Environmental and Planning Consultants

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Memorandum

To: Nicole Emmons (HH)

From: Jim Nash (AKRF)

Date: August 10th, 2012

Re: EPT Concord Resort – Resort Entry Road investigation area – Wetland Delineation

cc: C. Robbins (AKRF), N. Bourne (AKRF)

Summary:

This memorandum presents the results of a wetland delineation conducted by AKRF on June 7th, 2012 at the site of the proposed Resort Entry Road for the EPT Concord Resort Project. The investigation area included tax parcels 17.1, 19.2, 51, and 65.1. Wetlands were identified and delineated in accordance with the U.S. Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC) delineation methodologies.[1]

One wetland area was identified located principally within tax parcel 19.2. This wetland begins at the Route 17 right-of-way and extends northwards within the investigation area and continues offsite onto adjacent parcels to the north not owned/controlled by the applicant. The upland/wetland boundary of this onsite wetland was flagged in the field numbered sequentially A-1 to W-40 on its eastern side and A-41 to A-62 on its western side. In addition, two upland exclusion areas were identified within the wetland area and flagged E1-E8 and F1-F22 respectively. The attached sketch (Figure 1) shows the approximate location of these flags for your surveyors to survey-locate in the field.

Representatives from the USACE and the NYSDEC inspected and confirmed the wetland flag locations during site inspections conducted on 7/17/12 and 7/31/12 respectively. Site inspection reveals that the onsite wetland is contiguous with the NYSDEC-regulated wetland surrounding Concord Wetland #2. Therefore, the delineated wetland within the route of the Resort Entry Road is subject to both Federal and

[1] 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. 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

NYSDEC Freshwater Wetlands Delineation Manual (revised July 1995)

State wetland regulations (Section 404 of the Clean Water Act; Article 24 of the New York State Environmental Conservation Law).

Findings:

Wetlands identified in the investigation area consist of a closed canopy, forested hemlock-red maple wetland transitioning to a shrub and graminoid-dominated wetland closer to Route 17. The wetland occurs within a topographic depression beginning in the north offsite, and extending southwards as the land descends gradually in elevation towards Route 17. Several narrow, south-flowing meandering streams transect the onsite wetland.

The forested portion of the wetland complex consists of topographically level to gently sloping bottomland with pit/mound topography. Water-stained leaves and saturated soil occupy the depressions (pits) with the majority of the overstory trees rooted on the slightly higher ground (mounds). Eastern hemlock (*Tsuga Canadensis*) and red maple (*Acer rubrum*) co-occur and form a dense canopy. Overstory tree calipers range from 12-30+ inches with a subcanopy of smaller trees (typically eastern hemlock). Understory species include highbush blueberry (*Vaccinium corymbosum*), New York fern (*Thelypteris noveboracensis*), cinnamon fern (*Osmunda cinnamomea*), and starflower (*Trientalis borealis*). Expanses of sphagnum moss (*Sphagnum sp*.) occur in wetter portions of the forested wetland. Due to the pit/mound topography of the forested wetland, it exhibits a habitat mosaic of hydric soil and non-hydric soil where historic tree falls have created higher areas with less saturation. However, except for two upland exclusion areas delineated within the wetland, overall the habitat is predominantly wetland and was flagged as such. The southern portion of this wetland is an emergent, scrub-shrub wetland with saturated hydric soils and evidence of more frequent inundation. Sedges are dominant, with such species as *Carex intumescens*, *Carex scoparia*, *Carex stipata*, and *Carex crinita* occurring where the shrub layer is sparse. Additional herbaceous species common to this wetland area include sensitive fern (*Onoclea sensibilis*), false hellebore (*Veratrum viride*), and jewelweed (*Impatiens capensis*). Shrubs scattered throughout the wetland area include winterberry (*Ilex verticillata*), steeplebush (*Spirea tomentosa*) and highbush blueberry (*Vaccinium corymbosum*).

The wetland transitions to uplands as elevation increases to the east and west, with facultative upland species becoming predominant, including sugar maple (*Acer saccharum*), black birch (*Betula lenta*), juneberry (*Amelanchier arborea*), blackberry (*Rubus allegheniensis*), red spruce (*Picea rubens*), hayscented fern (*Dennstaedtia punctilobula*), clubmoss (*Lycopodium obscurum*), and other species.

Soils within the wetland meet indicators F3: Depleted Matrix and less commonly TF2: Red Parent Material. Bedrock is sandstone and shale of Devonian age. Where exposed or used as bedding material for roadways, this bedrock exhibits red (5YR or redder) hue throughout the project site. Therefore, use of indicator TF2 is warranted, but found to be unnecessary within the wetland areas.

