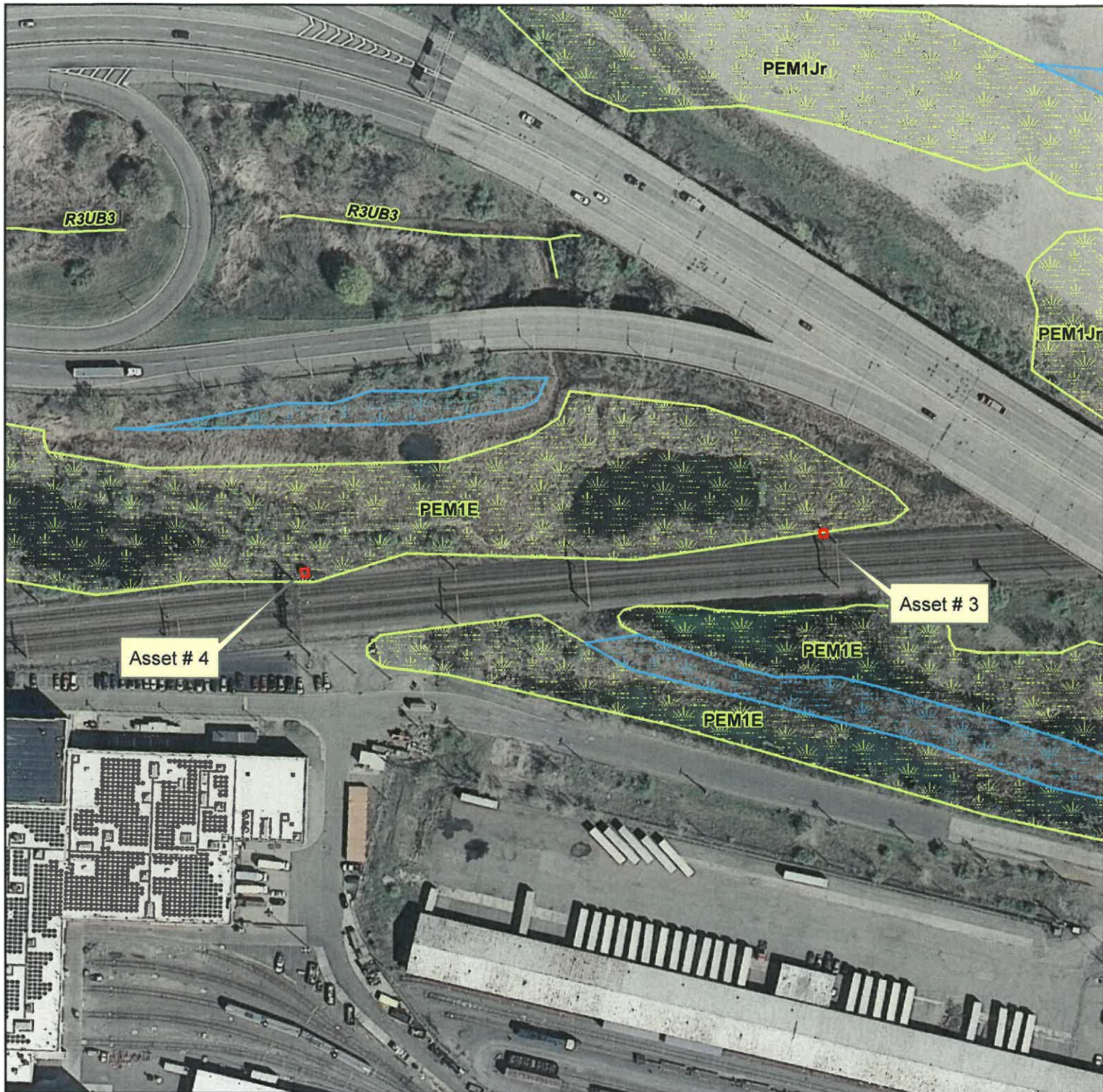
Figure 6a NJDEP Wetland & Streams Map

Asset M&E 2
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

 Feet

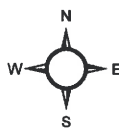
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Legend

- ◆ M&E Line Asset Structure
- ~ Streams with Water Quality
- NJDEP Freshwater Wetlands
- NJDEP Tidal Wetlands
- NJDEP Linear Wetlands

WETLAND CLASSIFICATIONS:
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 PEM1E - Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
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 R3UB3x - Riverine, Upper Perennial, Unconsolidated Bottom, Mud, Excavated



Sources:
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Figure 6b NJDEP Wetland & Streams Map

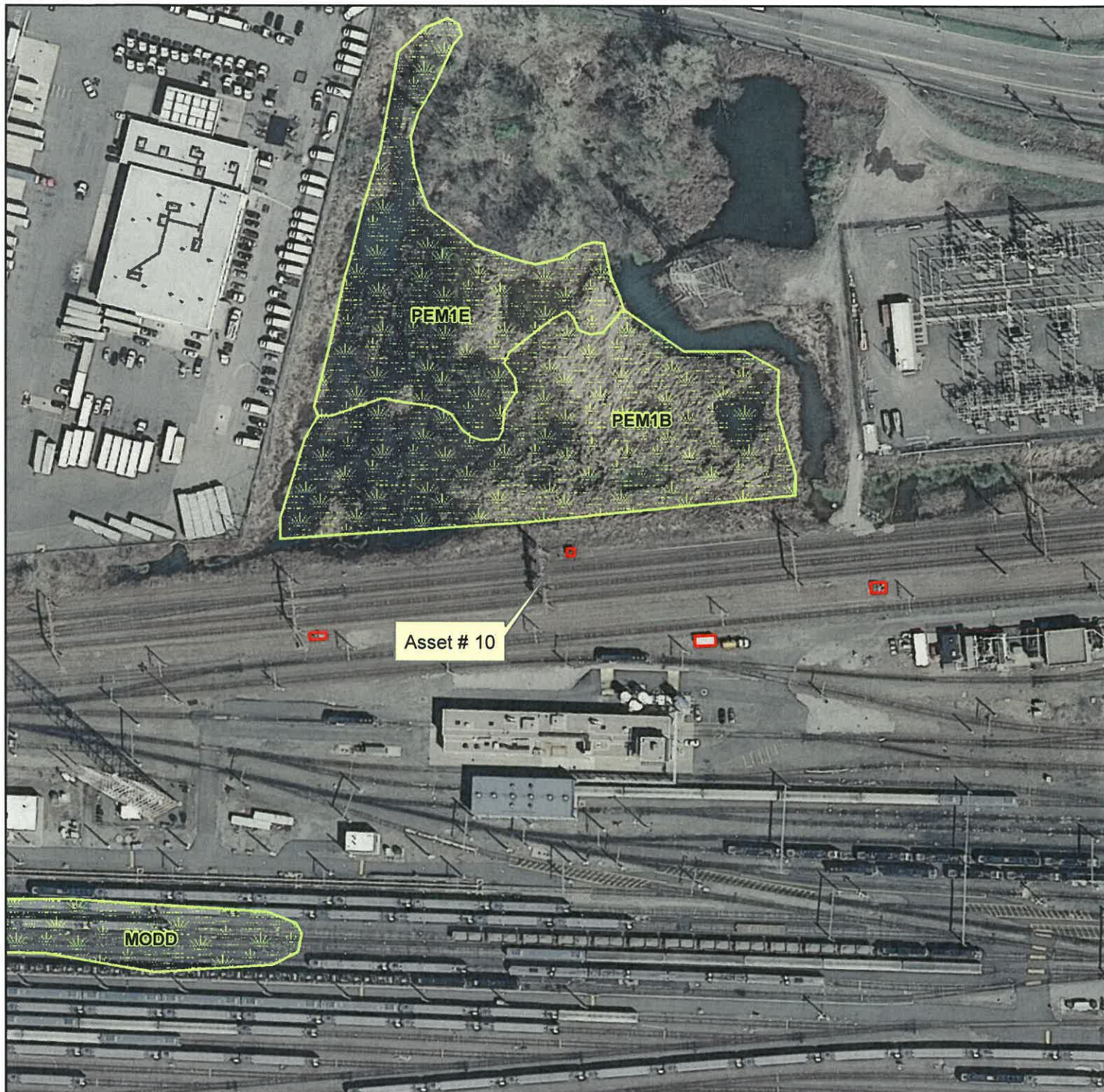
Assets M&E 3 and 4
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868






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Feet

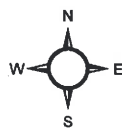
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Legend

-  M&E Line Asset Structure
-  Streams with Water Quality
-  NJDEP Freshwater Wetlands
-  NJDEP Tidal Wetlands
-  NJDEP Linear Wetlands

WETLAND CLASSIFICATIONS:
 PEM1B - Palustrine, Emergent, Persistent, Saturated
 PEM1E - Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
 PEM1Jr - Palustrine, Emergent, Persistent, Intermittently Flooded, Artificial
 R3UB3x - Riverine, Upper Perennial, Unconsolidated Bottom, Mud, Excavated



Sources:
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Figure 6c NJDEP Wetland & Streams Map

Asset M&E 10
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey






ASGECI Project # 3868

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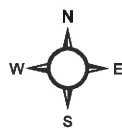
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Legend

-  M&E Line Asset Structure
-  Streams with Water Quality
-  NJDEP Freshwater Wetlands
-  NJDEP Tidal Wetlands
-  NJDEP Linear Wetlands

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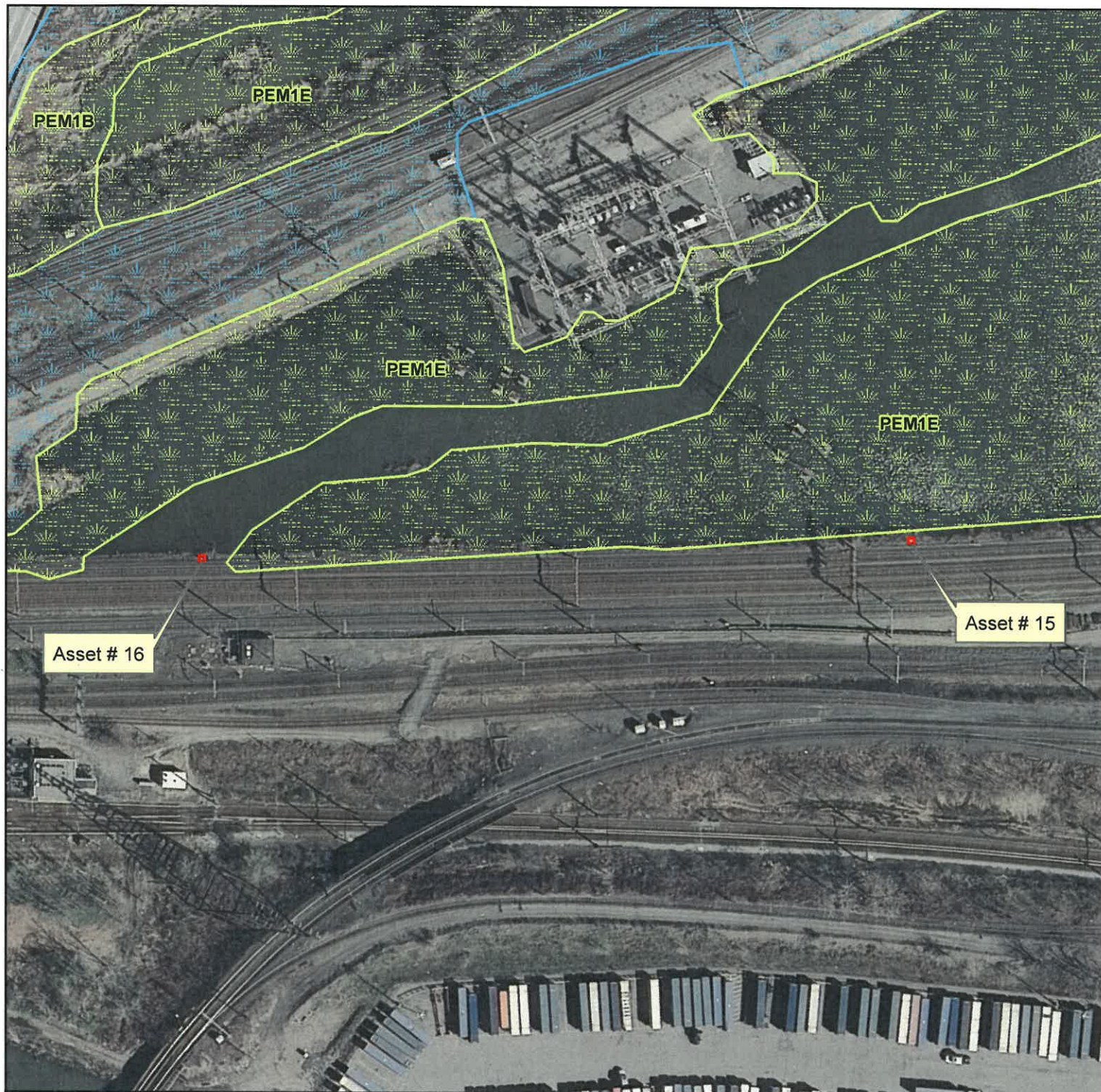
Figure 6d NJDEP Wetland & Streams Map

Asset M&E 14
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey






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 Feet

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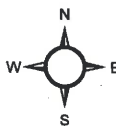


Legend

-  M&E Line Asset Structure
-  Streams with Water Quality
-  NJDEP Freshwater Wetlands
-  NJDEP Tidal Wetlands
-  NJDEP Linear Wetlands

WETLAND CLASSIFICATIONS:

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Sources:
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Figure 6e
NJDEP Wetland & Streams Map

Assets M&E 15 and 16
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868






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Feet

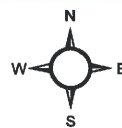
 **AMY S. GREENE**
ENVIRONMENTAL
CONSULTANTS.



Legend

-  M&E Line Asset Structure
-  Streams with Water Quality
-  NJDEP Freshwater Wetlands
-  NJDEP Tidal Wetlands
-  NJDEP Linear Wetlands

WETLAND CLASSIFICATIONS:
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Figure 6f
NJDEP Wetland & Streams Map

Assets M&E 19, 20, and 21
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey



ASGECI Project # 3868

150
 Feet

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ENVIRONMENTAL
CONSULTANTS.



Legend

-  M&E Line Asset Structure
-  100-year FEMA Floodplain

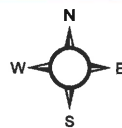


Figure 7a Preliminary DFIRM Flood Map




Asset M&E 1
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

150

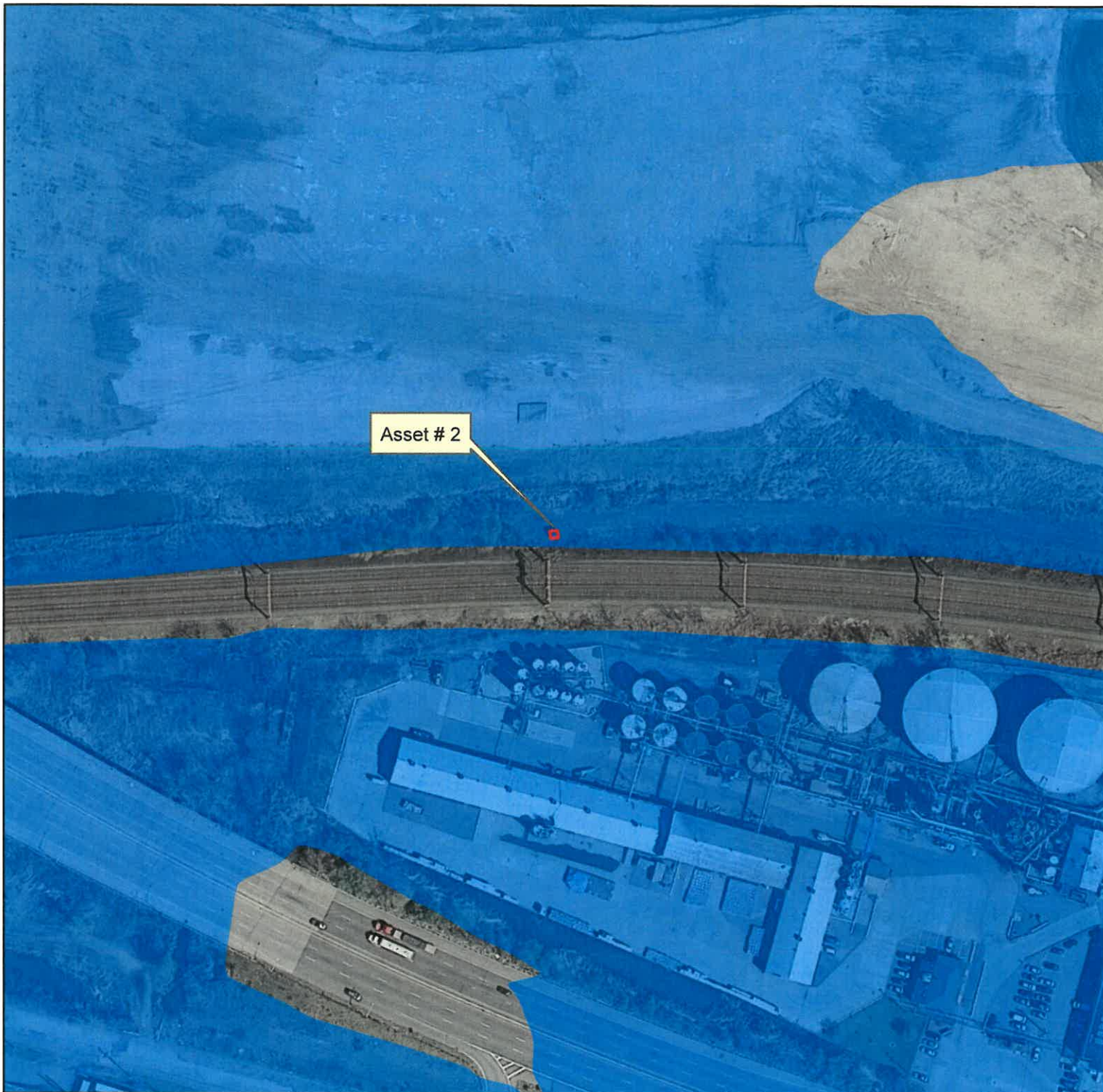


Feet

 **AMY S. GREENE**
 **ENVIRONMENTAL**
 **CONSULTANTS.**

Sources:

Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJ OIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain

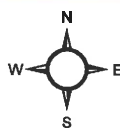


Figure 7b Preliminary DFIRM Flood Map

Asset M&E 2
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

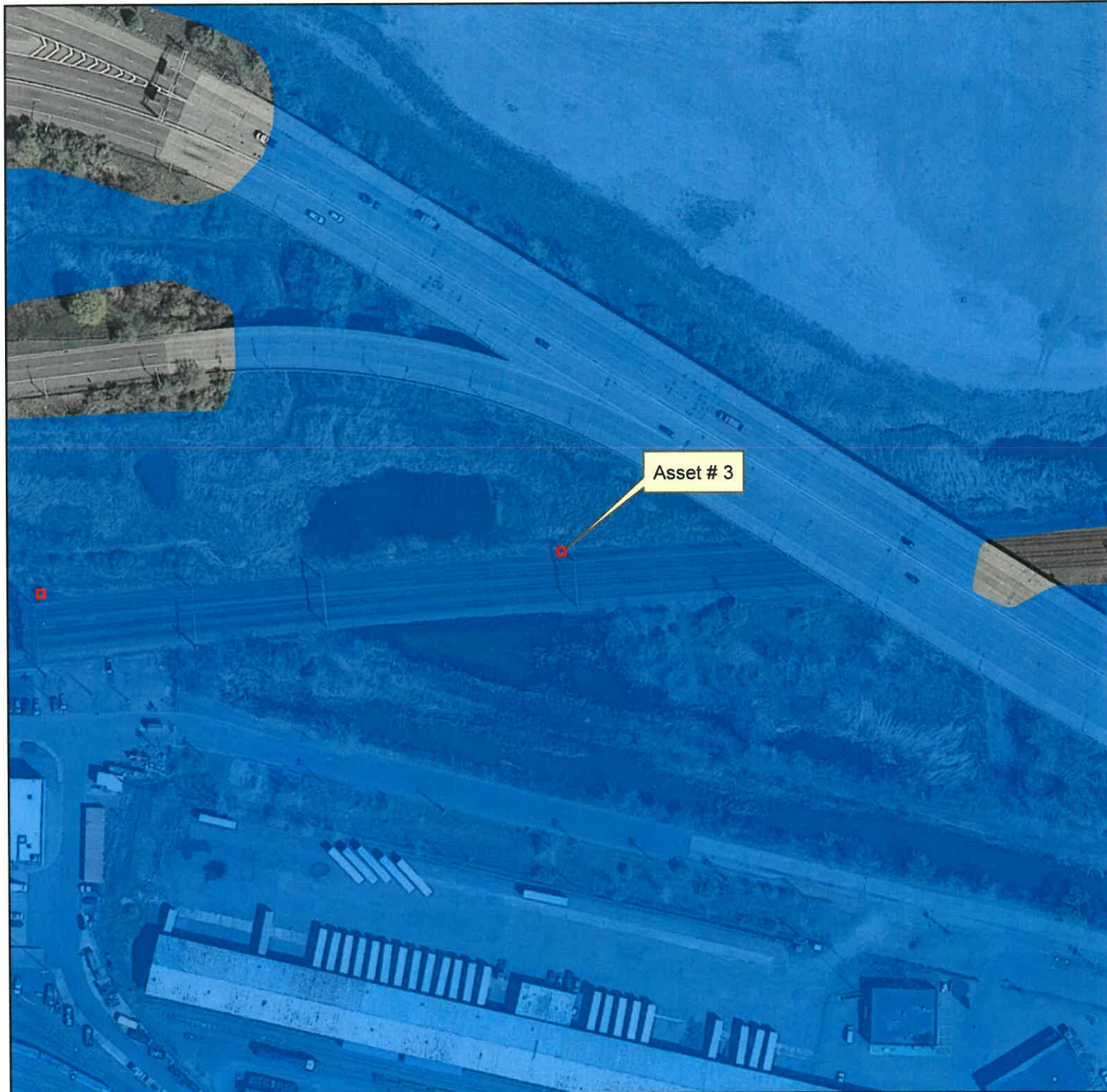
ASGECI Project # 3868

150

Feet

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ENVIRONMENTAL
CONSULTANTS

Sources:
Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
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Legend

-  M&E Line Asset Structure
-  100-year FEMA Floodplain

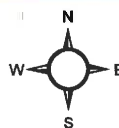


Figure 7c Preliminary DFIRM Flood Map

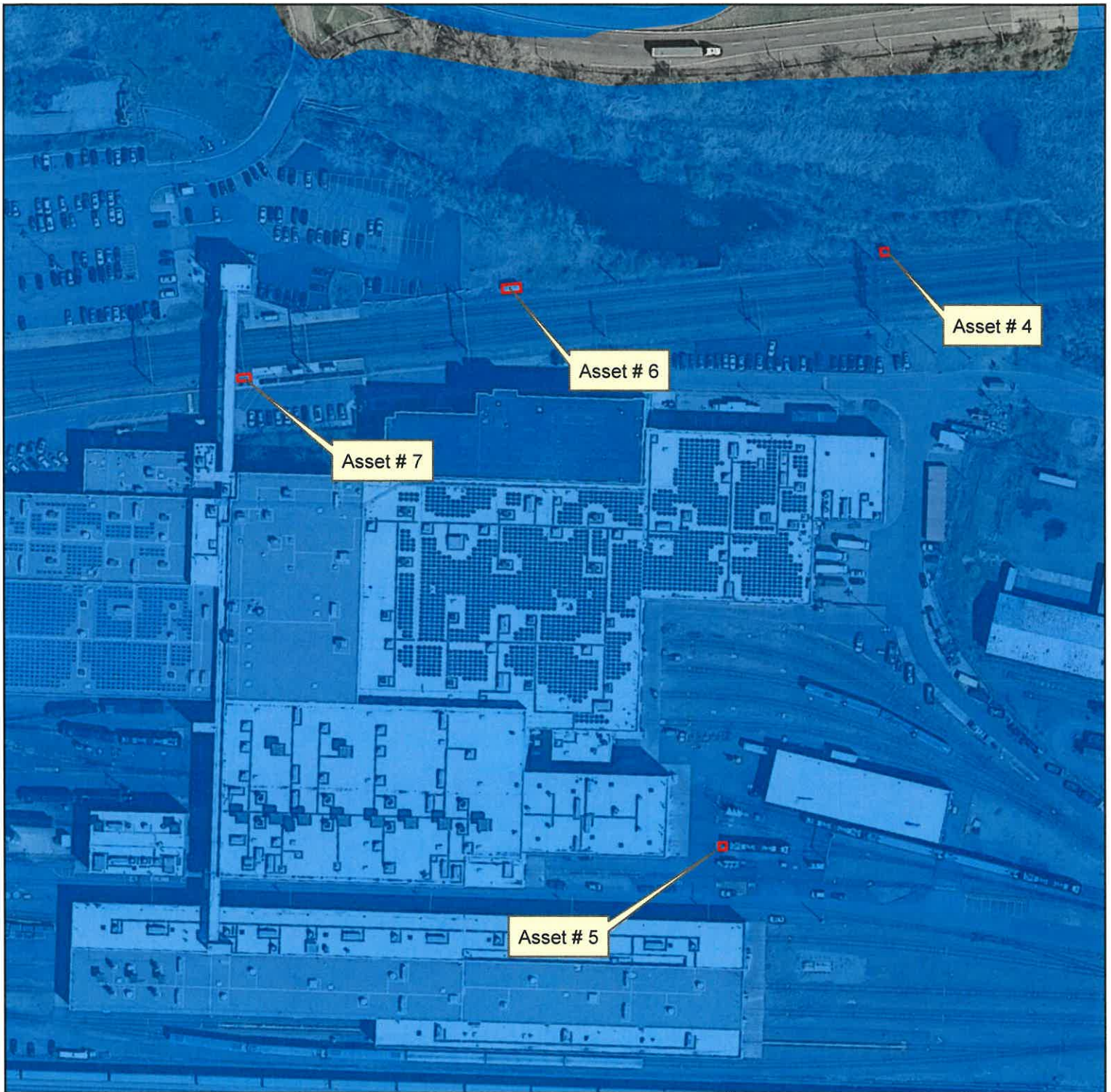
Asset M&E 3
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

