Appendix J-2
Wetlands and Surface Water Assessment Report

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

INTERSTATE 81 (I-81) VIADUCT PROJECT

WETLAND AND SURFACE WATER ASSESSMENT REPORT

December 2016

A. INTRODUCTION

The Federal Highway Administration (FHWA), in coordination with the New York State Department of Transportation (NYSDOT), is preparing a Draft Environmental Impact Statement (Draft EIS) for the Interstate 81 (I-81) Viaduct Project ("the Project"), located in the City of Syracuse, New York, in accordance with the National Environmental Policy Act (NEPA) and New York State Environmental Quality Review Act (SEQRA). The purpose of the Project is to address the structural deficiencies and non-standard highway features of I-81 while creating an improved corridor through the City of Syracuse that meets transportation needs and provides the transportation infrastructure to support long-range planning efforts. As part of the Project, Wetlands Assessment Methodology was developed and implemented in support of the documentation of natural resources for the Draft EIS. This report outlines the results of the Wetland and Surface Water Assessment.

B. METHODOLOGY

Wetland mapping[1] was conducted in accordance with the I-81 Viaduct Project "Wetland Assessment Methodology" dated December 9, 2015 as approved by the United States Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC). This methodology includes preliminary identification of the location of wetlands for the purposes of the Draft EIS. A formal wetland delineation will be conducted as part of the potential future permitting process once the preferred alternative has been identified.

WETLAND AND SURFACE WATER ASSESSMENT STUDY AREA

The wetland and surface water study area for each of the following four Project Study areas comprises the area of disturbance and the area within 100-feet (ft) of the area of disturbance. The four Project study areas are as follows:

(1) I-81 Viaduct Study Area—Located in downtown Syracuse;

(2) I-481 South Study Area—Located at the I-81 and I-481 interchange south of downtown Syracuse;

(3) I-481 East Study Area—Two linear sections (referred to herein as Northern and Southern) of I-481 east of downtown Syracuse; and

(4) I-481 North Study Area—Located at the I-81 and I-481 interchange north of downtown Syracuse.

INITIAL WETLAND/SURFACE WATER MAPPING

A desktop wetland and surface water mapping exercise was conducted in the four Project study areas described above. For this initial mapping effort, ArcGIS 10.3 desktop software was used to

[1] Includes the mapping of New York State Department of Environmental Conservation- (NYSDEC) and National Wetland Inventory- (NWI) mapped surface waters.

identify potential wetland/surface water areas for subsequent field verification. Best-available high-resolution digital aerial photography from the New York State Statewide Digital Orthoimagery Program was compiled and loaded into the software for use as a base map. This imagery is 4-band and includes natural color (red, green and blue bands) and infrared, which can provide additional information regarding vegetation coverage and type. For Onondaga County, best-available imagery includes 0.5-foot resolution imagery captured in 2012 for some areas of the County. For areas outside that coverage area, the February 2015 Annual Lot and its 1-foot resolution imagery product was used.

This imagery was supplemented with other GIS data overlays including the following: U.S. Geological Survey, hydric soils data from the Natural Resources Conservation Service's (NRCS) (U.S. Department of Agriculture) Web Soil Survey[2] and NRCS National Hydric Soils list;[3] U.S. Fish and Wildlife Service National Wetlands Inventory (NWI); NYSDEC Article 24 freshwater wetland maps; and NYSDEC surface waters maps (see **Attachment 1**). Topographic data, in conjunction with the high-resolution natural color and infrared imagery, enabled the project team to more accurately approximate potential wetland areas, identify unmapped potential wetlands, and identify areas where activities may have eliminated or modified wetlands subsequent to Federal/State wetland mapping efforts. Specifically, topographic data and high resolution natural color imagery was used to differentiate developed areas, including areas converted to lawn/pavement subsequent to NWI/NYSDEC mapping, from undeveloped areas that may contain hydrophytic vegetation and wetland hydrology. This effort resulted in identifying area of mapped NWI/NYSDEC wetlands to be excluded from further review.

FIELD INSPECTION

Using the mapping as described above, wetland scientists conducted field inspections in the four Project study areas on July 6, 7, 19, 20, 21, and 28, 2016 to confirm the approximate locations of any wetlands/surface waters identified during the desktop mapping exercise described above. Additional photograph documentation was collected on September 16 and 20, 2016. As per the USACE Wetland Delineation Manual[4] three wetland indicators, hydrophytic vegetation, hydric soils,[5] and hydrology, must be present for an area to be classified as a wetland. Any area shown on the maps and/or on the GIS overlays that exhibited signs of wetland conditions (e.g., visible surface waters, hydric soils, and/or wetland vegetation) were mapped and further investigated through limited field inspections to determine if all three USACE wetland indicators (i.e., hydrophytic vegetation, hydric soils, and hydrology) were present. Field staff also evaluated sampling locations taking NYSDEC protocols into consideration.

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[2] Available: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

[3] Available: http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/.

[4] Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Miss; U.S. Army Corps of Engineers. 2011. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (version 2.0), ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

[5] United States Department of Agriculture, Natural Resources Conservation Service. 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

MAPPING AND FIELD INSPECTION RESULTS

This Wetland and Surface Water Assessment Report documents the mapping and field inspection results. Mapping associated with this report documents the following wetland categories:

- NYSDEC-mapped freshwater wetlands and surface waters;
- NWI-mapped freshwater wetlands and riverine systems (i.e., surface waters);
- NYSDEC- and NWI-mapped freshwater wetlands as verified during the field inspection;
- NYSDEC- and NWI-mapped surface waters as verified during the field inspection; and
- Unmapped freshwater wetlands and surface waters identified during the field inspection.

Based on the field inspection, the approximate boundaries of wetlands and surface waters were adjusted on the maps in the field. No wetlands or surface waters were drawn outside of the 100-ft study area. Following the field inspection, the field-adjusted maps were updated in ArcGIS 10.3.

The results of the Wetland and Surface Water Assessment are presented below for each of the four Project study areas. In terms of the organization of the mapping and the narrative as presented in this report, field-drawn wetlands and surface waters are presented in an alpha-numeric format. The Project study area identifiers are the following: I-81 Viaduct Study Area ("V"); I-481 South Study Area ("S"); I-481 East Study Area ("E"); and I-481 North Study Area ("N"). Wetlands are assigned a number within each of the Project study areas where applicable (e.g., V-1, S-1, E-1, and N-1) and are shown in yellow on the figures in **Attachment 2**. Surface waters are assigned a number within each of the Project study areas where applicable with the watercourse name in parentheses (e.g., V-2 (Ley Creek)) and are represented in blue on the figures in **Attachment 2**.

In terms of the USACE wetland parameters, the wetland status indicator of the plants observed in the field is presented in parentheses at the first mention of each plant. These wetland indicators are derived from "Northcentral and Northeast 2016 Regional Wetland Plant List (Lichvar et al. 2016).[6]" Soils and hydrology indicators, as identified in the USACE wetland delineation methodology, are documented for each wetland.

Attachment 2, Figures 2-1 (Index Figure) to **2-16** show the approximate locations and extent of field-inspected wetlands and surface waters and will be used to assess the approximate wetland and surface water impacts of each alternative in the Draft EIS. These maps show NWI- and NYSDEC-mapped wetlands as they occur in each of the agency databases. Any NWI- or NYSDEC-mapped wetland present in the 100-ft study area that extends outside of the 100-ft study area is also shown in the mapping to demonstrate its coverage in the immediate vicinity of

[6] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X (available http://rsgisias.crrel.usace.army.mil/nwpl_static/data/DOC/lists_2016/Regions/pdf/reg_NCNE_2016v1.pdf [accessed on July 5, 2016]).

the study area. Locations of culvert inlet/outlets observed in the field were also added to the maps, including those located immediately outside of the 100-ft study area.

The photographic documentation presented in this report includes at least one photograph of each wetland or surface water.[7]

This memorandum includes the following attachments:

- Attachment 1—NYSDEC Freshwater Wetland and Surface Water, NWI Wetland, and NRCS Soil Overview Maps;
- Attachment 2—Wetlands and Surface Water Maps that show the approximate locations of freshwater wetlands and surface waters as verified during the Wetland and Surface Water Assessment; and
- Attachment 3— Photographic documentation.

ANTICIPATED REGULATORY JURISDICTION

Based on available mapping and field inspection, all surface waters inspected during this Wetland and Surface Water Assessment may be regulated as Waters of the United States (WOUS) subject to a jurisdictional determination by USACE. (Highway infrastructure drainage ditches that do not appear to flow all of the time or do not appear to be connected to jurisdictional waters were excluded from this Wetland and Surface Water Assessment.) A preliminary draft of this Wetland and Surface Water Assessment Report (dated October 2016) was submitted to the USACE and NYSDEC for review. On September 29, 2016, USACE, NYSDEC, and NYSDEC held a field meeting to review the preliminary wetland and surface water mapping. Following the meeting, the agencies provided comments on the preliminary draft of the Wetland and Surface Water Assessment Report (dated October 2016) including preliminary comments on the anticipated regulatory jurisdiction of these resources by each agency. The USACE and NYSDEC comments have been incorporated into this report where applicable. Within this report, the anticipated regulatory jurisdiction of wetlands is documented within each of the four study areas. As discussed above, both NYSDEC and USACE jurisdiction will be based on formal wetland delineations to be conducted once a preferred alternative is chosen. The preliminary regulatory jurisdiction (USACE- Article 10 or Article 404 and NYSDEC - Article 15 and Article 24) are described in more detail in the Appendix J-1-1 of the Draft EIS.

C. EXISTING CONDITIONS

I-81 VIADUCT STUDY AREA

The I-81 Viaduct Study Area is located in downtown Syracuse. Freshwater wetland coverage is limited to one wetland in this Project study area. Two NYSDEC Class C[8] creeks associated with Onondaga Lake located to the west of the 100-ft study area, Ley Creek and Onondaga Creek, flow through portions of the 100-ft study area. In general, these water resources are characterized by disturbance associated with roadway, commercial, industrial, and residential development. These water resources are described in more detail below. A summary of the water

[7] Excluding portions of creeks that are piped underground.

[8] Class C waters are those that support fisheries and are suitable for non - contact activities (http://www.dec.ny.gov/permits/6042.html).

resources of the Viaduct Study Area is presented in **Table 1**. Figures associated with the I-81 Viaduct Study Area are enclosed in **Attachment 2a** (**Figure 2-1)** and **Attachment 2b** (**Figures 2-2** and 2-**3**). Photographs of this study area are shown in **Attachment 3a**, **PH1** to **PH9**.

FIELD-INSPECTED AREAS

V1

V1A

As shown in **Attachment 2b**, **Figure 2-2**, V1A is located in close proximity to Onondaga Lake in the northern portion of this study area east of I-81. NYSDEC-mapped freshwater wetland SYW-12 located north of Ley Creek (described below) is associated with V1A. The area is also mapped by NWI as a seasonally flooded palustrine emergent wetland containing spoil material that supports persistent emergent vegetation (PEM1Cs). Common reed (*Phragmites australis*) (FACW) is dominant (see **Attachment 3a, PH1**) in the vicinity of V1A. Standing water was present during the time of the field inspection. Hydrology indicators include "Surface Water (A1)" and "High Water Table (A3)." Soils meet the A2 "Histic Epipedon" indicator.

V1B

As shown in **Attachment 2b**, **Figure 2-2**, V1B contains the same hydrophytic vegetation, hydrology, and hydric soils as described under V1A. A photograph of V1B is shown in **Attachment 3a, PH2**.

V2 (Ley Creek)

As shown in **Attachment 2b**, **Figure 2-2**, Ley Creek is a NYSDEC Class C tributary to Onondaga Lake that runs east through a small portion of the 100-ft study area. It is not mapped by NYSDEC as a freshwater wetland, but it is connected to NYSDEC freshwater wetland SYW-12 located to the west. This creek is mapped by NWI as a lower perennial riverine system with an unconsolidated bottom that has been excavated and is permanently flooded (R2UBHx). Common reed is present along the slopes of the creek and along the mudflats outside of the 100-ft study area. However, within the 100-ft study area, the creek is channelized and vegetated wetlands are not present (see **Attachment 3a**, **PH3**).

V3 (Onondaga Creek)

Onondaga Creek is a NYSDEC Class C creek (see **Attachment 2b**, **Figure 2-3**) that is a tributary to Onondaga Lake that meanders in a northerly direction through the western part of the 100-ft study area. It is mapped by NWI as a lower perennial riverine system with an unconsolidated bottom that is permanently flooded (R2UBH). The creek is channelized within the 100-ft study area. Along the channel slopes, box elder (*Acer negundo*) (FAC) and ash (*Fraxinus* sp.) are dominant in the canopy with Japanese knotweed (*Fallopia japonica*) (FACU) forming a monoculture in the understory in many locations. Vegetated wetlands are not present along Onondaga Creek within the 100-ft study area (see **Attachment 3a, PH4** to **PH9**).

Table 1
I-81 Viaduct Study Area
Water Resources Summary

Water Resources Map Code	NYSDEC Wetland Map Identification Number	NYSDEC Stream Classification	NWI Classification Code
V1	SYE-12	N/A	PEM1Cs
V2 (Ley Creek)	N/A	Class C	R2UBHx
V3 (Onondaga Creek)	N/A	Class C	R2UBH

Notes: Water Resources Map codes—(V) denotes I-81 Viaduct Study Area.
Sources: NYSDEC Freshwater Wetlands Maps (2010), NWI Mapping (2016), AKRF, Inc. Field Inspections (2016).

ANTICIPATED REGULATORY JURISDICTION

Based on the NYSDEC freshwater wetlands and stream classification mapping, NWI mapping, the field inspection, and field meeting with USACE, it is expected that V1, V2 (Ley Creek), and V3 (Onondaga Creek) are regulated by USACE as WOUS under Sections 401 and 404 of the Clean Water Act (CWA). The portion of Ley Creek that is within the Ordinary High Water elevation of Onondaga Lake would also be regulated by the USACE under Section 10 of the CWA. As confirmed by NYSDEC during the field meeting, V1 is expected to be regulated by NYSDEC under Article 24 "Freshwater Wetlands." Ley Creek and Onondaga Creek are regulated by NYSDEC under Article 15 "Protection of Waters" of the Environmental Conservation Law (ECL).

I-481 SOUTH STUDY AREA

This study area is characterized by highway infrastructure and ancillary roads. No NYSDEC- or NWI-mapped wetlands are present in this study area.

S1 (CITY LINE BROOK)

As shown in **Attachment 1**, **Figure 1-3 and Attachment 2c, Figure 2-4**, one NYSDEC-mapped Class B[9] creek is present within this study area. However, based on field inspection, it was determined that this NYSDEC Class B creek has been diverted underground within the 100-ft study area. No photographs of the creek were taken since it was not visible aboveground. In addition, no unmapped wetlands or surface waters were observed during the field inspection in this study area. Therefore, no further mapping or field inspection of wetlands or surface waters for this study area is anticipated.

ANTICIPATED REGULATORY JURISDICTION

It is anticipated that the underground portion of City Line Brook located within the I-481 South Study Area is regulated by the USACE under Sections 401 and 404 of the CWA and by NYSDEC under Article 15 "Protection of Waters" of the ECL.

I-481 EAST STUDY AREA

The I-481 East Study Area (Southern Section) consists of linear portions of I-481 that cross over the railroad tracks east of the I-81 Viaduct Study Area. This study area is generally characterized by development associated with the railroad, businesses, industry, and roadway infrastructure,

[9] Class B waters have a best use for swimming and other contact recreation, but not as drinking water (http://www.dec.ny.gov/permits/6042.html).

although edges of the 100-ft study area in some locations contain forested and emergent wetlands, some of which are mapped by NYSDEC and NWI. Wetlands and surface waters of this study area are described below. **Table 2** provides a summary of the water resources that are present within the I-481 East Study Area southern and northern (described below) sections. Figures associated with the I-481 East Study Area (Southern Section) are enclosed in **Attachment 2a** (**Figure 1-1)** and **Attachment 2d** (**Figures 2-5** to **2-7**). Photographs of this study area are shown in **Attachment 3b**, **PH1** to **PH7)**.

The I-481 East Study Area (Northern Section) consists of a linear portion of I-481 that crosses over I-90 to the east of the I-81 Viaduct Study Area. The majority of the I-481 East Study Area is characterized by highway right-of-way, industry, and medical facilities, although edges of the 100-ft study area are largely forested. Both NYSDEC- and NWI-mapped wetlands are present along this corridor. Table 2, above, provides a summary of the wetlands and surface waters that are present within the East Study Area southern and northern (described above) sections. Figures associated with the I-481 East Study Area (Northern Section) are enclosed in **Attachment 2a (Figure 1**) and **Attachment 2d (Figures 2-8 to 2-9)**. Photographs of this study area are shown in Attachment 3b, PH8 to PH11).

FIELD-INSPECTED AREAS

E1

E1A

As shown in **Attachment 2d**, **Figure 2-5,** E1A is located on the west side of the I-481 southbound lanes. Vegetation in the vicinity of E1A is dominated by common reed (see **Attachment 3b**, **PH1).** E1A is an unmapped/classified channel (E2, described below), which runs along the toe of the roadway embankment and continues out of the 100-ft study area to the south. However, no NYSDEC- or NWI-mapped wetlands are associated with W1A. Vegetation in the location of E1A is dominated by common reed. Hydrology indicators include "Surface Water (A1)," "Saturation (A3)," and "Geomorphic Position (D2)." Soils meet the A11 "Depleted Below Dark Surface" indicator.

E2 (Unnamed/Unclassified Creek)

As shown in **Attachment 2d**, **Figure 2-5,** an unmapped/unclassified creek is present in E1, as described above (see **Attachment 3b**, **PH1**). This unnamed/unclassified creek is open in some locations, with common reed associated with E1 above lining the creek. This unmapped/unclassified creek follows the toe of slope and continues offsite and into a common reed dominated area located to the south of the 100-ft study area.