Hydrology indicators include surface water, high water table, saturation in lower portions of the wetland and water stained leaves and saturation in the northerly, hemlock-red maple dominated forested wetland.

NWI Mapped Wetlands:

As shown in Figure 2, wetlands within the investigation area are mapped by the U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) as:

- PSS1E: Palustrine scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated.

Site inspection confirms this mapped wetland type and finds that an additional wetland type, palustrine forested wetland, extends northwards from the mapped wetland as discussed above.

NRCS Mapped Soils:

As shown in Figure 3, soils within the wetland area are mapped as Ra: Raynham silt loam and Ne: Neversink loam. These are both "poorly drained" soils that are classified as hydric (wetland) soils. The wetland area also encompasses a portion of the site mapped as MrB: Morris loam 3 to 8 percent slopes. This is a "somewhat poorly drained" soil.

Additional Information from JD Checklist:

- *Description of any current and/or historic land uses on the site:*

  The investigation area shows evidence of past building foundations, possibly farming or summer bungalow structures and shows disturbance related to the construction of Route 17 immediately adjacent. The forested portions of the site to the north exhibit a mature hemlock forest which was liked used for farming/pasture in the last century. It exhibits more open (less closed canopy) conditions on historic aerial photographs dating to the 1960's. Currently, the investigation area is undeveloped.

- *Watershed size, drainage area size (for each stream reach), average annual rainfall/snowfall*:

  Average annual rainfall for Monticello NY is 49 inches. As shown in Figure 4, the contributing watershed to the study area is approximately 119 acres in size.

- *Discussion of whether tributaries (streams) on the site are TNWs, perennial RPWs, seasonal RPWs, or non-RPWs. Include a description of general flow patterns, volume and frequency:*

  The overall 1500 acre Project Site is located within a subwatershed of the Neversink River (TNW), which is tributary to the Delaware River (TNW). The major drainage feature on the Project Site is Kiamesha Creek (RPW), which roughly bisects the Site between higher ground to the east and west occupied by two rounded hillsides. The Site also contains numerous ponds and lakes associated with Kiamesha Creek. Once leaving the site, Kiamesha Creek joins with Sheldrake Stream, which flows into the Neversink River, approximately one mile from the Project Site's easternmost boundary.

  However, unlike most of the Project Site, the wetlands within the Resort Entry Road investigation area discharge southward, through a 30" RCP pipe conveying flow under Route 17. Therefore these flows do not enter Kiamesha Creek but rather flows to the Neversink via an Unnamed Stream, as shown in Figure 4. The distance from the Resort Entry Road investigation area discharge point (at Route 17) to the Neversink River (TNW) is approximately 4.0 miles. From that point, the Neversink flows southwards an additional 33 miles until its confluence with the Delaware river (TNW).

- *Description of whether each wetland on the site either abuts or is adjacent to a tributary, identify which tributary (e.g. Wetland A directly abuts an unnamed tributary to Kayaderosseras Creek), and provide a discussion of the justification for this determination.*

  The wetland within the inspection area contains several narrow meandering rivulets roughly 1-2 feet in width. These rivulets were seen to contain standing water on most occasions during the spring/summer of 2012 and are presumed to be RPW's. Therefore the wetlands delineated onsite are adjacent/abutting RPW's and are presumed to be subject to USACE regulations. These rivulets are conveyed southwards beneath Route 17 in a 30" RCP pipe culvert as described above.

- *Description of tributary connections to a TNW for each aquatic resource on the site, including a discussion of wetland and/or other connections* . Description of tributary substrate composition (e.g. silts, sands, gravel, etc.)

  The wetlands delineated in the Resort Entry Road investigation area consist of scrub/shrub and wetland meadow habitat just prior to discharging beneath Route 17. The wetland contains now perennial stream, but has several small rivulets which meander through the level topography to a 30" culvert at the site boundary with Route 17. Here the flows discharge southwards, eventually

conveying runoff to an unnamed stream that is tributary to the Neversink River. The substrate of these rivulets is silt, high in organic matter. Upstream from the investigation area, these rivulets diverge into two (2) tributaries with more defined banks. These can be described are ephemeral streams and contain gravel/rock as one proceeds upslope on offsite properties.

- *Identify potential pollutants:*

  There are no known pollutants in the delineated wetlands. However, odors for the large septic field servicing the seasonal bungalow colony (visible on aerials adjacent to the onsite wetlands) were noted on numerous occasions.