150
Feet

 **AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.**

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Legend

-  M&E Line Asset Structure
-  100-year FEMA Floodplain

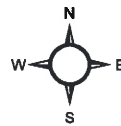


Figure 7d Preliminary DFIRM Flood Map

Assets M&E 4, 5, 6, and 7
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

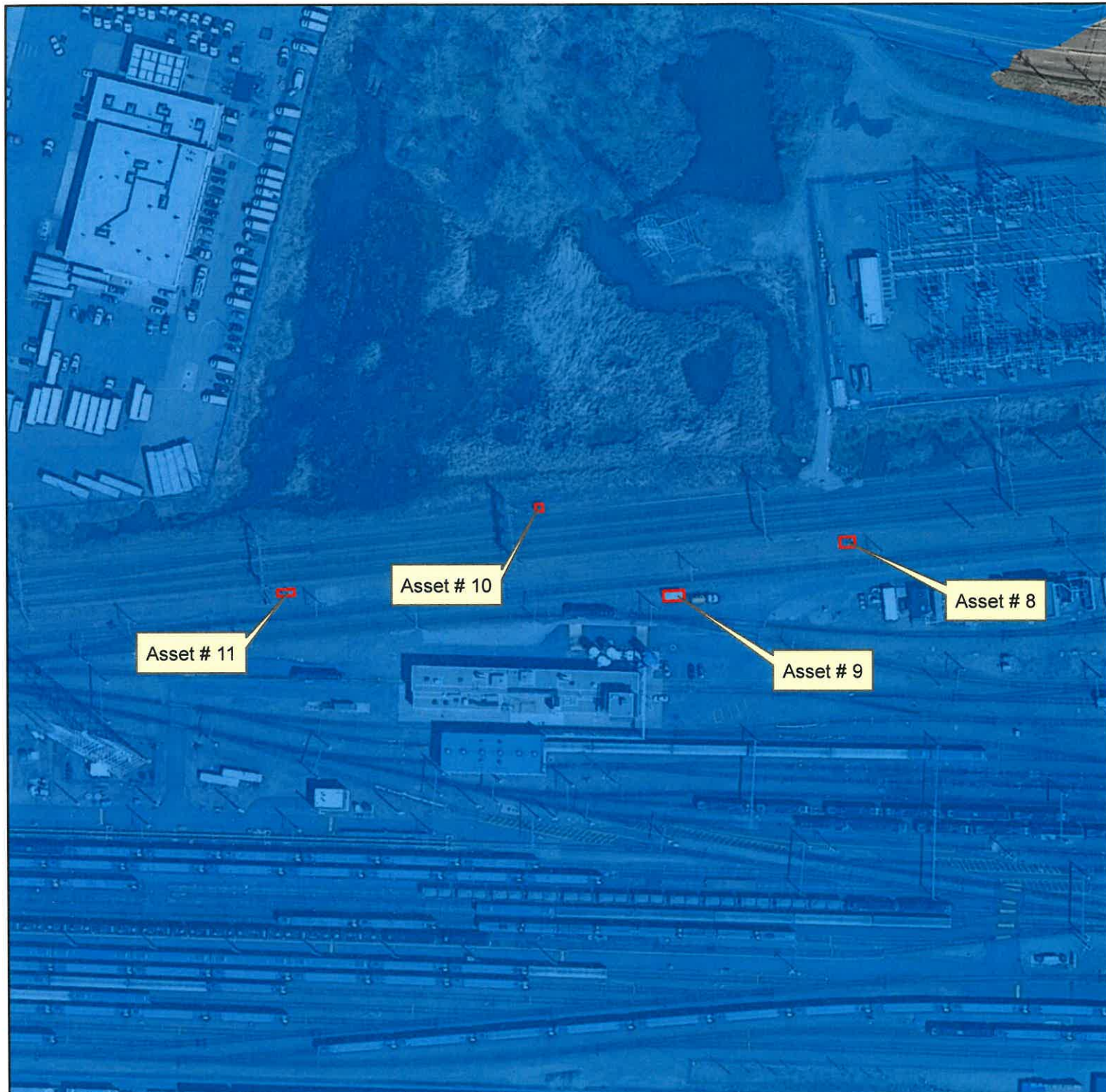
150

Feet

 **AMY S. GREENE
 ENVIRONMENTAL
 CONSULTANTS.**

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Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain

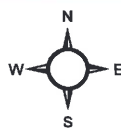


Figure 7e Preliminary DFIRM Flood Map

Assets M&E 8, 9, 10, and 11
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

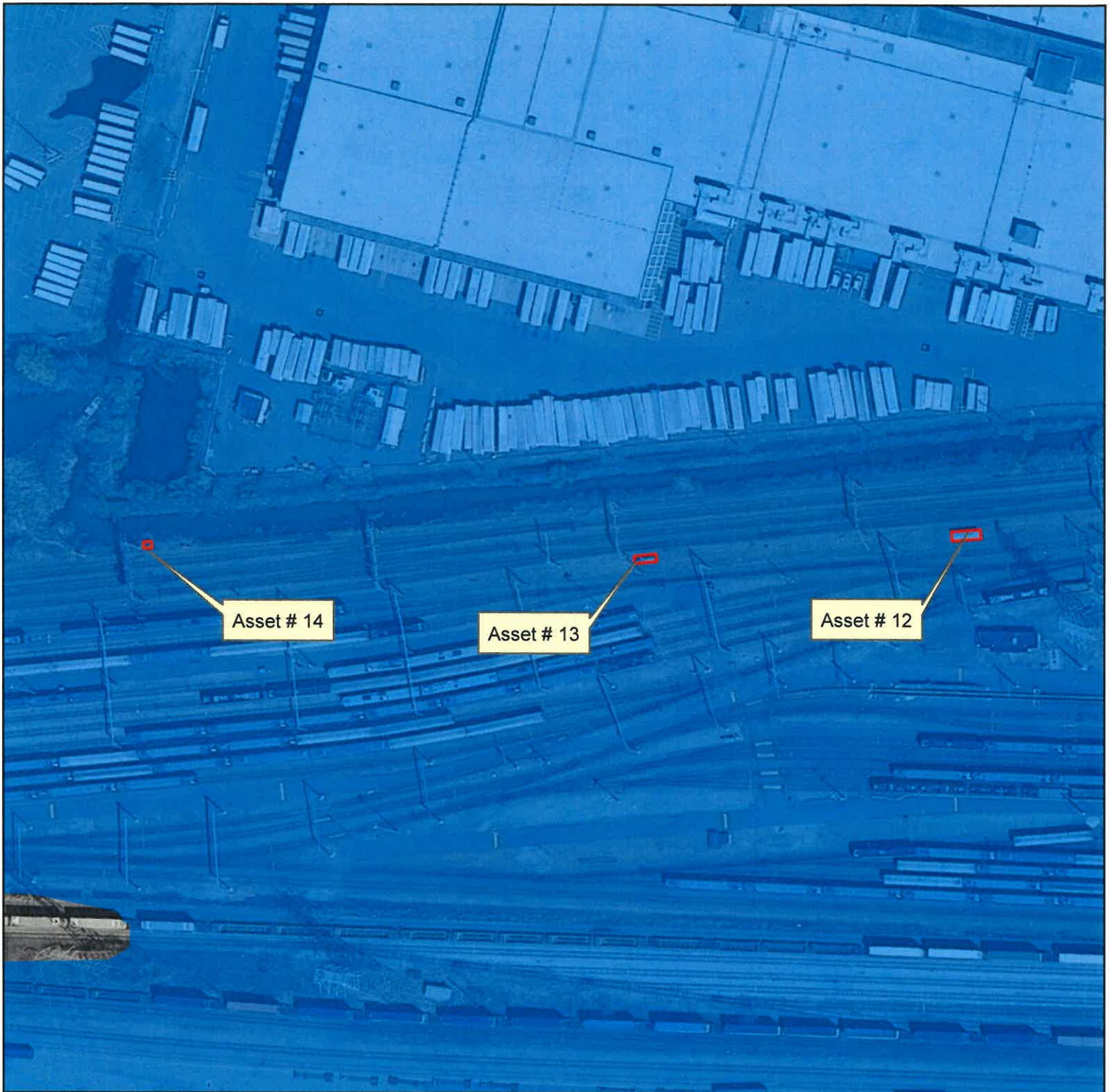
150

Feet



AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS

Sources:

Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
 This (map/publication/report) was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.



Legend

-  M&E Line Asset Structure
-  100-year FEMA Floodplain

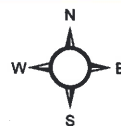


Figure 7f Preliminary DFIRM Flood Map

Assets M&E 12, 13, and 14
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

150

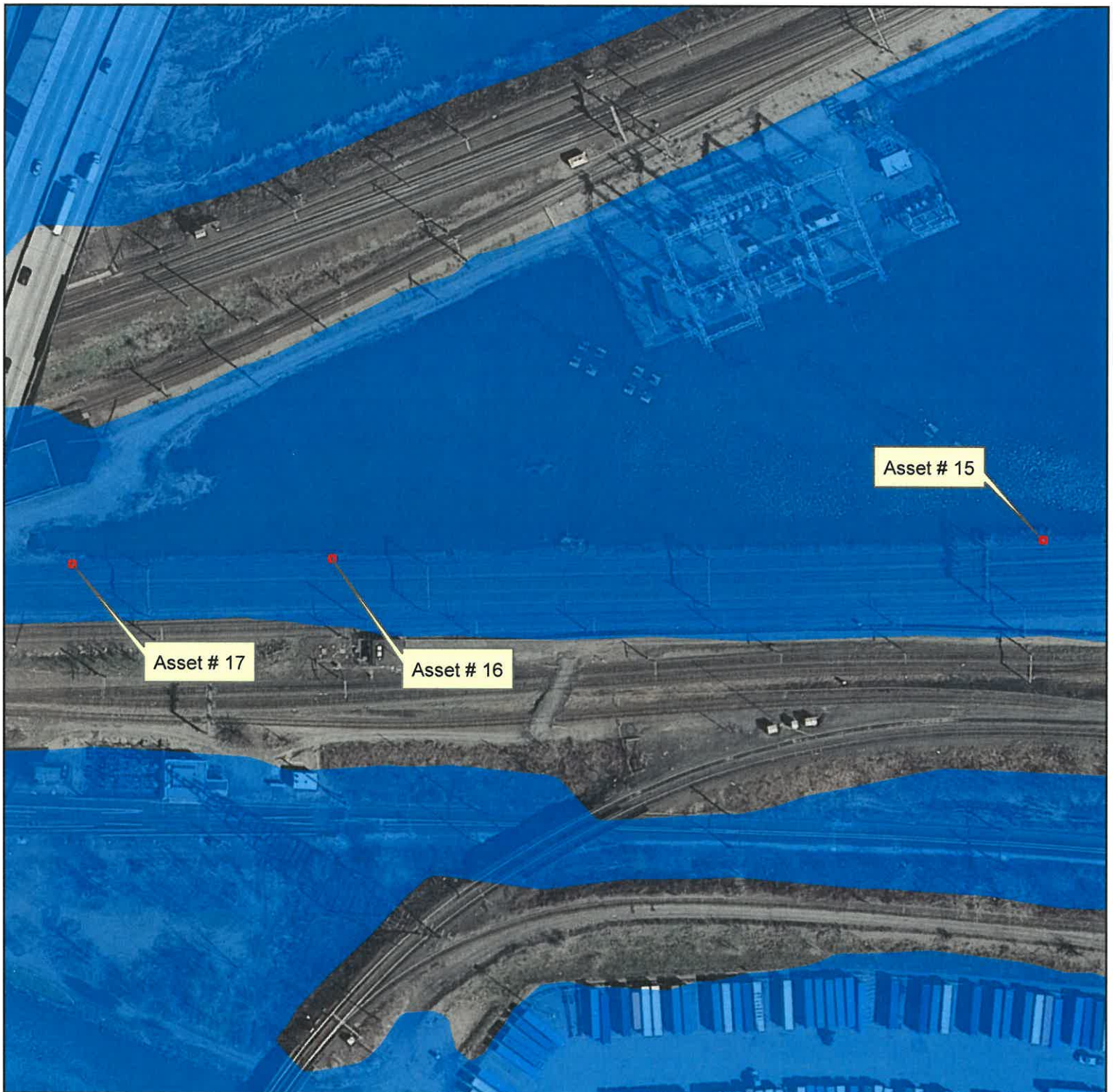


Feet

 **AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.**

Sources:

Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain

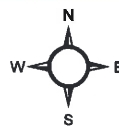


Figure 7g Preliminary DFIRM Flood Map

Assets M&E 15, 16, and 17
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

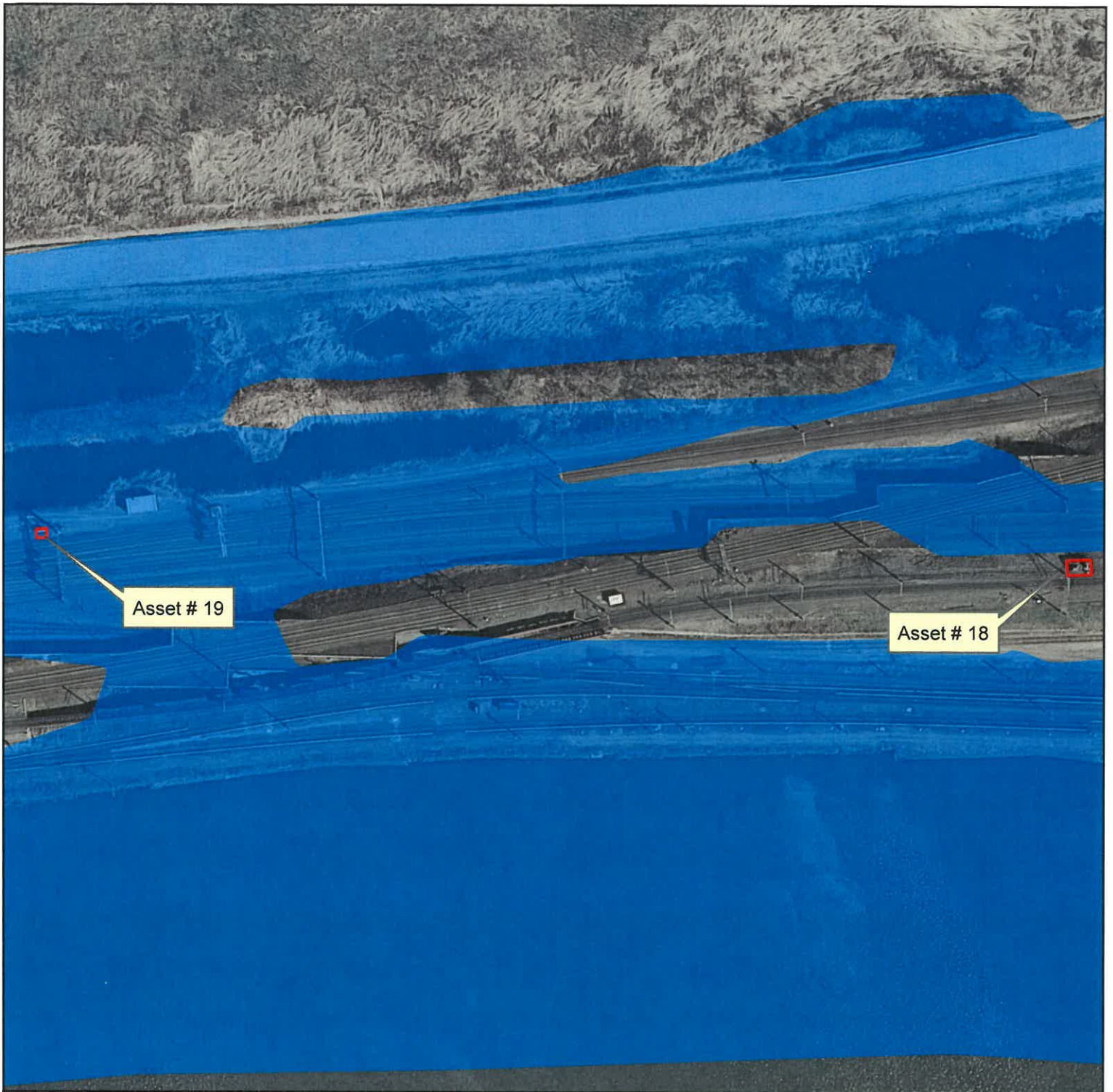
ASGECI Project # 3868

150

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS

Sources:
 Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain

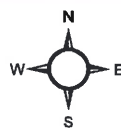


Figure 7h Preliminary DFIRM Flood Map

Assets M&E 18 and 19
NJ - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

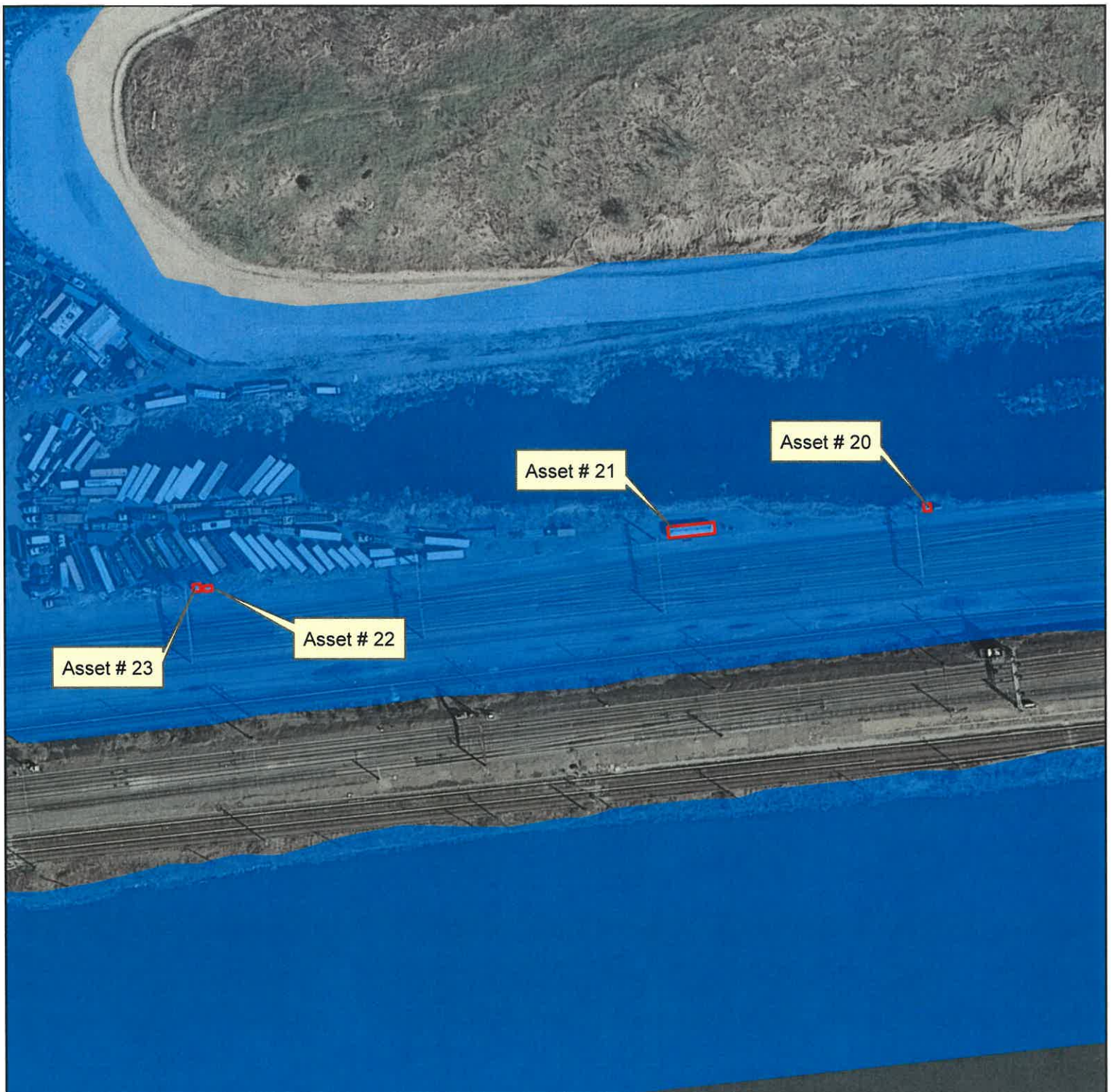
150



Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS, LLC

Sources:
Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJ OIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain

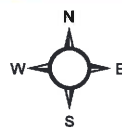


Figure 7i Preliminary DFIRM Flood Map

Assets M&E 20, 21, 22, and 23
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

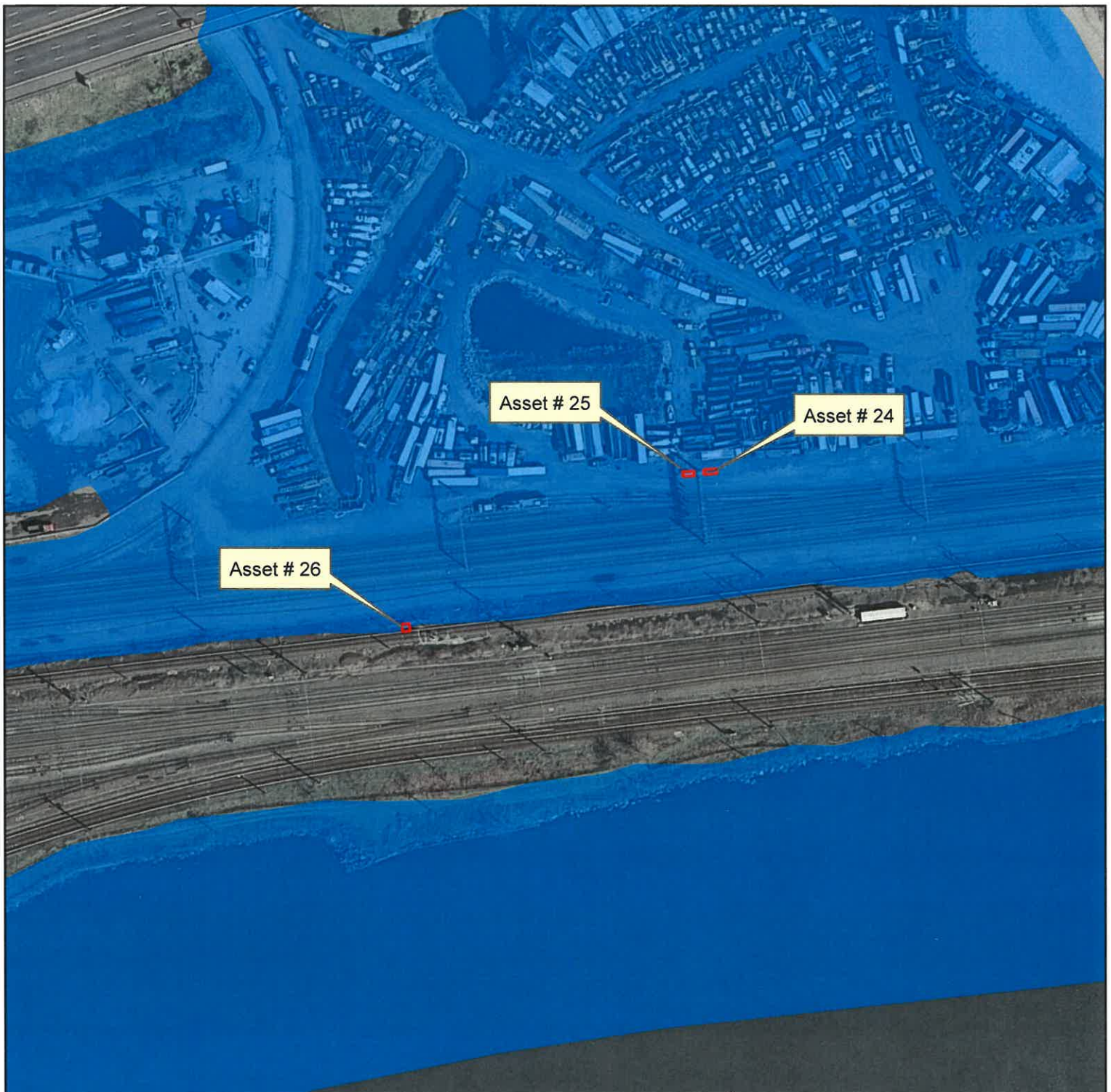
ASGECI Project # 3868

150

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.