E3

E3A

As shown in **Attachment 2d**, **Figures 2-5** and **2-6**, E3A is located in a wetland along the east side of the I-481 northbound lanes. Portions of the wetland are associated with NYSDEC-mapped freshwater wetland SYE-17[10] and a NWI-mapped temporarily flooded palustrine forested wetland (PFO1A) that is dominated by deciduous broad-leaf vegetation. However, further coordination with the NYSDEC could determine if E2 is actually part of SYE-17.

[10] The majority of SYE-17 is located to the east of the 100-ft wetlands study area.

In the vicinity of E3A, common reed is dominant in the herbaceous layer with patches of green ash (*Fraxinus pennsylvanica*) (FACW) and common cottonwood (*Populus deltoides*) (FAC) in the canopy (see **Attachment 3b PH2**). This forest cover becomes more prominent east of the 100-ft study area. Hydrology indicators include "Oxidized Rhizospheres on Living Roots (C3)" and "Geomorphic Position (D2)." Soils meet the "Depleted Matrix (F3)" indicator.

E4 (Unnamed/Unclassified Channel)

As shown in **Attachment 2d**, **Figure 2-6**, E4 is an unnamed/unclassified channel located in an upland area that joins with Butternut Creek, a NYSDEC-mapped Class C creek located to the east of the 100-ft study area. However, the unnamed/unclassified channel itself is not a NYSDEC-mapped Class C creek nor is it mapped by NWI. This unnamed/unclassified channel is connected to a culvert inlet/outlet that crosses to the south underneath the railroad tracks (see **Attachment 3c, PH3).** Vegetation along this unnamed/unclassified channel within the 100-ft study area is dominated by grape (*Vitis* sp.), which is covering other species including Staghorn sumac (*Rhus typhina*) (UPL), mugwort (*Artemisia vulgaris*) (UPL), common reed (*Phragmites australis*) (FACW), and Canada goldenrod (*Solidago canadensis*) (FACU). Standing water is present in the unnamed/unclassified channel with duckweed (*Lemna minor*) (OBL) present at the water surface.

E5

Due to the size and complexity of E5, a short introduction summarizing this wetland is provided in this section followed by the summary of conditions at E5A and E5B. As shown in **Attachment 2d**, **Figure 2-7,** E5 is located in NYSDEC-mapped freshwater wetland SYE-11 which is located under and to the east and west of the I-481 mainline north of the train tracks. It is also mapped by NWI as a semi-permanently flooded palustrine emergent wetland dominated by common reed (PEM5) with an unconsolidated bottom (UBF). This wetland contains a number of culverts and channels that divert flow underneath constructed gravel roads in the wetland. Narrowleaf cattail (*Typha angustifolia*) (OBL) is the dominant vegetation in central portions of the wetland with purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*) (FACW), and common reed dominant in areas along the edges and upland transitional areas. Open water is present in the central sections of this wetland. Forested portions of this wetland are present to the west of I-81. Photographs of E5 are presented in **Attachment 3c**, **PH4** to **PH7**.

E5A

As shown in **Attachment 2d**, **Figure 2-7**, E5A is located on the west side of I-481. Dominant species in the vicinity of E5A are purple loosestrife and reed canary grass in the right-of-way. Within the 100-ft study area to the east of the right-of-way, floodplain forested dominated by silver maple (FACW), red maple (*Acer rubrum*) (FAC), slippery elm (*Ulmus rubra*) (FAC), and green ash are dominate in the canopy. The understory in the vicinity of E5A is dominated by sensitive fern, smooth white old field aster (*Symphyotrichum racemosum*) (FACW), and New York aster (*Symphyotrichum novi-belgii*) (FACW). Hydrology indicators include "Drainage Patterns (B10)" and "FAC-Neutral Test (D5)." Soils meet the F3 "Depleted Matrix" indicator (see **Attachment 3c**, **PH6**).

E5B

As shown in **Attachment 2d**, **Figure 2-7**, E5B is located on the east side of I-481. Dominant species in the vicinity of E5B are purple loosestrife and reed canary grass. Hydrology indicators

include "Drainage Patterns (B10)" and "FAC-Neutral Test (D5)." Soils meet the F3 "Depleted Matrix" indicator (see **Attachment 3c, PH7**).

Table 2
I-481 East Study Area
Water Resources Summary

Water Resources Map Code	NYSDEC Wetland Map Identification Number	NYSDEC Stream Classification	NWI Classification Code
E1	N/A	N/A	N/A
E2 (Unnamed Creek)	N/A	N/A	N/A
E3	SYE-17	N/A	PFO1A
E4 (Unnamed Channel)	N/A	N/A	N/A
E5	SYE-11	N/A	PEM5/UBF
E6	SYE-11	N/A	N/A
E7 (North Branch Ley Creek)	N/A	Class C	R5UBH

Notes: Water Resources Map codes—(E) denotes I-481 East Study Area.
Sources: NYSDEC Freshwater Wetlands Maps (2010), NWI Mapping (2016), AKRF, Inc. Field Inspections (2016)

E6

E6A

As shown in **Attachment 2d**, **Figure 2-8**, E6A is associated with a small segment of NYSDEC-mapped freshwater wetland SYE-11. This portion of NYSDEC-mapped SYE-11 is not mapped by NWI. The majority of the mapped portion of NYSDEC-mapped freshwater wetland SYE-11 is present east of the 100-ft study area along the east side of Peasant Road/Benedict Road. Green ash is dominant in the canopy and common buckthorn (*Rhamnus cathartica*) (FAC) and poison ivy (*Toxicodendron radicans*) (FAC) are dominant in the understory. Common reed and narrowleaf cattail are dominant species with common duckweed and purple loosestrife along a channel in the western edge of this wetland (see **Attachment 3b**, **PH8** and **PH9**). Hydrology indicators include "Surface Water (A1)" and "Geomorphic Position (D2)." Soils meet the F3 "Depleted Matrix" indicator.

E7 (North Branch Ley Creek)

As shown in **Attachment 2d**, **Figure 2-9,** a NYSDEC-mapped Class C creek is located to the east of the 100-ft study area just north of I-90. According to the NYSDEC mapping, the mapped portion of this creek is diverted north and east underneath the highway and then flows due east offsite. During the site inspection, this mapped portion of the creek was not observed. Instead, the existing creek appears to be oriented east-to-west and passes under I-90 via three culverts (measuring up to 5.5 ft in diameter) and appears to coincide with a NWI-mapped unknown perennial[11] riverine system with an unconsolidated bottom that is permanently flooded (R5UBH). On the east side of I-481, this creek continues east outside of the 100-ft study area with common reed becoming the dominant species in the channel. During the field inspection, up to approximately one foot of water was observed in the creek channel (see **Attachment 3b**, **PH10** and **PH11**).

[11] This designation was created by NWI specifically for use when the distinction between lower perennial, upper perennial and tidal cannot be made from aerial photography and no data are available.

ANTICIPATED REGULATORY JURISDICTION

Based on the NYSDEC freshwater wetlands and stream classification mapping, NWI mapping, and the field inspection, it is expected that within the I-481 East Study Area (Southern and Northern Sections) E2 (Unnamed/Unclassified Creek), E3, E4 (Unnamed/Unclassified Channel), E5, E6, and E7 (North Branch Ley Creek) are regulated by USACE as WOUS under Sections 401 and 404 of the CWA. With respect to NYSDEC, it is expected that E3, E5, and E6 would be regulated under Article 24 "Freshwater Wetlands. NYSDEC Class C surface waters that do not have a classification of "T" and are not navigable[12] are not regulated under Article 15 "Protection of Waters" of the ECL. Surface waters E2 (Unnamed/Unclassified Creek), E4 (Unnamed/Unclassified Channel), and E7 (North Branch Ley Creek) are not expected to be navigable and, therefore, are not covered under Article 15. In order to determine the USACE/NYSDEC jurisdiction of E1 and E2 (Unnamed/Unclassified Creek), further investigation outside of the 100-ft study area would be required to determine the nexus of these water resources to other surface waters.

I-481 NORTH STUDY AREA

The I-481 North Study Area contains the most complex system of wetlands of the four Project study areas. This study area is generally characterized by development associated by roadway infrastructure and residential development, although edges of the 100-ft study area in some locations contain forested and emergent wetlands, some of which are mapped by NYSDEC and NWI. A number of NYSDEC- and NWI-mapped surface waters are also present in this study area, many of which connect with wetland complexes located outside of the 100-ft study area (see **Attachment 1**, **Figures 1-1** to **1-3**). **Table 3**, below, provides a summary of the wetlands and surface waters that are present within the I-481 North Study Area sections. Figures associated with the I-481 North Study Area are enclosed in **Attachment 2a** (**Figure 1)** and **Attachment 2e** (**Figures 2-10** to **2-16**). Photographs of this study area are shown in **Attachment 3c**, **PH1** to **PH14)**.

FIELD-INSPECTED AREAS

N1

N1A

As shown in **Attachment 2e**, **Figure 2-10,** N1A is located along the southbound lanes of I-481 at Exit 8. It is within the check zone of NYSDEC-mapped wetland CIC-17[13] and consists of an eastern branch of a NYSDEC Class C creek (N2), described below. Portions of N1A are also mapped by NWI as PFO1 and as palustrine scrub shrub wetland with broad-leaved vegetation that is temporarily flooded (SS1A). It consists of ponded water and a common reed-dominated freshwater emergent wetland. Other species observed in the vicinity of N1A include purple loosestrife, common duckweed, elderberry (*Sambucus canadensis*) (FACW), and forget-me-not

[12] Navigable waters of the State means all lakes, rivers, streams and other bodies of water in the State that are navigable in fact or upon which vessels with a capacity of one or more persons can be operated notwithstanding interruptions to navigation by artificial structures, shallows, rapids or other obstructions, or by seasonal variations in capacity to support navigation. It does not include waters that are surrounded by land held in single private ownership at every point in their total area.

[13] The "check zone" is an area around the NYSDEC-mapped wetland in which the actual wetland may occur.

(*Myosotis scorpioides*) (OBL). Hydrology indicators include "Surface Water (A1)," "Saturation (A3)," "Water-Stained Leaves (B9)," and "Aquatic Fauna (B13)" (i.e., frogs). Soils meet the F3 "Depleted Matrix" indicator (see **Attachment 3c, PH1**).

N2 (Unnamed Creek)

As shown in **Attachment 2e**, **Figure 2-10**, N2 (Unnamed Creek) is located along I-481 in the eastern portion of the 100-ft study area in the vicinity of N1. In the vicinity of N1, this NYSDEC Class C Creek branch is not mapped by NWI as a riverine system (although N1 is mapped by NWI as PF)1/SS1A). This creek continues north underneath I-481 via a culvert inlet/outlet (see **Attachment 3c**, **PH1**). To the south, it connects with the main reach of N4 (Mud Creek).

N3

N3A

As shown in **Attachment 2e**, **Figure 2-11,** N3A is located along the southbound lanes of I-481 in the vicinity of Thompson Road. It is associated with NYSDEC-mapped freshwater wetland CIC-16. An unnamed NYSDEC Class C and NWI-mapped R2UBHx creek (N4 (Mud Creek), as described below) is associated with N3A. Common reed is the dominant species (see **Attachment 3c**, **PH2**). Hydrology indicators include "Surface Water (A1)" and "Oxidized Rhizospheres on Living Roots (C3)." Soils meet the F3 "Depleted Matrix" indicator

N4 (Mud Creek)

As shown in **Attachment 2e**, **Figures 2-11** to **2-15**, N4 (Mud Creek) is a NYSDEC Class C creek and NWI-mapped R2UBHx system that connects a number of emergent and forested wetlands via culvert inlet/outlets located underneath highway infrastructure. Mud Creek also connects with tributaries within the study area that are unnamed (as shown in the **Attachment 2e**, **Figures 2-13** and **2-14**). N4 (Mud Creek) traverses E3, E5, and E6, and is associated with NYSDEC-mapped CIC-16 (i.e., N3 described above) located within the 100-ft study area and a number of other NYSDEC-mapped wetlands located outside of the 100-ft study area (see **Attachment 1**, **Figure 1-2**). See photographs of N4 (Mud Creek) in **Attachment 3c, PH2, PH4, PH5, PH7,** and **PH8.**

Mud Creek is also located in the northern portion of the 100-ft study area along the west side of I-81. It is also mapped by the NWI as R4SBC. NYSDEC mapping shows that Mud Creek in this area flows west, underground via culvert inlet/outlets through the Driver's Village property and east through the Project study area under the highway (see **Attachment 3c**, **PH14**). On the east side of the highway, it appears to daylight in a small point located on a horse farm on private property.

N5

N5A

As shown in **Attachment 2e**, **Figure 2-12**, N5A is located on the north side of I-481 along the Exit 9N ramp to the northbound lanes of I-81. This wetland is not mapped by NYSDEC. The majority of the wetland is also not mapped by NWI, although a small pond located in the northern portion of the 100-ft study area is mapped as a palustrine excavated wetland with an unconsolidated bottom that is permanently flooded (PUBHx). An unnamed NYSDEC-Class C (N4 (Mud Creek), described above) and NWI-mapped R2UBHx creek traverses the site in a roughly easterly to westerly direction. Box elder, weeping willow, and eastern cottonwood are present in the canopy. The understory along the edges of this point consists of a shrub layer of box elder saplings and bush honeysuckle, with Virginia creeper in the vine layer. The

herbaceous layer transitions to an understory dominated by common reed. Hydrology indicators of W3A include "Surface Water (A1)," "Saturation (A3)," "Water-Stained Leaves (B9)," and "Aquatic Fauna (B13)" (i.e., frogs). Soils meet the F3 "Depleted Matrix" indicator (see **Attachment 3c**, **PH3-PH4**).

N6

N6A

As shown in **Attachment 2e**, **Figure 2-13**, N6A is located in the northeast quadrant of the I-81/I-481 interchange. NYSDEC- and NWI-mapped wetlands are not associated with N6A. However, the NYSDEC Class C creek and NWI-mapped R2UBHx system (N4 (Mud Creek)) described under N3A and N5A runs through this quadrant and continues west (via a culvert inlet/outlet located under the I-81 mainline). As shown in **Attachment 2e**, **Figure 2-13**, a second channel, oriented north-to-south, connects with N4 (Mud Creek) at the western most culvert inlet/outlet in this quadrant. It is mapped by NWI as an intermittent streambed that is seasonally flooded (R4SBC). This creek channel continues to the south and outside of the 100-ft study area.

N6A is located in the woodland portion of this wetland. Green ash and red maple (FAC) are dominant in the tree canopy with green ash and common buckthorn dominant in the shrub stratum. Sensitive fern (*Onoclea sensibilis*) (FACW), jewelweed, (*Impatiens capensis*) (FACW), poison ivy, and common reed are dominant in the herbaceous stratum. Common reed is dominant in the central portions of this wetland, along the channels, south of N6A (see **Attachment 3c, PH5 to PH7**). Hydrology indicators of W4A include "Saturation (A3)." The soils meet the hydric indicator of A3 "Black Histic" soils.

N7

N7A

As shown in **Attachment 2e**, **Figure 2-14**, N7A is located in the southwest quadrant of the I-81/I-481 interchange. This area is located in a wetland that is partially located within the "check zone" of NYSDEC-mapped freshwater wetland CIC-15. This "check zone" area is also classified by NWI as a palustrine scrub-shrub/emergent wetland, which contains broad-leaved deciduous and persistent wetland species that is seasonally flooded and saturated (PSS1/EM1E). Dominant canopy species associated with N7A include red maple (*Acer rubrum*) and green ash. Common buckthorn, red maple, and green ash are present in the shrub layer. Jewelweed and sensitive fern are dominant in the herbaceous layer (see **Attachment 3c, PH9**). Hydrology indicators of N7A include "Surface Water (A1)" and "High Water Table (A2)." Soils meet A1 "Histosol" indicator.

Table 3
I-481 North Study Area
Water Resources Summary

Water Resources Map Code	NYSDEC Wetland Map Identification Number	NYSDEC Stream Classification	NWI Classification Code
N1	CIC-17 "Check Zone"	N/A	PFO1/SS1A
N2 (Unnamed Creek)	N/A	Class C	N/A
N3	CIC-16	N/A	N/A
N4 (Mud Creek)	N/A	Class C	R2UBHx/R4SBC
N5	N/A	N/A	PUBHx*
N6	N/A	N/A	N/A
N7	CIC-15 "Check Zone"	N/A	PSS1/EM1E
N8	N/A	N/A	N/A

N9	N/A	N/A	N/A
N10	N/A	N/A	N/A
N11 (Unnamed Creek)	N/A	Class C	R4SBC
Notes:	Water Resources Map codes—(N) denotes I-481 North Study Area; (*) only a small portion of this wetland is mapped as PUBHx.		
Sources:	NYSDEC Freshwater Wetlands Maps (2010), NWI Mapping (2016), AKRF, Inc. Field Inspections (2016), NYSDEC check zones: http://www.dec.ny.gov/imsmaps/ERM/viewer.htm.		

N8

N8A

As shown in **Attachment 2e**, **Figure 2-15**, N8A is located on the east side of the northbound lanes of I-81, just north of the Exit 9N ramp. This is a wetland that is primarily located on private property east of the ROW fence. No NYSDEC- or NWI-mapped wetlands or surface waters are associated with this point. Shrubs and small trees including green ash and common buckthorn are present in the shrub and tree strata. Narrow-leaf cattail is dominant in the herbaceous layer (see **Attachment 3c**, **PH10**). Hydrology indicators include "Water-Stained Leaves (B9)." Soils meet the F3 "Depleted Matrix" indicator.

N9

N9A

As shown in **Attachment 2e**, **Figure 2-15**, N9A is located on the east side of I-81 just north of N8A. It is not associated with NYSDEC- and NWI-mapped freshwater wetlands. A NYSDEC Class C and NWI-mapped R4SBC creek (N11), described below, flows along the south edge N9. The dominant vegetation of N9A is common reed and fox sedge (*Carex vulpinoidea*) (OBL) (see **Attachment 3c**, **PH11**). Hydrology indicators of N9A include Surface Soil Cracks (B6) and "Water-Stained Leaves (B9)." Soils meet the F3 "Depleted Matrix" indicator.