- *Identify potential habitat for species:*

  Green frogs (*Rana clamitans)* were noted within the onsite wetland. Other herpetiles found elsewhere on the project site which may also frequent the Resort Entry Road wetland investigation area including wood frog (*Rana sylvatica*), eastern newt (*Notophthalmus viridescens*), northern dusky salamander (*Desmognathus fuscus*), and painted turtle (*Chrysemys picta*), as discussed in the EPT Concord DGEIS (7/24/12 Completeness, Lead Agency - Town of Thompson, NY).

Figures:

1. Approximate Wetland Flag Locations
2. NWI Mapped Wetlands
3. NRCS Mapped Soils
4. Watershed and Tributaries
5. Representative Site Photos

If you have any questions please don't hesitate to call.

James Nash

Wetland Ecologist – Technical Director

Predominant Vegetation Identified Within Option A Study Area:

red maple	Acer rubrum	FAC
sugar maple	Acer saccharum	FACU
Jack in the pulpit	Arisaema triphyllum	FACW-
yellow birch	Betula alleghaniensis	FAC
gray birch	Betula populifolia	FAC
fringed sedge	Carex crinita	OBL
bladder sedge	Carex intumescens	FACW+
broom sedge	Carex scoparia	FACW
awlfruit sedge	Carex stipata	OBL
hay scented fern	Dennstaedtia punctilobula	NL
intermediate woodfern	Dryopteris intermedia	FACU
American beech	Fagus grandifolia	FAC+
green ash	Faxinus pensylvanica	FACW
winterberry	Ilex verticillata	FACW+
jewelweed	Impatiens capensis	FACW
solf rush	Juncus effusus	FACW+
rare clubmoss	Lycopodium obscurum	FACU
shining clubmoss	Lycopodium lucidulum	FACW-
partridgeberry	Mitchella repens	FACU
sensitive fern	Onoclea sensibilis	FACW
cinnamon fern	Osmunda cinnamomea	FACW
red spruce	Picea rubens	FACU
white pine	Pinus strobus	FACU
swamp buttercup	Ranunculus hispidus	FAC-
great laurel	Rhododendron maximum	FAC
red Raspberry	Rubus idaeus	FAC-
broadleaf meadowsweet	Spirea tomentosa	FACW
New York Fern	Thelypteris noveboracensis	FAC
starflower	Trientalis borealis	FAC
eastern hemlock	Tsuga canadensis	FACU
highbush blueberry	Vaccinium corymbosum	FACW
false hellebore	Veratrum viride	FACW+