Sources:
Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
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Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain

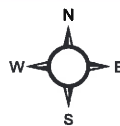


Figure 7j Preliminary DFIRM Flood Map

Assets M&E 24, 25, and 26
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

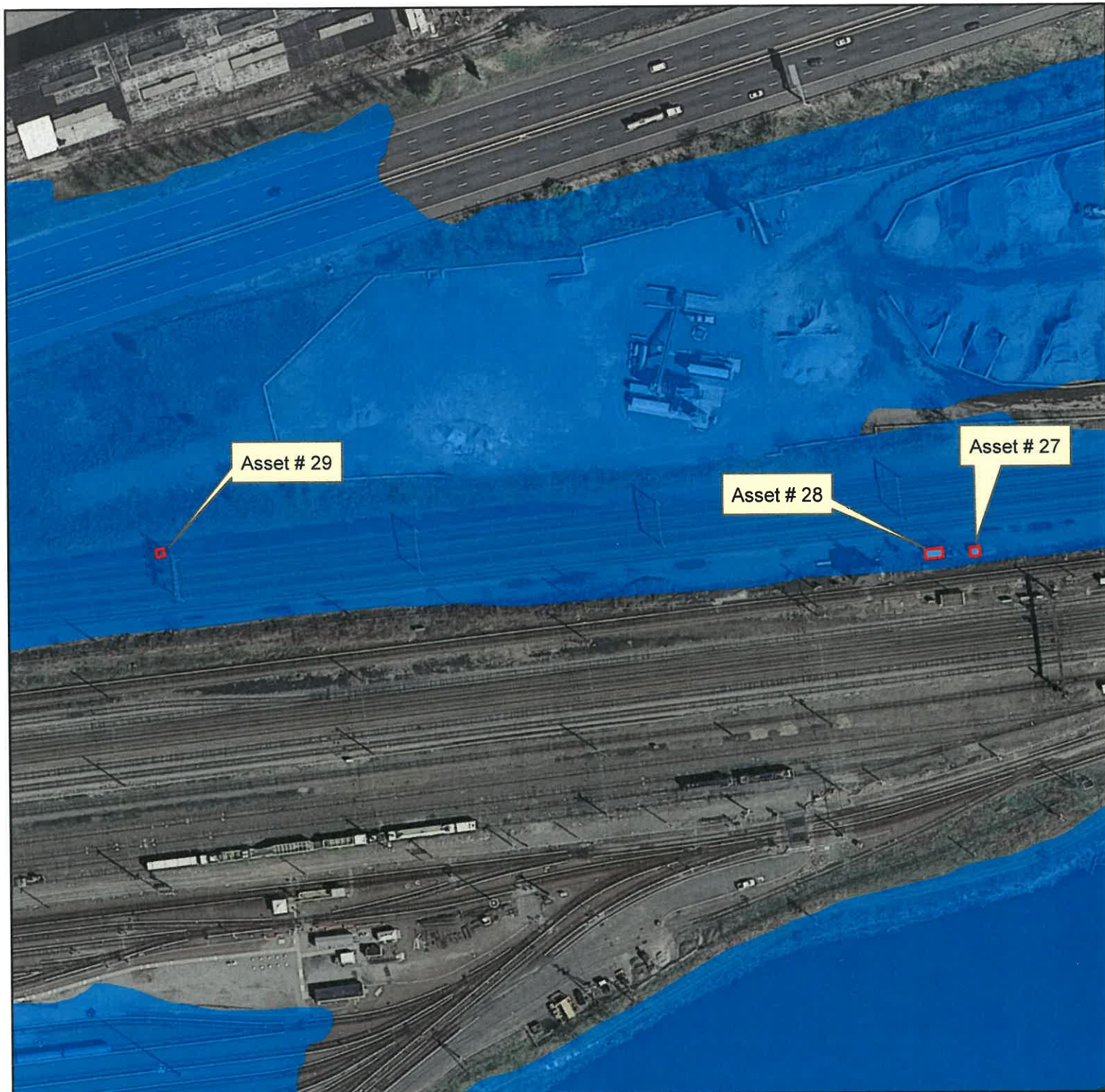
150



Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS, LLC

Sources:
Preliminary Digital Flood Insurance Rate Map (DFIRM) Database, Hudson County, New Jersey, Federal Emergency Management Agency, vector digital data, Federal Insurance and Mitigation Administration, Washington, DC, January 2015.
New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
This (map/publication/report) was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.



Legend

- ◆ M&E Line Asset Structure
- 100-year FEMA Floodplain



Figure 7k Preliminary DFIRM Flood Map

Assets M&E 27, 28, and 29
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150



Feet

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ENVIRONMENTAL
CONSULTANTS

Sources:
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 This (map/publication/report) was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.



NEARBY SPECIES LIST:

03_232703, 03_238006, 03_238009, 03_238020, & 03_284413 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
 03_238014, 03_238015, 03_238016, & 03_238018 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Osprey (Foraging), & Snowy Egret (Foraging)
 03_274845 - Cattle Egret (Foraging)
 03_278709 - Cattle Egret (Foraging), Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
 03_284415 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286487 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)
 03_286492 - Little Blue Heron (Foraging), Northern Harrier (Non-breeding Sighting), & Snowy Egret (Foraging)

Legend

 M&E Line Asset Structure

 Rank 1 Habitat
 Rank 2 Habitat
 Rank 3 Habitat
 Rank 4 Habitat
 Rank 5 Habitat

ON-SITE SPECIES LIST:

03_217453 & 03_220708 - Northern Harrier (Non-breeding Sighting)
 03_278712 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286491 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)

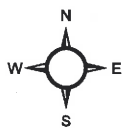


Figure 8a Landscape Project Map

Asset M&E 2
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

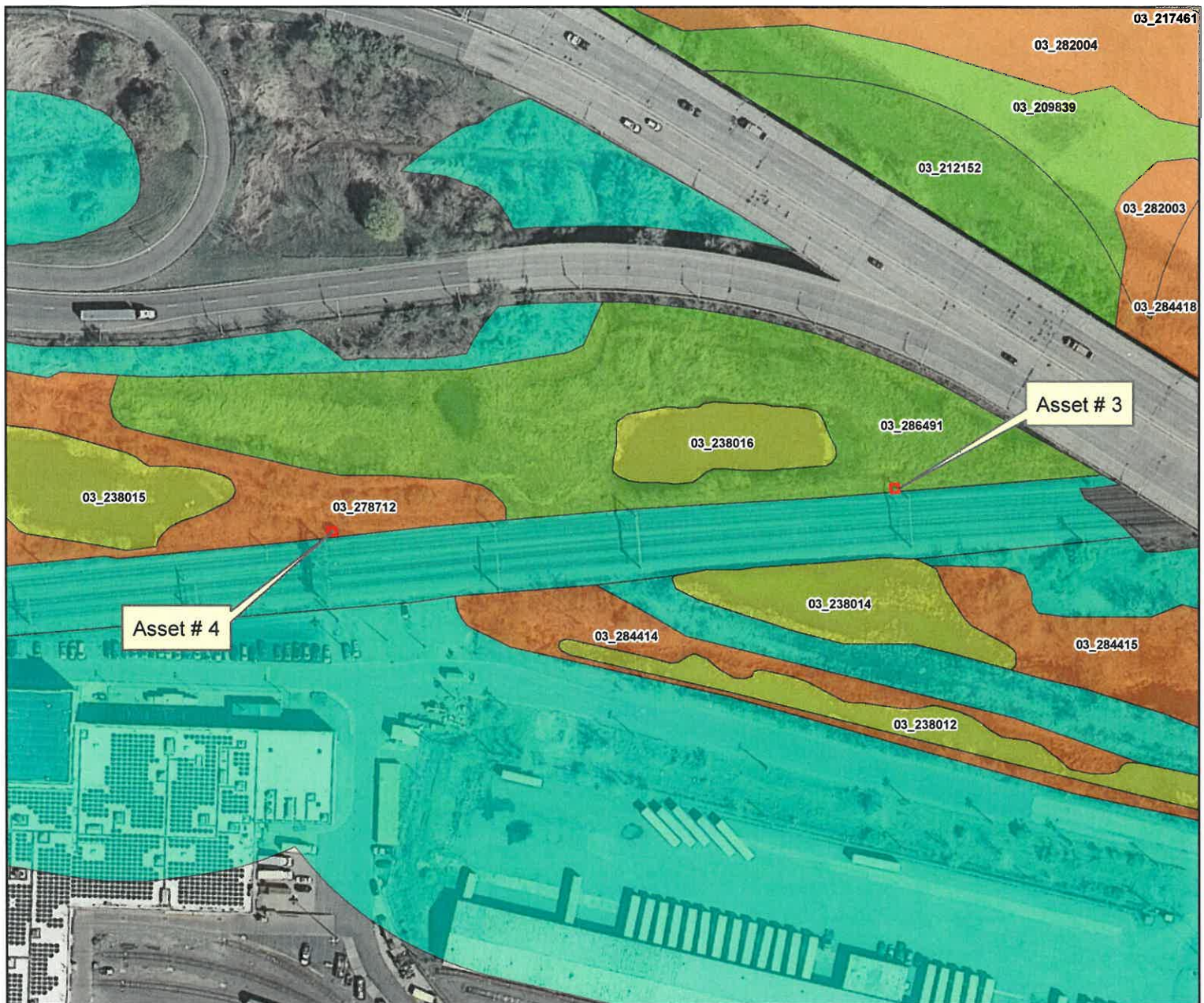
ASGECI Project # 3868

150

Feet

 AMY S. GREENE
 ENVIRONMENTAL
 CONSULTANTS.

Sources:
 NJDEP Species Based Habitat by Landscape Region (Version 3.1), New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered Non-Game Species Program, NJ Division of Fish and Wildlife, Trenton, NJ, February 2012.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJ/OIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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NEARBY SPECIES LIST:

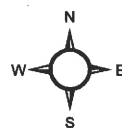
03_232703, 03_238006, 03_238009, 03_238020, & 03_284413 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
 03_238014, 03_238015, 03_238016, & 03_238018 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Osprey (Foraging), & Snowy Egret (Foraging)
 03_274845 - Cattle Egret (Foraging)
 03_278709 - Cattle Egret (Foraging), Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
 03_284415 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286487 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)
 03_286492 - Little Blue Heron (Foraging), Northern Harrier (Non-breeding Sighting), & Snowy Egret (Foraging)

Legend

- ◆ M&E Line Asset Structure
- Rank 1 Habitat
- Rank 2 Habitat
- Rank 3 Habitat
- Rank 4 Habitat
- Rank 5 Habitat

ON-SITE SPECIES LIST:

03_217453 & 03_220708 - Northern Harrier (Non-breeding Sighting)
 03_278712 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286491 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)



Sources:

NJDEP Species Based Habitat by Landscape Region (Version 3.1), New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered Non-Game Species Program, NJ Division of Fish and Wildlife, Trenton, NJ, February 2012.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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Figure 8b Landscape Project Map

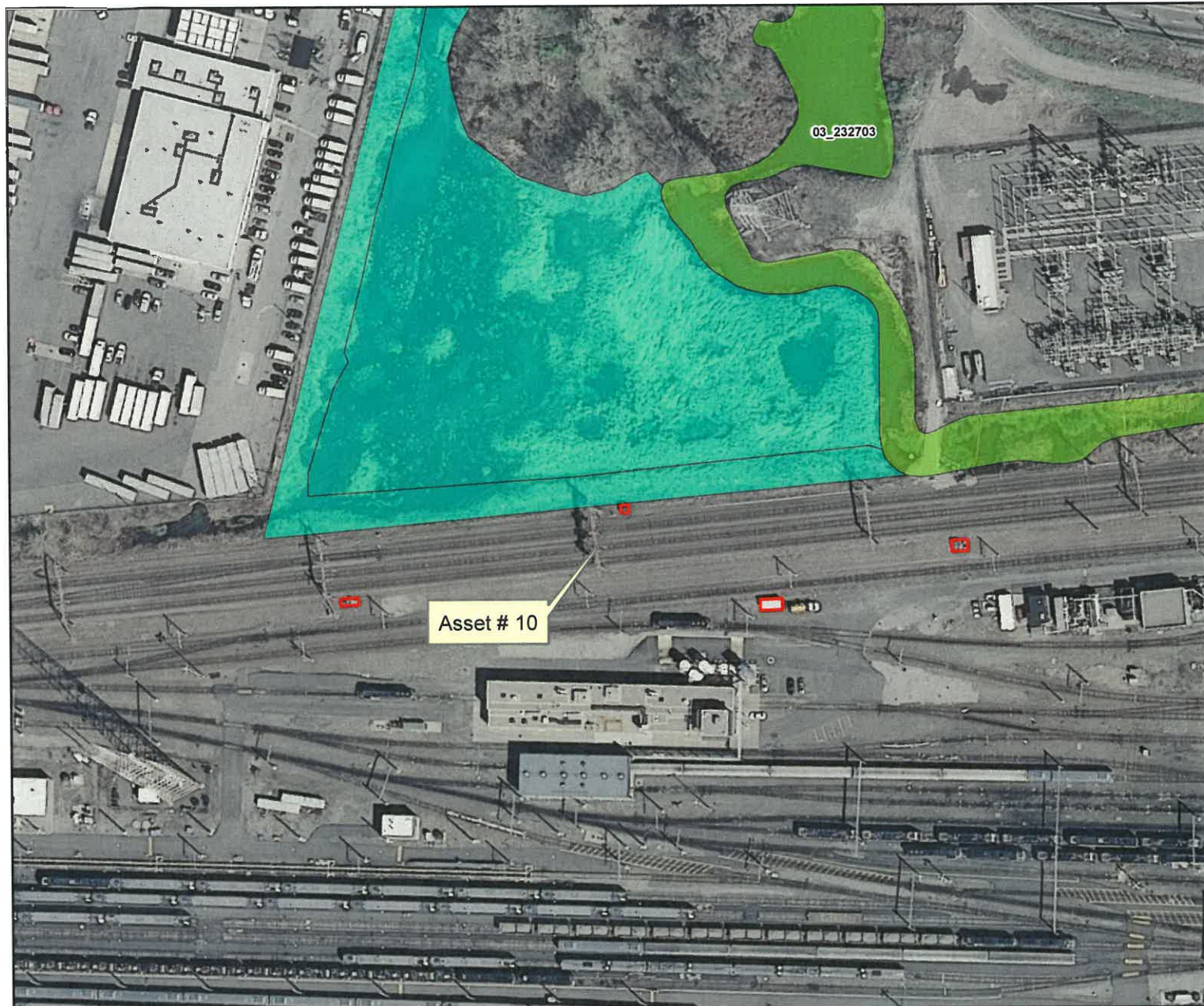
Assets M&E 3 and 4
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

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ENVIRONMENTAL
CONSULTANTS.



NEARBY SPECIES LIST:

03_232703, 03_238006, 03_238009, 03_238020, & 03_284413 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
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 03_274845 - Cattle Egret (Foraging)
 03_278709 - Cattle Egret (Foraging), Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
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 03_286487 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)
 03_286492 - Little Blue Heron (Foraging), Northern Harrier (Non-breeding Sighting), & Snowy Egret (Foraging)

Legend

M&E Line Asset Structure

Rank 1 Habitat

Rank 2 Habitat

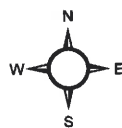
Rank 3 Habitat

Rank 4 Habitat

Rank 5 Habitat

ON-SITE SPECIES LIST:

03_217453 & 03_220708 - Northern Harrier (Non-breeding Sighting)
 03_278712 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286491 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)



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Figure 8c Landscape Project Map

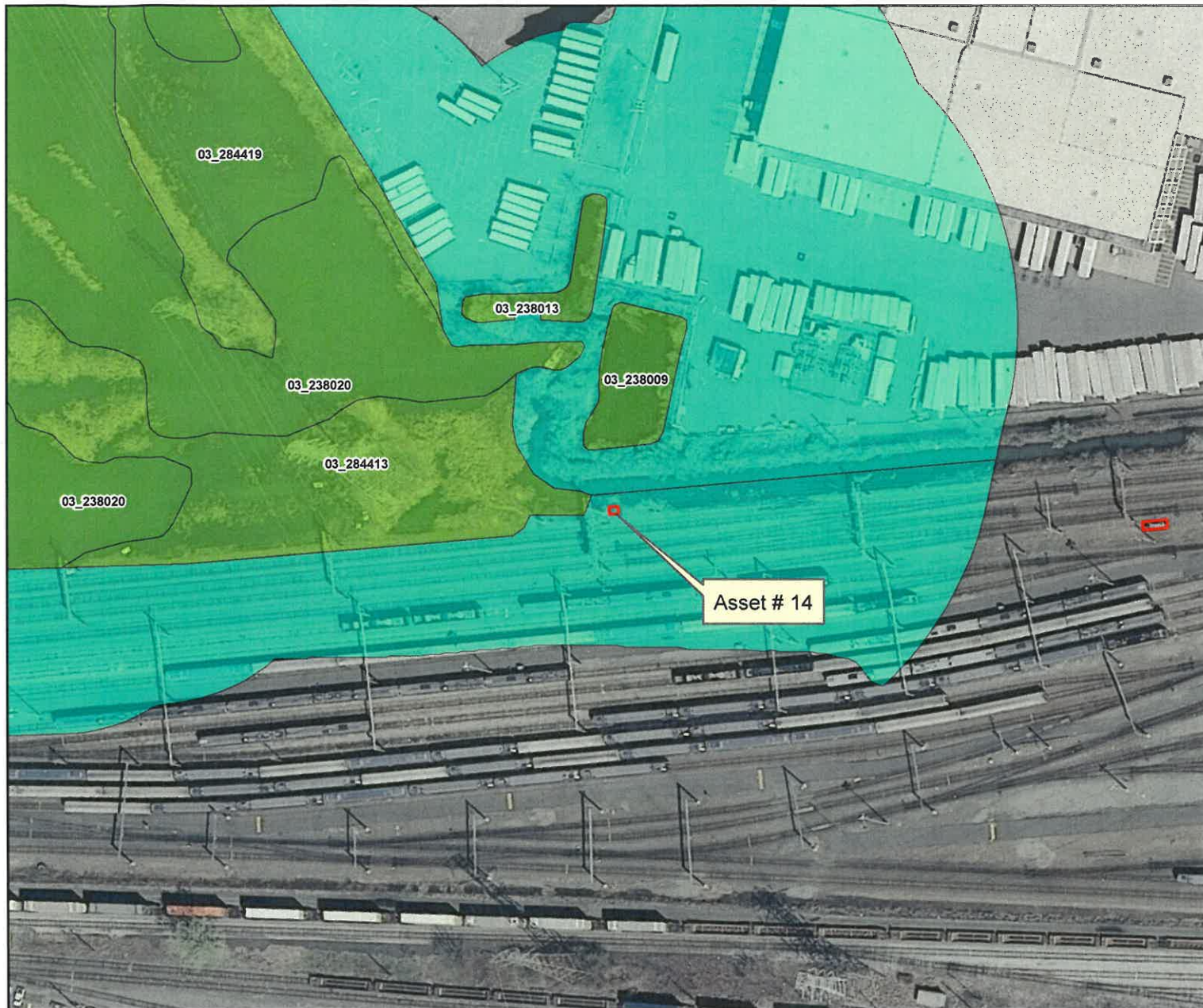
Asset M&E 10
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

 Feet

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 ENVIRONMENTAL
 CONSULTANTS.

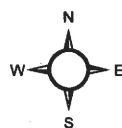


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 03_284415 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286487 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)
 03_286492 - Little Blue Heron (Foraging), Northern Harrier (Non-breeding Sighting), & Snowy Egret (Foraging)

Legend

- ◆ M&E Line Asset Structure
- Rank 1 Habitat
- Rank 2 Habitat
- Rank 3 Habitat
- Rank 4 Habitat
- Rank 5 Habitat



ON-SITE SPECIES LIST:

03_217453 & 03_220708 - Northern Harrier (Non-breeding Sighting)
 03_278712 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
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Figure 8d Landscape Project Map

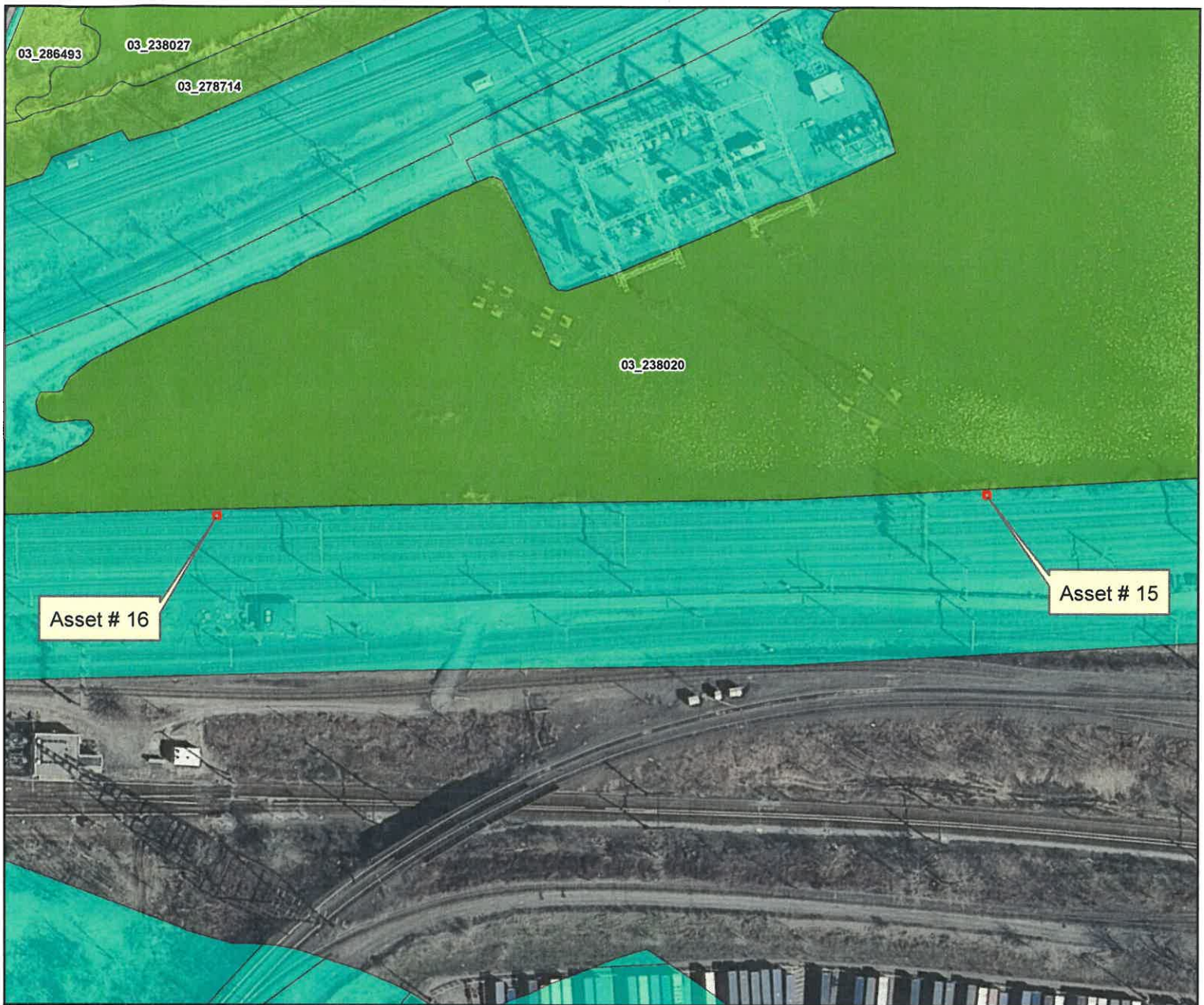
Asset M&E 14
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



NEARBY SPECIES LIST:

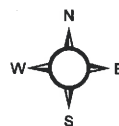
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 03_286487 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)
 03_286492 - Little Blue Heron (Foraging), Northern Harrier (Non-breeding Sighting), & Snowy Egret (Foraging)

Legend

- ◆ M&E Line Asset Structure
- Rank 1 Habitat
- Rank 2 Habitat
- Rank 3 Habitat
- Rank 4 Habitat
- Rank 5 Habitat

ON-SITE SPECIES LIST:

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 03_278712 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
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Figure 8e Landscape Project Map

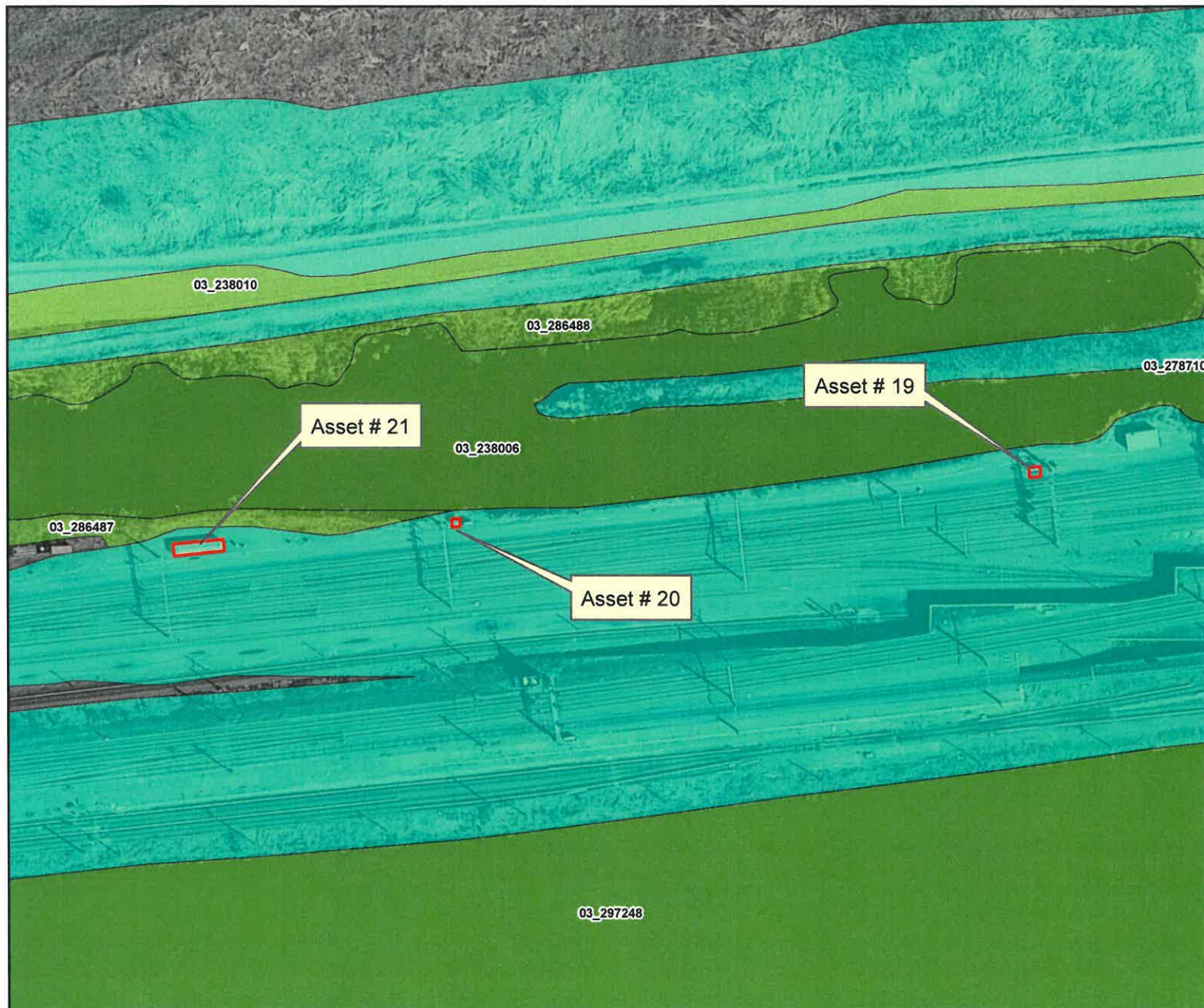
Assets M&E 15 and 16
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS



NEARBY SPECIES LIST:

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 03_278709 - Cattle Egret (Foraging), Glossy Ibis (Foraging), Little Blue Heron (Foraging), & Snowy Egret (Foraging)
 03_284415 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286487 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)
 03_286492 - Little Blue Heron (Foraging), Northern Harrier (Non-breeding Sighting), & Snowy Egret (Foraging)

Legend

- ◆ M&E Line Asset Structure
- Rank 1 Habitat
- Rank 2 Habitat
- Rank 3 Habitat
- Rank 4 Habitat
- Rank 5 Habitat

ON-SITE SPECIES LIST:

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 03_278712 - Glossy Ibis (Foraging), Little Blue Heron (Foraging), Peregrine Falcon (Urban Nest), & Snowy Egret (Foraging)
 03_286491 - Little Blue Heron (Foraging) & Snowy Egret (Foraging)

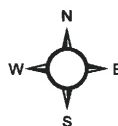


Figure 8f Landscape Project Map

Assets M&E 19, 20, and 21
 NJT - Morris & Essex Line
 Train Controls / Wayside Signals
 Towns of Kearny & Harrison
 Hudson County, New Jersey

ASGECI Project # 3868

150

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.