N10

N10A

As shown in **Attachment 2e**, **Figure 2-15,** N10A is located on the west side of the I-81 northbound lanes north of Exit 29N. It is associated with a NYSDEC Class C creek (N11, described below) that is diverted under I-81 via a culvert toward the vicinity of N9A, described above. This creek continues west outside of the 100-ft study area. The dominant species is reed canary grass with spike rush (*Eleocharis palustris*) (OBL) and purple loosestrife also commonly occurring (see **Attachment 3c**, **PH12**). Hydrology meets the "Surface Water (A1)" and "Saturation (A3)" indicators. Soils meet the F3 "Depleted Matrix" indicator.

N11 (Unnamed Creek)

As shown in **Attachment 2e**, **Figure 2-15,** N11 (Unnamed Creek) is located along the west side of I-81 north of Exit 29N. It is a NYSDEC Class C creek that is also mapped by the NWI as R4SBC and is associated with N10, described above. It flows underneath I-81 via culvert inlet/outlets (see **Attachment 3c**, **PH13**) to the east and follows the southern edge of N9. On the west side of I-81, N11 continues west outside of the 100-ft study area.

ANTICIPATED REGULATORY JURISDICTION

Based on the NYSDEC freshwater wetlands and stream classification mapping, NWI mapping, and the field inspection, it is expected that N1, N2, N3, N4 (Mud Creek), N5, N6, N7, N9, N10, and N11 are regulated by USACE as WOUS under Sections 401 and 404 of the CWA. Further

investigation outside of the 100-ft study area would be required to determine the nexus of N8 to WOUS.

With respect to NYSDEC, N1 is located within the check zone of freshwater wetland CIC-17, a portion of N3 is located in freshwater wetland CIC-16, and a portion of N7 is located in the check zone of freshwater wetland CIC-15. For these reasons, it is expected that all or a portion of these wetlands are regulated under Article 24 "Freshwater Wetlands" of the ECL. With respect to N5, N6, N8, N9, and N10, these wetlands are not mapped by NYSDEC nor are they located in freshwater wetland check zones. For these reasons, it is not expected that N5, N6, N8, N9, and N10 would fall under the jurisdiction of the NYSDEC. As described above, NYSDEC Class C surface waters that do not have a classification of "T" and are not navigable are not regulated under Article 15 "Protection of Waters" of the ECL. Thus, it is not expected that N2, N4 (Mud Creek), and N11 would fall under the jurisdiction of NYSDEC. However, further NYSDEC review with respect to N2, N4 (Mud Creek), and N11 would be required to confirm that they are not covered under Article 15.

CONCLUSIONS

As summarized in **Table 4**, a total of 13 wetlands were identified, but not delineated, during the Wetland and Surface Water Assessment within the four project areas: One (1) wetland is present within I-81 Viaduct Study Area (i.e., V1); four (4) wetlands are present within I-481 East Study Area (i.e., E1, E3, E5, and E6); and eight (8) wetlands are present within I-481 North Study Area (i.e., N1, N3, N5, N6, N7, N8, N9, and N10). Several of these wetlands are associated with NYSDEC- and NWI-mapped wetlands located within the 100-ft study area. Most wetlands included in this Wetland and Surface Water Assessment Report are dominated by common reed and are associated with disturbance related to highway construction.

Table 4
Water Resources Anticipated Permit Requirements and Next Steps

Water Resources Map Code	Anticipated NYSDEC Permits	Anticipated USACE Permits	Anticipated Next Steps
V1	Article 24	§401, §404	Formal wetland delineation
V2 (Ley Creek)	Article 15	§10, §401, §404	Further coordination with NYSDEC and USACE
V3 (Onondaga Creek)	Article 15	§401, §404	Further coordination with NYSDEC and USACE
S1 (City Line Brook)	Article 15	§401, §404	Further coordination with NYSDEC and USACE
E1	Further review necessary	Further review necessary	Further investigation outside of 100-ft study area
E2 (Unnamed Creek)	Further review necessary	§401, §404	Further investigation outside of 100-ft study area
E3	Article 24	§401, §404	Formal wetland delineation
E4 (Unnamed Channel)	Further review necessary	§401, §404	Further coordination with NYSDEC and USACE
E5	Article 24	§401, §404	Formal wetland delineation
E6	Article 24	§401, §404	Formal wetland delineation
E7 (North Branch Ley Creek)	Further review necessary	§401, §404	Further coordination with NYSDEC and USACE
N1	Article 24	§401, §404	Formal wetland delineation
N2 (Unnamed Creek)	Further review necessary	§401, §404	Further coordination with NYSDEC and USACE
N3	Article 24	§401, §404	Formal wetland delineation

N4 (Mud Creek)	Further review necessary	§401, §404	Further coordination with NYSDEC and USACE
N5	None expected	§401, §404	Formal wetland delineation
N6	None expected	§401, §404	Formal wetland delineation
N7	Article 24	§401, §404	Formal wetland delineation
N8	None expected	Further review necessary	Formal wetland delineation, further investigation outside of 100-ft study area
N9	None expected	§401, §404	Formal wetland delineation
N10	None expected	§401, §404	Formal wetland delineation
N11 (Unnamed Creek)	Further review necessary	§401, §404	Further coordination with NYSDEC and USACE

Notes: Water Resources Map codes—(V) denotes I-81 Viaduct Study Area, (S) denoted I-481 South Study Area, (E) denoted I-481 East Study Area, (N) denoted I-481 North Study Area. Wetlands/surface waters identified for further investigation outside of 100-ft study area are those that require a nexus determination to either NYSDEC-regulated offsite wetlands/surface waters and/or USACE Waters of the United States (WOUS).
Sources: NYSDEC Freshwater Wetlands Maps (2010), NWI Mapping (2016), AKRF, Inc. Field Inspections (2016)

As summarized in **Table 4**, a total of 9 surface waters were identified during the Wetland and Surface Water Assessment within the four project areas: two (2) creeks are present in the I-81 Viaduct Study Area (i.e., V2 and V3); one (1) creek is present in the I-481 South Study Area (i.e., S1 [diverted underground]); three (3) creeks are present in the I-481 East Study Area (i.e., E2, E4, and E7); and three (3) creeks are present in the I-481 North Study Area (i.e., N2, N4, and N11). In many locations these creeks are diverted under highway elements that connect wetlands on the opposite sides of the highway or interchanges. In some cases, these creeks connect wetlands within the 100-ft study area via a creek branch that flows outside of the 100-ft study area, but later connects with a creek branch that flows back through the 100-ft study area.

As described above, a number of wetlands and surface waters are anticipated to be under the jurisdiction of the USACE and/or the NYSDEC. **Table 4** provides a summary of any anticipated USACE/NYSDEC permits that would be required should any project elements have the potential to impact any of the wetlands and surface waters listed above and a summary of any anticipated next steps. Coordination with these agencies will continue to be ongoing with respect to the jurisdiction of these wetlands and surface waters.

The results of the Wetland and Surface Water Assessment were used to assess the approximate wetland impacts of the Viaduct and Community Grid alternatives in the Draft EIS. This level of analysis will satisfy the requirements of NEPA and SEQRA to assess wetland and surface water impacts under each alternative.

Attachment 1

I-81 Viaduct Project

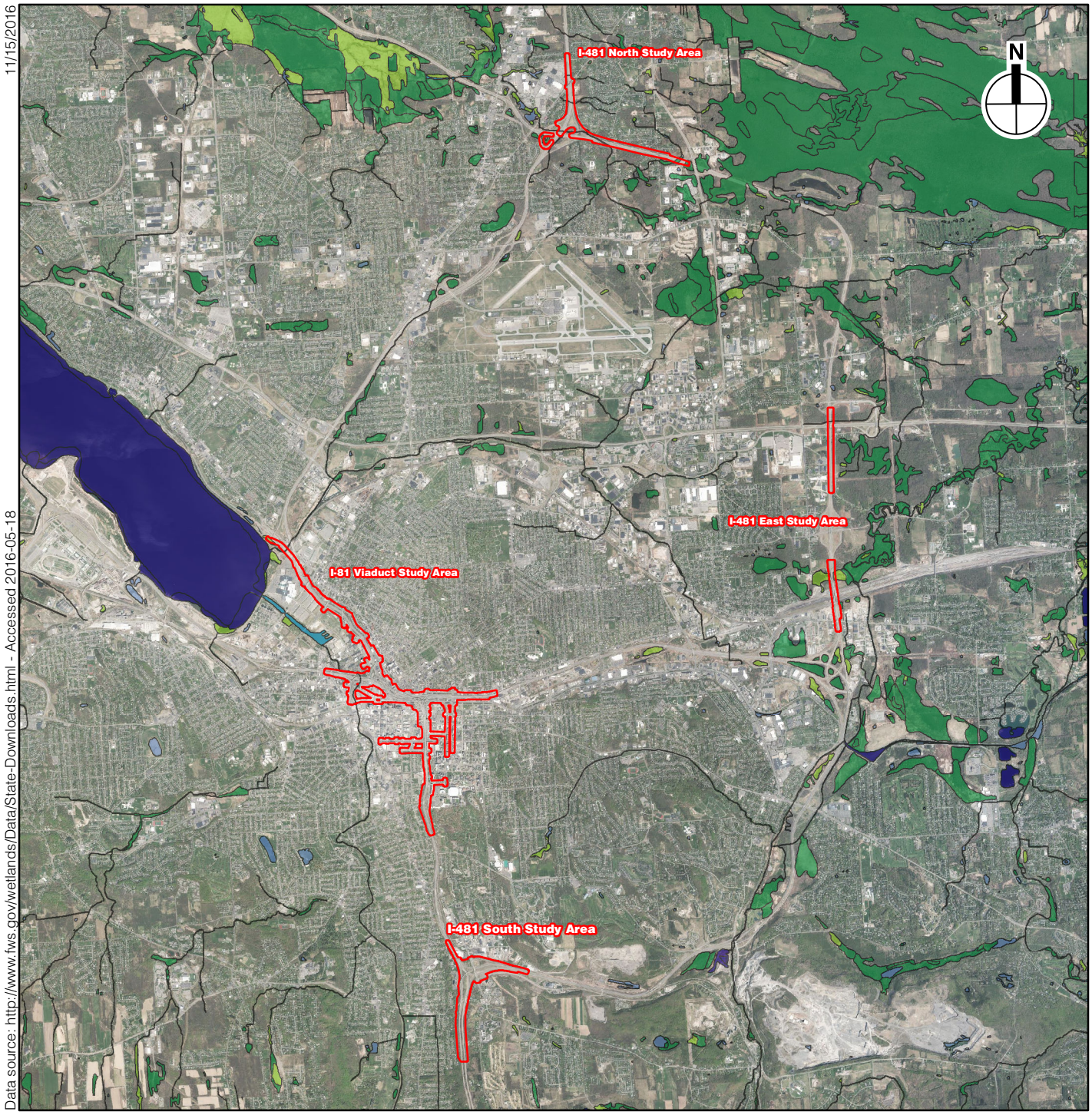
NYSDEC Freshwater and Surface Water and NWI Overview Maps

1(a) – U.S. Fish and Wildlife Service National Wetlands Inventory (Figure 1-1)

1(b) – New York State Department of Environmental Conservation Regulatory Freshwater Wetlands (Figure 1-2)

1(c) – New York State Department of Environmental Conservation Water Quality Classification (Figure 1-3)

1(d) – Natural Resources Conservation Service (NRCS) Soil Maps (Figures 1-4a and Figure 1-4b)



Study Areas

0 2 Miles

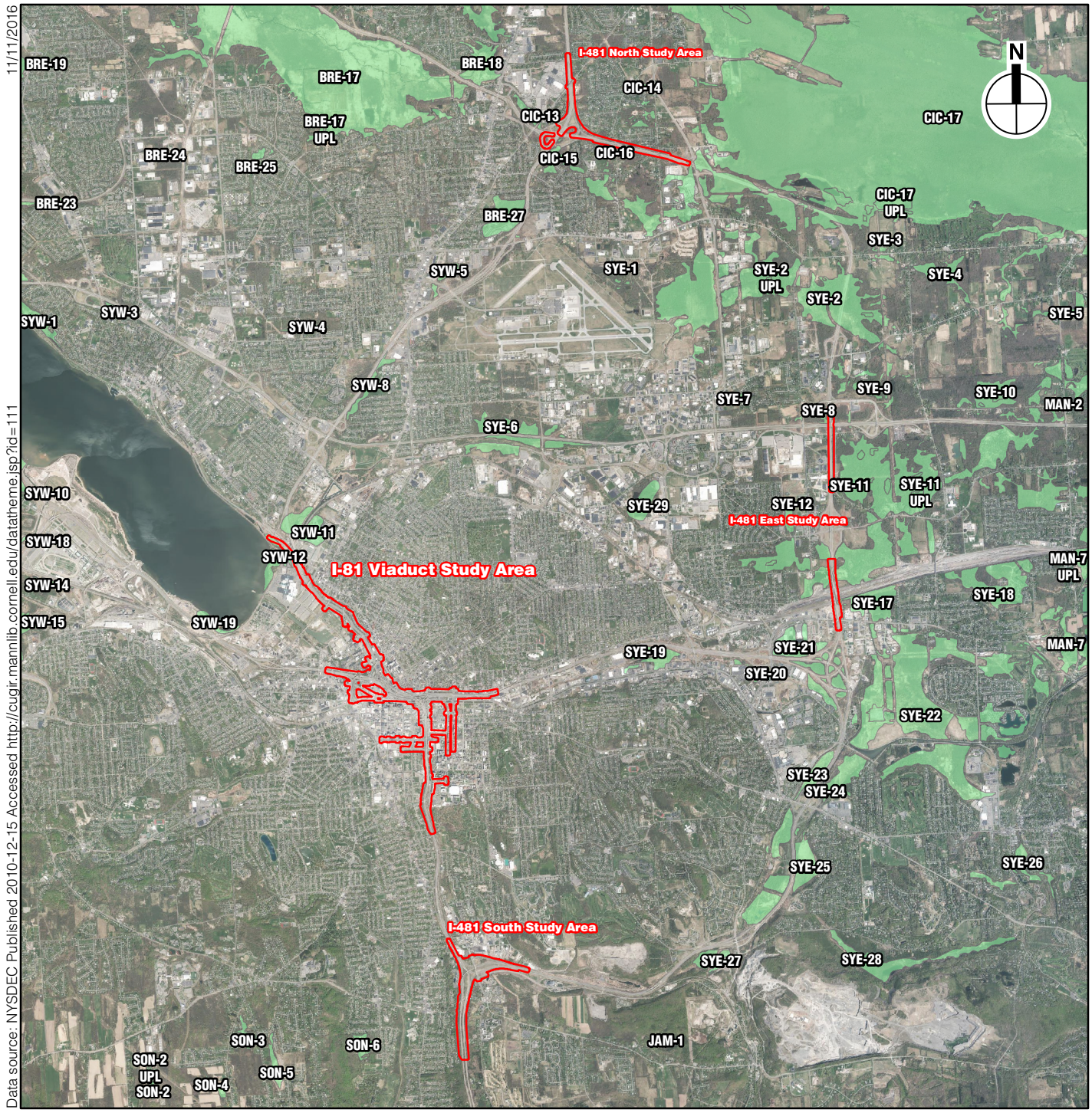
Wetland Type (Map Codes)

- Freshwater Forested/Shrub Wetland (PFO, PSS)
- Freshwater Emergent Wetland (PEM)
- Freshwater Pond (PUB, PAB)
- Riverine (R)
- Lake (L)

U.S. Fish and Wildlife Service
National Wetlands Inventory

I-81 Viaduct Project

Figure 1-1



New York State Department of Environmental Conservation
Regulatory Freshwater Wetlands