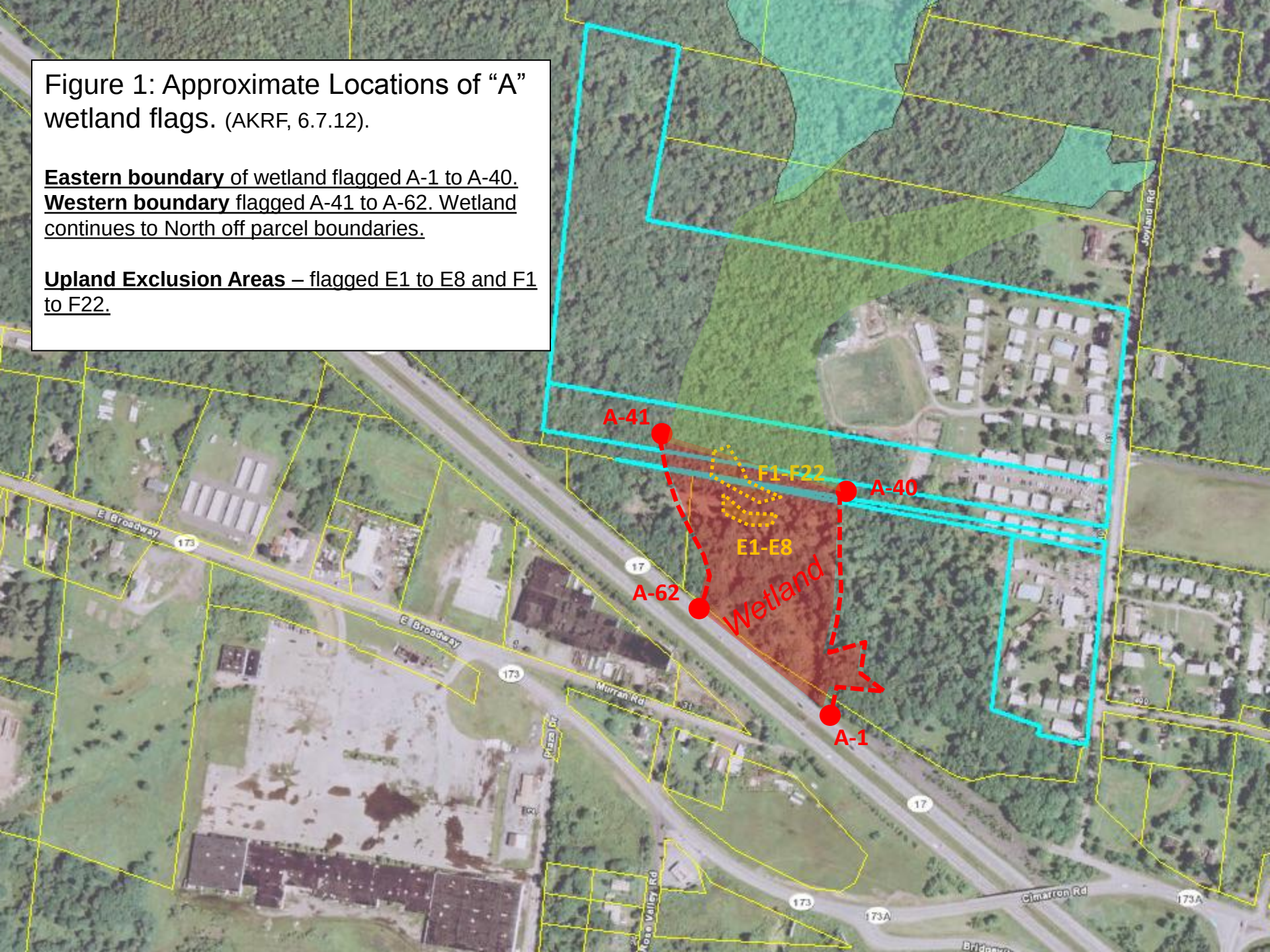


Figure 1: Approximate Locations of “A” wetland flags. (AKRF, 6.7.12).

Eastern boundary of wetland flagged A-1 to A-40. **Western boundary** flagged A-41 to A-62. Wetland continues to North off parcel boundaries.

Upland Exclusion Areas – flagged E1 to E8 and F1 to F22.