Sources:
 NJDEP Species Based Habitat by Landscape Region (Version 3.1), New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered Non-Game Species Program, NJ Division of Fish and Wildlife, Trenton, NJ, February 2012.
 New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles, State of New Jersey - Office of Information Technology (NJGIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, March 2013.
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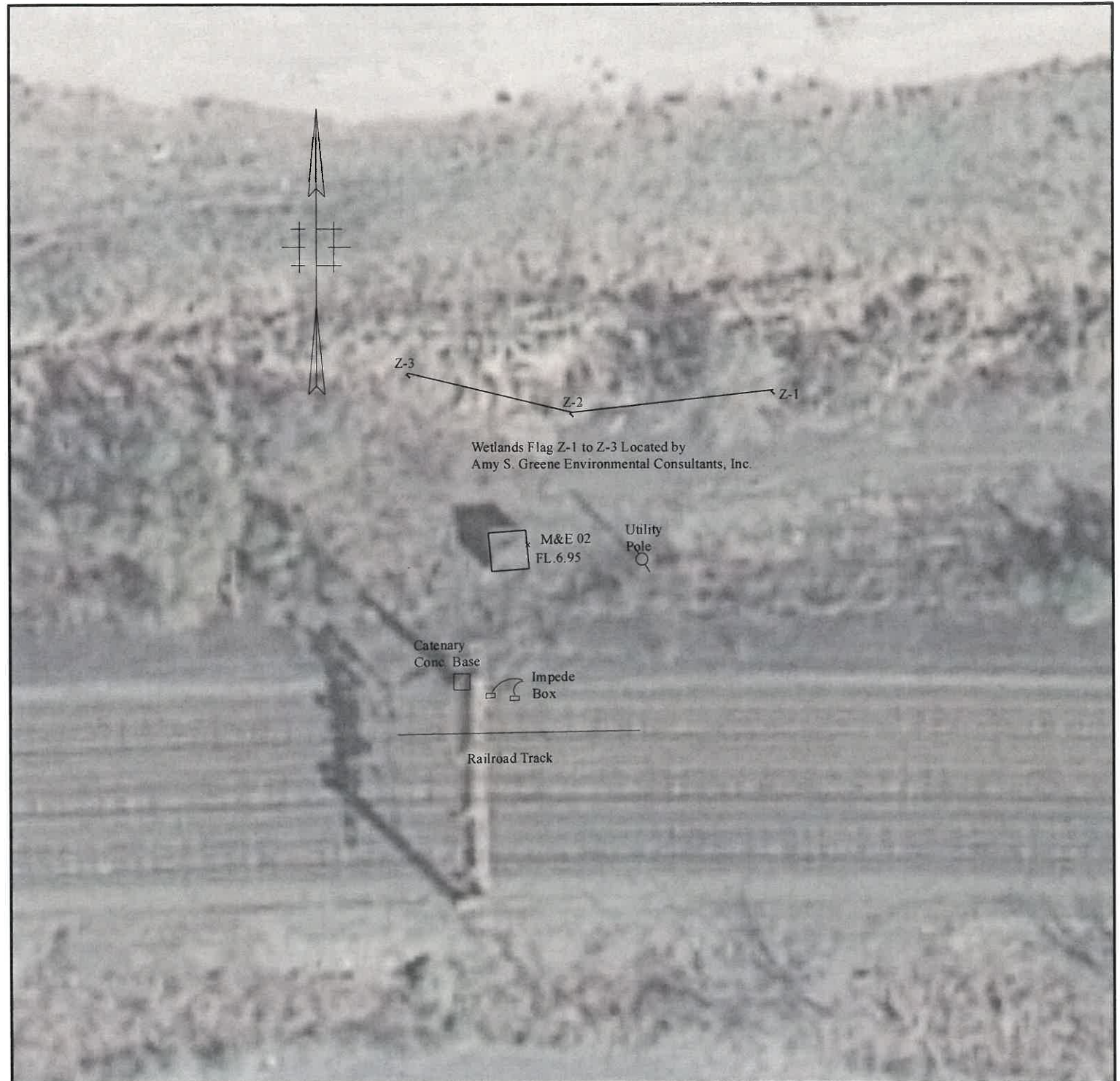


Figure 9a
Wetland Delineation Map

Asset M&E 2
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



Figure 9b
Wetland Delineation Map

Asset M&E 3
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



Figure 9c
Wetland Delineation Map

Asset M&E 4
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868



Figure 9d
Wetland Delineation Map

Asset M&E 10
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



Figure 9e
Wetland Delineation Map

Asset M&E 14
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

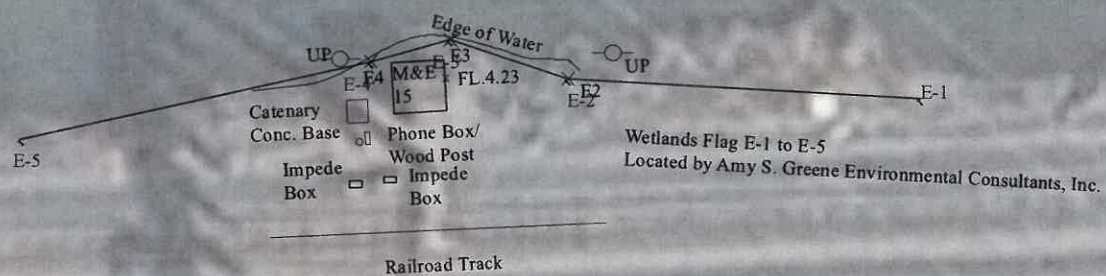


Figure 9f
Wetland Delineation Map

Asset M&E 15
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.

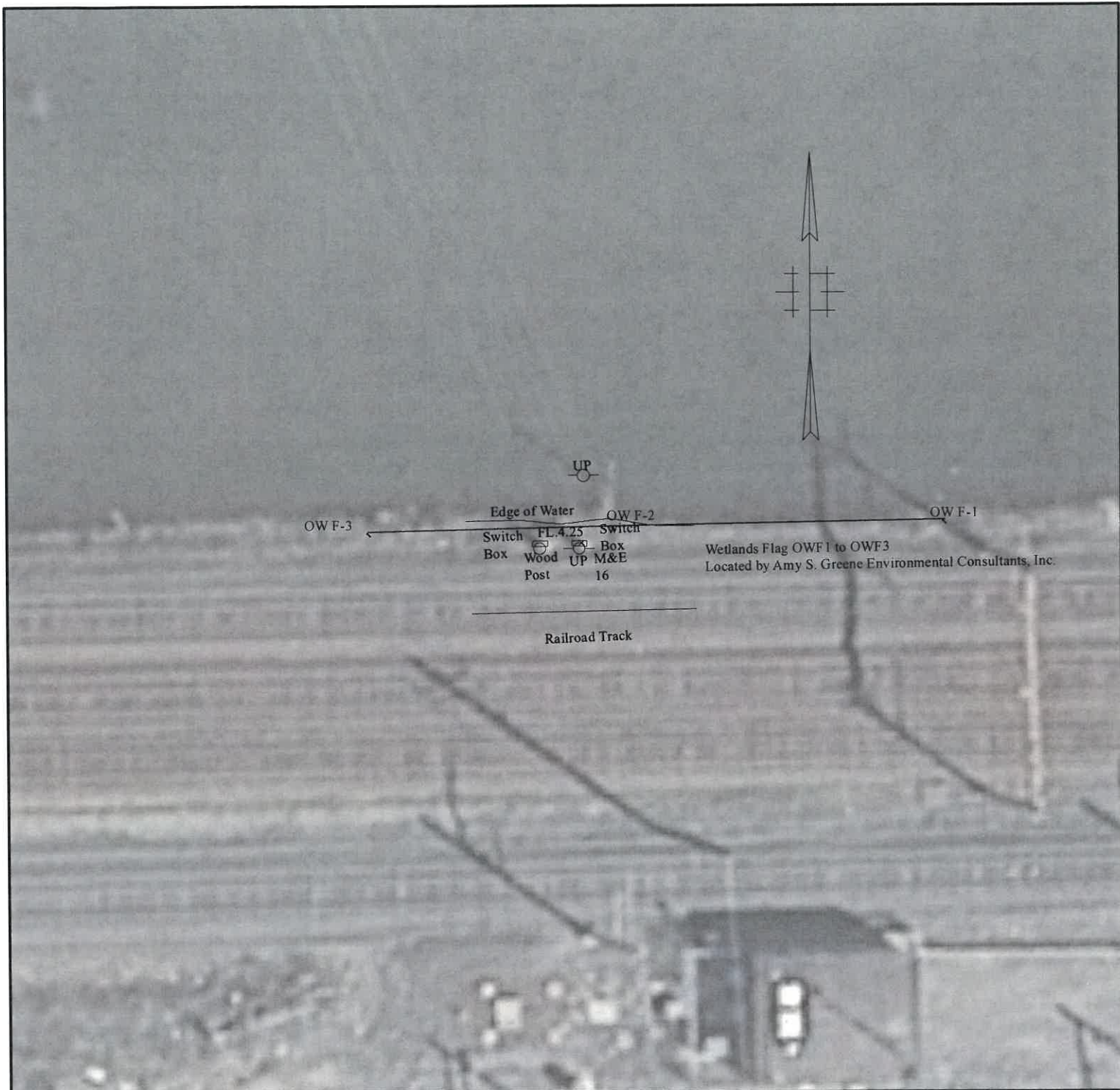


Figure 9g
Wetland Delineation Map

Asset M&E 16
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.

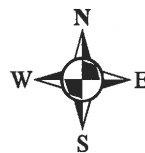


Figure 9h
Wetland Delineation Map

Asset M&E 19
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



Figure 9i
Wetland Delineation Map

Asset M&E 20
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS.



Figure 9j
Wetland Delineation Map

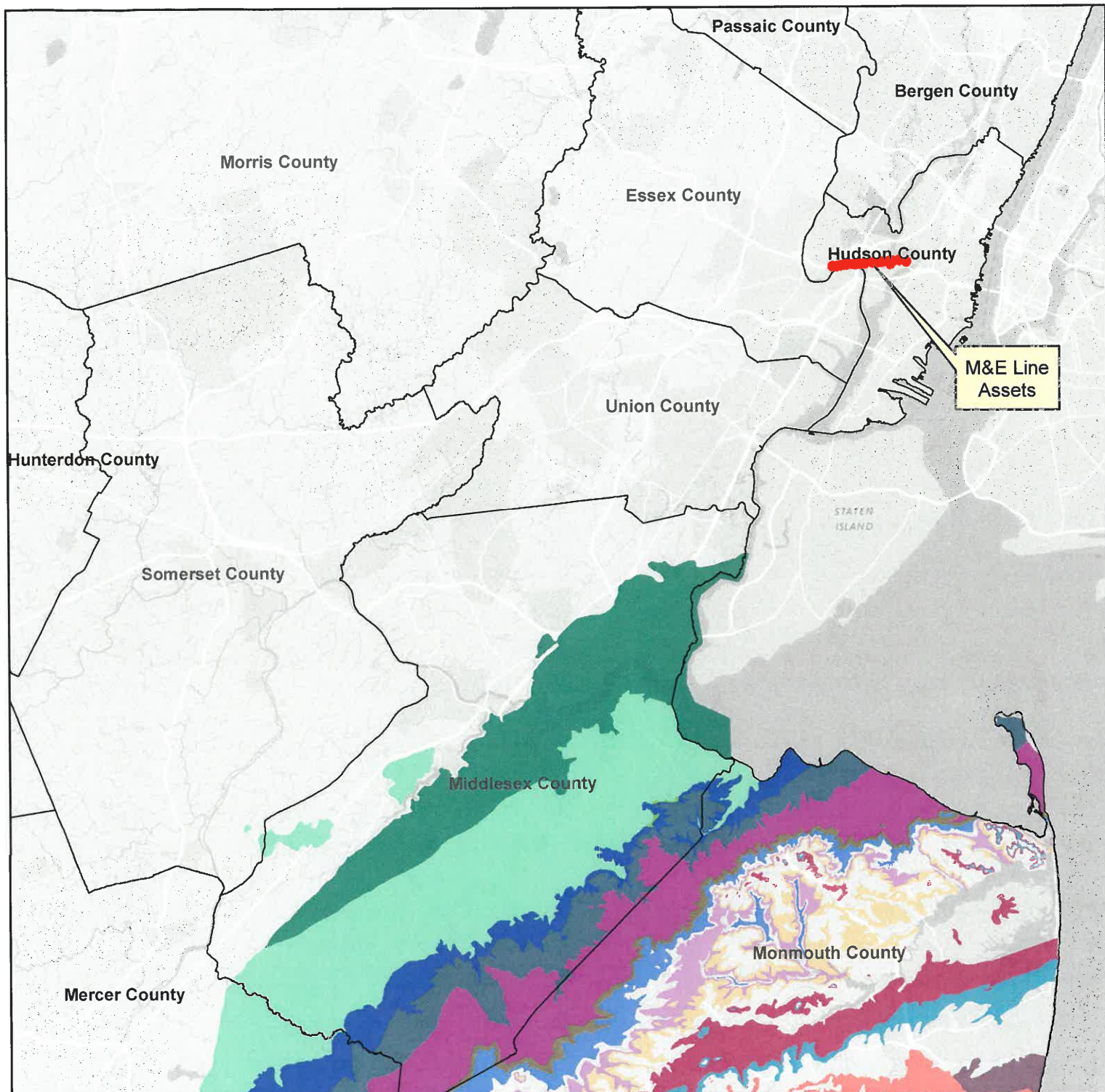
Asset M&E 21
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Harrison & Kearny
Hudson County, New Jersey

ASGECI Project #3868

30

Feet

AMY S. GREENE
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Legend

 M&E Line Asset Structure

Geology with the Potential for Acid Producing Soils:

 Cheesquake Formation	 Manasquan Formation	 Sandy Hook Member
 Englishtown Formation	 Marshalltown Formation	 Shark River Formation
 Hornerstown Formation	 Merchantville Formation	 Tinton Formation
 Magothy Formation	 Navesink Formation	 Wenonah Formation
 Lower Member of Kirkwood Formation	 Raritan Formation	 Woodbury Formation

Sources:
Coastal Plain formations of New Jersey Associated with Acid-Producing Soils, selected from: Bedrock Geology for New Jersey 1:100,000 Scale, New Jersey Department of Environmental Protection, New Jersey Geological Survey, Trenton, NJ, June 1999.
This (map/publication/report) was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

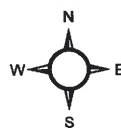


Figure 10 - Geology with the Potential for Acid Producing Soils

Assets M&E 1 to 29
NJT - Morris & Essex Line
Train Controls / Wayside Signals
Towns of Kearny & Harrison
Hudson County, New Jersey

ASGECI Project # 3868

30,000



Feet

 **AMY S. GREENE**
ENVIRONMENTAL
CONSULTANTS

SECTION #3

**SAMPLE STATION DATA SHEETS
MORRIS and ESSEX LINE**

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line Asset #2 City/County: Kearny, Hudson Co Sampling Date: 7/21/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: Z-2
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Rail road edge Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'44.73" N Long: 74 5'26.03." W Datum: NAD 83
 Soil Map Unit Name: Westbrook mucky peat NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) Floodation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>See Photo A</u>		
Remarks:		

Sampling Point: **Z-2**

Northcentral and Northeast Region – Version 2.0

Sampling Point: Z-2

Sampling Point: Z-2

US Army Corps of Engineers Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line Asset #2 City/County: Kearny, Hudson Co Sampling Date: 7/21/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: Z-2
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Rail road ballest slope Local relief (concave, convex, none): none Slope (%): 30%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'44.73" N Long: 74 5'26.03." W Datum: NAD 83
 Soil Map Unit Name: Westbrook mucky peat NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)

Soils are rail road ballast

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Secondary Indicators (minimum of two required)

Surface Water (A1)
 High Water Table (A2)
 Saturation (A3)
 Water Marks (B1)
 Sediment Deposits (B2)
 Drift Deposits (B3)
 Algal Mat or Crust (B4)
 Iron Deposits (B5)
 'undation Visible on Aerial Imagery (B7)
 Sparsely Vegetated Concave Surface (B8)

Water-Stained Leaves (B9)
 Aquatic Fauna (B13)
 Marl Deposits (B15)
 Hydrogen Sulfide Odor (C1)
 Oxidized Rhizospheres on Living Roots (C3)
 Presence of Reduced Iron (C4)
 Recent Iron Reduction in Tilled Soils (C6)
 Thin Muck Surface (C7)
 Other (Explain in Remarks)

Surface Soil Cracks (B6)
 Drainage Patterns (B10)
 Moss Trim Lines (B16)
 Dry-Season Water Table (C2)
 Crayfish Burrows (C8)
 Saturation Visible on Aerial Imagery (C9)
 Stunted or Stressed Plants (D1)
 Geomorphic Position (D2)
 Shallow Aquitard (D3)
 Microtopographic Relief (D4)
 FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☐ No ☒ Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

See Photo A

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: **Z-2**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. none				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.				
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Remarks: (Include photo numbers here or on a separate sheet.) See Photo A				

Sampling Point: Z-2

Sampling Point: Z-2

Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line Asset # 4 City/County: Kearny, Hudson County Sampling Date: 6/16/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: A-1
 Investigator(s): Robert Piel Section, Township, Range: Kearney
 Landform (hillslope, terrace, etc.): Tidal Marsh Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'43.55" N Long: 74 5'49.17" W Datum: NAD 83
 Soil Map Unit Name: Westbrook mucky peat (WectA) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

<input checked="" type="checkbox"/> Surface Water (A1)	Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	Aquatic Fauna (B13)
<input checked="" type="checkbox"/> Saturation (A3)	Marl Deposits (B15)
<input type="checkbox"/> Water Marks (B1)	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
 Drainage Patterns (B10)
 Moss Trim Lines (B16)
 Dry-Season Water Table (C2)
 Crayfish Burrows (C8)
 Saturation Visible on Aerial Imagery (C9)
 Stunted or Stressed Plants (D1)
 Geomorphic Position (D2)
 Shallow Aquitard (D3)
 Microtopographic Relief (D4)
 FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 0"
 Saturation Present? Yes ☒ No ☐ Depth (inches): 0"
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

See photo C

Remarks:

Sampling Point: A-1

Northcentral and Northeast Region – Version 2.0

Sampling Point: A-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
 Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
 Loamy Mucky Mineral (F1) (**LRR K, L**)
 Loamy Gleyed Matrix (F2)
 Depleted Matrix (F3)
 Redox Dark Surface (F6)
 Depleted Dark Surface (F7)
 Redox Depressions (F8)

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
Coast Prairie Redox (A16) (**LRR K, L, R**)
5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
Dark Surface (S7) (**LRR K, L, M**)
Polyvalue Below Surface (S8) (**LRR K, L**)
Thin Dark Surface (S9) (**LRR K, L**)
Iron-Manganese Masses (F12) (**LRR K, L, R**)
Piedmont Floodplain Soils (F19) (**MLRA 149B**)
Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____

Depth (inches):

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line, Asset #4 City/County: Kearny, Hudson Co Sampling Date: 6/16/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: A-1
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Tidal Marsh Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'43.55" N Long: 74 5'49.17" W Datum: NAD 83
 Soil Map Unit Name: Westbrook Mucky peat (Wecta) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland is rail line ballast.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) _____ High Water Table (A2) _____ Saturation (A3) _____ Water Marks (B1) _____ Sediment Deposits (B2) _____ Drift Deposits (B3) _____ Algal Mat or Crust (B4) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Sparsely Vegetated Concave Surface (B8) _____		Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5) _____
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See photo C		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: **A-1**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>none</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>none</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Herb Stratum (Plot size: _____)				
1. <u>Common reed (Phragmites australis)</u>	<u>10</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Common horsetail (Equisetum arvense)</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				<u>20</u> = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
				_____ = Total Cover
Remarks: (Include photo numbers here or on a separate sheet.)				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: <u>20</u> (A)	<u>50</u> (B)

Prevalence Index = B/A = 0.4

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- 5 - Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No

Sampling Point: A-1

Sampling Point: A-1

Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line, Asset #10 City/County: Kearny, Hudson County Sampling Date: 6/16/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: C-4
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Tidal Marsh Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LRR, R Lat: 40 44'41.61" N Long: 74 6'16.21" W Datum: NAD 83
 Soil Map Unit Name: Westbrook mucky peat (Wecta) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>See photo D</u>			
Remarks:			

VEGETATION – Use scientific names of plants.

Sampling Point: **C-4**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>none</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>none</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Herb Stratum (Plot size: _____)				
1. <u>Common reed (Phragmites australis)</u>	<u>98</u>	<u>yes</u>	<u>FACW</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				<u>98</u> = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
				_____ = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: C-4

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line, Asset #10 City/County: Kearny, Hudson County Sampling Date: 6/16/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: C-4
 Investigator(s): Robert Piel Section, Township, Range: Kearney
 Landform (hillslope, terrace, etc.): Rail Line Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LRR R Lat: 40 44'41.1" N Long: 74 6'16.21" W Datum: NAD 83
 Soil Map Unit Name: Urban Land, wet substratum 0-8% slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: (Explain alternative procedures here or in a separate report.)			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
Surface Water (A1)	Water-Stained Leaves (B9)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Fauna (B13)	Drainage Patterns (B10)
Saturation (A3)	Marl Deposits (B15)	Moss Trim Lines (B16)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Dry-Season Water Table (C2)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	Crayfish Burrows (C8)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
See photo D		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: **C-4**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>none</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>none</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Japanese knotweed (Polygonum cuspidatum)</u>	<u>20</u>	<u>yes</u>	<u>NL</u>	
2. <u>Great mullein (Verbascum thapsus)</u>	<u>10</u>	<u>no</u>	<u>UPL</u>	
3. <u>Panic grass (Panicum virgatum)</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. <u>Fox grape (Vitis labrusca)</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Sampling Point: C-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
 Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
 Loamy Mucky Mineral (F1) (**LRR K, L**)
 Loamy Gleyed Matrix (F2)
 Depleted Matrix (F3)
 Redox Dark Surface (F6)
 Depleted Dark Surface (F7)
 Redox Depressions (F8)

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
Coast Prairie Redox (A16) (**LRR K, L, R**)
5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
Dark Surface (S7) (**LRR K, L, M**)
Polyvalue Below Surface (S8) (**LRR K, L**)
Thin Dark Surface (S9) (**LRR K, L**)
Iron-Manganese Masses (F12) (**LRR K, L, R**)
Piedmont Floodplain Soils (F19) (**MLRA 149B**)
Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No ☒

Remarks:

Soils highly disturbed railroad ballast.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line, Asset #15 City/County: Kearny, Hudson County Sampling Date: 6/17/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: E-2
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Tidal Marsh Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LRR, R Lat: 40 44'41.61" N Long: 74 6'16.21" W Datum: NAD 83
 Soil Map Unit Name: Westbrook mucky peat (Wecta) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0"		
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0"		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0" (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
See photo F		
Remarks:		
Soils saturated to the surface by adjacent tidal water body		

VEGETATION – Use scientific names of plants.