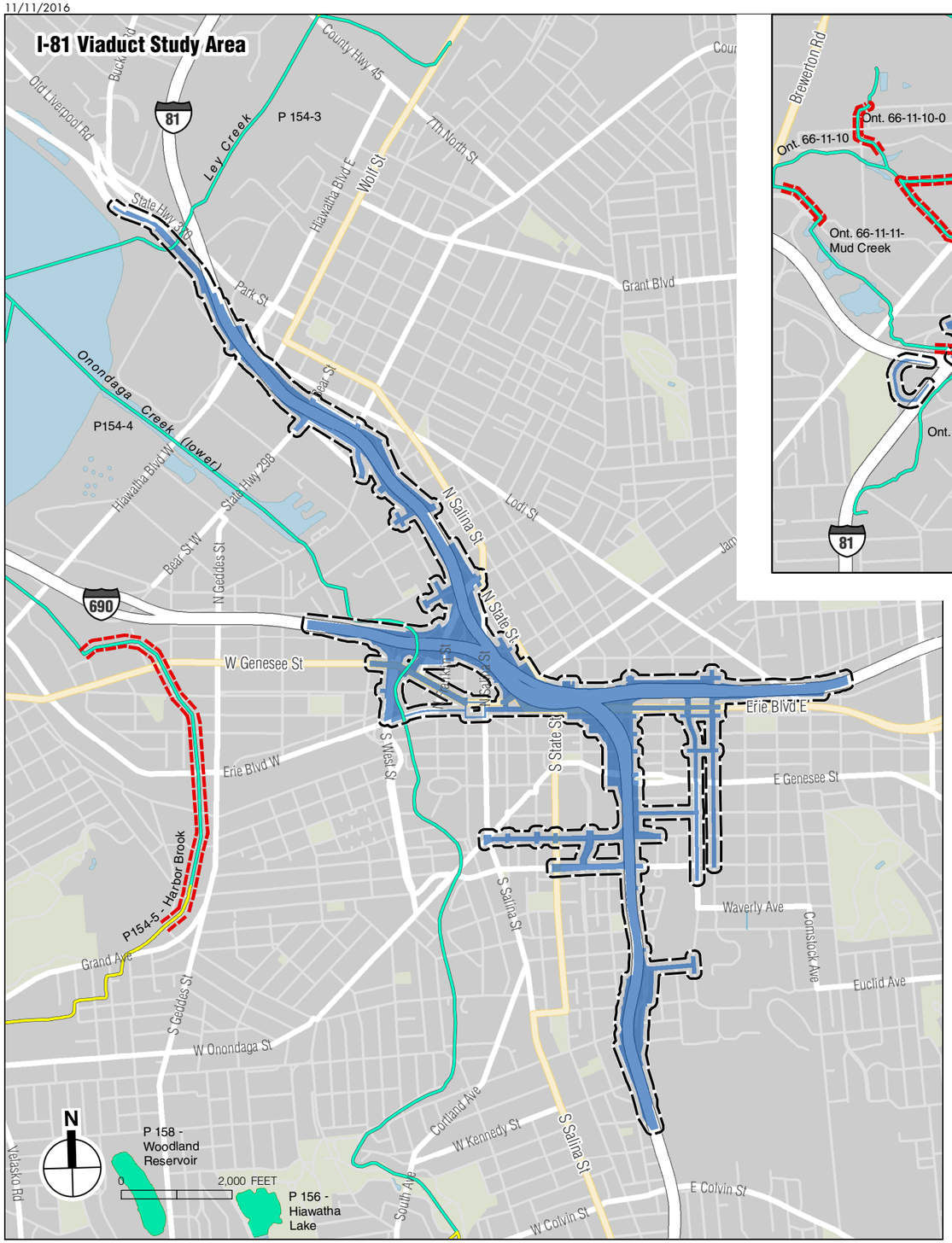
I-81 Viaduct Project

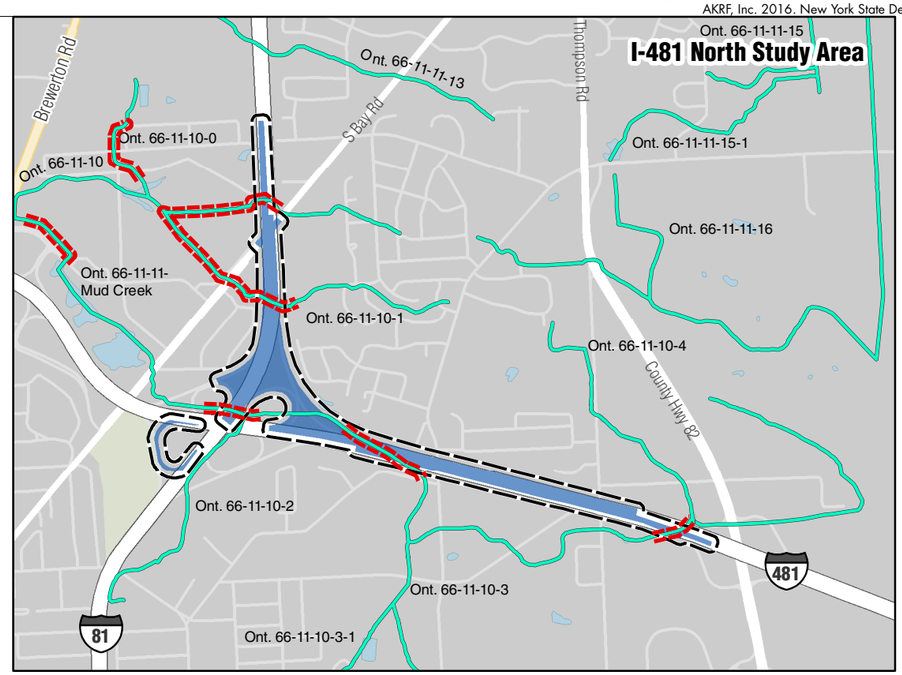
Figure 1-2

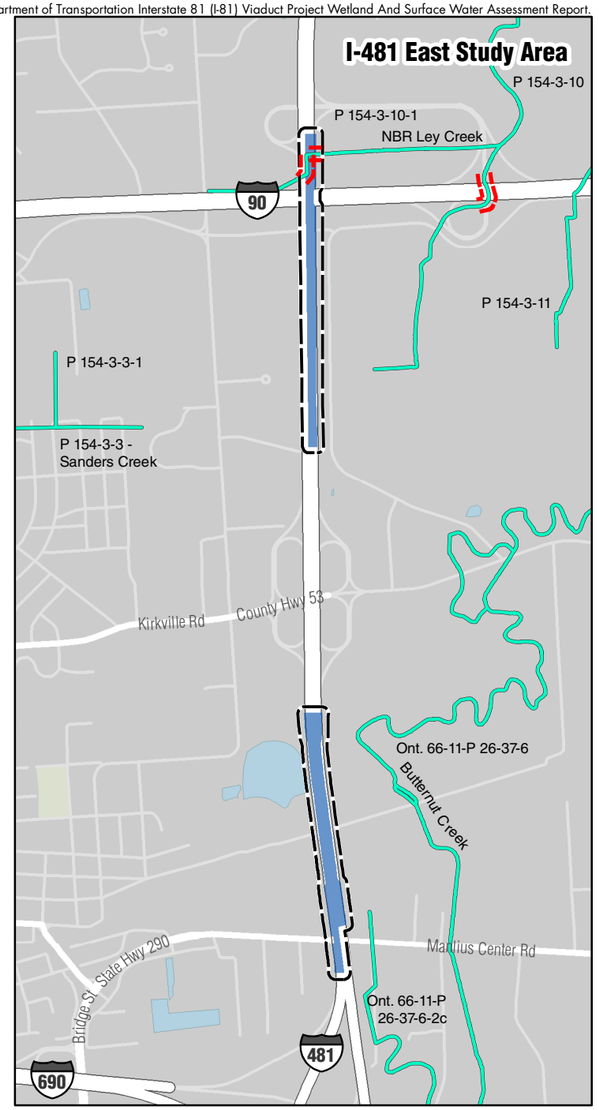
11/11/2016

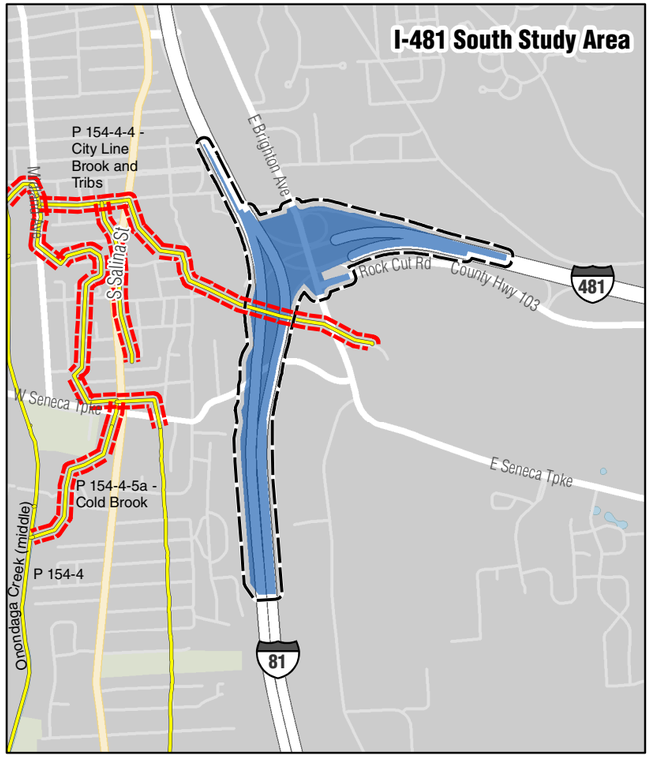
Sources: NYS Dept. of Environmental Conservation, Division of Water, Bureau of Water Assessment and Monitoring. Thompson Reuters. 2016. New York Codes, Rules and Regulations. Title 6, Chapter X, Subchapter B, Article 14. Oswego River Drainage Basin Series. Accessed October 20th, 2016 at https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I3563adb0b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)&bhcp=1

AKRF, Inc. 2016. New York State Department of Transportation Interstate 81 (I-81) Viaduct Project Wetland And Surface Water Assessment Report.









Project Limits

Study Area (100-Foot Boundary)

Water Quality Classifications

Class B

Class C

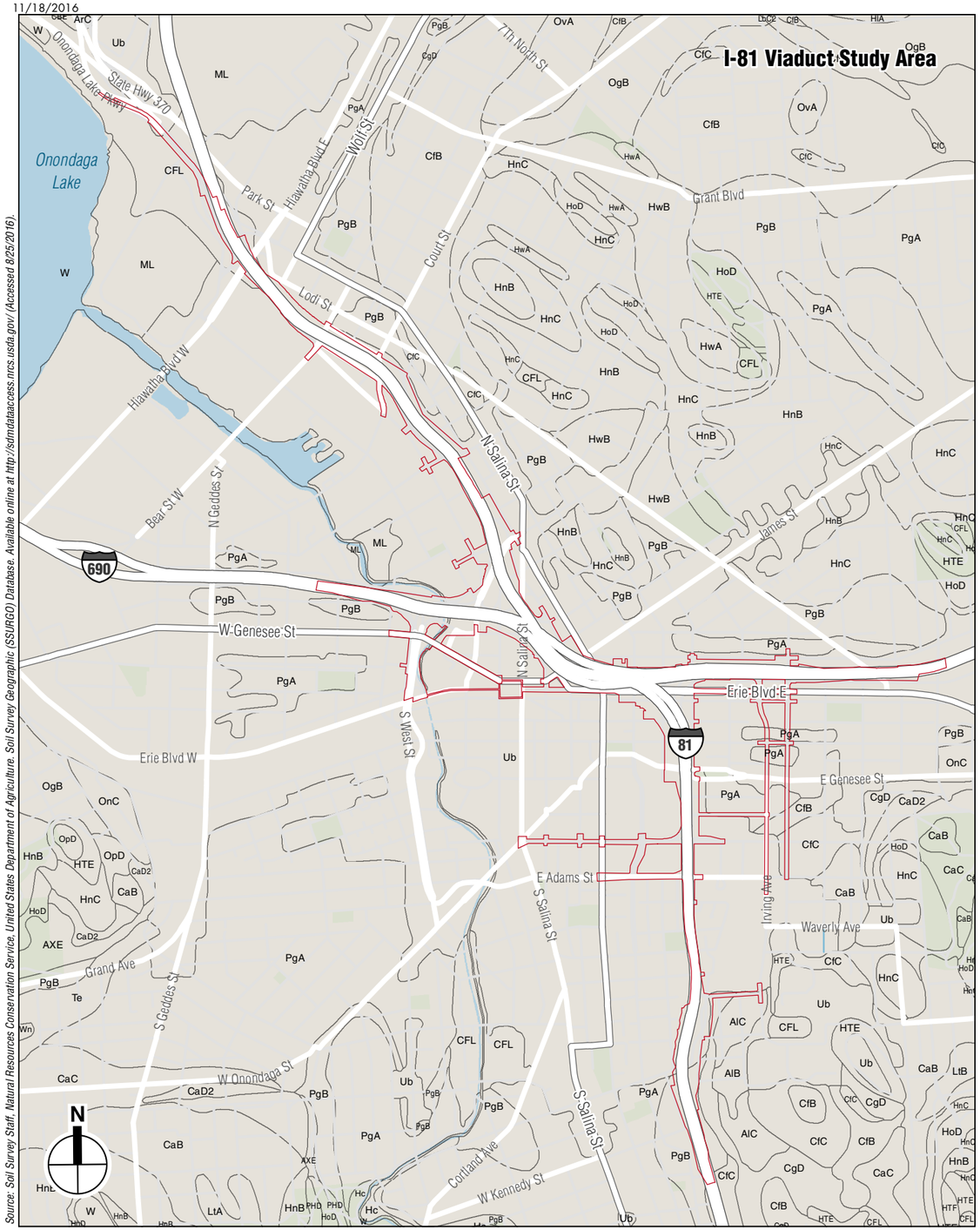
Underground stream segments

I-81 Viaduct Project

NYSDEC Water Quality Classifications

Figure 1-3

11/18/2016



Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database. Available online at http://sdmdataaccess.nrcs.usda.gov/ (Accessed 8/25/2016).

Soils Key	
AlB	Alton gravelly fine sandy loam, 3 to 8 percent slopes
AlC	Alton gravelly fine sandy loam, rolling
AoA	Appleton loam, 0 to 3 percent slopes
ArB	Arkport very fine sandy loam, 2 to 6 percent slopes
ArC	Arkport very fine sandy loam, rolling
ArD	Arkport very fine sandy loam, hilly
AwB	Aurora silt loam, 0 to 6 percent slopes
AXE	Aurora-Farmington-Rock outcrop association, steep
BeB	Benson silt loam, undulating
BNC	Benson-Wassaic-Rock outcrop association, sloping
BNF	Benson-Wassaic-Rock outcrop association, very steep
BoB	Bombay gravelly loam, 2 to 8 percent slopes
CaB	Camillus silt loam, 2 to 6 percent slopes
CaC	Camillus silt loam, 6 to 12 percent slopes
CaD2	Camillus silt loam, 12 to 18 percent slopes eroded
CBE	Camillus and Lairdsville channery soils, steep
Cd	Canandaigua mucky silt loam
Ce	Carlisle muck
CfB	Cazenovia silt loam, 2 to 8 percent slopes
CfC	Cazenovia silt loam, 8 to 15 percent slopes
CFL	Cut and fill land
CgD	Cazenovia soils, 15 to 25 percent slopes
ChA	Collamer silt loam, 0 to 2 percent slopes
ChB	Collamer silt loam, 2 to 6 percent slopes
CIB	Colonie loamy fine sand, 0 to 6 percent slopes
CIC	Colonie loamy fine sand, rolling
CrB	Croghan loamy fine sand, 0 to 6 percent slopes
DuC	Dunkirk silt loam, rolling
FL	Fluvaquents, frequently flooded
Fo	Fonda mucky silty clay loam
Fr	Fredon loam
GaA	Galen very fine sandy loam, 0 to 2 percent slopes
GaB	Galen very fine sandy loam, 2 to 6 percent slopes
Hc	Hamlin silt loam, high bottom
HIA	Hilton loam, 0 to 3 percent slopes
HIB	Hilton loam, 3 to 8 percent slopes
HnB	Honeoye silt loam, 2 to 8 percent slopes
HnC	Honeoye silt loam, 8 to 15 percent slopes
HnCK	Honeoye silt loam, rolling
HoD	Honeoye and Lansing soils, 15 to 25 percent slopes
HSC	Honeoye very stony soils, sloping
HTE	Honeoye, Lansing, and Ontario soils, 25 to 35 percent slopes
HTF	Honeoye, Lansing, and Ontario soils, 35 to 50 percent slopes
HwA	Howard gravelly fine sandy loam, 0 to 3 percent slopes
HwB	Howard gravelly fine sandy loam, 3 to 8 percent slopes
HwC	Howard gravelly fine sandy loam, rolling
HyA	Howard gravelly silt loam, 0 to 3 percent slopes
KeA	Kendaia silt loam, 0 to 3 percent slopes
KeB	Kendaia silt loam, 3 to 8 percent slopes

Soils Key	
LaB	Lairdsville silt loam, 2 to 6 percent slopes
LbC2	Lairdsville silty clay loam, 6 to 12 percent slopes, eroded
Lk	Lakemont silty clay loam, 0 to 3 percent slopes
Lm	Lamson very fine sandy loam
LtA	Lima silt loam, 0 to 3 percent slopes
LtB	Lima silt loam, 3 to 8 percent slopes
LvB	Lockport and Brockport silty clay loams, 0 to 6 percent slopes
Ly	Lyons soils, 0 to 3 percent slopes
MdB	Madrid fine sandy loam, 2 to 8 percent slopes
MdC	Madrid fine sandy loam, 8 to 15 percent slopes
MgB	Madrid gravelly loam, 2 to 8 percent slopes
MgC	Madrid gravelly loam, 8 to 15 percent slopes
ML	Made land
Ms	Martisco and Warners soils
MtA	Minoa fine sandy loam, 0 to 2 percent slopes
MtB	Minoa fine sandy loam, 2 to 6 percent slopes
MwB	Mohawk silt loam, 2 to 8 percent slopes
MwC	Mohawk silt loam, 8 to 15 percent slopes
Na	Naumburg loamy fine sand
NgA	Niagara silt loam, 0 to 4 percent slopes
OdB	Odessa silty clay loam, 2 to 6 percent slopes
OgB	Ontario loam, 2 to 8 percent slopes
OnC	Ontario gravelly loam, 8 to 15 percent slopes
OpD	Ontario and Madrid soils, 15 to 25 percent slopes
OvA	Ovid silt loam, 0 to 3 percent slopes
PaC	Palatine shaly silt loam, 6 to 12 percent slopes
Pb	Palms muck
PB	Borrow pits
PG	Gravel pits
PgA	Palmyra gravelly loam, 0 to 3 percent slopes
PgB	Palmyra gravelly loam, 3 to 8 percent slopes
PHD	Palmyra and Howard soils, hilly
PpA	Phelps gravelly loam, 0 to 3 percent slopes
Pt	Quarries
Rh	Rhinebeck silt loam
SA	Saprists and Fluvaquents, ponded
Te	Teel silt loam
Ub	Urban land
Va	Varick silt loam
W	Water
WcB	Wassaic silt loam, 0 to 8 percent slopes
WcC	Wassaic silt loam, 8 to 15 percent slopes
WDD	Wassaic-Benson silt loams, moderately steep
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded
WwA	Williamson silt loam, 0 to 2 percent slopes
WwB	Williamson silt loam, 2 to 6 percent slopes
WwC	Williamson silt loam, rolling