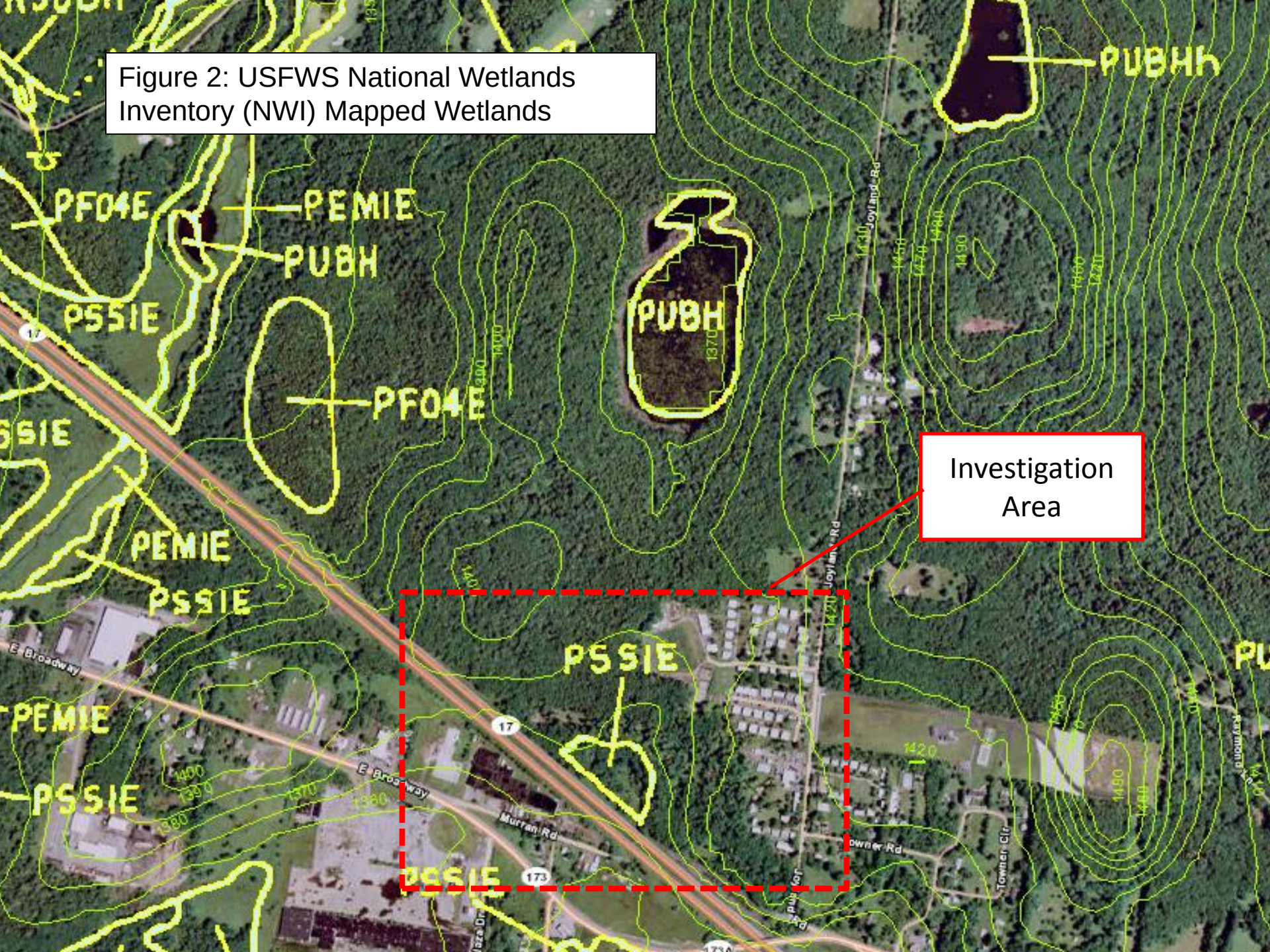


Figure 2: USFWS National Wetlands Inventory (NWI) Mapped Wetlands