Sampling Point: **E-2**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>none</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. <u>Groundsel tree Baccharis hamimifolia</u> <u>5</u> <u>yes</u> <u>FACW</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 2problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____) 1. <u>Common Reed (Phragmites australis)</u> <u>75</u> <u>yes</u> <u>FACW</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____) 1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: (Include photo numbers here or on a separate sheet.) See Photo F				

SOIL

Sampling Point: E-2

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line Asset #15 City/County: Kearny, Hudson Co Sampling Date: 6/16/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: E-2
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Rail road fill slope Local relief (concave, convex, none): none Slope (%): 20%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'38.47" N Long: 74 7'3.12." W Datum: NAD 83
 Soil Map Unit Name: Urban land wet sub NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒ Soil ☒ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland is rail line ballast.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
Surface Water (A1)	Water-Stained Leaves (B9)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Fauna (B13)	Drainage Patterns (B10)
Saturation (A3)	Marl Deposits (B15)	Moss Trim Lines (B16)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Dry-Season Water Table (C2)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	Crayfish Burrows (C8)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: See Photo F		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: **E-2**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. none				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. none				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Herb Stratum (Plot size: _____)				
1. Common reed (<i>Phragmites australis</i>)	10	yes	FACW	
2. Common horsetail (<i>Equisetum arvense</i>)	10	yes	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				20 = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
				_____ = Total Cover

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across All Strata: 2 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____ x 1 = _____	
FACW species <u>10</u> x 2 = <u>20</u>	
FAC species <u>10</u> x 3 = <u>30</u>	
FACU species _____ x 4 = _____	
UPL species _____ x 5 = _____	
Column Totals: <u>20</u> (A)	<u>50</u> (B)

Prevalence Index = B/A = 0.4

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)
 Vegetation growing in Rail road ballest

Sampling Point: 2

Sampling Point: 2

Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line Asset #19 City/County: Kearny, Hudson Co Sampling Date: 6/17/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: H-19
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Rail road edge Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'37.68" N Long: 74 7'42.68." W Datum: NAD 83
 Soil Map Unit Name: Westbrook mucky peat NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>See Photo H</u>		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: **H-19**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. none				
2.				
3.				
4.				
5.				
6.				
7.				
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. Choke Cherry (<i>Prunus virginiana</i>)	20	yes	FACU ⁺	
2. Groundseltree <i>Baccharis hamimifolia</i>	10	no	FACW	
3.				
4.				
5.				
6.				
7.				
				30 = Total Cover
Herb Stratum (Plot size: _____)				
1. Common reed (<i>Phragmites australis</i>)	80	yes	FACW	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
				80 = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. none				
2.				
3.				
4.				
				_____ = Total Cover

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across All Strata: 2 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____ x 1 = _____	
FACW species <u>90</u> x 2 = <u>180</u>	
FAC species _____ x 3 = _____	
FACU species <u>20</u> x 4 = <u>80</u>	
UPL species _____ x 5 = _____	
Column Totals: <u>110</u> (A) <u>260</u> (B)	

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Problematic Hydrophytic Vegetation¹ (Explain)

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)
 See Photo H

Sampling Point: H-19

Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Morris and Essex Rail Line Asset #19 City/County: Kearny, Hudson Co Sampling Date: 6/17/15
 Applicant/Owner: New Jersey Transit State: NJ Sampling Point: H-19
 Investigator(s): Robert Piel Section, Township, Range: Kearny
 Landform (hillslope, terrace, etc.): Rail road edge Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR or MLRA): LLR, R Lat: 40 44'37.68" N Long: 74 7'42.68." W Datum: NAD 83
 Soil Map Unit Name: Urban land wet sub NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒ Soil ☒ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)
 Upland is rail line ballast.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
Surface Water (A1)	Water-Stained Leaves (B9)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Fauna (B13)	Drainage Patterns (B10)
Saturation (A3)	Marl Deposits (B15)	Moss Trim Lines (B16)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Dry-Season Water Table (C2)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	Crayfish Burrows (C8)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 See Photo H

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: **H-19**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. none				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				Dominance Test worksheet:
				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
				Prevalence Index worksheet:
				Total % Cover of: _____ Multiply by:
				OBL species _____ x 1 = _____
				FACW species _____ x 2 = _____
				FAC species _____ x 3 = _____
				FACU species _____ x 4 = _____
				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
				Hydrophytic Vegetation Indicators:
				✓ 1 - Rapid Test for Hydrophytic Vegetation
				2 - Dominance Test is >50%
				3 - Prevalence Index is ≤3.0 ¹
				4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
				5 - Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata:
				Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
				Woody vines – All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Sapling/Shrub Stratum (Plot size: _____)				
1. Choke Cherry (<i>Prunus virginiana</i>)	20	yes	FACU+	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				= Total Cover
Herb Stratum (Plot size: _____)				
1. Common reed (<i>Phragmites australis</i>)	10	yes	FACW	
2. Japanese Knotweed (<i>Polygonum cuspidatum</i>)	10	yes	UPL	
3. Panic Grass (<i>Panicum virgatum</i>)	10	yes	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				30 = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. none				
2. _____				
3. _____				
4. _____				
				= Total Cover
Remarks: (Include photo numbers here or on a separate sheet.) Vegetation growing in Rail road ballast				

Sampling Point: H-19

Sampling Point: H-19

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- histosol (A1)
- histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Striped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
Loamy Mucky Mineral (F1) (**LRR K, L**)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)

2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
Coast Prairie Redox (A16) (**LRR K, L, R**)
5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
Dark Surface (S7) (**LRR K, L, M**)
Polyvalue Below Surface (S8) (**LRR K, L**)
Thin Dark Surface (S9) (**LRR K, L**)
Iron-Manganese Masses (F12) (**LRR K, L, R**)
Piedmont Floodplain Soils (F19) (**MLRA 149B**)
Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: n/a

Depth (inches): _____

Hydric Soil Present? Yes No ☒

Remarks:

Soils highly disturbed railroad ballast.

SECTION #4

**PHOTOGRAPHS WITH DESCRIPTIONS
MORRIS and ESSEX LINE**



Photo A: View facing west of M&E Asset #2. Wetland line is at the toe of fill east (right) side of the asset. Area to the north of the asset is upland.



Photo B: View facing east of M&E Asset #3. Wetland line B follows the toe of slope.



Photo C: View facing west of M&E Asset #4. Wetland line A follows the toe of slope within 5 feet north of the asset.



Photo D: View facing east of M&E Asset 10. Wetland line C is to the north of the asset and follows the toe of slope.



Photo E: View facing east of M&E Asset #14. Wetland line D has been flagged along the toe of slope of the rail road embankment.



Photo F: View facing northeast of M&E Asset # 15.

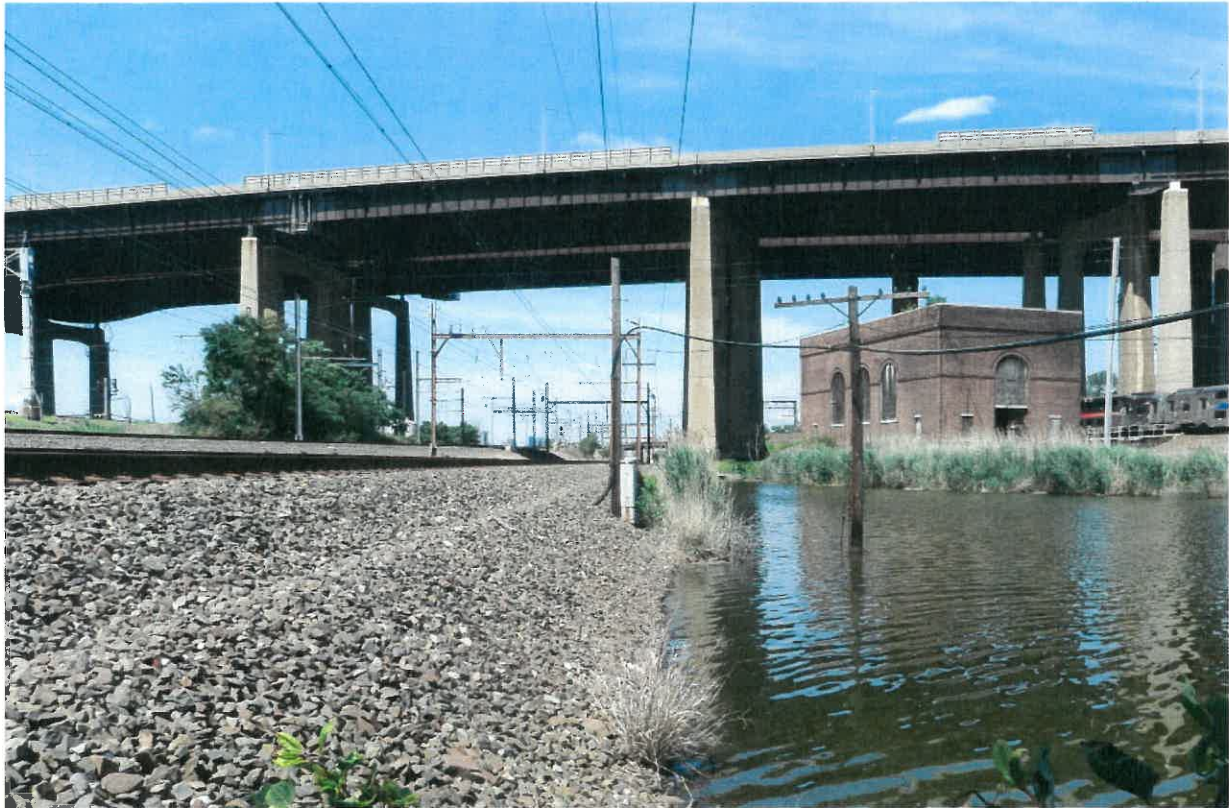


Photo G: View facing west of M&E Asset #16. Vegetation adjacent to the asset is upland and are is flagged as open water (Line OW-F).



Photo H View facing northeast of M&E Asset 19. Wetland line H is located along the edge of gravel fill.



Photo I: View facing west of M&E Asset 20. Wetland line H extends behind this asset as well as asset 19.

SECTION #5

RESUME OF PREPARER

Years of Experience: 38

Education

⇒ B.S Life Science, Concentration Environmental Science, Rowan University, 1978;
 ⇒ M.A. Conservation and Environmental Education, Concentration: Land Use Planning Rowan University 1980.

Professional Affiliations

⇒ Association of State Wetland Managers, Board of Directors, 2001-2006, Member 1989-present;
 ⇒ Environmental Council of the States 404 Assumption Work Group 2010-2012;
 ⇒ New Jersey Wetlands Mitigation Council 1989- 2005;
 ⇒ Meadowlands Interagency Mitigation Advisory Committee 1989- 2005;
 ⇒ Interagency Wetlands and Agriculture Committee 1989 -2005;
 ⇒ Interagency Wetland and Forestry Committee 1988- 2003.

Certifications and Training

⇒ USEPA & USACE Mitigation Rule Workshop, October, 2009;
 ⇒ USFWS Wetlands Plant Identification Training 2001;
 ⇒ Certified Public Manager Training Completed 1990.
 ⇒ USEPA Wetland Delineation Training Federal Manual for Identifying and Delineating Wetlands, Certification, 1989;
 ⇒ US EPA Jurisdictional Delineation of Wetlands, Certification 1988;
 ⇒ USFWS Habitat Evaluation Procedures, Certification April, 1986;
 ⇒ NJ Transit "Roadway Worker /On Track Protection" safety training, September 2013;
 ⇒ Amtrak Contractor Orientation Safety Training, August, 2014.

Instructor

⇒ NJ Institute for Continuing Legal Education Flood Hazard Area Control Act Rule Update, 2013;
 ⇒ NJ Institute for Continuing Legal Education Flood Hazard Area Control Act Rule, 2007;

KEY QUALIFICATIONS

Mr. Piel has 38 years of professional experience, most of which were with the Department of Environmental Protection in the Division of Land Use Regulation, where he managed a professional environmental and engineering staff responsible for the review of Freshwater Wetlands, Flood Hazard Area Control Act, Coastal Area Facility Review Act (CAFRA), Coastal Wetlands and Waterfront Development permit applications. He also established and managed the operations of the Wetlands Mitigation Unit, Threatened and Endangered Species Unit, the Vernal Pool Unit and the Transportation Unit. From 2010 through 2013, Mr. Piel was a Director in NJDEP's Land Use Management Program, where he was responsible for developing policy and drafting updates to the Coastal Zone Management Rules, Flood Hazard Area Control Act Rules and the Freshwater Wetlands Rules. Mr. Piel was also the Director of the Division of Smart Growth, where he coordinated interagency teams to draft regulations to fast track land use, water and wastewater permit applications. Mr. Piel served as NJDEP Bureau Manager of the newly legislated Freshwater Wetlands Program. In this role he established the operational procedures and technical standards for the program, developed a budget as well as hired staff and coordinated program responsibilities with the USEPA, USACE and the USFWS. Mr. Piel was also responsible for the technical review of CAFRA, Waterfront Development and Coastal Wetland permit applications in the Division of Coastal Resources where he evaluated wetland limits and impacts, wildlife habitat impacts including impacts to endangered and threatened species habitat. As Environmental Project Manager, Mr. Piel is responsible for Freshwater Wetlands, Flood Hazard Area and Coastal permitting and wetland mitigation design and construction oversight.

RELEVANT EXPERIENCE

(#3666) Kittatinny Valley State Park, Kenco Tract, Independence Township, Warren County, NJ. NJDEP Division of Fish & Wildlife/North Jersey RC&D. Project Manager assisting in the preparation of a concept plan and a proposal to the New Jersey Wetlands Mitigation Council (NJWMC) to request funds necessary to restore and enhance over 90 acres of wetlands, riparian zones and critical habitat within the Kittatinny Valley State Park for the NJDEP Department of Parks and Forestry and Division of Fish and Wildlife. The Conceptual Wetland Restoration Plan was approved by the New Jersey Wetlands Mitigation Council in December 2013. Based on the Concept Plan, the NJWMC approved funding of \$2.1 million for design and construction of this project. Currently collaborating with subconsultant, Taylor Wiseman and Taylor, to develop final design plans and NJDEP permit plans that will comply with NJDEP Division of Land Use Regulation freshwater wetland and flood hazard area permit requirements. *Reference: Grace Messinger, Executive Director, North Jersey RC&D, (908) 439-2518.*

Instructor (cont'd)

⇒USEPA/NJDEP Wetland
Compensatory Mitigation Workshop,
October 2002;
⇒NJ Institute for Continuing Legal
Education Freshwater Wetlands Rule
Update 2001 and earlier;
⇒Rutgers University, Cook College,
College of Continuing Professional
Education Seminar Freshwater
Wetlands Rules 2005 and earlier;
⇒Coastal Project Review, 1994 -
2000;
⇒Wetland Law and Regulation
Workshop, 1993.
⇒Commerce and Industry
Association of New Jersey /
Environmental Business Council Fall
Conference, Edison New Jersey:
What you Need to Know - Land Use
Permitting, 9-29-14.

April 2014 to present.

(#3048) Caldwell Trucking Company Superfund Site, Fairfield Township Essex County, New Jersey. Caldwell Trucking Company/Golder Associates, Inc. Project Manager responsible for preparation of a NJDEP Freshwater Wetlands General Permit # 4 Equivalency Permit Application and Flood Hazard Area Individual Permit and Hardship Exception Application to authorize a groundwater remediation solution. Also responsible for the preparation of the wetland and riparian zone restoration plan, oversight of plant installation and post-construction monitoring and reporting to NJDEP. *Reference: Allen Kane, P.E., Sr. Consultant/Associate, Golder Associates, Inc., (610) 941-8173. October 2008 to present.*

(#3596) Bay Head Rail Yard, Bay Head Borough, Monmouth County, New Jersey. New Jersey Transit Corporation. Project Manager responsible for preparation of an application for a NJDEP Freshwater Wetlands General Permit #1 for the maintenance of existing facilities located in and adjacent to freshwater wetlands and transition

areas. Performed a field delineation of wetlands and identified the extent of mapped coastal wetlands on and adjacent to the site. *Reference: Nick Valente, Manager Environmental Services, NJ Transit Corporation, (973) 491-7211. June 2013 to present.*

(#3510a) Northeast Corridor High Speed Rail Line, Trenton to New Brunswick New Jersey. AMTRAK/Hatch Mott MacDonald. Senior Environmental Scientist responsible for assisting with the delineation of freshwater wetlands, state open waters and flood hazard area riparian zones along a 26 mile portion of the Northeast Corridor line to facilitate improvements to the high speed rail line. *Reference: Robert S. Lin, PWS, Senior Project Scientist, Hatch Mott MacDonald, LLC, (973) 379-3400. July 2013 to present.*

(#3624) Fresh Kills Landfill, Staten Island, Richmond County, New York. New York City Department of Sanitation/ SCS Engineers, Inc. Senior Environmental Scientist responsible for assisting with delineation of freshwater wetlands, open waters, and tidal wetlands along a 463 acre portion of the landfill. *Reference: Greg McCarron, P.E., Vice President, SCS Engineers, Inc., (845) 357-1510. August 2013 to present.*

(#3626) NJDEP & Department of Treasury, Community Development Block Grant Program. Gannett Fleming, Inc. Senior Environmental Scientist responsible for conducting Environmental Screenings of structures damaged in Superstorm Sandy for possible grant funding under the Community Development Block Grant Program. Assessments include investigation of the presence of wetlands, endangered species, above ground storage tanks, underground storage tanks or other potentially hazardous conditions. *Reference: William M. Plumpton, CEP, Vice President, Gannett Fleming, Inc., (717) 756-1012. October 2013 to present.*

(#3642) Zimmerman Property, Ocean Township, Monmouth County, New Jersey. Arnold Zimmerman, M.D. Project Manager responsible for Freshwater Wetlands/ Open Waters delineation on a 4+ acre commercial property. Flood hazard area riparian zone limits were also established. Prepared application to NJDEP for a Letter of Interpretation. *Reference: Arnold Zimmerman, M.D., (732) 241-0954. September 2013 to September 2014.*

(#3640) Clay Street Bridge, City of Newark, Essex County and Borough of East Newark, Hudson County, New Jersey. North Jersey Transportation Authority/Hardesty & Hanover, LLC. Project Manager, responsible for Freshwater Wetlands and Open Waters delineation and preparation of an Environmental



Screening Report for the relocation/reconstruction of the Clay Street Bridge over the Passaic River. The screening report assessed impacts to known contaminated sites, wetlands, waters, historic resources, as well as Environmental Justice and demographic issues. Upon completion of the screening report various alternative designs and locations were evaluated and their environmental impacts were assessed including impacts to the Passaic River which is listed as an EPA Superfund site. *Reference: Bruce K. Riegel, P.E., Senior Project Manager, Hardesty & Hanover, LLC, (609) 538-8233. January 2014 to present.*

(#3640) South Front Street Bridge, City of Elizabeth, Union County New Jersey. North Jersey Transportation Authority/Hardesty & Hanover. Project Manager responsible for Freshwater Wetlands and Open Waters delineation and preparation of an Environmental Screening Report for the relocation/reconstruction of the South Front Street Bridge over the Elizabeth River. The screening report assessed impacts to known contaminated sites, wetlands, waters, historic resources, as well as environmental justice and demographic issues. Upon completion of the screening report various alternative designs and locations were evaluated and their environmental impacts were assessed. *January 2014 to present.*

(#3704) 2014 Lines 12/27AC Mitigation, Plumstead Township, Bucks County Pennsylvania and West Amwell Township, Hunterdon County, New Jersey. Spectra Energy/ TRC Companies Inc. Project Manager responsible for the delineation of regulated wetlands and waters along a 7.5 mile portion of the Spectra Energy Gas Pipeline extending from Bucks County in Pennsylvania to Hunterdon County in New Jersey. The delineation required the use of the US Army Corps of Engineers Wetland Delineation Manual in Pennsylvania and the Unified Federal Manual for Delineating Wetlands in New Jersey. *Reference: Denis Blais, Project Manager, TRC Companies, Inc., (207) 274-2605. May 2014 to present.*

(#3737) Van Holten Road Improvements, Bridgewater Township Somerset County, New Jersey. Carroll Engineering. Project Manager responsible for delineation of wetlands and open waters along a portion of Van Holten Road and preparation of a Freshwater Wetlands General Permit #1 and verification of a Flood Hazard Area Permit by Rule. *Reference: Rudy Holzmann, P.E., Carroll Engineering, (908) 874-7500 (x214). July 2014 to present.*

(#3726) US Coast Guard, Training Center Waterfront Reconstruction, Cape May City, Cape May County, New Jersey. US Coast Guard/CDM Smith, Inc. ASGECI teamed with CDM Smith, Inc. to provide consultation for their design/build contract with the U.S. Coast Guard to address rehabilitation of waterfront infrastructure critical to the on-going operations of the facility. A portion of the work is associated with damage caused or exacerbated by Super Storm Sandy. ASGECI's role includes delineating wetlands through analysis of flora, hydrology, and soils in accordance with US Army Corps of Engineers (USACE) and NJDEP requirements; assessing and documenting habitat for endangered and threatened species, communicating with agencies, and submitting USACE Nationwide Permit #3 Application for a portion of the project and a USACE Individual Permit Application for a separate portion and submittal of a NJDEP Federal Coastal Zone Consistency Determination and Section 401 Water Quality Certification. ASGECI also provided background information regarding mitigation for impacts to tidal waters including design recommendations for a living shoreline project. *Reference: Patricia Forgang, Deputy Program Manager, CDM Smith, Inc., (732) 225-7000. June 2014 to present.*

(#3837 – P9674) Emergency Engineering Services Term Agreements Statewide. Lawrence Township Mercer County, New Jersey. NJ Department of Transportation/ Arora & Associates, Inc. Project Manager responsible for Freshwater Wetlands and Open Waters delineation and preparation of an application to the Delaware and Raritan Canal Commission for the replacement of a bridge deck over the Shipetauken Creek and the Delaware and Raritan Canal. *Reference: Narendra Khambhati, Senior Vice President, Arora & Associates, Inc., (609) 844-1111. December 2012-present.*

(#3080) Barkers Brook Mitigation Project, Burlington County, New Jersey. Burlington Preservation Partners. New Jersey Turnpike Interchanges 6 to 9 Widening Project. This project involves the creation of a



wetland mitigation site to offset impacts to wetlands for the New Jersey Turnpike Interchanges 6 to 9 Widening Project. Environmental Scientist responsible for assisting Mr. David Brotherton with annual fall vegetation monitoring surveys at the site in October 2014. *Reference: Albert Mainka, Managing Member, Burlington Preservation Partners, (856) 866-5544. February 2009-present.*

(#3416a) VDM Metals USA, Floram Park, Morris County, New Jersey. VDM Metals USA. Project Manager responsible for delineating the extent of Freshwater Wetlands and Open Waters on a portion of the site which must be remediated for hazardous waste contamination. Revise and update the wetland restoration plan and an application for NJDEP Freshwater Wetlands General Permit #4. *Reference: Robert Oleksy, Manager Environmental Health & Safety, VDM Metals USA, (973) 236-1664. December 2014-present.*

(#3792) Proposed Solar Development, Upper Freehold Township, Monmouth County New Jersey. Community Energy Inc. /Landcore Engineering Consultants. Project Manager responsible for conduction a detailed wetland delineation of a disturbed 57 acre farmed wetland in accord with the NJDEP procedures. Prepare an application for a Regulatory Wetland Line Verification Letter of Interpretation and a Freshwater Wetlands General Permit #6. *Reference: Matthew Rutt, PE, CDP, President, Landcore Engineering Consultants, (717) 490-2785. December 2014 to present.*

EXPERIENCE PRIOR TO ASGECI

New Jersey Wetland Mitigation Council

Mr. Piel represented the Commissioner of the NJDEP on the Freshwater Wetlands Mitigation Council from 1989 through 2005. In this role he reviewed proposals for land donations and monetary donations as part of the states in lieu fee program to compensate for wetland losses. He also reviewed proposals for grants from the Wetlands Mitigation Bank to replace wetlands that were filled as a result of wetland permits or violations. The Council also was responsible for approval of private wetland mitigation banks. Mr. Piel also managed the staff to the Wetlands Mitigation Council which evaluated potential wetland bank sites, land donation proposals as well as proposals for monetary donations.

Meadowlands Interagency Mitigation Assessment Committee

Represented the Commissioner of NJDEP on this interagency team which was responsible for developing consistent mitigation requirements and standards for use in the NJ Hackensack Meadowlands District. The agencies represented included the USEPA, USACE, USFWS, National Marine Fisheries Service, Meadowlands Commission and NJ DEP. This committee established wetlands mitigation banking criteria for the District, reviewed and approved mitigation banks as well as individual mitigation projects.

New Jersey Department of Environmental Protection

Office of Policy Implementation and Watershed Restoration~ Director

10/10 – 07/13

- Managed staff of the Office of Policy Implementation and the Watershed Restoration Program.
- Facilitated rule revisions for the Department's Coastal Zone Management, Flood Hazard Area Control Act, Freshwater Wetlands Protection Act, and Highlands Water Protection and Planning Act rules.
- Managed the Watershed Restoration Program which oversees 319 (h) grant awards.
- Conducted stakeholder meetings with internal and external interest groups.
- Communicated complex, proposed rule strategies to internal and external interest groups.



Division of Land Use Regulation ~ Assistant Director*12/06 – 10/10*

- Managed a diverse professional and support workforce encompassing three bureaus which were responsible for permit review, wetland mitigation, threatened and endangered species reviews, engineering and administrative operations.
- Coordinated collaborative efforts with stakeholders from state and federal agencies, as well as constituent organizations.
- Managed priorities of the organization to ensure efficient and effective delivery of services.
- Ensured consistent application of regulations to protect natural resources.
- Oversaw the development of electronic permitting in the Land Use Division.
- Developed and implemented a reorganization plan for the Division.

Division of Smart Growth ~ Director*06/05 – 12/06*

- Developed regulations to implement a consolidated permit review program for wetlands, floodplains, treatment works and water supply permits.
- Developed regulations for a Certified Consultant Program.
- Coordinated with state and federal agencies to draft rules that provided for issuance of permits that are in compliance with current state and federal rules.
- Collaborated with stakeholders to take advantage of innovative and streamlined technologies.
- Presented the Smart Growth concept and strategy to various organizations across the state.

Division of Land Use Regulation ~ Manager*04/96 – 06/05*

- Managed environmental, engineering, technical and administrative staff while facilitating the operations of the Division.
- Managed the revision of the DEP's Freshwater Wetland Protection Act Rules.
- Developed a wetland mitigation unit and vernal habitat protection strategy.
- Oversaw the operations of the State's Wetland Mitigation Council and represented the Commissioner of DEP on the Council.

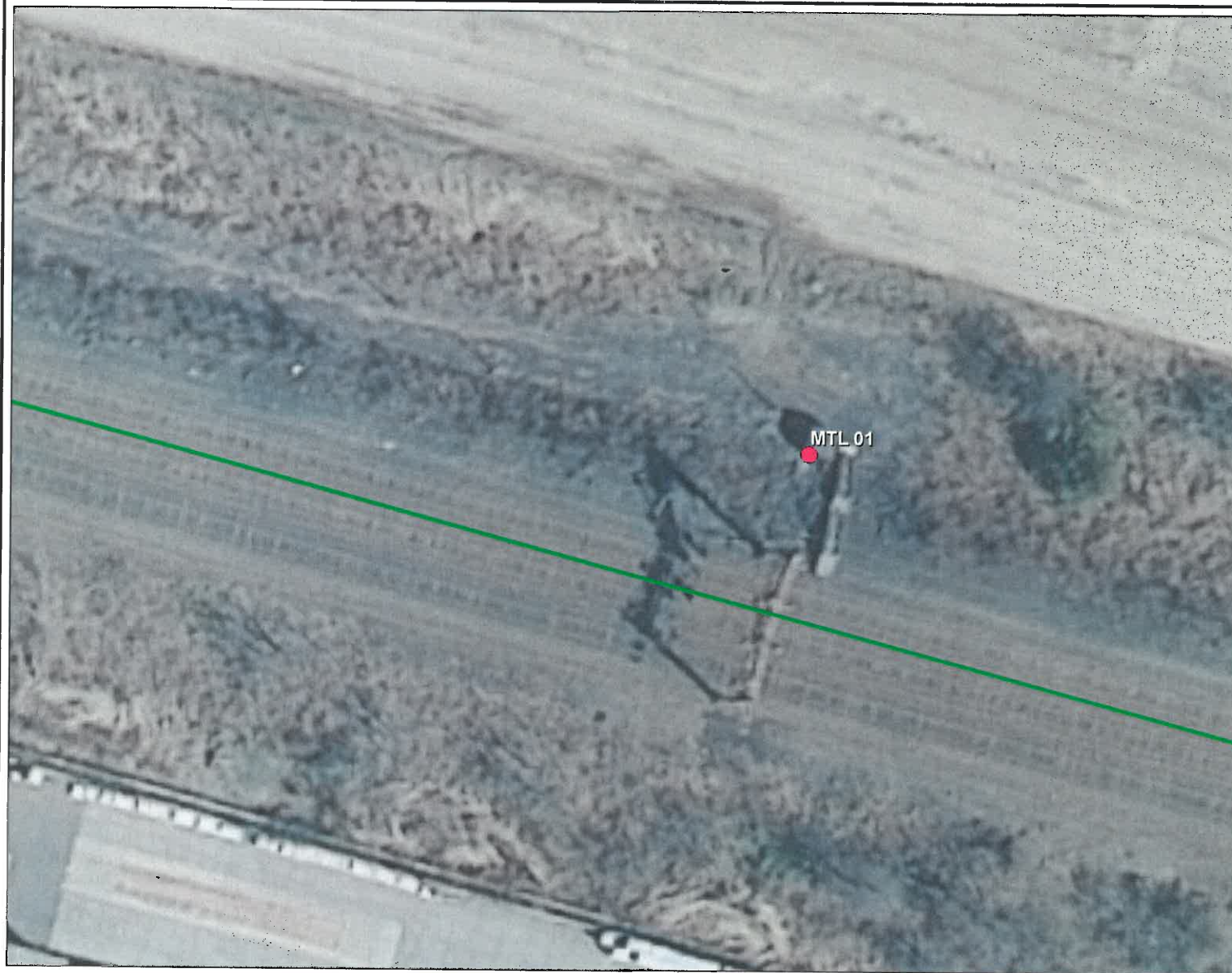
Division of Land Use Regulation ~ Manager IV*10/89 – 04/96*

- Developed a reorganization plan integrating the State's Freshwater Wetland Program, the Coastal Zone Program, and the Flood Hazard Program.
- Managed the successful application to USEPA for NJ to assume the Federal 404 program.
- Managed the day to day operations of a regulatory bureau including policy, technical, budget and personnel matters.
- Managed the revision and updating of the NJ Freshwater Wetlands Rules.
- Collaborated with stakeholders.
- Oversaw the operations of the State's Wetland Mitigation Council and represented the Commissioner of DEP on the Council.