I-81 Viaduct Project

Soil Survey
Figure 1-4a

11/18/2016

Soils Key	
AlB	Alton gravelly fine sandy loam, 3 to 8 percent slopes
AlC	Alton gravelly fine sandy loam, rolling
AoA	Appleton loam, 0 to 3 percent slopes
ArB	Arkport very fine sandy loam, 2 to 6 percent slopes
ArC	Arkport very fine sandy loam, rolling
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BoB	Bombay gravelly loam, 2 to 8 percent slopes
CaB	Camillus silt loam, 2 to 6 percent slopes
CaC	Camillus silt loam, 6 to 12 percent slopes
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CfB	Cazenovia silt loam, 2 to 8 percent slopes
CfC	Cazenovia silt loam, 8 to 15 percent slopes
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CgD	Cazenovia soils, 15 to 25 percent slopes
ChA	Collamer silt loam, 0 to 2 percent slopes
ChB	Collamer silt loam, 2 to 6 percent slopes
ClB	Colonie loamy fine sand, 0 to 6 percent slopes
ClC	Colonie loamy fine sand, rolling
CrB	Croghan loamy fine sand, 0 to 6 percent slopes
DuC	Dunkirk silt loam, rolling
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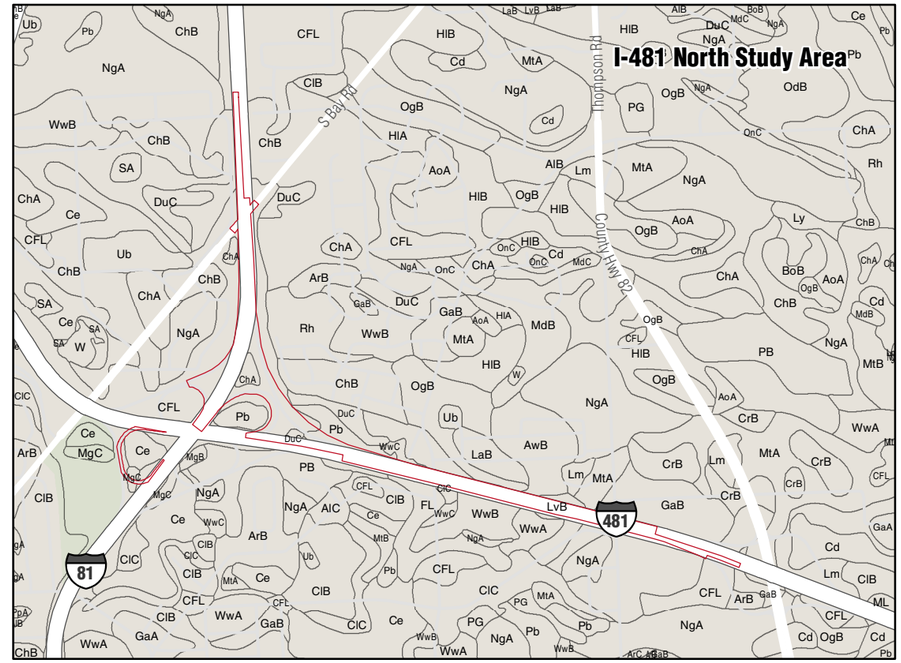
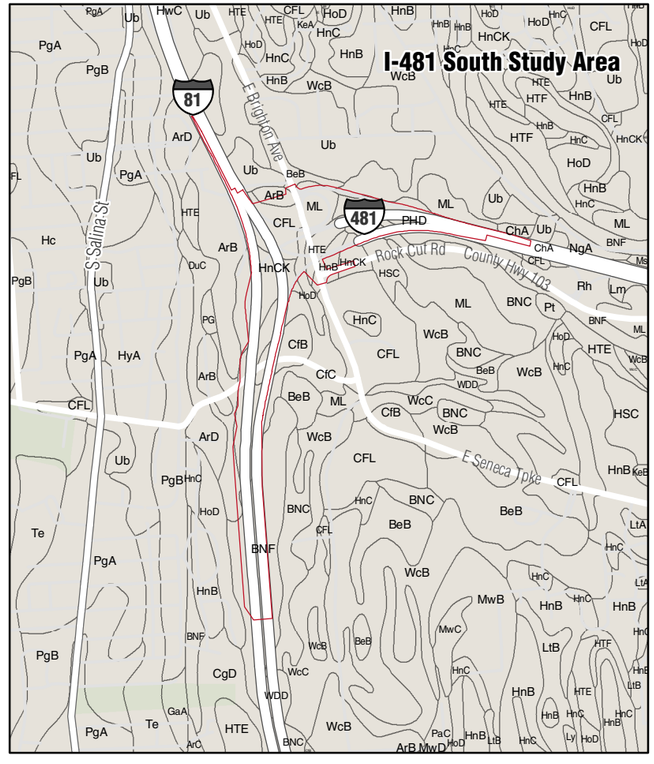
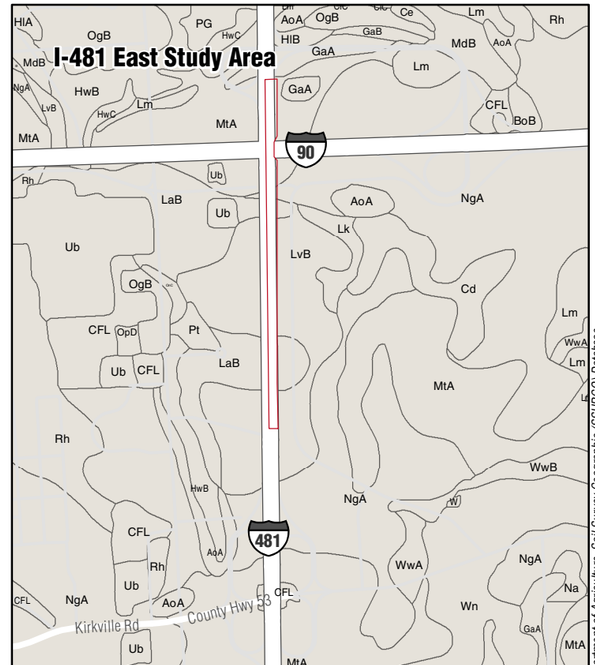
Fo	Fonda mucky silty clay loam
Fr	Fredon loam
GaA	Galen very fine sandy loam, 0 to 2 percent slopes
GaB	Galen very fine sandy loam, 2 to 6 percent slopes
Hc	Hamlin silt loam, high bottom
HlA	Hilton loam, 0 to 3 percent slopes
HlB	Hilton loam, 3 to 8 percent slopes
HnB	Honeoye silt loam, 2 to 8 percent slopes
HnC	Honeoye silt loam, 8 to 15 percent slopes
HnCK	Honeoye silt loam, rolling
HoD	Honeoye and Lansing soils, 15 to 25 percent slopes
HSC	Honeoye very stony soils, sloping
HTE	Honeoye, Lansing, and Ontario soils, 25 to 35 percent slopes
HTF	Honeoye, Lansing, and Ontario soils, 35 to 50 percent slopes
HwA	Howard gravelly fine sandy loam, 0 to 3 percent slopes
HwB	Howard gravelly fine sandy loam, 3 to 8 percent slopes
HwC	Howard gravelly fine sandy loam, rolling
HyA	Howard gravelly silt loam, 0 to 3 percent slopes
KeA	Kendaia silt loam, 0 to 3 percent slopes
KeB	Kendaia silt loam, 3 to 8 percent slopes

Soils Key	
LaB	Lairdsville silt loam, 2 to 6 percent slopes
LbC2	Lairdsville silty clay loam, 6 to 12 percent slopes, eroded
Lk	Lakemont silty clay loam, 0 to 3 percent slopes
Lm	Lamson very fine sandy loam
LtA	Lima silt loam, 0 to 3 percent slopes
LtB	Lima silt loam, 3 to 8 percent slopes
LvB	Lockport and Brockport silty clay loams, 0 to 6 percent slopes
Ly	Lyons soils, 0 to 3 percent slopes
MdB	Madrid fine sandy loam, 2 to 8 percent slopes
MdC	Madrid fine sandy loam, 8 to 15 percent slopes
MgB	Madrid gravelly loam, 2 to 8 percent slopes
MgC	Madrid gravelly loam, 8 to 15 percent slopes
ML	Made land
Ms	Martisco and Warners soils
MtA	Minoa fine sandy loam, 0 to 2 percent slopes
MtB	Minoa fine sandy loam, 2 to 6 percent slopes
MwB	Mohawk silt loam, 2 to 8 percent slopes
MwC	Mohawk silt loam, 8 to 15 percent slopes
Na	Naumburg loamy fine sand
NgA	Niagara silt loam, 0 to 4 percent slopes
OdB	Odessa silty clay loam, 2 to 6 percent slopes
OgB	Ontario loam, 2 to 8 percent slopes
OnC	Ontario gravelly loam, 8 to 15 percent slopes
OpD	Ontario and Madrid soils, 15 to 25 percent slopes
OvA	Ovid silt loam, 0 to 3 percent slopes
PaC	Palatine shaly silt loam, 6 to 12 percent slopes
Pb	Palms muck
PB	Borrow pits
PG	Gravel pits
PgA	Palmyra gravelly loam, 0 to 3 percent slopes
PgB	Palmyra gravelly loam, 3 to 8 percent slopes
PHD	Palmyra and Howard soils, hilly
PpA	Phelps gravelly loam, 0 to 3 percent slopes
Pt	Quarries
Rh	Rhinebeck silt loam
SA	Saprists and Fluvaquents, ponded
Te	Teel silt loam
Ub	Urban land
Va	Varick silt loam
W	Water
WcB	Wassaic silt loam, 0 to 8 percent slopes
WcC	Wassaic silt loam, 8 to 15 percent slopes
WDD	Wassaic-Benson silt loams, moderately steep
Wn	Wayland soils complex, 0 to 3 percent slopes, frequently flooded
WwA	Williamson silt loam, 0 to 2 percent slopes
WwB	Williamson silt loam, 2 to 6 percent slopes
WwC	Williamson silt loam, rolling







Soil Survey map units

0 2,000 FEET

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database. Available online at http://sdmdataaccess.nrcs.usda.gov/ (Accessed 8/25/2016).

I-81 Viaduct Project

Soil Survey
Figure 1-4b

Attachment 2

I-81 Viaduct Project

Wetlands and Surface Waters

2(a) – Index Map (Figure 2-1)

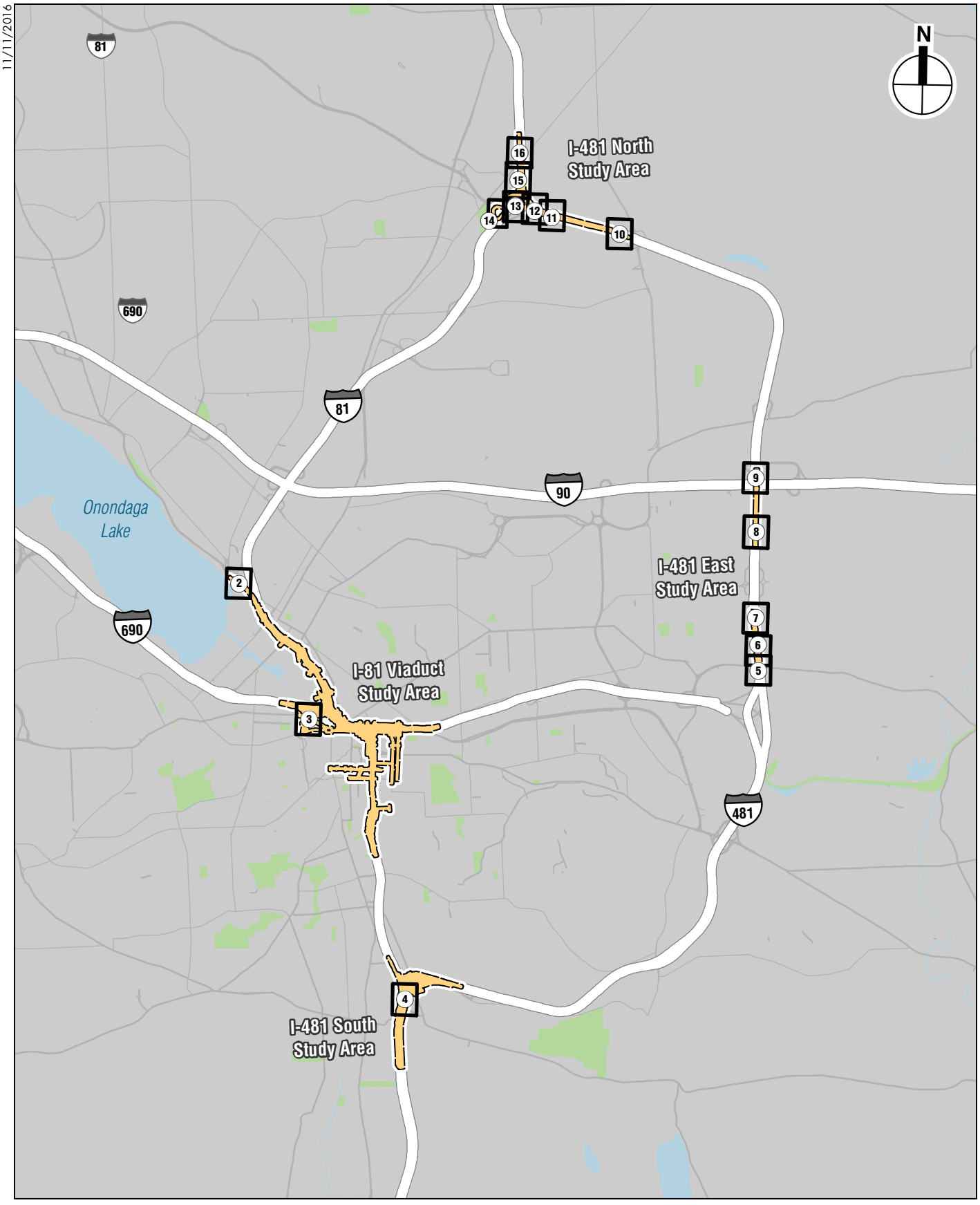
2(b) – I-81 Viaduct Study Area (Figures 2-2 – 2-3)

2(c) – I-481 South Study Area (Figure 2-4)

2(d) – I-481 East Study Area (Figures 2-5 – 2-9)

2(e) – I-481 North Study Area (Figures 2-10 – 2-16)

Wetlands and Surface Waters
Attachment 2(a)
Index Map
(Figure 2-1)

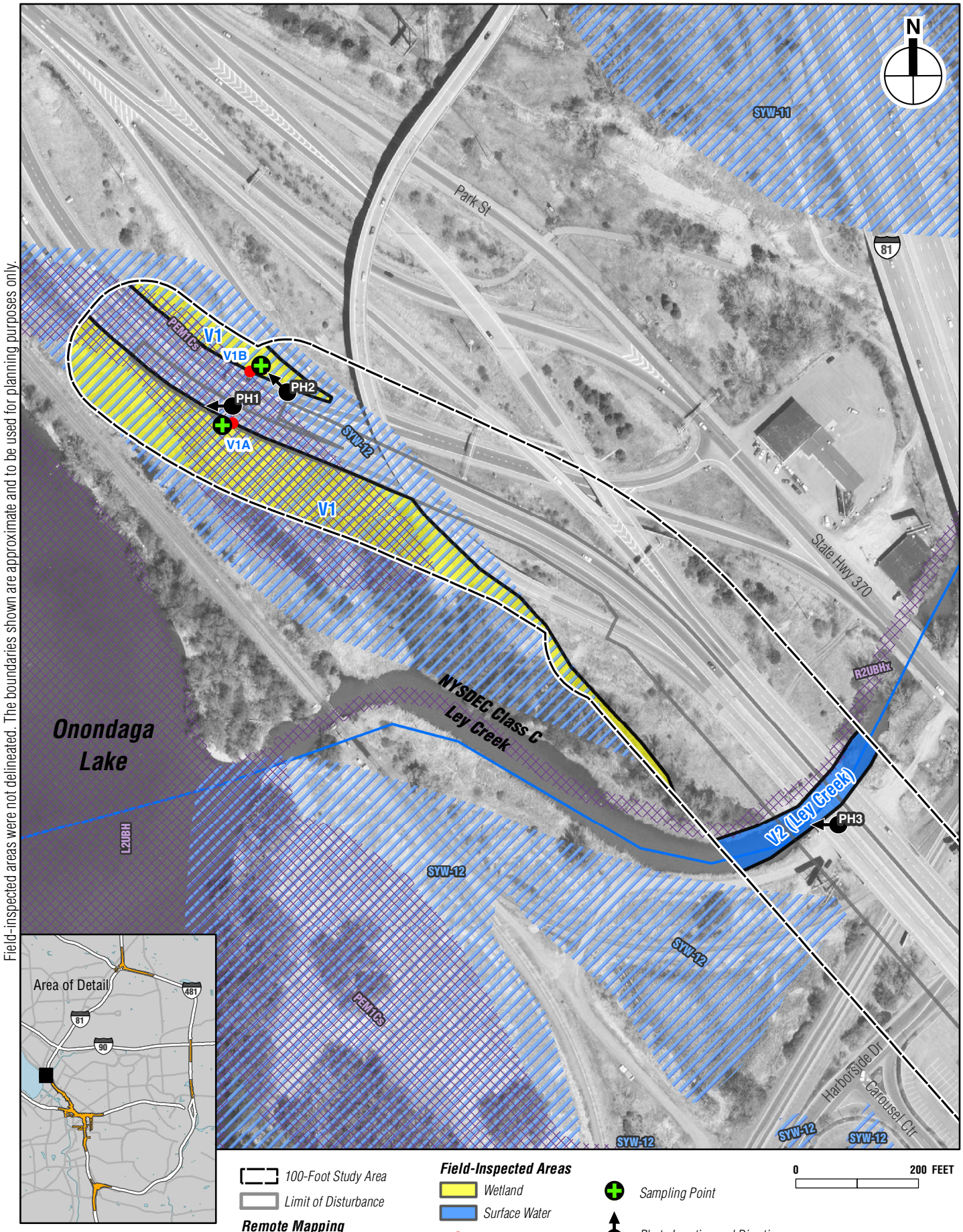


Index Map

I-81 Viaduct Project

Figure 2-1

Wetlands and Surface Waters
Attachment 2(b)
I-81 Viaduct Study Area
(Figures 2-2 – 2-3)