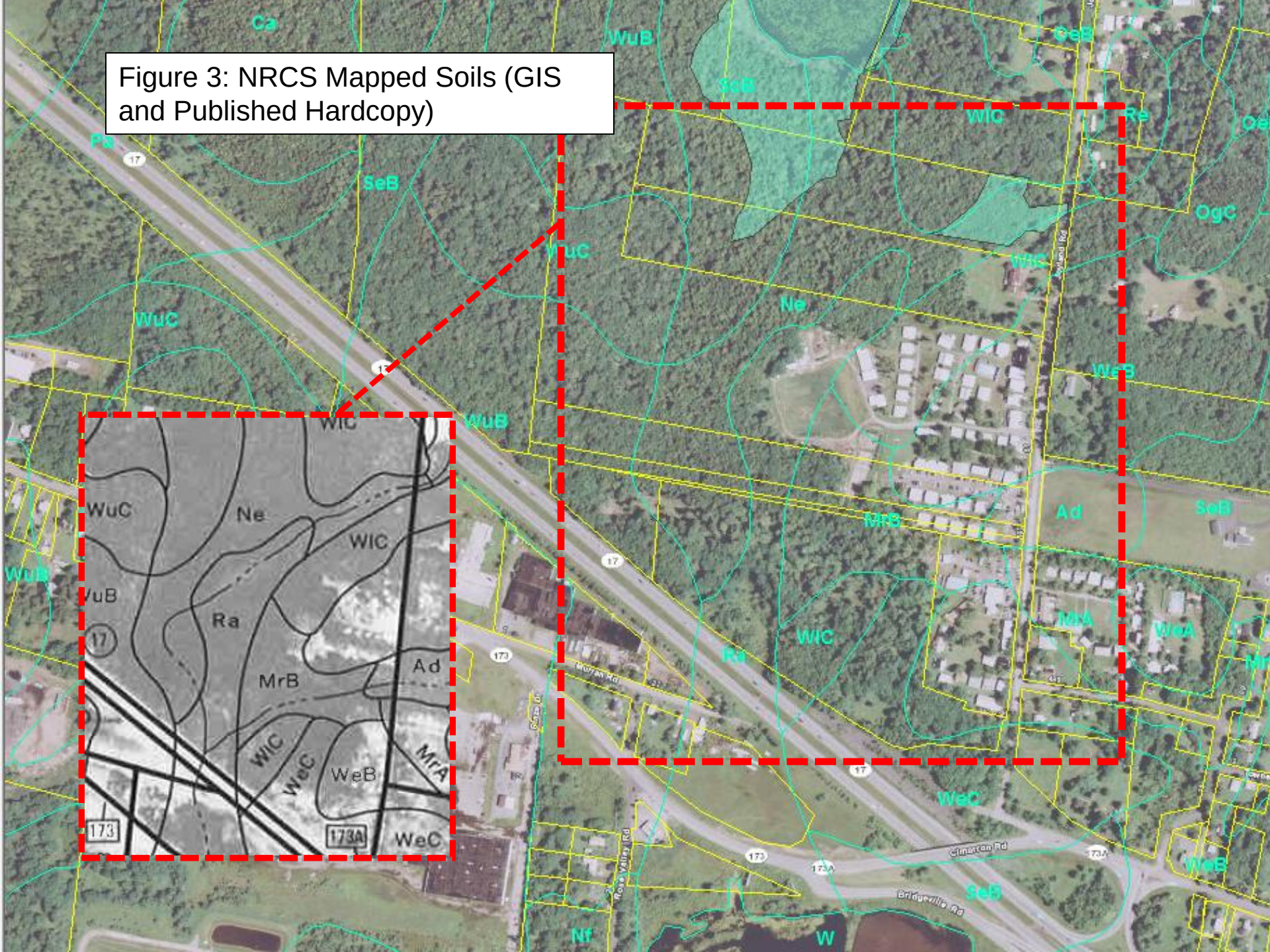
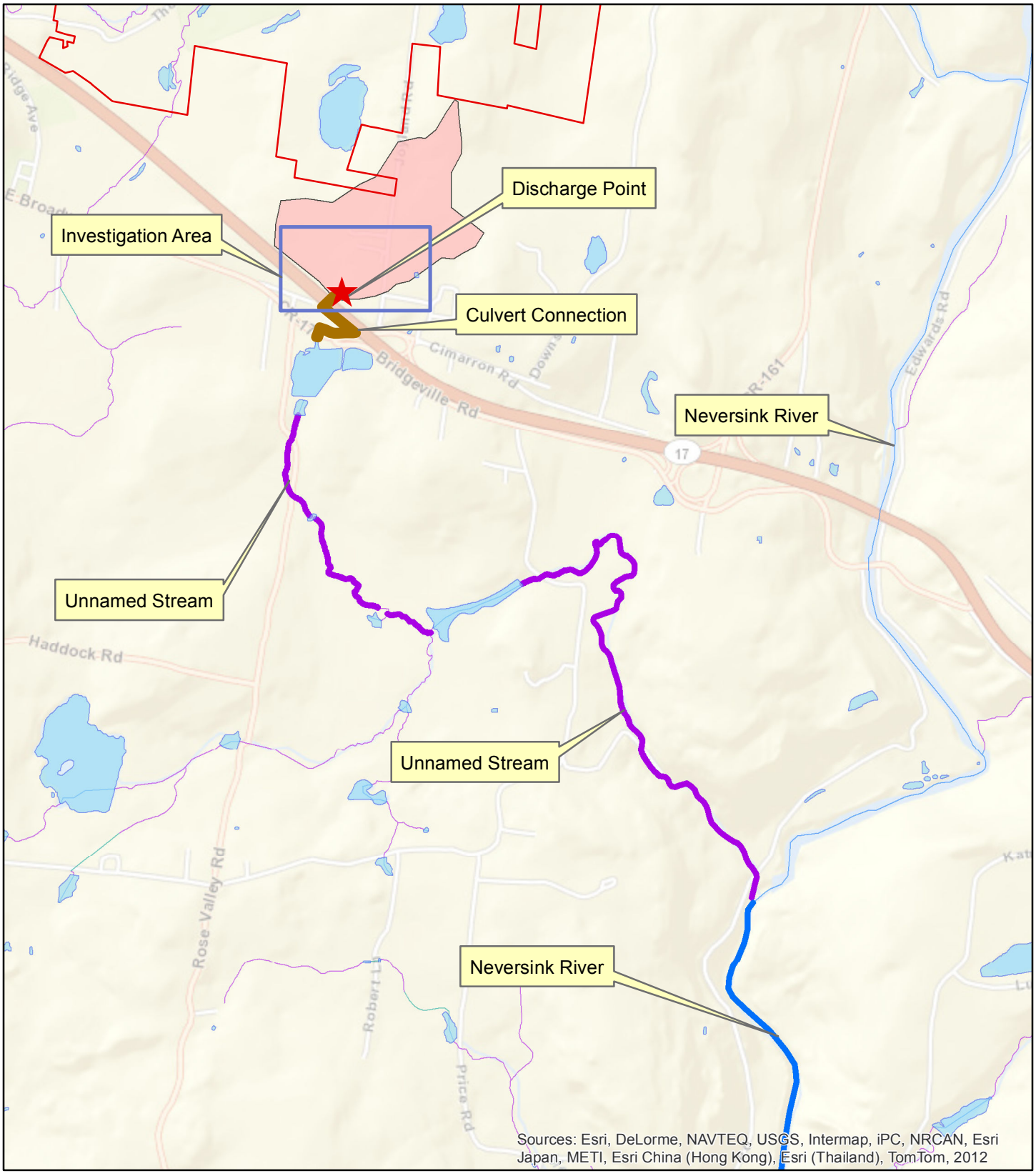