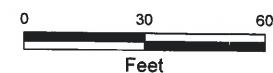
SECTION #6

**BEM SYSTEMS ASSET LOCATION MAP BOOK
REVISED 6/24/2015
MORRIS and ESSEX LINE**



Legend

- ASSET TO BE SURVEYED
- MORRIS & ESSEX LINE



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M&E Line Survey Asset Locations:
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Preliminary Project Mapping

Trains Controls-Wayside Signals

BALANCED ENVIRONMENTAL MANAGEMENT 100 Passaic Avenue
BEM SYSTEMS Chatham, NJ 07928
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Preliminary Project Mapping

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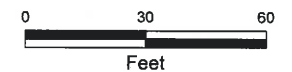
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Page 3 of 20

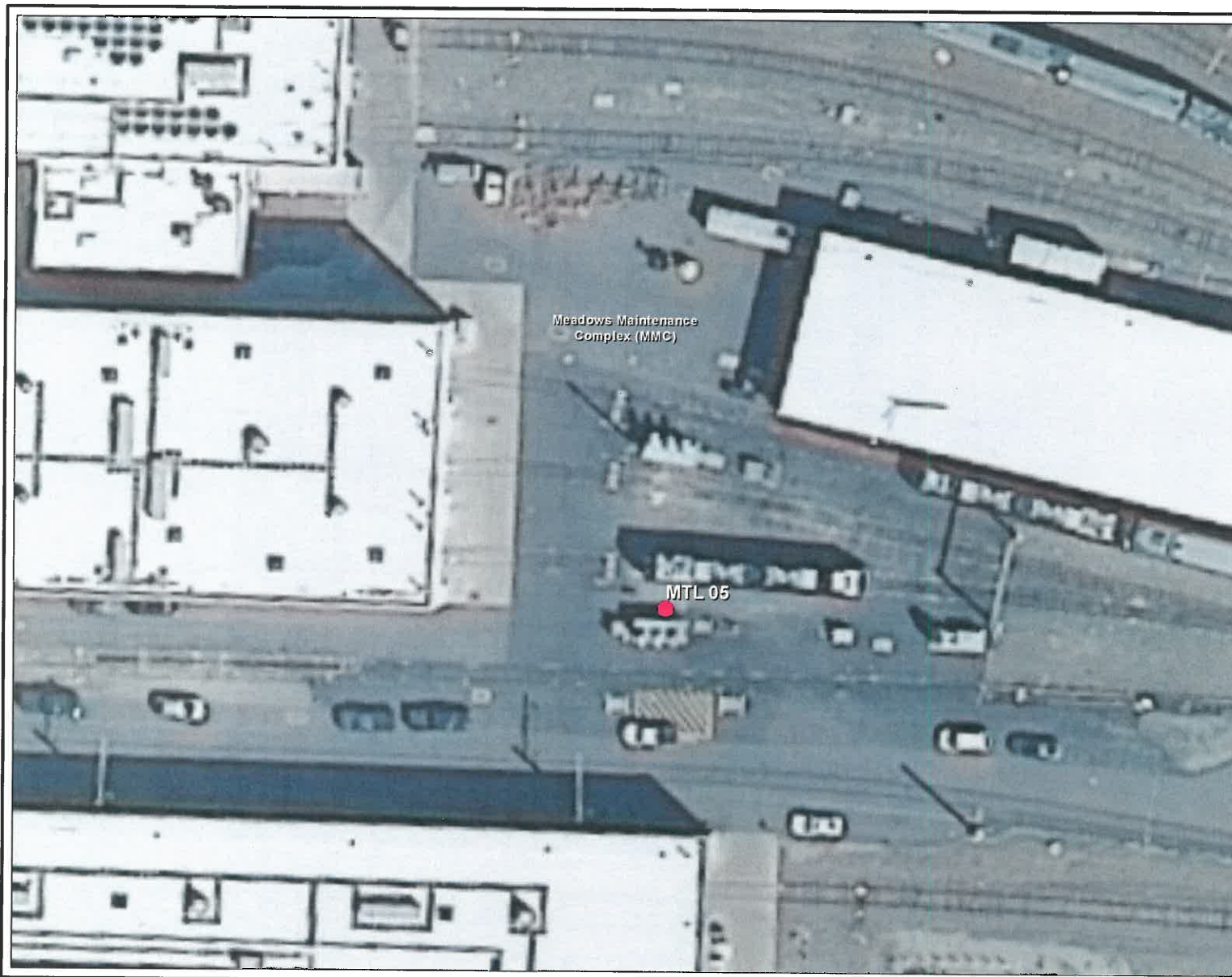
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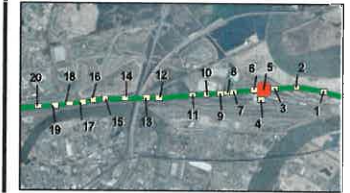
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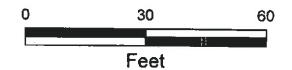
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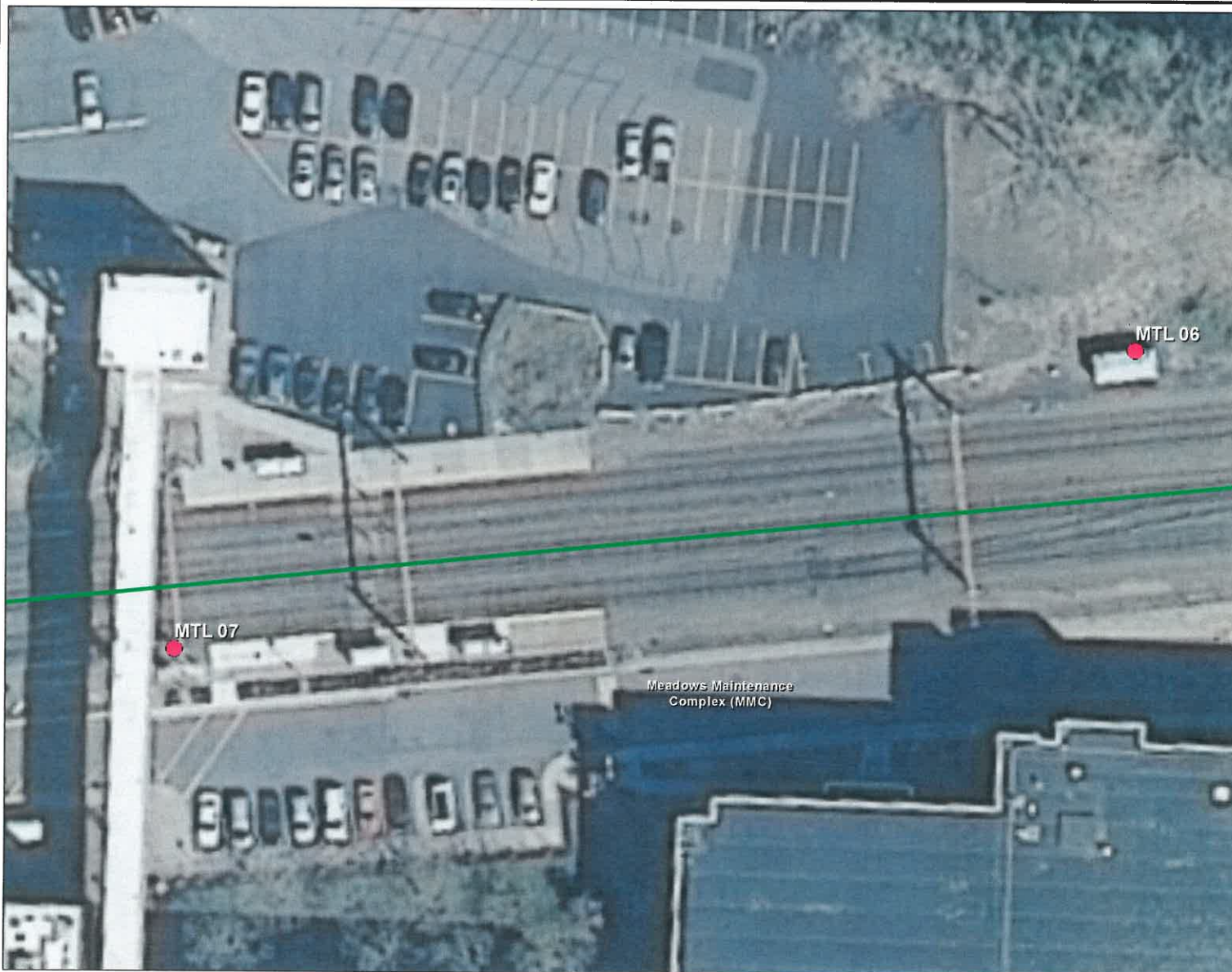
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Trains Controls-Wayside Signals

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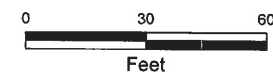
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Preliminary Project Mapping

Trains Controls-Wayside Signals

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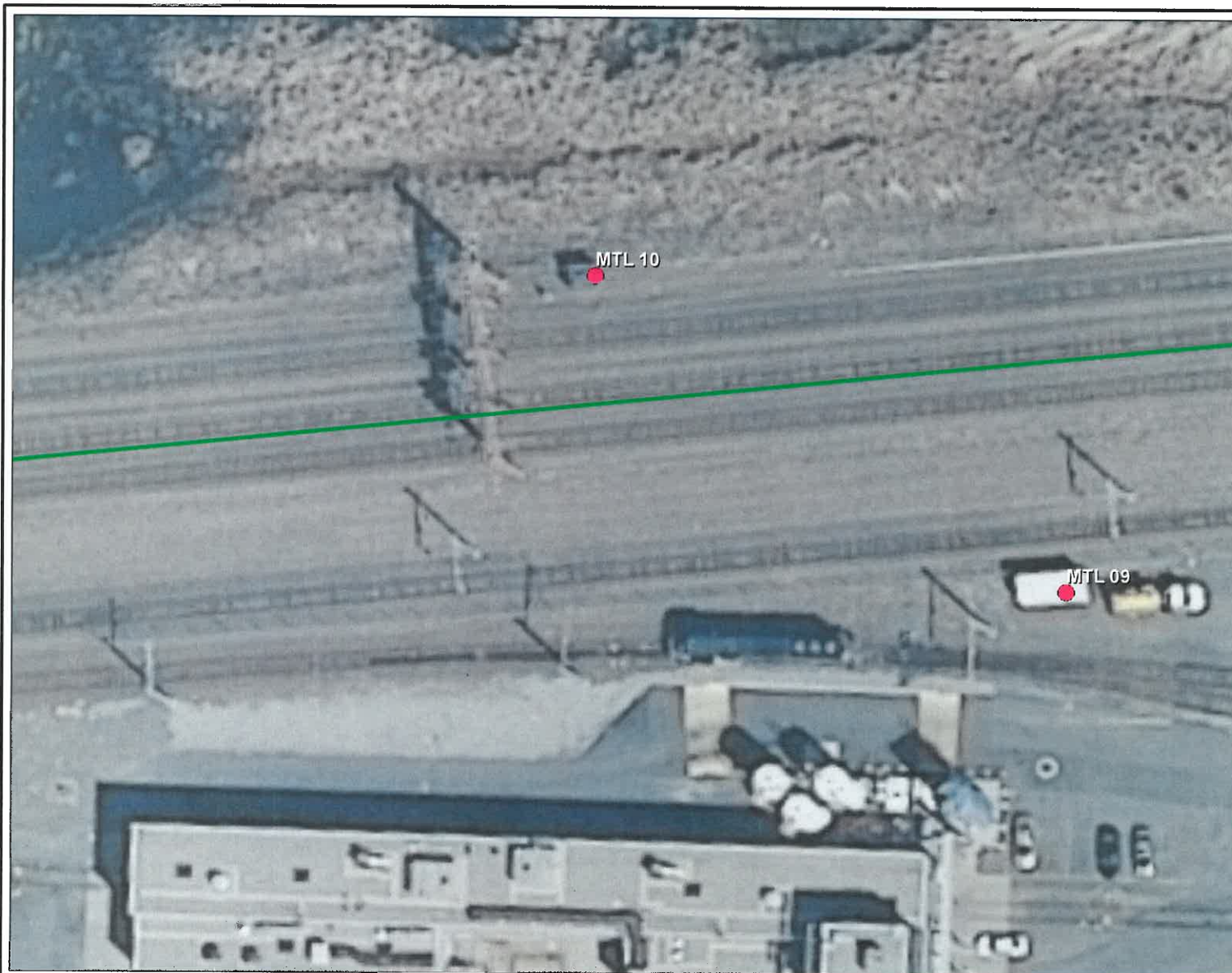
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Trains Controls-Wayside Signals

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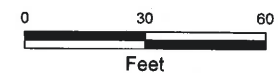
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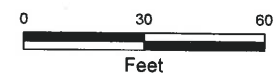
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Trains Controls-Wayside Signals

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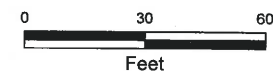
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Trains Controls-Wayside Signals

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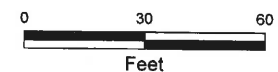
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Trains Controls-Wayside Signals

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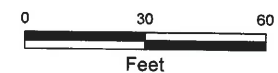
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Trains Controls-Wayside Signals

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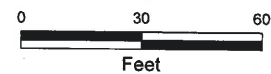
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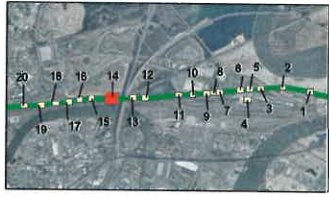
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P 908.598.2600

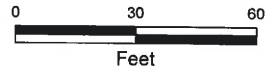
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NJ TRANSIT
The Way To Go.

M&E Line Survey Asset Locations:
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Preliminary Project Mapping

Trains Controls-Wayside Signals

BALANCED ENVIRONMENTAL MANAGEMENT

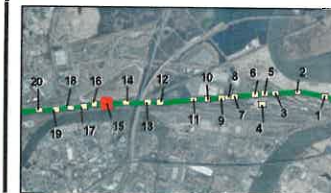
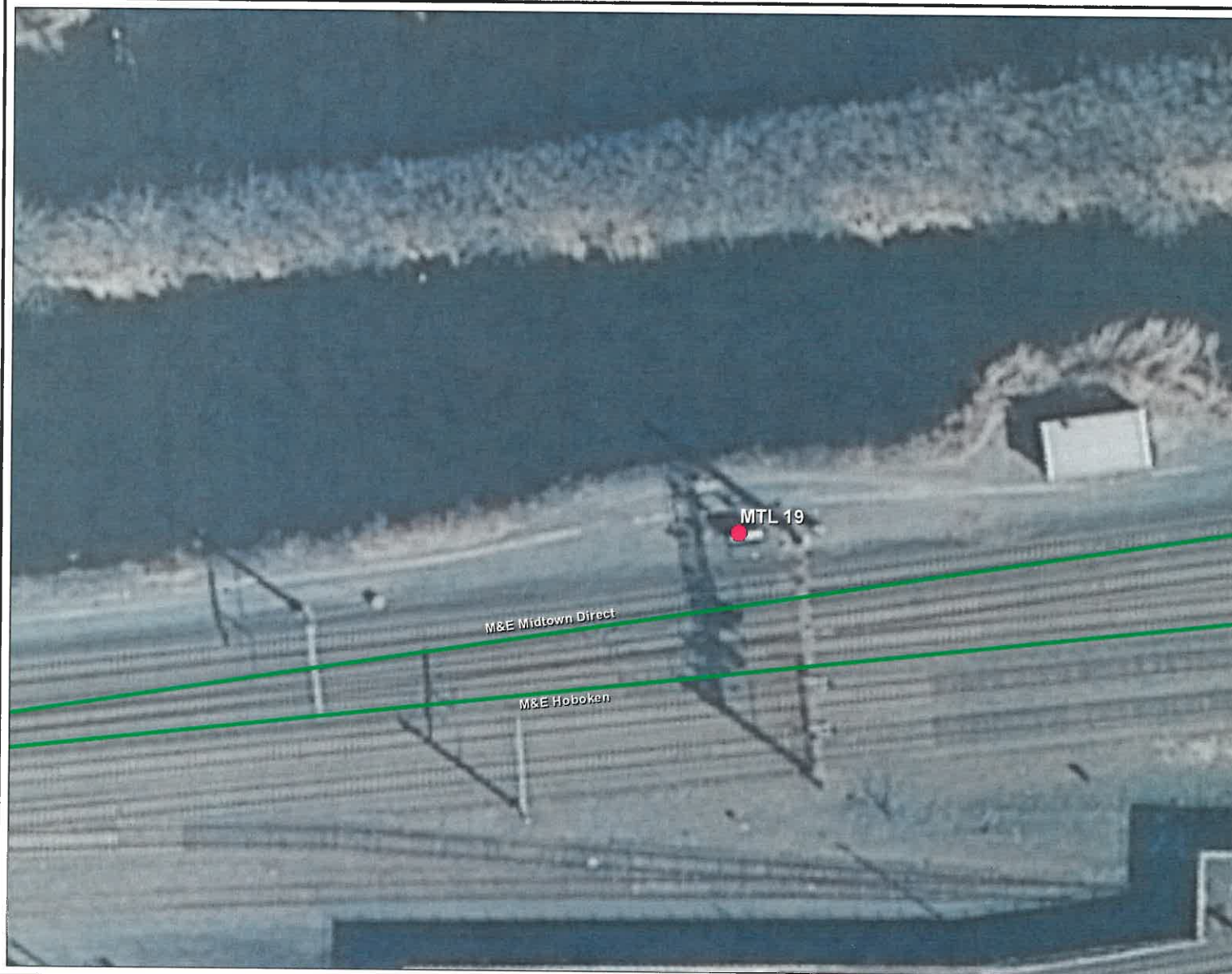


BEM SYSTEMS

100 Passaic Avenue
Chatham, NJ 07928
P 908.598.2600

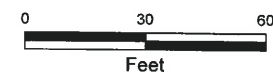
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Trains Controls-Wayside Signals

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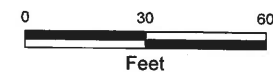
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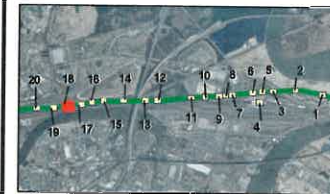
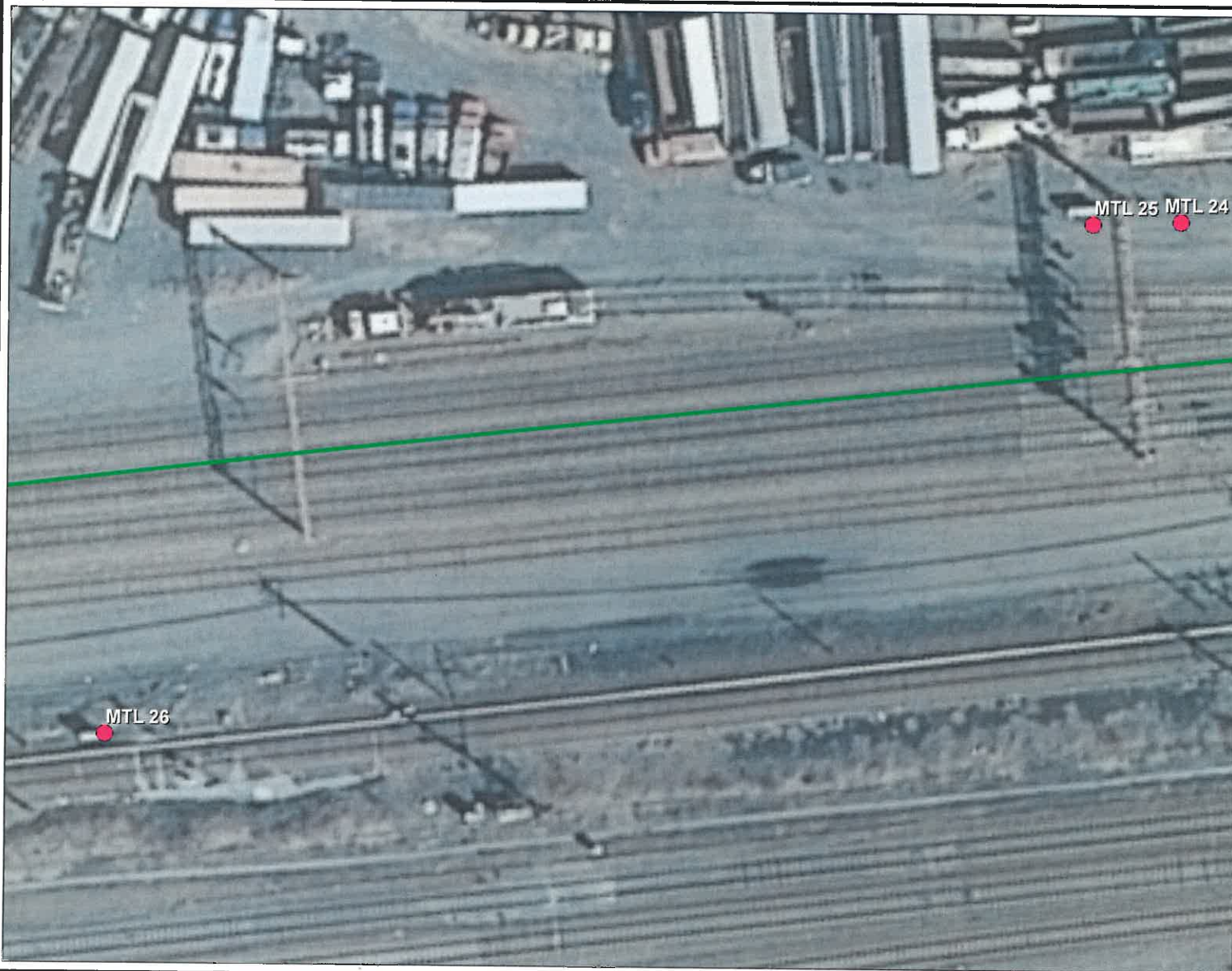
Trains Controls-Wayside Signals

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BEM SYSTEMS

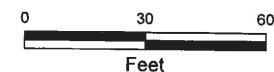
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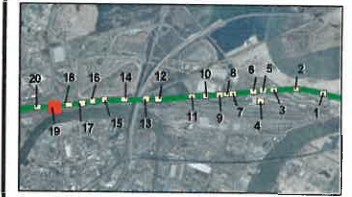
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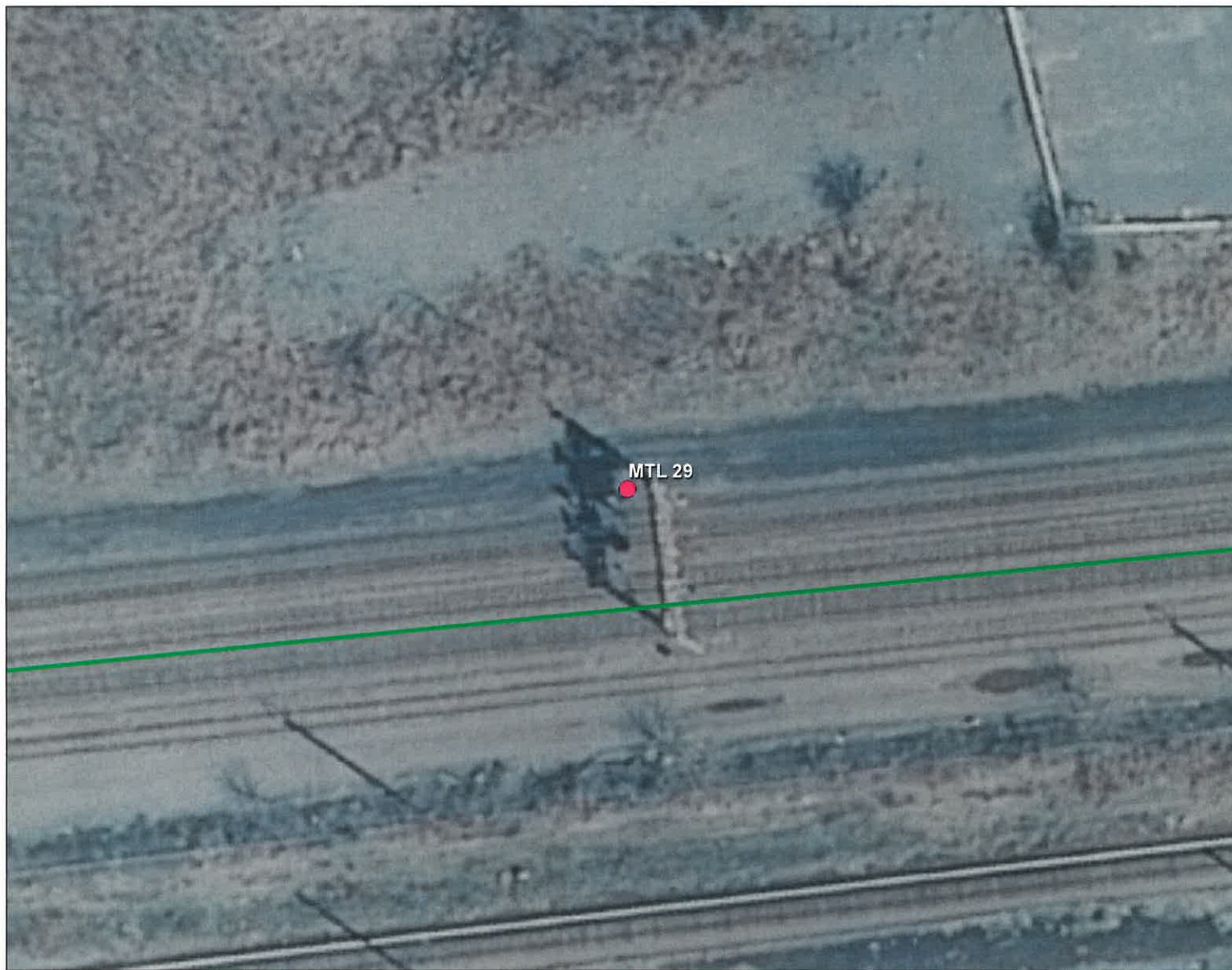
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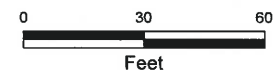
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WETLAND DELINEATION REPORT