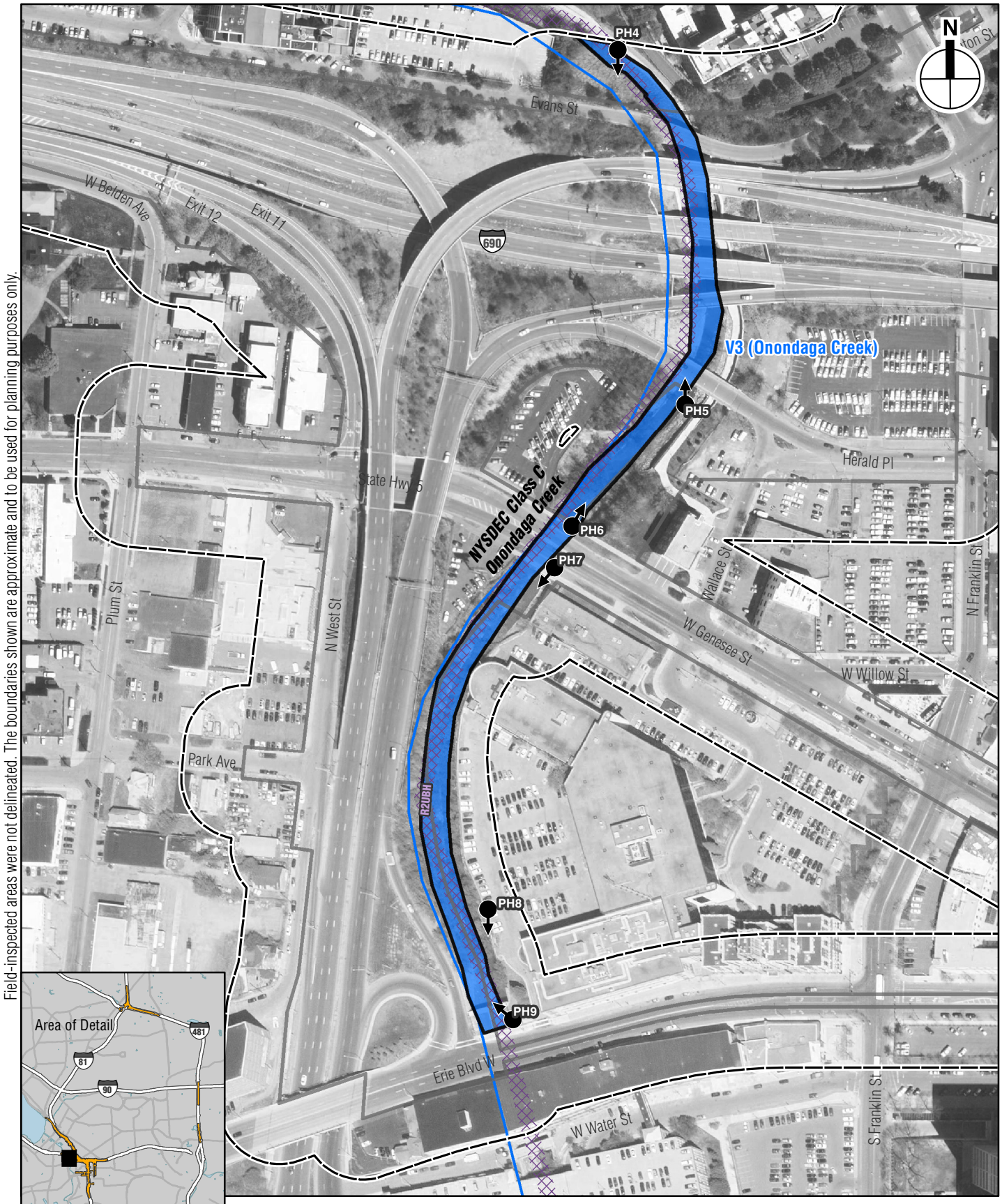
Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project

I-81 Viaduct Study Area

Wetlands and Surface Waters

Figure 2-2



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

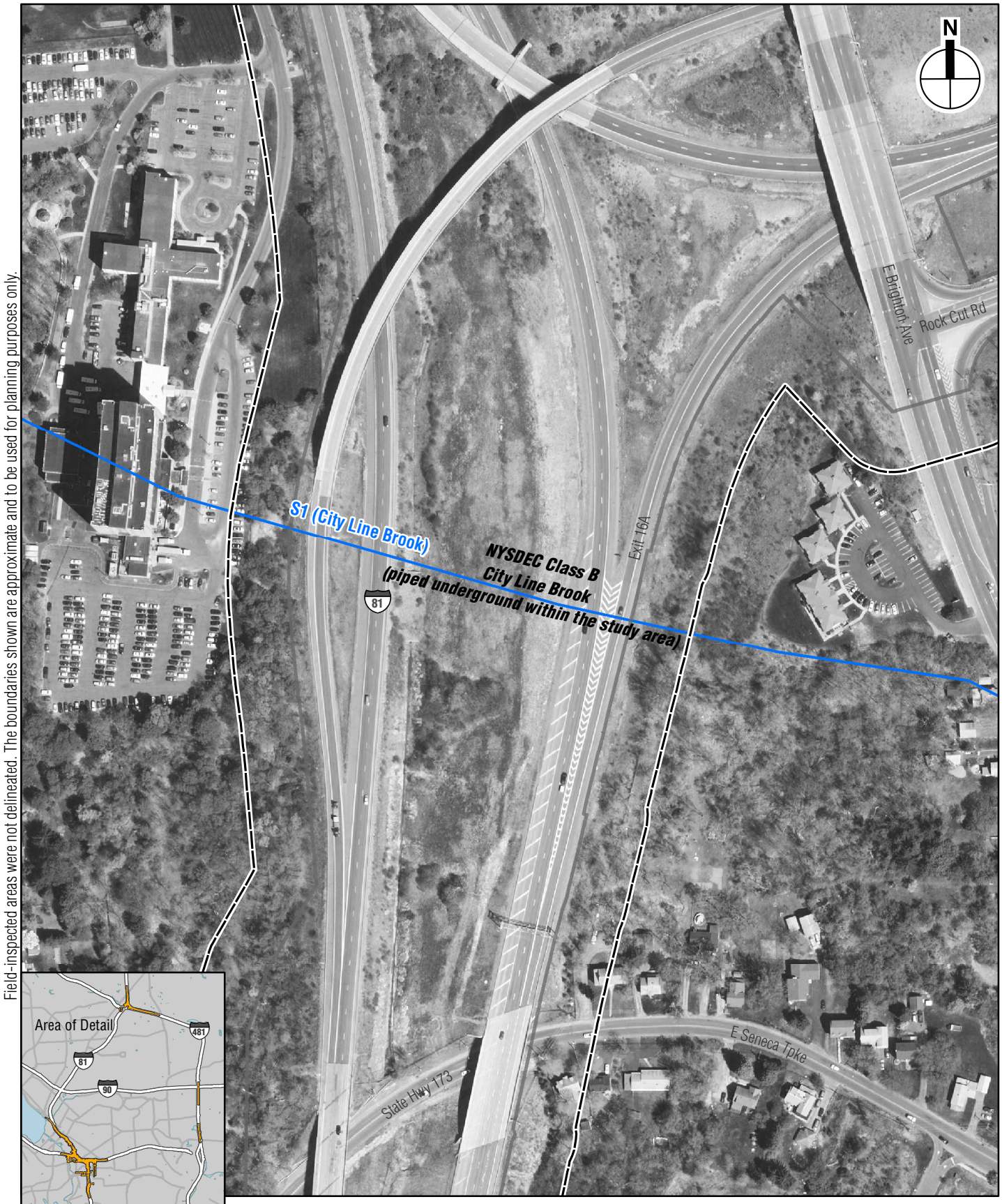
I-81 Viaduct Project

I-81 Viaduct Study Area

Wetlands and Surface Waters

Figure 2-3

Wetlands and Surface Waters
Attachment 2(c)
I-481 South Study Area
(Figure 2-4)



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

100-Foot Study Area

Limit of Disturbance

Remote Mapping

NWI Wetlands

NYSDEC Freshwater Wetlands

Field-Inspected Areas

Wetland

Surface Water

Culvert Inlet/Outlet

Sampling Point

PH# Photo Location and Direction

0 200 FEET

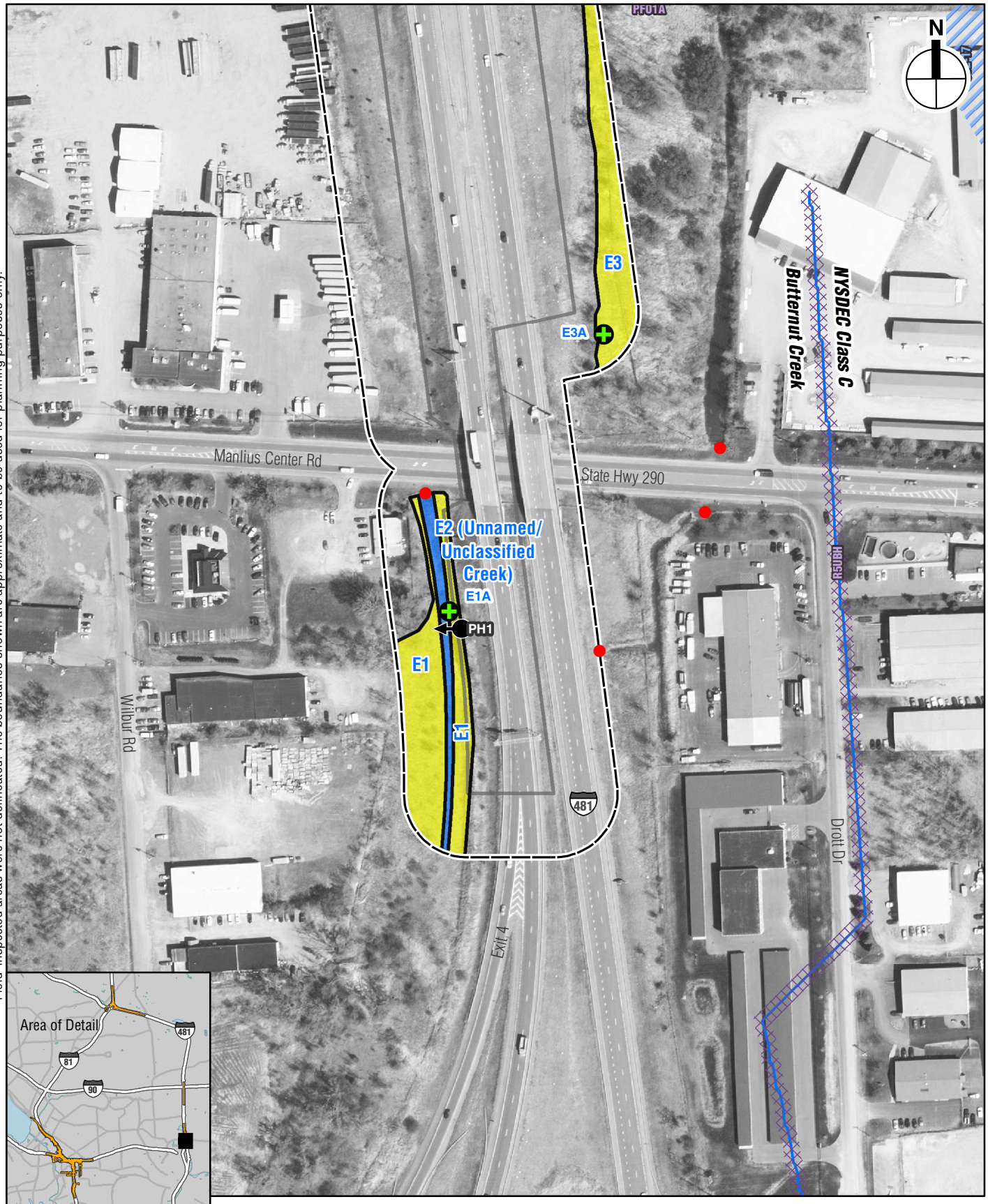
I-81 Viaduct Project

I-481 South Study Area

Wetlands and Surface Waters

Figure 2-4

Wetlands and Surface Waters
Attachment 2(d)
I-481 East Study Area
(Figures 2-5 – 2-9)



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

100-Foot Study Area

Limit of Disturbance

Remote Mapping

NWI Wetlands

NYSDEC Freshwater Wetlands

Field-Inspected Areas

Wetland

Surface Water

Culvert Inlet/Outlet

Sampling Point

Photo Location and Direction

PH#

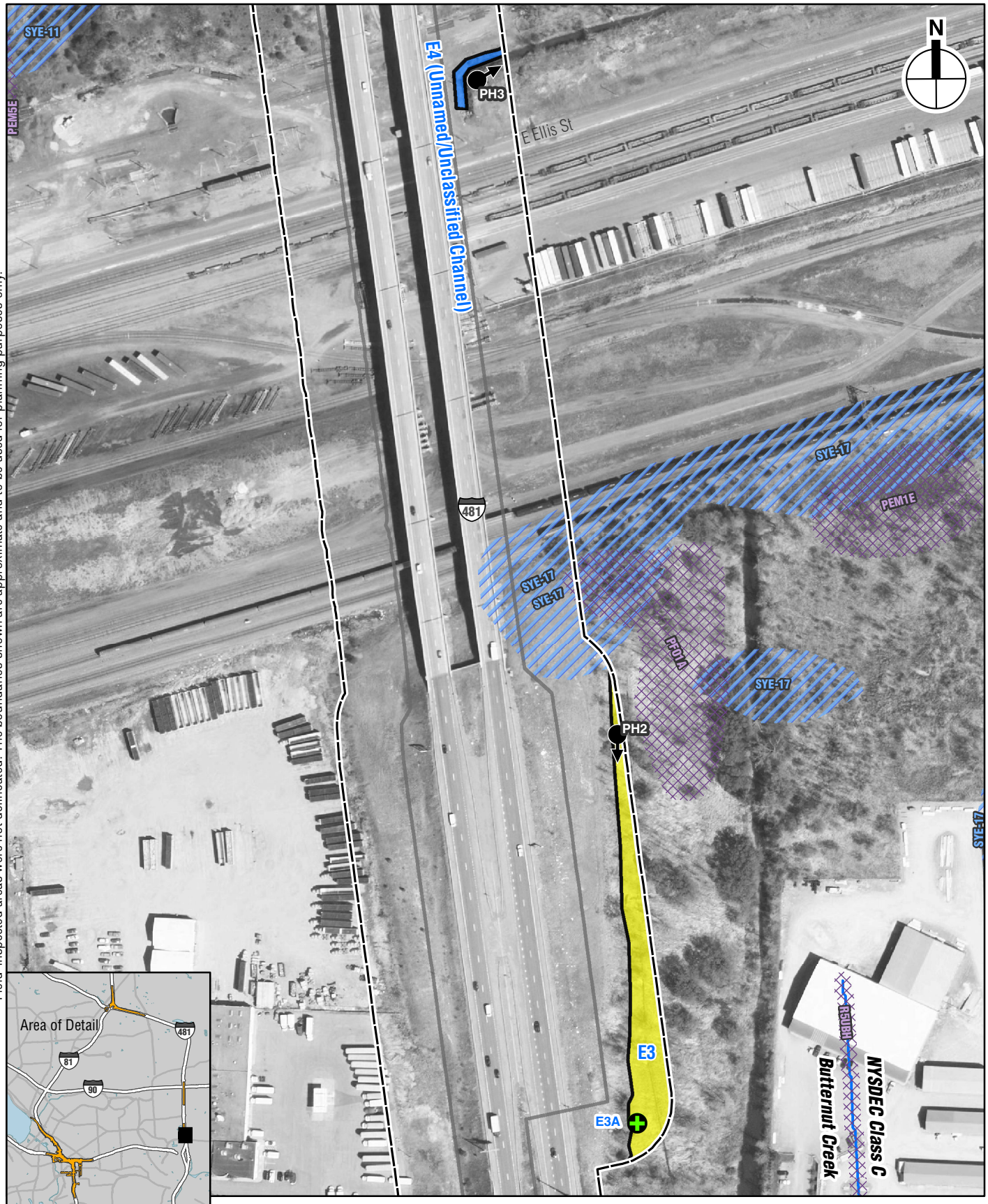
0 200 FEET

I-81 Viaduct Project

I-481 East Study Area

Wetlands and Surface Waters

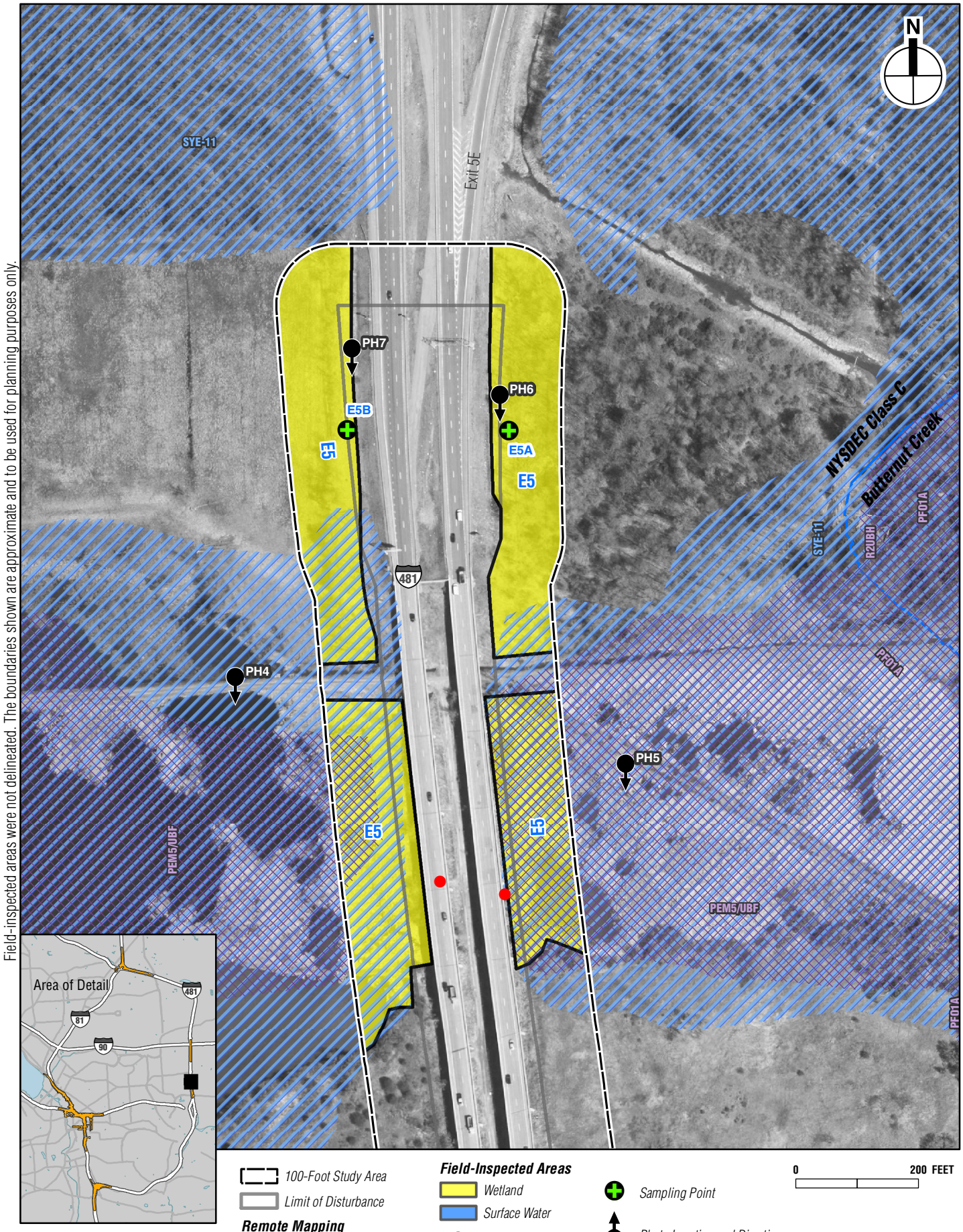
Figure 2-5



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 East Study Area

Wetlands and Surface Waters
Figure 2-6



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 East Study Area

Wetlands and Surface Waters
Figure 2-7

Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

100-Foot Study Area

Limit of Disturbance

Remote Mapping

NWI Wetlands

NYSDEC Freshwater Wetlands

Field-Inspected Areas

Wetland

Surface Water

Culvert Inlet/Outlet

Sampling Point

Photo Location and Direction

PH#

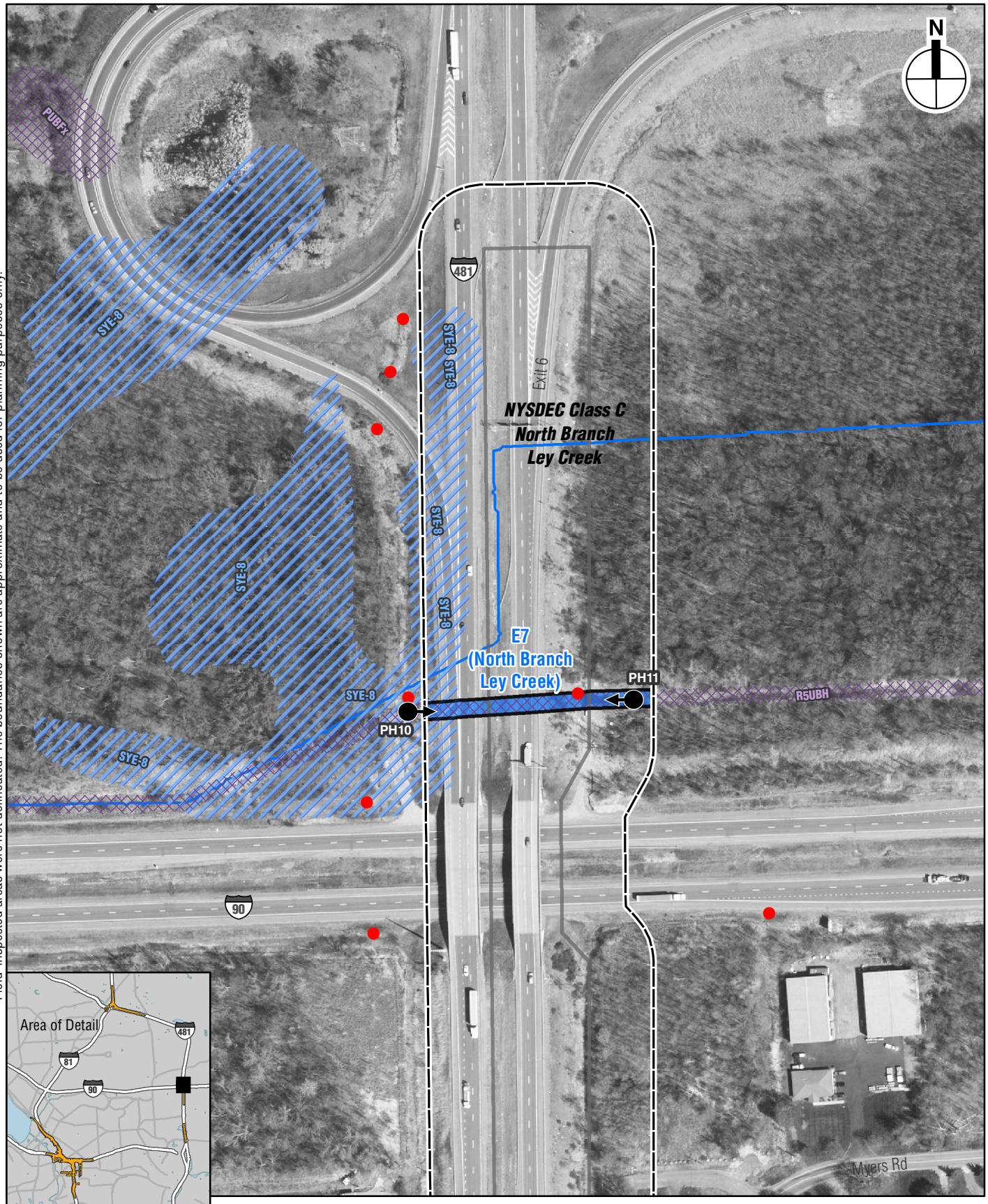
0 200 FEET

I-81 Viaduct Project

I-481 East Study Area

Wetlands and Surface Waters

Figure 2-8

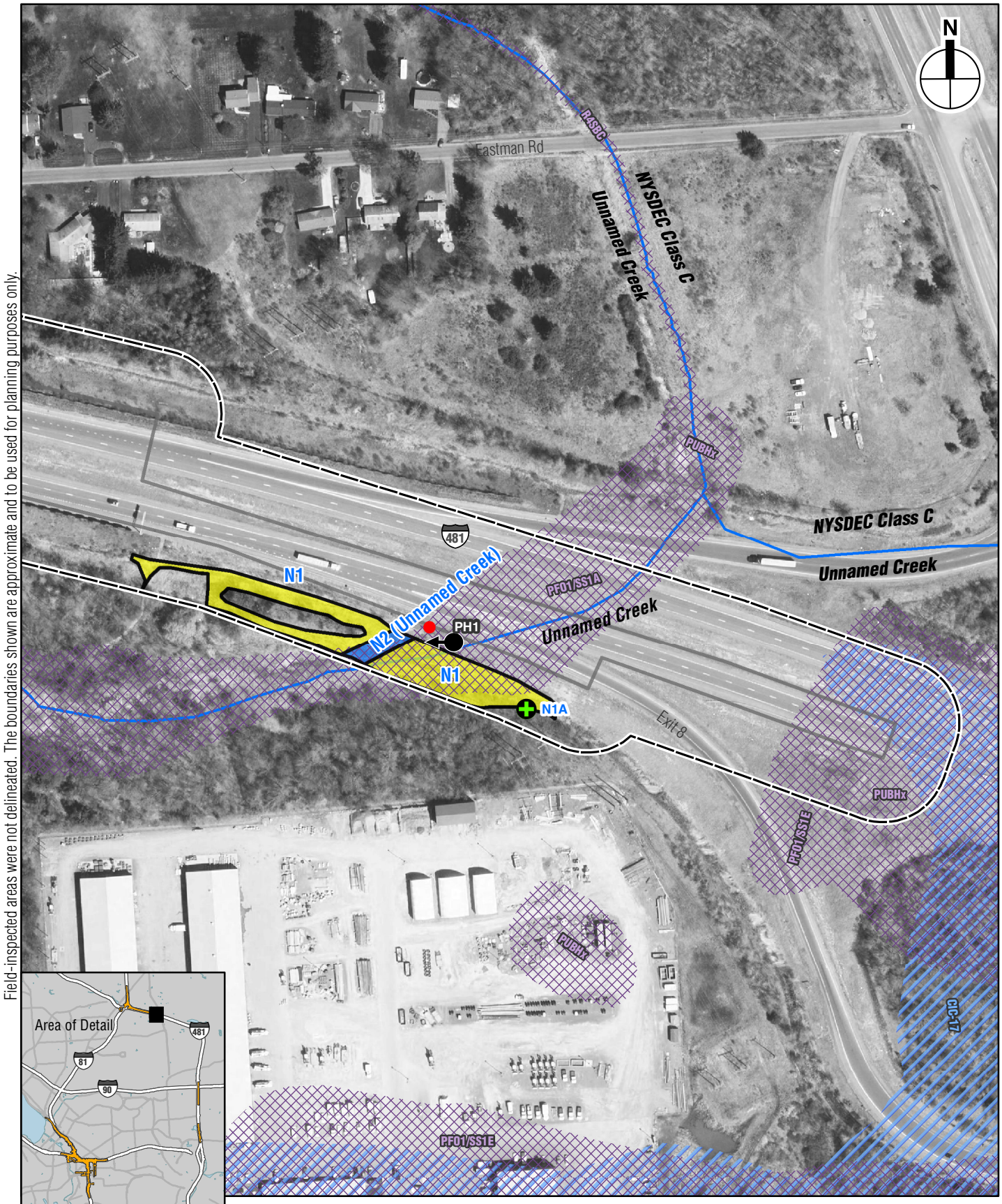


Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 East Study Area

Wetlands and Surface Waters
Figure 2-9

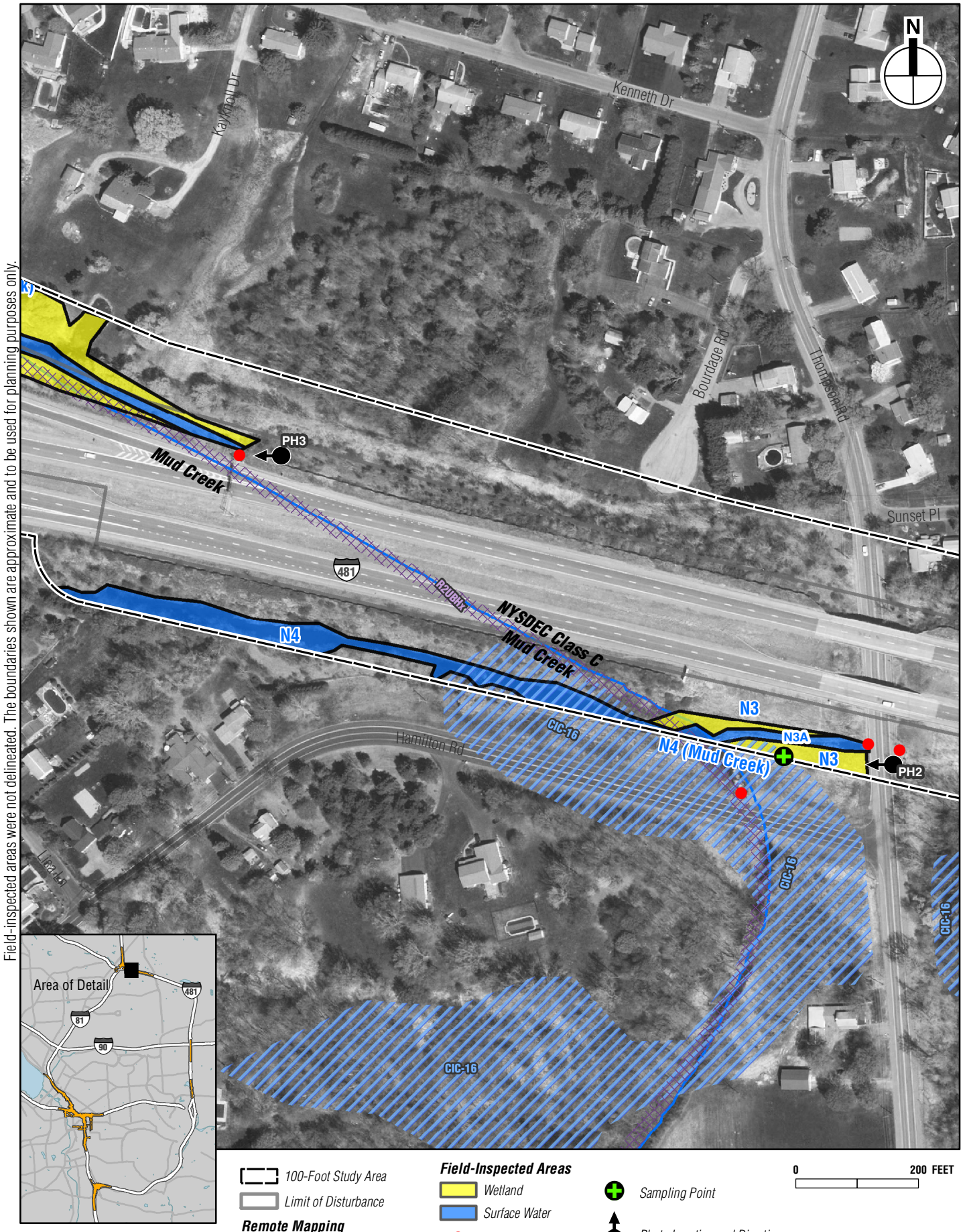
Wetlands and Surface Waters
Attachment 2(e)
I-481 North Study Area
(Figures 2-10 – 2-16)



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 North Study Area

Wetlands and Surface Waters
Figure 2-10



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

100-Foot Study Area

Limit of Disturbance

Remote Mapping

NWI Wetlands

NYSDEC Freshwater Wetlands

Field-Inspected Areas

Wetland

Surface Water

Culvert Inlet/Outlet

Sampling Point

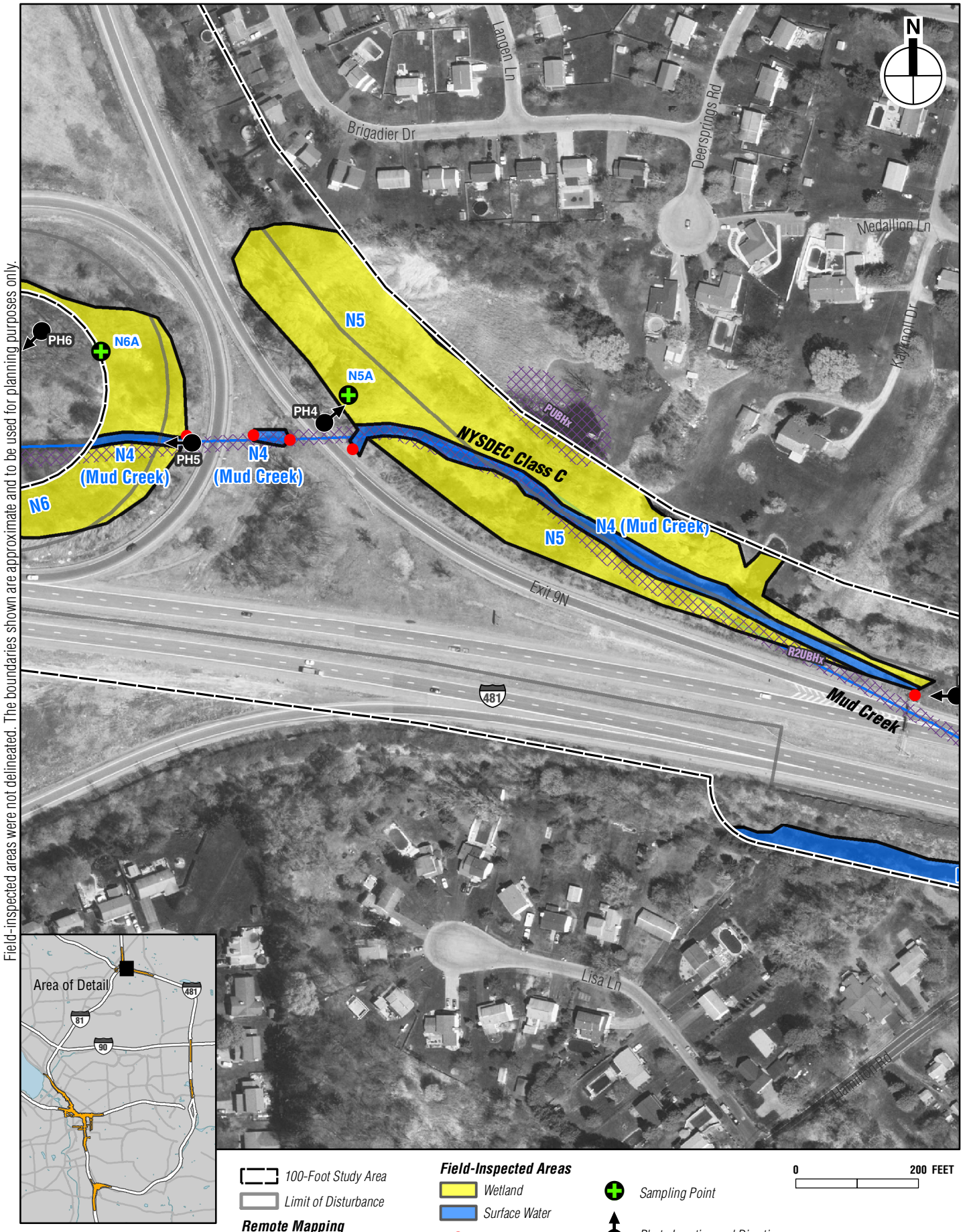
Photo Location and Direction

I-81 Viaduct Project

I-481 North Study Area

Wetlands and Surface Waters

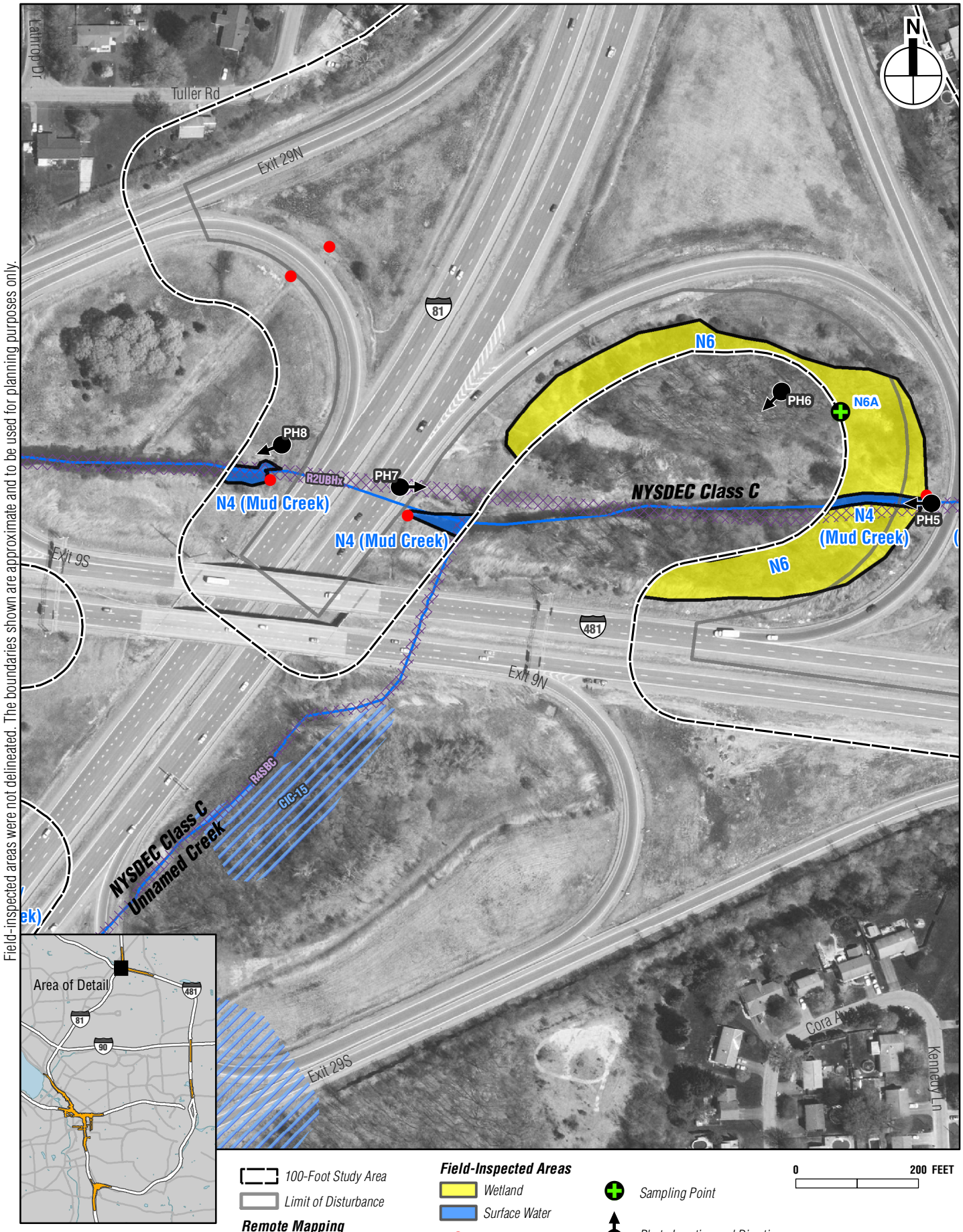
Figure 2-11



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 North Study Area

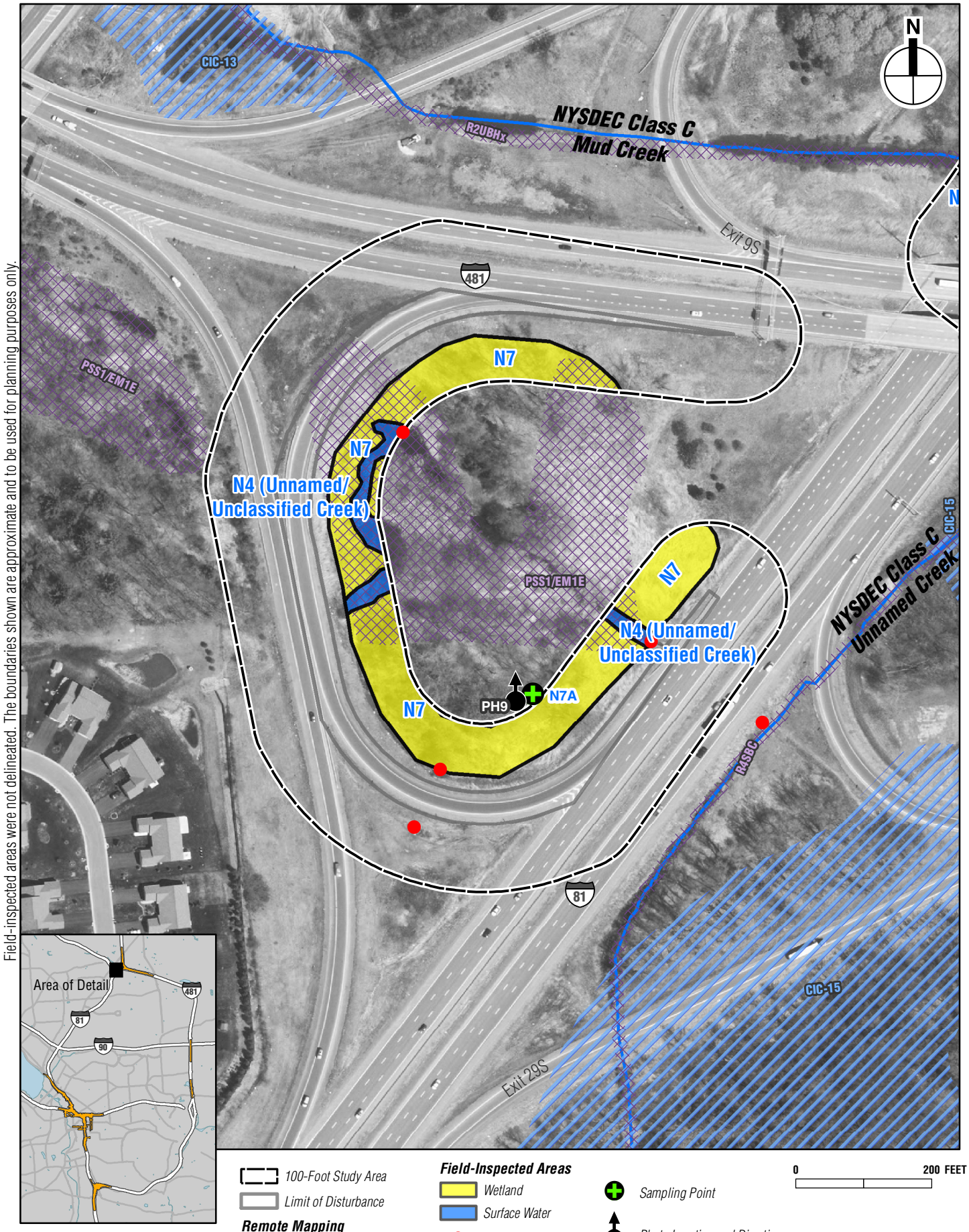
Wetlands and Surface Waters
Figure 2-12



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 North Study Area

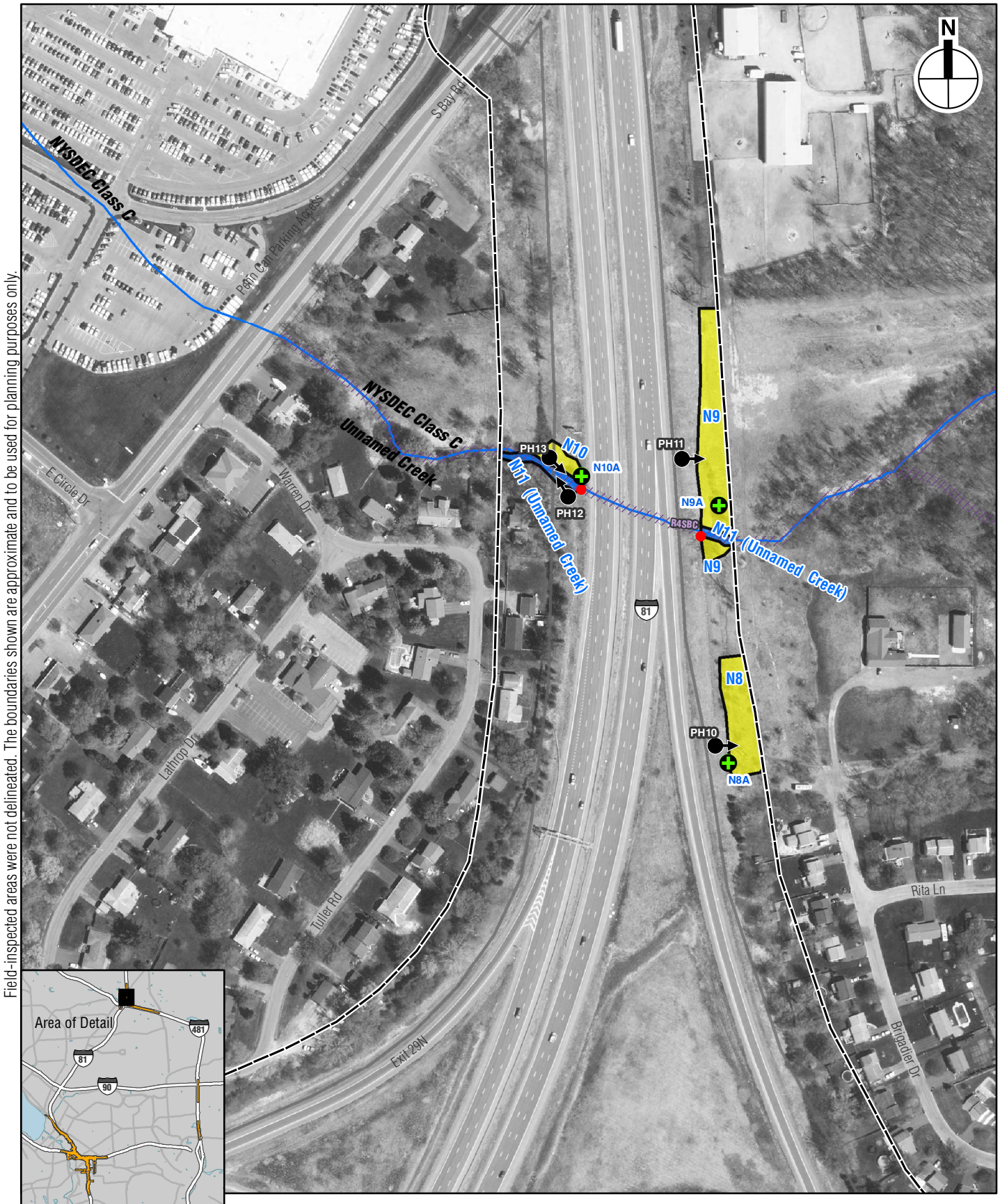
Wetlands and Surface Waters
Figure 2-13



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 North Study Area

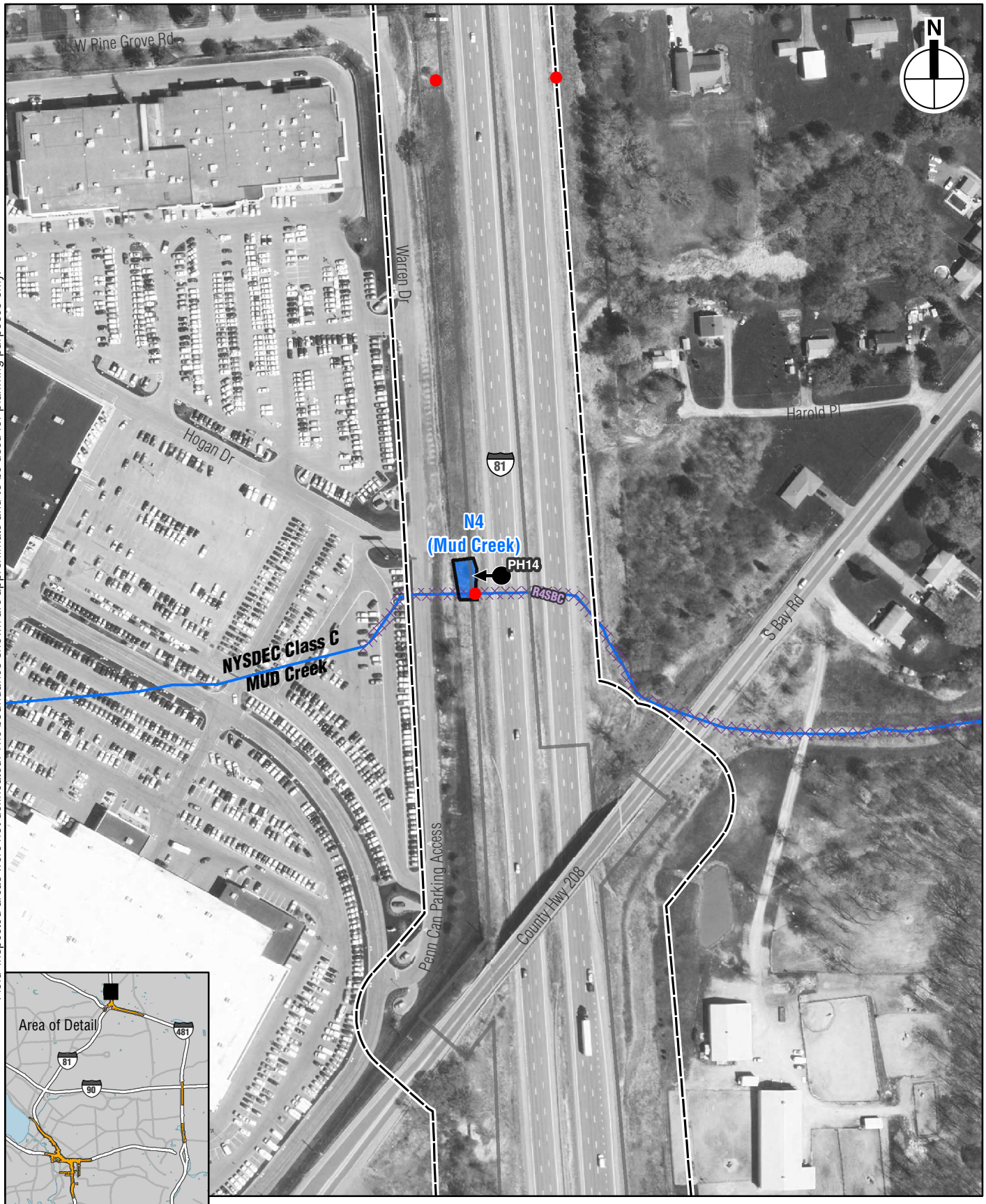
Wetlands and Surface Waters
Figure 2-14



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

I-81 Viaduct Project
I-481 North Study Area

Wetlands and Surface Waters
Figure 2-15



Field-inspected areas were not delineated. The boundaries shown are approximate and to be used for planning purposes only.

100-Foot Study Area

Limit of Disturbance

Remote Mapping

NWI Wetlands

NYSDEC Freshwater Wetlands

Field-Inspected Areas

Wetland

Surface Water

Culvert Inlet/Outlet

Sampling Point

PH# Photo Location and Direction

0 200 FEET

I-81 Viaduct Project

I-481 North Study Area

Wetlands and Surface Waters

Figure 2-16

Attachment 3

I-81 Viaduct Project

Photographic Documentation

3(a) – I-81 Viaduct Study Area

3(b) – I-481 East Study Area

3(c) – I-481 North Study Area

Photographic Documentation
Attachment 3a
I-81 Viaduct Study Area

PH1: V1
September 16, 2016
Facing west

PH2: V1
July 28, 2016
Facing northwest

PH3: V2 (Ley Creek)
July 28, 2016
Facing west

PH4: V3 (Onondaga Creek)
July 28, 2016
Facing south

PH5: V3 (Onondaga Creek)
July 28, 2016
Facing north

PH6: V3 (Onondaga Creek)
July 28, 2016
Facing northeast

PH7: V3 (Onondaga Creek)
July 28, 2016
Facing southwest

PH8: V3 (Onondaga Creek)
July 28, 2016
Facing south

PH9: V3 (Onondaga Creek)
July 28, 2016
Facing northwest

Photographic Documentation
Attachment 3(b)
I-481 East Study Area

PH1: E1/E2 (Unnamed Creek)
July 21, 2016
Facing west

PH2: E3
July 20, 2016
Facing south

PH3: E4 (Unnamed Channel)
September 20, 2016
Facing east

PH4: E5
July 20, 2016
Facing south

PH5: E5
July 20, 2016
Facing south

PH6: E5
July 20, 2016
Facing south

PH7: E5
July 21, 2016
Facing south

PH8: E6
July 20, 2016
Facing west

PH9: E6
July 20, 2016
Facing east

PH10: E7 (North Ley Creek)
July 19, 2016
Facing east

PH11: E7 (North Ley Creek)
July 19, 2016
Facing west

Photographic Documentation
Attachment 3(c)
I-481 North Study Area

PH1: N1/N2 (Unnamed Creek)
July 19, 2016
Facing west

PH2: N3/N4 (Mud Creek)
July 19, 2016
Facing west

PH3: N5
August 1, 2016
Facing west

PH4: N4 (Mud Creek)/N5
August 1, 2016
Facing northeast

PH5: N4 (Mud Creek)/N6
August 1, 2016
Facing west

PH6: N6
July 7, 2016
Facing southwest

PH 7: N4 (Mud Creek)/N6
July 8, 2016
Facing east

PH8: N4 (Mud Creek)
July 8, 2016
Facing southwest

PH9: N7
July 8, 2016
Facing north

PH10: N8
July 7, 2016
Facing east

PH11: N9
September 16, 2016
Facing east

PH12: N10
July 6, 2016
Facing northwest

PH13: N11 (Unnamed Creek)
September 16, 2016
Facing southeast

PH14: N4 (Mud Creek)
July 6, 2016
Facing west