Figure 3: NRCS Mapped Soils (GIS and Published Hardcopy)



EPT Concord Resort Boundary

Approximate Watershed Area to Delineated Wetland (119 acres)

Flow Path

Unnamed Stream

Neversink River

N

0 1,500 3,000 Feet

Figure 4

Watershed and Tributaries

Photograph 1: Emergent/Shrub Scrub Portion of wetland – Rte 17 visible.

Photograph 2: Emergent portion of delineated wetland.

Photograph 3: Hemlock dominant portion with meandering stream.

Photograph 4: Typical pit/mound topography in hemlock wetland.

Predominant Vegetation Identified Within Option A Study Area:

red maple	Acer rubrum	FAC
sugar maple	Acer saccharum	FACU
Jack in the pulpit	Arisaema triphyllum	FACW-
yellow birch	Betula alleghaniensis	FAC
gray birch	Betula populifolia	FAC
fringed sedge	Carex crinita	OBL
bladder sedge	Carex intumescens	FACW+
broom sedge	Carex scoparia	FACW
awlfruit sedge	Carex stipata	OBL
hay scented fern	Dennstaedtia punctilobula	NL
intermediate woodfern	Dryopteris intermedia	FACU
American beech	Fagus grandifolia	FAC+
green ash	Faxinus pensylvanica	FACW
winterberry	Ilex verticillata	FACW+
jewelweed	Impatiens capensis	FACW
solf rush	Juncus effusus	FACW+
rare clubmoss	Lycopodium obscurum	FACU
shining clubmoss	Lycopodium lucidulum	FACW-
partridgeberry	Mitchella repens	FACU
sensitive fern	Onoclea sensibilis	FACW
cinnamon fern	Osmunda cinnamomea	FACW
red spruce	Picea rubens	FACU
white pine	Pinus strobus	FACU
swamp buttercup	Ranunculus hispidus	FAC-
great laurel	Rhododendron maximum	FAC
red Raspberry	Rubus idaeus	FAC-
broadleaf meadowsweet	Spirea tomentosa	FACW
New York Fern	Thelypteris noveboracensis	FAC
starflower	Trientalis borealis	FAC
eastern hemlock	Tsuga canadensis	FACU
highbush blueberry	Vaccinium corymbosum	FACW
false hellebore	Veratrum viride	FACW+

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Concord - option A City/County: Sullivan Sampling Date: 6/7/12
Applicant/Owner: EDT State: NY Sampling Point: A-1
Investigator(s): J. Nash Section, Township, Range: Thompson
Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): concave / sloping
Slope (%): ~5% Lat: Long: Datum:
Soil Map Unit Name: Ra: Raynham NWI classification: PSS/E
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 ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ✓	No ____	

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)

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X 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)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 0 - 6"
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0"

Wetland Hydrology Present? Yes X No ____

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

Remarks:

Graminoid, scrub/shrub wetland w/ meandering stream/rivulets.

VEGETATION – Use scientific names of plants.

Sampling Point: A1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple (Acer rubrum)	30	Y	FAC
2. Betula alleghaniensis	10	N	FAC
3.			
4.			
5.			
6.			
7.			
	40 = Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1. Ilex verticillata	30	Y	FACW+
2. Vaccinium corymbosum	30	Y	FACW
3.			
4.			
5.			
6.			
7.			
	60 = Total Cover		

Herb Stratum (Plot size:)			
1. Carex intumescens	20	Y	FACW+
2. Carex scoparia	20	Y	FACW
3. Carex tomentosa	20	N	FACW
4. Carex crinita	15	N	OBL
5. Onoclea sensibilis	30	Y	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105 = 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: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 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: A1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/1							organic / sapric
10-16+	10YR 4/2		10YR 5/6	>10				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)
- ☐ Stripped 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)

Indicators for Problematic Hydric Soils[3]:

- ☐ 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**)
- ☐ 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 (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Concord - Option 1A City/County: Sullivan Sampling Date: 6/7/12

Applicant/Owner: EPT State: NY Sampling Point: A-2

Investigator(s): J. Nash Section, ~~Township~~, Range: Thompson

Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): Level

Slope (%): < 5% Lat: Long: Datum:

Soil Map Unit Name: Xe: Nevervink loam NWI classification: Unmapped

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 X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____

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

Forested / Old Growth w/ E. hemlock regen, codominant w/ red maple.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Sparsely Vegetated Concave Surface (B8)
- X 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)

Secondary Indicators (minimum of two required)

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- ___ Drainage Patterns (B10)
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- X Geomorphic Position (D2)
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- X 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? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

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

Remarks:

- Pit / mound topography w/ hemlock on the mounds.