MUNICIPAL TAX DESIGNATIONS FOR EVALUATION LIMITS

Municipality	Block	Lot
BAYONNE CITY	504	13
BAYONNE CITY	504	16.01
BAYONNE CITY	504	3
BAYONNE CITY	504	1
BAYONNE CITY	504	14.01
BAYONNE CITY	504	6
BAYONNE CITY	504	5
BAYONNE CITY	504	12
BAYONNE CITY	504	2
HOBOKEN CITY	137	15.02
HOBOKEN CITY	9	5.01
HOBOKEN CITY	23	1
HOBOKEN CITY	139	1.01
HOBOKEN CITY	136	6.01
HOBOKEN CITY	146	1
HOBOKEN CITY	145	1.01
HOBOKEN CITY	3	1
HOBOKEN CITY	80	10.01
HOBOKEN CITY	144	1
HOBOKEN CITY	143	19
*	145	12.03
*	144	20
HOBOKEN CITY	24	2
JERSEY CITY CITY	4901	34
JERSEY CITY CITY	4901	27
JERSEY CITY CITY	4901	21
JERSEY CITY CITY	4901	35
JERSEY CITY CITY	1801	6
JERSEY CITY CITY	4901	36
JERSEY CITY CITY	4901	37

JERSEY CITY CITY	2405	2
JERSEY CITY CITY	2405	2
JERSEY CITY CITY	5103	11
JERSEY CITY CITY	2405	2
JERSEY CITY CITY	4901	29
JERSEY CITY CITY	4901	33
JERSEY CITY CITY	4901	28
JERSEY CITY CITY	4801	3
JERSEY CITY CITY	5304	24
JERSEY CITY CITY	5304	3
JERSEY CITY CITY	5304	7
JERSEY CITY CITY	5304	8
JERSEY CITY CITY	5301	32
JERSEY CITY CITY	5804	31
JERSEY CITY CITY	5804	5
JERSEY CITY CITY	5202	4
JERSEY CITY CITY	5202	1
JERSEY CITY CITY	5402	43
JERSEY CITY CITY	5402	42
JERSEY CITY CITY	5402	41
JERSEY CITY CITY	5402	1
JERSEY CITY CITY	5501	19
JERSEY CITY CITY	5501	15
JERSEY CITY CITY	5501	14
JERSEY CITY CITY	5501	13
JERSEY CITY CITY	5501	12
JERSEY CITY CITY	5501	11
JERSEY CITY CITY	5501	10
JERSEY CITY CITY	5501	9
JERSEY CITY CITY	5501	8
JERSEY CITY CITY	5501	7
JERSEY CITY CITY	5601	8

WETLAND DELINEATION REPORT

MUNICIPAL TAX DESIGNATIONS FOR EVALUATION LIMITS

JERSEY CITY CITY	5601	7
JERSEY CITY CITY	5601	6
JERSEY CITY CITY	5601	5
JERSEY CITY CITY	5601	4
JERSEY CITY CITY	5601	3
JERSEY CITY CITY	5601	2
JERSEY CITY CITY	5601	1
JERSEY CITY CITY	5601	19
JERSEY CITY CITY	5602	1
JERSEY CITY CITY	5601	18
JERSEY CITY CITY	5802	23
JERSEY CITY CITY	5802	34
JERSEY CITY CITY	5802	22
JERSEY CITY CITY	5802	35
JERSEY CITY CITY	5802	21
JERSEY CITY CITY	5802	36
JERSEY CITY CITY	5802	37
JERSEY CITY CITY	5802	38
JERSEY CITY CITY	5802	18
*	5304	27
*	5304	23
JERSEY CITY CITY	5802	39
JERSEY CITY CITY	5802	40
JERSEY CITY CITY	5802	17
JERSEY CITY CITY	5802	16
JERSEY CITY CITY	5802	41
JERSEY CITY CITY	5804	12
JERSEY CITY CITY	5802	42
JERSEY CITY CITY	5804	11
JERSEY CITY CITY	5804	10
JERSEY CITY CITY	5804	9
JERSEY CITY CITY	5804	8

JERSEY CITY CITY	5804	7
JERSEY CITY CITY	5804	6
JERSEY CITY CITY	7405	1
JERSEY CITY CITY	7404	2
JERSEY CITY CITY	7402	19
JERSEY CITY CITY	5804	4
JERSEY CITY CITY	5804	3
JERSEY CITY CITY	6005	3
JERSEY CITY CITY	6001	41
JERSEY CITY CITY	6005	8
JERSEY CITY CITY	6005	7
JERSEY CITY CITY	6002	6
JERSEY CITY CITY	6002	3
JERSEY CITY CITY	6002	2
JERSEY CITY CITY	6001	43
JERSEY CITY CITY	6001	37
JERSEY CITY CITY	6001	13
JERSEY CITY CITY	6001	33
JERSEY CITY CITY	6001	42
JERSEY CITY CITY	6902	1
JERSEY CITY CITY	7202	2
JERSEY CITY CITY	6902	2
JERSEY CITY CITY	6902	32
JERSEY CITY CITY	6902	3
JERSEY CITY CITY	6902	5
JERSEY CITY CITY	6902	6
JERSEY CITY CITY	6902	16
JERSEY CITY CITY	6902	21
JERSEY CITY CITY	6902	16.02
JERSEY CITY CITY	6102	2
JERSEY CITY CITY	6102	3
JERSEY CITY CITY	7303	11

WETLAND DELINEATION REPORT

MUNICIPAL TAX DESIGNATIONS FOR EVALUATION LIMITS

JERSEY CITY CITY	7303	12
JERSEY CITY CITY	7303	5
JERSEY CITY CITY	7303	4
JERSEY CITY CITY	7303	8
JERSEY CITY CITY	7301	5
JERSEY CITY CITY	7301	1
JERSEY CITY CITY	7302	1
JERSEY CITY CITY	13703	3
JERSEY CITY CITY	13702	3
JERSEY CITY CITY	13702	2
JERSEY CITY CITY	14205	24
JERSEY CITY CITY	14205	23
JERSEY CITY CITY	14205	22
JERSEY CITY CITY	14205	21
JERSEY CITY CITY	14405	3
JERSEY CITY CITY	14205	18
JERSEY CITY CITY	14205	15
JERSEY CITY CITY	15701	2
JERSEY CITY CITY	15702	7
JERSEY CITY CITY	10901	127
JERSEY CITY CITY	9806	1
JERSEY CITY CITY	9801	4
JERSEY CITY CITY	9801	3
JERSEY CITY CITY	9801	2
JERSEY CITY CITY	10901	114
JERSEY CITY CITY	10901	124
JERSEY CITY CITY	10901	123
JERSEY CITY CITY	10901	84
JERSEY CITY CITY	10901	120
JERSEY CITY CITY	11603	15
JERSEY CITY CITY	11603	42
JERSEY CITY CITY	11603	28

JERSEY CITY CITY	11603	40
JERSEY CITY CITY	11603	41
JERSEY CITY CITY	11603	4
JERSEY CITY CITY	15901	16.01
JERSEY CITY CITY	19903	10
JERSEY CITY CITY	21102	52
JERSEY CITY CITY	21503	3
JERSEY CITY CITY	21503	2
JERSEY CITY CITY	21503	1
JERSEY CITY CITY	21404	1
JERSEY CITY CITY	22204	1
JERSEY CITY CITY	15802	19
JERSEY CITY CITY	15802	20
JERSEY CITY CITY	15802	21
JERSEY CITY CITY	15802	11
JERSEY CITY CITY	15802	8
JERSEY CITY CITY	15802	7
JERSEY CITY CITY	15802	6
JERSEY CITY CITY	15802	5
JERSEY CITY CITY	15801	76
JERSEY CITY CITY	15801	68
JERSEY CITY CITY	15801	71
JERSEY CITY CITY	15801	67
JERSEY CITY CITY	15801	66
JERSEY CITY CITY	15801	70
JERSEY CITY CITY	15801	7
JERSEY CITY CITY	15801	5
JERSEY CITY CITY	15801	65
JERSEY CITY CITY	15801	1
JERSEY CITY CITY	15801	48
JERSEY CITY CITY	15802	4
JERSEY CITY CITY	27401	2.01

WETLAND DELINEATION REPORT

MUNICIPAL TAX DESIGNATIONS FOR EVALUATION LIMITS

JERSEY CITY CITY	27401	5
JERSEY CITY CITY	27401	2.02
JERSEY CITY CITY	27401	2
JERSEY CITY CITY	13806	2
JERSEY CITY CITY	15801	3
JERSEY CITY CITY	15801	2
JERSEY CITY CITY	21305	25
JERSEY CITY CITY	27401	1
JERSEY CITY CITY	27401	2
JERSEY CITY CITY	30305	20
JERSEY CITY CITY	30305	19
JERSEY CITY CITY	30304	21
*	5802	43
*	5802	44
*	7402	29
*	7402	27
*	6001	44
*	6902	34
*	8401	12
*	21003	11
*	11603	31
*	11603	45
*	11603	46
*	11603	47
*	11603	3
*	15901	21.01
*	15901	14
*	20902	86
*	21102	51
*	21501	1
*	21403	1
*	21402	1

*	21401	2
*	15802	22
*	15802	9
*	15801	9
*	15801	13
*	15801	14
*	15801	81
*	30305	12
*	30305	13
KEARNY TOWN	284	34
KEARNY TOWN	284	35.02
KEARNY TOWN	287	80
KEARNY TOWN	284	27
KEARNY TOWN	284	28.04
KEARNY TOWN	284	28.03
KEARNY TOWN	284	28.01
KEARNY TOWN	284	16
KEARNY TOWN	287	53
KEARNY TOWN	287	61.01
KEARNY TOWN	287	54
KEARNY TOWN	287	5.01
KEARNY TOWN	287	50
KEARNY TOWN	287	48
KEARNY TOWN	287	68
KEARNY TOWN	287	69
KEARNY TOWN	287	63
KEARNY TOWN	287	70
KEARNY TOWN	287	71
KEARNY TOWN	287	61.03
KEARNY TOWN	287	60
KEARNY TOWN	287	55
KEARNY TOWN	287	62

WETLAND DELINEATION REPORT

MUNICIPAL TAX DESIGNATIONS FOR EVALUATION LIMITS

KEARNY TOWN	287	32.01
KEARNY TOWN	287	56
*	287	52
*	287	49
*	287	49.01
*	287	51
*	287	52.01
*	287	70.01
*	287	71.01
*	287	61.02
*	287	62.01
NORTH BERGEN TWP	160	5.13
NORTH BERGEN TWP	160	5.01
*	160	1.02
*	483	17
UNION CITY CITY	267	18
UNION CITY CITY	192.01	1.01
UNION CITY CITY	267	15
UNION CITY CITY	267	13
UNION CITY CITY	267	12
UNION CITY CITY	267	11
UNION CITY CITY	267	17
UNION CITY CITY	267	16
UNION CITY CITY	267	10
UNION CITY CITY	267	14
UNION CITY CITY	267	21
*	267	9
*	267	8
*	267	7
*	267	5
*	267	6

*	267	4
WEEHAWKEN TWP	34.03	6
WEEHAWKEN TWP	36.04	2
WEEHAWKEN TWP	61	19
WEEHAWKEN TWP	61	22
WEEHAWKEN TWP	61	23
WEEHAWKEN TWP	61	21
WEEHAWKEN TWP	61	20
WEEHAWKEN TWP	11	4
WEEHAWKEN TWP	64	3
*	45.01	14
*	64	11
*	36.03	24
*	45	9
*	*	*

Attachment D Qualifications of Preparers

HAROLD OLARTE *Program Manager, NEPA, Permitting & Ecological Services*

EDUCATION

BA/BS double major in Marine Biology and Spanish Language & Literature, Brandeis University, Waltham, MA

PROFESSIONAL CERTIFICATIONS

*OSHA 1910.20 40-Hour Hazardous Waste Operations (e)(3)(i), up to level B Health & Safety Training.
GC Env., New York, 2001 & UMDNJ, 2007. 8-Hour OSHA Refresher
Vernal Pool Assessment and Certification, NJ Division of Fish Game & Wildlife, 2003
CPR/ First Aid Certification, 2003
Conrail Railroad Training, 2005, BP Site Training, 2005, Kinder Morgan Site Training, 2005*

PROFESSIONAL TRAINING

- *NJT Safety Training, April, 2014*
- *Amtrak Safety Training, May, 2014*
- *NJ Audubon Society Bird Atlas, 1994-present*
- *NJ Audubon Society Herp Atlas, 1994-present*
- *Sustainable International Development, Universidad Du Amazonas, 1996*
- *Macro-invertebrate Identification, Cornell University, NY, January 1998*
- *Lake and Pond Assessments, Cook College, NJ, April, 1998*
- *Biological Assessments (BAT's), Cook College, NJ, May, 1998*
- *Freshwater Wetlands, Cook College, NJ, March, 2000*
- *Coastal Project Review, Cook College, NJ, April, 2000*
- *Hydric Soils, Cook College, June 2000*
- *Methodology of Delineating Wetlands, Cook College, June, 2000*
- *Wetland Vegetation Identification, Cook College, July, 2000*
- *Stream Encroachment, Cook College, November 2000*
- *Wetlands Regulatory Workshop, Wetlands Regulatory Group, November, 2000*
- *Coastal Management Workshop, Ecological Indicators for Salt Marsh Restoration in the Mid-Atlantic Bight, Richard Stockton College, December 2000*
- *The New Coastal Rules, New Jersey Builders Association, March, 2000*
- *Coastal Project Review, Cook College, NJ, March 2000*
- *ENSP, Endangered Species Seminar, Cook College, NJ, March, 2005*
- *Freshwater Wetlands Construction, Cook College, NJ, June, 2006*

PROFESSIONAL AFFILIATIONS

- *Society of Wetland Scientists*
- *The Wildlife Society*
- *Massachusetts Audubon Society (Key Lecturer)*
- *Massachusetts Natural Heritage Program*
- *NJ Audubon Society (Key Lecturer)*
- *Flat Rock Brook Nature Center ((Key Lecturer, former Naturalist, Trail Guide, Park Ranger)*
- *NJ Palisades Association (Key Lecturer)*
- *NJ Division of Fish Game & Wildlife, Endangered Nongame Species Program (Certified Volunteer)*

TOTAL YEARS OF EXPERIENCE: 17

RELEVANT WORK EXPERIENCE

Mr. Olarte Manager, Permitting and Ecological Services, has over 17 years of professional experience in the Northeast, Mid-Atlantic, and Southeastern Region. His areas of chief expertise lie in land use

regulation, regulatory compliance, permit application/preparation, the inventory and evaluation of aquatic, terrestrial, and wetland systems, ecosystem restoration design/implementation and compensatory mitigation. Assessment and mitigation of impacts associated with major development, transportation and infrastructure projects. Adept at addressing local, County, State- SEQRA/CEQRA, Environmental Conservation Law-Article 24, 25 (Land Use Compliance for several states including Florida, New York State and NYC, New Jersey, Massachusetts, Connecticut, Maryland, Delaware and Pennsylvania) and Federal (Section 10/404/Nationwide/NEPA) regulatory compliance for natural resources permitting as well as ecosystem restoration, construction and restoration. Planning and completion of threatened and endangered species surveys (avian, terrestrial, aquatic and herpetological species studies), wildlife management (flora & fauna), aquatic studies involving fish and benthic community analysis through invertebrate data metrics and indices, multi-parameter habitat assessment including physical and chemical environmental sampling, vernal pool ecology and eutrophic habitat rehabilitation, EPA protocol rapid bio

HAROLD OLARTE *Program Manager, NEPA, Permitting & Ecological Services*

assessments, utilizing bio-engineering techniques for water quality enhancement, compensatory wetland mitigation characterization, design, construction oversight, monitoring studies and reporting. Mr. Olarte has also been involved in the coordination, preparation and planning board review of numerous environmental assessments and environmental impact statements for local planning boards providing expert witness testimony, State and federally funded projects. Mr. Olarte has successfully procured various land use permits, designed and implemented many small and large scale ecosystem restoration projects ranging from rural to urban.

PROJECT EXPERIENCE

NEPA -EO 215:

- **New Jersey Transit, Superstorm Sandy Recovery and Resiliency, Environmental Program Manager:** Superstorm Sandy Recovery National Environmental Policy Act (NEPA) & Permitting Program Management Environmental Program Management for NJ TRANSIT for the ongoing repair and rehabilitation of the physical assets impacted by the October 2012 Superstorm Sandy event. Supporting New Jersey Transit as an overall Environmental Program Manager for preparing National Environmental Policy Act (NEPA) documentation, permit applications, hazardous waste studies, grant applications for Superstorm Sandy Recovery and Resiliency, and review by FTA. Work includes over 50 projects including rail signals and switches, power facilities, catenary pole replacement, bridge replacements, stations and terminals and other elements. Key highlights for this project include: NEPA documentation; Federal, State and Local Permitting; Site Investigation/Remedial Investigation; Remedial Action Work Plan/Remedial Action; SHPO Coordination; Stormwater Management; and Environmental Assessments/Compliance.
- **NEPA Land Use Compliance for Cell Sites, New York, New Jersey, Massachusetts, Connecticut, Pennsylvania, Virginia:** Conducted several thousand NEPA Land Use Screenings for proposed cell tower developments, collocations, and raw land acquisitions with special attention to regulatory NEPA compliance under FCC rules including but not limited to Threatened and Endangered Species, Wilderness Areas, Wildlife Preserves, Peregrine Falcon Impacts, Historic/ Areas of Potential Effect (APE's), Archeological Studies, Indian Burial Grounds, Floodplain, and Wetlands. Involved the preparation of NEPA Land Use Screening Checklists, Environmental Assessments, Findings of No Significant Impact (FONSI) and Environmental Impact Statements (EIS) when necessitated.
- **U.S. DOI Bureau of Indian Affairs, NEPA Land Use Compliance Guide for Juvenile Jail Sites in Native American Reservations:** Created a NEPA guide and reference EA to be used by the Bureau Staff, Consultants and developers in complying with the National Environmental Policy Act of 1969, for the proposed development of Juvenile Jails in Native American reservations.
- **Franklin Township Sewerage Authority, Franklin Township, NJ:** Project entailed the replacement of existing sanitary conveyance pipes. Prepared a Level 2- EO 215 Environmental Assessment (EA) for submission to the NJDEP, under the Municipal Finance program.
- **Sayreville Plainsboro Road Traffic Calming, Borough of Plainsboro, NJ:** Project consisted of the preparation of an application for a Categorical Exclusion document for the Federal Funding of a traffic calming project along Plainsboro Road, in accordance with State and Federal guidelines.

- **Improvements to Prospect Plains Rd. (CR 614), Monroe & Cranbury Townships, Middlesex County, NJ:** An EO 215 EA was prepared to evaluate the potential impacts on the natural and human environment in accordance with the Federal National Environmental Policy Act of 1969 and the State governing Executive Order 215. Level 1 review, to support a finding of no significant impact, for the proposed CR 614 Improvements. The EA evaluated potential impacts to land use, air quality, noise, geology and soils, water resources, wetlands, biological resources, cultural and historic resources, socioeconomics and environmental justice, transportation and hazardous materials use and conditions. The EA was approved by the NJDEP with no comments.
- **Sayreville War Memorial High School, Sayreville, NJ:** Prepared a NEPA, State affiliate E.O 215- level 1, Environmental Assessment (EA) for the Borough of Sayreville for proposed high school improvements.

Ecological/Wetland Restoration-Mitigation Banking:

- **U.S. Army Corps of Engineers, Jamaica Bay Marsh Islands Restoration Project, Brooklyn, NY:** The objectives of this proposed project were to improve and restore salt marsh in the interior portions of Jamaica Bay that were historically occupied by salt marsh. Project tasks included; identifying candidate islands and areas particularly suited for salt marsh restoration; identification of preliminary habitat improvement measures and methods in conjunction with the NY District Design Team. Mr. Olarte was also tasked with installing two independent gauging stations and collecting water quality data over a six month period from within the bay. This data was incorporated into the Natural Resources Inventory (NRI) prepared for the project. Mr. Olarte completed an intensive vegetation inventory of the two selected restoration sites (Yellow Bar Hassock and Elders Point Marsh) using a combination of color, infrared, aerial, photo interpretation and on-site GPS surveys. Mr. Olarte also developed a pilot restoration program and prepared NY State permit applications to implement the program. The pilot program consisted of four salt marsh restoration test plots that tested a variety of planting treatments and two different restoration strategies.
- **Mullica River Wetland Mitigation Bank, Evesham, NJ:** The 96 acre site is located adjacent to the Wharton State Forest in Watershed Management Area 14 – Mullica River. The bank will create, enhance and preserve a 96 acre fully integrated, and highly functioning forested wetland/upland complex, including hydrology, geomorphology, biological, chemical, and physical processes. The bank will restore riparian, forested wetlands plus 1,750 linear feet of an un-named tributary to Kettle Run diked and filled prior to the turn of the century for cranberry production, restoring natural sediment and nutrient cycling patterns, and removing and controlling invasive exotic vegetation. Evaluated the sites remaining surplus acreage and repositioned it as a mitigation bank. Collected market, ecological and hydrologic data to develop financial models and evaluate bank feasibility. Prepared and submitted a conceptual mitigation proposal to NJDEP. Coordinated and lead field assessments and meetings with the NJ Pinelands Commission, completed a Pinelands Development application, reviewed by the NJ Pinelands Commission and obtained a certificate of filling. Completed a Final Mitigation Proposal and submitted to the NJDEP. Acted as project director and was responsible for overseeing all aspects of this project including management, design, approval, construction mitigation demand assessment and credit sales. This mitigation bank would be the first that is authorized and constructed in the NJ Pinelands.

- **Manasquan River Wetland Mitigation Bank, Howell Township, NJ:** Secured NJDEP GP 16 permit approvals for, developed and sold off fixed price turnkey mitigation to the NJ Turnpike Authority as compensatory mitigation for a major transportation improvement project in Monmouth County. The turnkey mitigation was constructed during the spring of 2013. Completed all of the baseline ecological work, design and approvals work including drafting the mitigation banking instrument, conservation easement and financial assurances required to secure preliminary and final bank approval. The bank is anticipated to produce 6.18 freshwater wetland mitigation credits and can also compensate for impacts to state regulated riparian zone and critical wildlife habitat. I was responsible for overseeing all aspects of this bank including management, design, approval, construction, mitigation demand assessment and credit sales.
- **Lower Raritan Center Mitigation Bank, Edison, NJ:** This 609 acre site is located on the banks of the Raritan River in Watershed Management Area 9 in Edison Township, Middlesex County, NJ in the lower reach of the Raritan River. Existing wetlands are comprised of a mono-typic stand of common reed (*Phragmites australis*) which has been isolated from the tide for nearly a century and was subject to intensive military use during the 1940's and 1950's. Collected onsite hydrologic data, extensive biological inventories, functional wetland assessment and identification and study of numerous reference communities. Responsibilities included conducting baseline studies, design, completion of a Federal draft prospectus, review of subsurface soil characterization, RAR, RAWP, eco-risk data and evaluation, and design measures associated with a large scale Green Infrastructure Master Plan. Preparation of a Joint Permit which was comprised of a waterfront development, coastal consistency, water quality certification, transition area waiver, freshwater wetlands individual, individual flood hazard and Acceptable Use Determination (AUD).
- **Atlantic Coastal Wetland Mitigation Bank, Pleasantville, NJ:** The 53.60 acre site is located approximately 1/3 of mile from Absecon Bay, 4 miles northwest of Atlantic City and adjacent to the NJ Absecon Wildlife Management Area. The site is located in the eastern portion of Watershed Management Area 15 - Great Egg Harbor Bay - Atlantic, Eastern Gloucester, and Camden Counties. The bank will contain approximately 14 acres of *Phragmites* marsh restoration and enhancement/preservation of +40 acres of existing low marsh. It is anticipated that 11.45 tidal wetland mitigation credits will be generated from this bank. This project will enhance habitat for 11 state listed and rare species of birds and diamond back terrapin and provide critical water quality enhancement within the shadow of Atlantic City and ultimately become part of the NJ Absecon Wildlife Management Area. Coordinated and attended meetings with the IRT and completed a Draft and Final prospectus which was submitted to the Philadelphia District of the Army Corps of Engineers. Contributed to baseline evaluations, soil characterization, reference site evaluation, evaluated demand assessment and credit sales, completed a prospectus and MBI for submission to the IRT lead by the Philly District of the ACE.
- **Oradell Reservoir Wetland Mitigation Project, Closter & Haworth, NJ:** The 14 acre site is located adjacent to the Oradell Reservoir in Watershed Management Area 5-Hackensack, Hudson, Pascack Watersheds. Existing, hydraulically degraded wetlands are presently comprised invasive dominated wetlands including common reed (*Phragmites australis*), Japanese stilt grass (*Microstegium vimineum*) and Mile-A-Minute (*Persicaria perfoliata*). Design objectives included restoring and enhancing an impaired 14+ acre forested headwater wetland and riparian complex; including hydrology, geomorphology, biological, chemical, and physical processes. Restoring and enhancing habitat for threatened & endangered species, common wildlife, and other aquatic dependent wildlife across the Site. Contracted by the Port Authority of NY/NJ to provide fixed price turnkey

mitigation for the Teterboro Airport (TEB) Runway 24 Engineered Materials Arresting System (EMAS) Project. Responsible for identifying a suitable property upon which provide the required compensatory mitigation and conducted all the transactional work required to secure an executed license agreement from the land owner. This required coordination with the NJDEP Watershed Property Review Board to satisfy certain MIMAC requirements. Completed baseline ecological work, hydrologic investigations and developed engineered drawings for use in obtaining state and federal mitigation approvals. Prepared draft prospectus, final mitigation proposal, and mitigation bank instrument that was respectively submitted to the District of the Army Corps of Engineers & NJDEP.

- **Lower Raritan Center, EPA ACO Resolution, Edison, NJ:** Addressed an outstanding mitigation requirement imposed by the US Environmental Protection Agency (USEPA) issued in Administrative Consent Order (ACO). This Order required the removal of fill and restoration of wetlands on a total of 64 acres out of this 609+ acre site. The site possesses over 1 mile of frontage on the Raritan River approximately 3.8 miles upstream from Raritan Bay. Under the ACO, Summit is required to remove approximately 30 acres (~300,000 cubic yards) of fill and restore an additional 30+ acres of wetlands. Developed a cost effective solution to address the ACO and evaluate the highest and best use for the surplus wetland acreage in connection with solving the outstanding ACO. Obtained conceptual plan approval from the EPA to address the ACO and develop a bank on the remaining wetland acreage. Prepared a conceptual master plan to address the ACO, generate traditional revenue streams for Summit and develop a large wetland bank. The result will be nearly 600 acres of restored wetland and maritime upland in the Lower Raritan River Basin. The ACO resolution will involve conducting all of the required fill removal and compensatory mitigation within the footprint of fill removal. Developed 35% engineering drawings and secured approvals from USEPA, USACE and NJDEP. Secured jurisdictional clarification from both the USACE and NJDEP. Responsible for overseeing all aspects of this project including management, proposal review, design, approval, regulatory coordination/compliance and contract compliance.
- **Public School 14, Staten Island, NY:** Preparation of application materials and procurement of an Individual Joint Application for a Section 404 Permit to the Army Corps of Engineers, and Article 24 Freshwater Wetlands Permit to the New York State Department of Environmental Conservation for 4±acres of wetland impacts.
- **Public School 6, Staten Island, NY:** Preparation and submission of a State Pollution Discharge Elimination System application for construction dewatering and stormwater discharge. Provided wetland mitigation design development including drafting construction specifications. Provided construction oversight of the 3+acres freshwater wetland restoration project. The design called for the removal of 44,000 cy of construction/demolition rubble and other garbage to reach design grades. Over 75,000 individual wetland plants installed. Responsible for mitigation monitoring and preparation of monitoring reports over a 5 year period.
- **Gateway Estates, Brooklyn, New York:** Preparation of application materials and procurement of an Individual Joint Application for a Section 404 Permit to the Army Corps of Engineers, and Article 24 Freshwater Wetlands Permit and an Article 25 tidal Wetlands Permit to the New York State Department of Environmental Conservation. The state and federal permits were required for permanent impacts to 0.5±acre tidal and 1.5±acre freshwater wetlands resulting from the development of a mixed-use residential community. Assisted in the preparation of mitigation plans and performed onsite monitoring along Hendrix Creek in Brooklyn, NY.

- **Public School 58, Staten Island, New York:** Preparation and submission of an Individual Joint Application for a Section 404 Permit to the Army Corps of Engineers (ACOE), an Article 24 Freshwater Wetlands Permit to the New York State Department of Environmental Conservation for 2+ acres of forested wetland impacts. In an effort to reduce project costs a suitable mitigation site was located in cooperation with the NYC Department of Parks and Recreation on City owned park land. Conducted a wetland delineation, vegetation survey and Habitat Evaluation Procedure (HEP) wildlife habitat assessment was performed. Construction plans, specifications and cost estimates were prepared for a 3.5-acre of forested freshwater wetlands mitigation. The design included provisions to “daylight” a historic section of Corsin’s Creek that had been piped for approximately 85 years. The mitigation plans also provided design layouts and specifications for an additional 3+ acres of upland forest.

Federal & State Regulatory Compliance:

- **Roosevelt Island, Southern Tip Improvements, NY:** Conducted site evaluation of southern tip to determine the extent of State and Federally regulated Jurisdictional waters. Meetings with Local, State, and Federal regulators for purposes of defining the scope of the required permit applications for the project including NYSDEC Joint Permit Application, ACOE Nationwide permits and State and Local CZM consistency.
- **Lowes-Long Island, Long Island, NY:** Performed wetland investigation on this 30+ acres site to determine the extent of state and federally regulated jurisdictional wetlands.
- **National Lead Redevelopment Site, Sayreville, NJ:** As a representative for the Sayreville Economic Redevelopment Association (SERA) and the Borough of Sayreville provided remedial/radiation and construction oversight and documentation, oversight on LSRP site management, ecological expertise, NJDEP/ USACE and managerial construction meeting representation, provided mitigation oversight as the project progressed in brownfield redevelopment efforts and maintaining regulatory compliance.
- **NJTPA Interchange-12, Carteret, NJ:** Preparation of application materials and procurement of NJDEP Freshwater Wetlands General Permit Nos. 12 and 14. Preparation and acquisition of an Individual FWW/Open water fill Permit/ Waterfront Development, Water Quality Certification, Transition Area Waiver and Coastal Consistency and Individual Section 10 and 404 Permit Application from the Army Corps of Engineers for geotechnical studies and the redesign of the Interchange 12 toll plaza, local roadway network, stormwater and adjacent retail area improvements. Services also included attending regulatory meetings, candidate mitigation site evaluation, a formal delineation, mitigation proposal with GIS analysis, mitigation design, contract preparation, mitigation construction oversight and 5 year monitoring, Baseline Ecological Evaluation to qualify potential ecological exposure to historical contaminants and the acquisition of a tidelands license and blanket grant.
- **Red’s Marina, Highland Park, NJ:** Prepared a Baseline Ecological Evaluation on behalf of the Middlesex County Improvement Authority that was submitted in conjunction with a Remedial Action Work plan submitted to NJDEP Site Remediation Department.
- **148 Doremus Avenue, LLC, Newark, NJ:** Preparation of plans and application materials and procurement of NJDEP Waterfront Development, Water Quality Certification and Coastal Consistency and Individual Section 10 and 404 Permit Application from the Army Corps of Engineers for the redevelopment of this fuel storage facility into a dredge processing facility. Completed an Essential Fish Habitat Study (EFH) to address National

Marine Fisheries Service (NMFS) concerns and comply with fisheries requirements under the Magnuson-Stevens Fishery Conservation and Management Act.

- **Carteret Marina, Carteret, NJ:** Preparation of application materials and procurement of NJDEP Waterfront Development, Water Quality Certification and Coastal Consistency and Individual Section 10 and 404 Permit Application from the Army Corps of Engineers for a three phased project that involved the conversion of the Borough of Carteret Waterfront, specifically the Arthur Cove into a municipal recreational marina. Designed and conducted a Finfish and Macro-invertebrate Essential Fish Habitat Study for concurrent submission to NJDEP, ACOE and National Marine Fisheries Service. Designed on-site and offsite concept mitigation that was submitted under federal public notice to provide a no net loss to natural resources.
- **Land Reclaiming, Inc. (ILR) Sanitary Landfill, Edison, NJ:** An environmental assessment (EA) was conducted for a portion of the former ILR Landfill. The purpose of the EA was to evaluate the impacts of the proposed development on the existing site environment. The proposed activities included the brownfield redevelopment of the subject property with the construction of a warehouse facility compatible with adjacent regional uses. The EA evaluated potential impacts to land use, air quality, noise, geology and soils, water resources, wetlands, biological resources, cultural and historic resources, socioeconomics and environmental justice, transportation and hazardous materials use and conditions. Services included the preparation of application materials and procurement of NJDEP Freshwater Wetlands General Permit Nos. 4, 12 and 14. Preparation and acquisition of Waterfront Development, Water Quality Certification, Transition Area Waiver and Coastal Consistency and Individual Section 10 and 404 Permit Application from the Army Corps of Engineers. Provided local planning board professional testimony for discussion of threatened and endangered species, designed a T&E ecological screening habitat, assisted with public and legal opposition.
- **Xanadu, Continental Arena-Meadowlands Sports Complex, Township of Rutherford, NJ:** Conducted a wetland delineation and inventory on the Meadowlands Sports Complex and adjacent NJTP roadway areas. Services included a wetland delineation, obtaining a Jurisdictional Determination, preparation and procurement of Individual Section 10 and 404 Permit Application from the Army Corps of Engineers, and a Wildlife Survey for the proposed Office and Entertainment Center.
- **Commercial Realty and Resources Corporation, Monmouth Shores Corporate Park, Wall Township, NJ:** Conducted wetland delineation and inventory on the 100± acre undeveloped portion of this commercial office park. Additional services included obtaining NJDEP Letter of Interpretation for two lots and a Transition Area Waiver, Buffer Averaging Plan permit approval.
- **Amerada Hess Corporation, Secaucus, NJ:** Wetland delineation, preparation of application materials and procurement of Individual Section 10 and 404 Permit Application from the Army Corps of Engineers for the redevelopment of this fuel storage facility into a 400,000 sq ft 18-story office tower. Included with application was a mitigation plan involving wetland creation and enhancement. Also obtain NJDEP Waterfront Development and Stream Encroachment Permits. Conducted field monitoring/data collection at this tidal wetland creation and restoration site. Prepared annual wetland mitigation monitoring report for submission to USACE and NJDEP.
- **Hopkins Tract Residential Development, New Britain Township, PA:** Performed a site-specific Aquatic Macro-invertebrate Survey and Habitat Quality Bio-assessment, for the Pennsylvania Department of Environmental Protection to establish benthic invertebrate

utilization of an onsite farm pond that would be impacted by a proposed 87 lot single family dwelling subdivision. The study included a family level identification and a multi-parameter habitat assessment including physical and chemical environmental sampling, analysis of habitat quality through invertebrate data metrics and indices.

- **John Kennedy Ford at Feasterville, Lower Southampton Township, PA:** Performed a site-specific Aquatic Macro-invertebrate Survey and Habitat Quality Bio-assessment to establish benthic invertebrate utilization of the site for the Pennsylvania Department of Environmental Protection. Permit approval was obtained for the construction of three bridges to span an unnamed tributary of the Poquessing Creek.
- **Public Service Electric and Gas, Electric Transmission Line, Jersey City, NJ:** Wetland delineation and preparation and procurement of a Statewide General Permit No. 2 from NJDEP for the construction of electrical utility lines through freshwater wetlands and open water resources.
- **Sunoco & Colonial Pipeline, Petroleum Line, Atco, NJ:** Wetland delineation and preparation and procurement of a permits from Pinelands Commission for the construction of petroleum line and relocation through freshwater wetlands.
- **First Fidelity and Celanese Pharmaceuticals, Boston, Somerville, MA:** Performed Phase 1 ESA's, addressed asbestos contamination for First Fidelity Corporation and produced a Health and Safety Plan for Celanese Pharmaceuticals.
- **First Massachusetts Department of Fire Services, Boston, MA:** Performed a multi phased evaluation to determine the applicability of storm water regulations and Federal compliance under the Clean Water Act. Produced a Stormwater Protection Plan (SWPP) and prepared and acquired the corresponding NPDES permits.
- **Commercial Properties, Newark, NJ:** Provided translation services and report review and performed Phase 1 ESA's for commercial properties located in Newark.
- **Freehold Practice Range, Freehold, NJ:** Conducted a grid/ lead contamination survey, cleanup and wetland delineation for an abandoned property.
- **New Jersey Transit, Cedar Creek Marsh Restoration, Kearny, NJ:** Conducted ongoing wetland mitigation monitoring program to evaluate the success of a freshwater marsh mitigation/Restoration project. Successful mitigation is a condition of an Individual Section 404 Permit issued to NJ Transit by ACOE for associated rail improvements in the Hackensack Meadowlands wetlands ecosystem.
- **Northville, Linden, NJ:** Freshwater and tidal wetland delineation at this vacant site proposed for a five storage tank expansion of an adjacent petroleum storage facility. Obtain NJDEP Statewide General Permits and Stream Encroachment Permit for the project.
- **Wal Mart Stores, Inc., Toms River, NJ:** Wetland evaluation on this forested parcel located in the state's coastal zone to be developed as a retail department store. Obtain NJDEP non-jurisdiction determination for wetlands. Prepare and procured Coastal Area Facilities Review Act (CAFRA) permit/Coastal Zone Management Consistency Concurrence.
- **Wal Mart Stores, Inc., Brick Township, NJ:** Wetland delineation on this abandoned drive-in theater site proposed for the construction of a retail department store. Preparation, submission and procurement from NJDEP Statewide General Permit to fill wetlands and Coastal Area Facilities Review Act (CAFRA) permit and Coastal Zone Management Consistency Concurrence for this project which is situated in the State's coastal zone.

- **Hudson Mall, Jersey City, NJ:** Performed a wetland delineation on the adjacent spartina alterniflora/patens marsh and tidal wetlands. Prepared NJDEP Individual Wetlands and Waterfront Development permit application for onsite stormwater management improvements.
- **Stop & Shop Inc., Seymour, CT:** Prepared two CTDEP Stream Encroachment applications and assisted in the preparation of a Stormwater Pollution Control Plan for the proposed Stop & Shop and Route 313 and Bridge improvements.
- **New Jersey Natural Gas, Route 34, Wall Township, NJ:** Conducted wetland delineation at this existing NJNG office and maintenance facility. Wetlands delineated for purposes of obtaining preliminary permitting requirements for a proposed extension of a sewer line.
- **Institute of Islamic Studies, Cranbury, NJ:** Preparation of plans and Stream Encroachment, and Letter of Interpretation application to the NJDEP for the construction of an Islamic Youth Center.
- **Main Street By-Pass (Phase 1), Sayreville, NJ:** Designed for the Borough of Sayreville, the By-Pass is to be constructed to alleviate traffic congestion along Main Street. Required the acquisition of a Section 10/404 Individual Permit (Federal), (State) Waterfront development (waterward and inland), WQC, Coastal Wetland Permit, Tidelands license, Compensatory Mitigation Design, oversight, and monitoring. Freshwater and Tidal/Coastal wetlands present within the project limits and the proposed compensatory mitigation were delineated in accordance with the Federal Method for Identifying and Delineating Jurisdictional Wetlands (1989) for use in subsequent submission of regulatory permits and Compensatory Mitigation Design to include restoration, enhancement and creation of wetland, riparian and upland habitat resources.
- **Improvements to County Route 522 and Pigeon Swamp Compensatory Mitigation Site, South Brunswick, NJ:** A site investigation was conducted to delineate the jurisdictional extent of freshwater wetlands and State open waters/ waters of the U.S. present on the improvement and mitigation site. Wetlands were delineated in accordance with the 1989 “Federal Manual for Identifying and Delineating Jurisdictional Wetlands.” for use in subsequent submission of State FWW Individual Permit, Flood Hazard Individual Permit and Compensatory Mitigation Design to include restoration, enhancement and creation of wetland, upland habitat resources, and threatened and endangered species habitat.
- **River Road Environmental Center, Borough of Highland Park, NJ:** Conducted a Phase II Site Investigation (SI) related to soil and groundwater contamination at the River Road Environmental Center at Block 183 Lot 1 in Highland Park, NJ. Designed a native wildlife habitat landscape plan, with trails to educate the public and convert a remediate area to a natural and functional ecosystem.
- **Khalid Ibrahim, Freehold, NJ:** Conducted a file review at the local municipality, performed a wetlands delineation and prepared a wetlands and flood plain assessment for a proposed residential development.

Threatened and Endangered Species Studies:

- **Raptor/Avian Species Studies, New York, Delaware, New Jersey, Pennsylvania:** Performed a census and habitat evaluation on raptor activity and migration within the NYS, DE, PA and NJ corridor. Worked as an Audubon Society biological team member

locating nesting sites and viable habitat for raptors and migrant birds. Worked with the New Jersey Audubon in studying migratory birds. Coordinated the collection of data, trained volunteers in quantifying and identification in several Northeast sanctuaries.

- **Spotted Owl Study - Pinelands, NJ:** Conducted a spotted owl night surveys for a two year period of a Spietel Tract in the New Jersey Pinelands. Included audio response, call & response, tracking and documentation of nesting resources and foraging areas.
- **Coyote Study - Palisades, NJ:** Conducted a survey to catalogue coyote populations and reproduction with the local tri-state area. Included tracking by radio collar, migration documentation and tagging of pups.
- **Bog Turtle Survey - Lake Naomi, PA:** Assisted in a survey for Bog Turtle habitat and utilization for a PENNDOT dam restoration and road improvement project.
- **Grasshopper Sparrow Study, Teterboro Airport, NJ:** Conducted a survey to document utilization of the Teterboro Airport by the NJ threatened Grasshopper Sparrow.
- **Herp Atlas Studies, NJ:** Coordinated and trained volunteers in searching and identification of endemic reptile and amphibian species within the northeast area. Data collected was utilized by NJDEP in conjunction with their Herp Atlas Program.
- **Biomonitoring, NJ:** Lead a survey team in assessing local watershed issues and conducting a thorough study of local aquatic systems. Quantified populations, anthropogenic pressures and sources of pollution through biological testing: macro-invertebrate identification, chemical analysis and riparian area assessments.
- **Horseshoe Crab Study, Cape May , NJ:** Worked with local biologist in cataloging horseshoe crab activity along Cape May, New Jersey with special attention to reproduction and male/female ratios.
- **Ephemeral Ecosystems, Massachusetts Audubon Society, MA -** Performed habitat evaluation of ephemeral ecosystems, inventory of endemic flora and fauna with special attention to blue spotted salamanders, catalogued biodiversity, migrations and seasonal progression for these habitats within 25 sanctuaries in MA. Surveys included performing call and response, spotlighting and egg identification. Worked directly with the public to certify vernal pool ecosystems on privately owned lands.
- **Colonial Waterbird Study, Sayreville, NJ:** Created and completed a landward and waterward habitat assessment of coastal wetland areas and functional use of vegetation for rookeries, nesting, feeding, perching for colonial waterbirds. Demarked and evaluated high probability habitat areas and resources.

ANNA R. LOSS *Natural Resources / Wetlands Scientist, Permitting Specialist*

EDUCATION

BS, Environmental Earth Science and Sustainable Energy, Geographic Information Systems (minor), Eastern Connecticut State University, 2012

Post Baccalaureate Certificate in Geographic Information Systems, 2014

CERTIFICATIONS

40-hour OSHA HAZWOPER Certification - current

8-hour OSHA Refresher Course – current

YEARS OF EXPERIENCE: 4.5

RELEVANT WORK EXPERIENCE

Ms. Loss has over 4 years of experience and has assisted in the preparation of multiple Federal, State, and local regulatory permit compliance applications and reports throughout Connecticut, New York, New Jersey, Pennsylvania and South Dakota. She has also assisted and performed various wetland delineations and prepared numerous wetland analysis reports. Additional experience includes proficiency with various geographic information system programs, data management and data analysis processes, as well as AutoCAD plan preparation and wetland delineation field work and report preparation.

PROJECT EXPERIENCE

- New Jersey Transit, Superstorm Sandy Recovery and Resiliency, Environmental Project Manager: Superstorm Sandy Recovery National Environmental Policy Act (NEPA) & Permitting Program Management and Environmental Program Management for NJ TRANSIT for the ongoing repair and rehabilitation of the physical assets impacted by the October 2012 Superstorm Sandy event. Supporting New Jersey Transit as an overall Environmental Program Manager for preparing National Environmental Policy Act (NEPA) documentation, permit applications, hazardous waste studies, grant applications for Superstorm Sandy Recovery and Resiliency, and review by FTA. Work includes over 50 projects including rail signals and switches, power facilities, catenary pole replacement, bridge replacements, stations and terminals and other elements. Key highlights for this project include: NEPA documentation; Federal, State and Local Permitting; Site Investigation/Remedial Investigation; Remedial Action Work Plan/Remedial Action; SHPO Coordination; Stormwater Management; and Environmental Assessments/Compliance.
- New Jersey TRANSIT Resilience Program (NJTRP): Supporting New Jersey Transit as an Environmental Project Manager for preparing NEPA documentation (CE's), Non-Federal EO 215, Federal and State land use permit applications, Public Outreach and Public Notice support, hazardous waste studies, grant applications for Superstorm Sandy Recovery and Resiliency, and review by the Federal Transit Administration (FTA). Work encompasses over 50 projects including rail signals and switches, power facilities, catenary pole replacement, bridge replacements, stations and terminals, and other improvement elements. In addition, has managed Section 7 consultation, Section 106 documentation, Section 4(f), E.O. 215 documentation.
- New Jersey TRANSIT, Superstorm Sandy Competitive Resilience Program: Responsible for all environmental services and resiliency planning for five large-scale resiliency projects with a total capital budget in excess of \$1.7 Billion. Provide a wide variety of environmental services to support the planning, design, and construction of these projects, including the preparation of NEPA documents and supporting environmental, biological, threatened and endangered species studies, socioeconomic studies; the preparation and securing of all State and Federal permits; compliance with Section 106 & Section 4(f)

requirements, site remediation, property acquisition and compensatory wetland and riparian mitigation support.

- **The Record Site, Hackensack, New Jersey:** Prepared a NJDEP Multi-Permit application consisting of an Upland and In-Water Waterfront Development Permit, an Individual Flood Hazard Area Permit, Flood Hazard Area Verification, Freshwater Wetlands Letter of Interpretation, Transition Area Waiver for Redevelopment and Water Quality Certificate for redevelopment activities within regulated areas onsite. These redevelopment activities included a warehouse with associated parking lots and drive ways, stormwater management features, utilities, and flood resilience measures.
- **Lincoln Crossing, Secaucus, New Jersey:** Prepared and submitted a NJDEP Individual Flood Hazard Area Permit and Flood Hazard Area Verification application for the construction of a distribution center within the tidal floodplain of Penhorn Creek. Concurrently prepared and submitted a USACE Jurisdictional Determination to confirm the absence of federally-regulated waters of the United States onsite. Additional responsibilities included a wetland investigation onsite and preparation of a wetlands delineation plan.
- **New Elementary/Middle School, Gloucester, New Jersey:** Prepared and submitted a NJDEP Individual Flood Hazard Area Permit and Flood Hazard Verification application for the construction of a school facility within the tidal floodplain of the Delaware River.
- **Secaucus Road Development, Jersey City, New Jersey:** Prepared and submitted of a NJDEP Flood Hazard Area Permit application and USACE Nationwide Permit application for the construction of a warehouse within wetlands and the NJDEP regulatory floodplain. A wetlands investigation and delineation was also performed.
- **Elisabeth Morrow School, Englewood, New Jersey:** Prepared and submitted a NJDEP Individual Flood Hazard Area Permit for the construction of a parking area within the 50-foot riparian zone of a tributary to Overpeck Creek. Additional responsibilities included performing a top-of-bank delineation and a wetlands investigation and delineation onsite.
- **Private Residence, Brick, New Jersey:** Prepared and submitted of a USACE Individual Permit application concerning unauthorized fill activities performed within wetlands on a private residential site. An after-the-fact mitigation plan measured was also submitted as part of this application.
- **Cape Liberty Cruise Terminal, Bayonne, New Jersey:** Prepared and submitted a USACE Nationwide Permit for the construction of a stormwater outfall below the spring high water line that was required for a cruise ship terminal project proposed onsite. A site investigation was also performed.
- **PSE&G Front Street, Newark, New Jersey:** Prepared and submitted a NJDEP Waterfront Development permit application, NJDEP Tidelands Grant and License Application and USACE Nationwide Permit application for the replacement of a bulkhead in the Passaic River. Additional responsibilities included the preparation of an Essential Fish Habitat Study, and an onsite wetlands investigations and delineation, as well as GIS mapping and AutoCAD plan preparation.
- **American Dream, East Rutherford, New Jersey:** Initiated an air monitoring program for the client, for which equipment procurement, standard operating procedures and staff labor was monitored and maintained. NJDEP stormwater and NJPDES permits were prepared as submitted.

- **Morristown Municipal Airport, Morristown, New Jersey:** Performed a wetlands investigation and delineation onsite, which included the preparation of a Wetlands Delineation Report submitted to the NJDEP and client. Additionally, NJDEP Freshwater Wetland Permits were prepared and submitted.
- **Goethals Bridge, Elizabeth, New Jersey:** Assisted in preparation of New Jersey Department of Environmental Protection (NJDEP) and New York State Department of Environmental Conservation (NYSDEC) permit application packages and researched and managed GIS databases pertaining to environmental files for the project.
- **Costco at Oceanside, Oceanside, New York:** Prepared an Essential Fish Habitat Assessment enclosed within a NYSDEC Tidal Wetlands Permit Application, and prepared a USACE Nationwide Permit. Additional responsibilities included research of marine habitats within the vicinity of the project, and GIS information research and mapping.
- **Central Park Conservancy – The Loch, New York:** Assisted in wetland delineation and field survey of the project site. Prepared and submitted an Joint Application to the NYSDEC and USACE for the project.
- **Mercedes Benz Brooklyn, Brooklyn, New York:** Assisted in the preparation of a NYSDEC Tidal Wetlands Permit and Coastal Erosion Management Permit application package for the construction expansion of a car dealership within wetland and coastal erosion hazard areas.
- **Desarrollo Vistas at Chalacatepec, Jalisco, Mexico:** Assisted in the preparation of a Coastal Dune Management Plan for the construction of a beachfront resort. Responsibilities included GIS land use research, habitat and orthoimagery data research, GIS data management, AutoCAD plan preparation, GIS data creation, GIS and AutoCAD data conversion processes and final data distribution through ESRI's ArcOnline programming.
- **Galleria at Sowwah Square, Abu Dhabi, UAE:** Researched and reported on local wetland, habitat, land use and natural resource GIS databases to support the preliminary research for the construction of a commercial complex within a marsh area. Also researched local government and state jurisdictional agencies within the area, and their respective regulations for potential impacts due to the proposed project.