VEGETATION – Use scientific names of plants.

Sampling Point: A2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga canadensis	70	Y	FACU
2. Acer rubrum	50	Y	FAC
3.			
4.			
5.			
6.			
7.			
	130	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. Vaccinium corymbosum	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	

Herb Stratum (Plot size:)			
1. Coptis groenlandica	20	Y	FACW
2. Thelypteris noveboracensis	50	Y	FAC
3. Osmunda cinnamomea	30	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= 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: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (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:

- [ ] Rapid Test for Hydrophytic Vegetation
- [x] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] 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 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: A2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1		—					
3-5	10YR 5/1		5YR 6/8	10%				
6-12+	10YR 6/2		5YR 5/6					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)
- ☐ Stripped 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)

Indicators for Problematic Hydric Soils[3]:

- ☐ 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**)
- ☐ 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 (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Soil in "pits" meets F3. Mounds in variable topography 3/1 to 4/4 to 5/6 w/o/+ mottles. However, overall "habitat" is a mosaic of 75%+ wetland.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: CONCORD – Option A City/County: Sullivan Sampling Date: 6/7/12

Applicant/Owner: FM State: NY Sampling Point: A-3

Investigator(s): J. Nash Section, Township, Range: Thompson

Landform (hillslope, terrace, etc.): gently sloping Local relief (concave, convex, none): _____

Slope (%): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: 1011C: Wellsboro & Wurtsboro, strongly sloping, extr. stony NWI classification: unmapped

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 X 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 _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X (TP2)	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____

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

Forested slope immediately east of wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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)
- ___ 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)

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 X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharum	30	Y	FACU
2. Betula lenta	5	N	FACW
3. Pinus strobus	20	Y	FACU
4. Fagus grandifolia	20	Y	FACU
5.			
6.			
7.			
	75	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. Rubus idaeus	40	Y	FACU
2. Berberis thunbergii	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
	60	= Total Cover	

Herb Stratum (Plot size:)			
1. Anthoxanthum odoratum	20	Y	FACU
2. Dactylis glomerata	20	Y	FACU
3. Dennstaedtia punctilobula	60	Y	NL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= 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: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 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 X

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

SOIL Sampling Point: A3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	5YR 3/1						loam	
1-2	5YR 4/4						"	
2-4	5YR 4/4		4/6	10%			"	
4-6	5YR 4/3		4/6	10%			"	
6-10							"	
10+	—						—	Rock

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)
- ☐ Stripped 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)

Indicators for Problematic Hydric Soils[3]:

- ☐ 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**)
- ☐ 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 (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10"

Hydric Soil Present? Yes ____ No X

Remarks:

- Although some areas meet TF2 Red Parent Material, this data point on slope east of wetland shows no hydrology and fails the vegetation test.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: CONCORD - OPTION A City/County: Sullivan Sampling Date: 6/7/12

Applicant/Owner: EPT State: NY Sampling Point: A4

Investigator(s): J. Nash Section, Township, Range: Thompson

Landform (hillslope, terrace, etc.): Gently sloping Local relief (concave, convex, none): _____

Slope (%): 5-10% Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: WuB Wurtsboro loam NWI classification: unmapped

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____

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

Upland forest at western edge of delineated wetland. Transitions to S. maple/o. beech

HYDROLOGY

Wetland Hydrology Indicators:

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)
- ___ 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)

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): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	Y	FAC
2. Pinus strobus	20	Y	FACU
3. Picea rubens	20	Y	FACU
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Herb Stratum (Plot size:)			
1. Dennstaedtia punctilobula	30	Y	NL
2. Lycopodium obscurum	20	Y	FACU
3. Dryopteris intermedia	15	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= 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: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 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 X

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

SOIL

Sampling Point: A4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	5YR 3/1		—				loam	
1-6	5YR 3/4		—				"	
6-12	5YR 5/8		5YR 4/4	50%			"	
12+	5YR 4/4						"	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)
- ☐ Stripped 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)

Indicators for Problematic Hydric Soils[3]:

- ☐ 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**)
- ☐ 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 (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: