

Overlook Wetlands Preserve LaGrange, NY

A site in the Hudson-Wappinger Service Area

Prepared by: The Wetland Trust
4729 State Route 414, Burdett, NY 14818

www.thewetlandtrust.org

Submitted to:
United States Army Corps of Engineers
Internal Review Team

October 2018



Table of Contents

1. Introduction and Objectives 4

2. Site Selection 4

3. Site Protection Instrument 4

4. Credit Accounting..... 6

 4.1 Determination of credits 6

 4.2 Credit release schedule..... 6

5. Baseline Ecological Characteristics 8

 5.1 Historic and existing plant communities, including wetlands 8

 5.2 Site land use history, including structures 10

 5.3 Soil descriptions..... 16

 5.4 Historic and Existing Hydrology..... 16

 5.5 Animal and plant species including endangered species18

6. Mitigation Work Plan 20

 6.1 Geographic boundaries20

 6.2 Construction methods, timing and sequencing 20

 6.3 Grading plan, including elevations and slopes of substrate 20

 6.4 Methods for establishing desired plant community 26

 6.5 Sources of water, connections to existing waters and upland runoff 26

 6.6 Invasive species 26

 6.7 Soil management and erosion control measures 28

7. Maintenance Plan 28

8. Performance Standards 28

 8.1 First Interim Goal Releases 15% of Credits..... 29

 8.2 Second Interim Goal Releases 15% of Credits 29

 8.3 Third Interim Goal Releases 15% of Credits 29

 8.4 Final Vegetative Goal Releases 25% at the End of the 10-Year Monitoring Period 29

9. Monitoring Requirements 29

 9.1 Monitoring report requirements 29

 9.2 Reporting schedule 30

10. Long-term Management Plan, Including Financial Arrangements 31

11. Adaptive Management Plan, Including Addressing Invasive Species Control 31

12. Financial Assurances 32

References 33

Table of Contents

List of Figures

Figure 1: Overlook Wetlands Preserve Mitigation Site Location..... 5

Figure 2: Overlook Property Mitigation Site Plan..... 7

Figure 3: Overlook Property Landuse..... 9

Figure 4: Overlook Wetland Delineation.....11

Figure 5: 1938 Aerial Photo.....12

Figure 6: 1940 Aerial Photo.....12

Figure 7: 1956 Aerial Photo.....13

Figure 8: 1970 Aerial Photo.....13

Figure 9: 2016 Aerial Photo.....14

Figure 10: Overlook Property Soils Map..... 17

Figures 11-15 Areas A-E Grading Plans..... 21

Figure 16: Overlook Property Mitigation Areas Watershed..... 27

List of Tables

Table 1: Credit Generation 6

Table 2a: Wildlife Species Identified..... 18

Table 2b: Bird Species Identified..... 19

Table 3: Construction Methods, Timing and Sequencing.....20

Table 4: List of Species to be Planted at Mitigation Site.....26

Table 5: Reporting Schedule30

List of Appendices

- Appendix A: Wetland Delineation Report
- Appendix B: Supplemental Site Photos Including Photo Location Map
- Appendix C: Overlook Site Soil Investigation Report

1. Introduction and Objectives

The Hudson River Wetland Mitigation Bank is an umbrella bank, providing for multiple sites to maximize each service area's mitigation services. The Instrument will activate after approval and one service area's site mitigation plan is approved by the DE acting in consultation with the Internal Review Team (IRT). The Overlook Wetlands Preserve is the first plan submitted and if approved, will activate the Hudson River Bank Instrument and the Hudson-Wappinger Service Area (SA). The plan provides all necessary site descriptions and actions to be taken as required by Federal Register Volume 73, Number 70, Part 332.4. The remaining three service areas will activate after each SA has a site mitigation plan approved; all site plans are submitted for public comment and IRT review and approval.

The TWT Overlook Wetlands Preserve is a biologically diverse site. Careful restoration efforts will be undertaken to increase the wetland functionality on the property with a special emphasis to maximize scrub shrub wetlands. This initial plan will reestablish, establish, rehabilitate, and/or enhance wetlands for mitigation credits;

The objectives of this plan include:

- a. Develop mitigation credits to meet Hudson-Wappinger Service Area needs.
- b. Reestablish, establish, enhance, and rehabilitate the functions and services of wetlands on the site.
- c. Provide for long-term sustainability of a biologically diverse site.
- d. Provide for a long-term research site for aquatic wildlife studies.

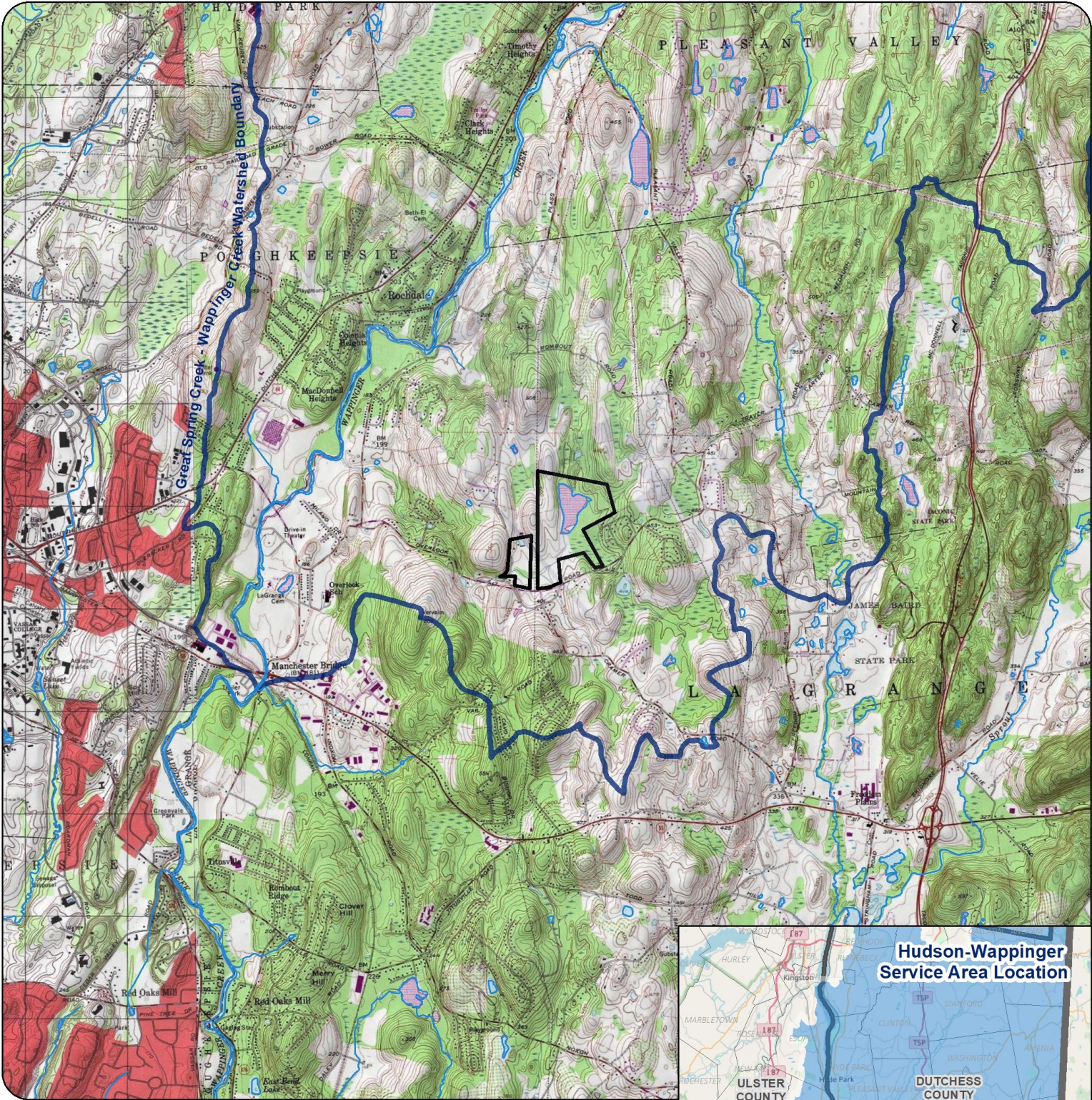
2. Site Selection

TWT owns 159.8 acres of land at the junction of Rombout and Overlook roads in the Town of LaGrange, Dutchess County and located in the 8-digit HUA 02020008, Hudson-Wappinger Creek, (Latitude/Longitude = 41.698533, -73.830013 and Figure 1). This site was selected for its substantial size that provides for long-term stability and its existing large wetland complex that holds a diverse assemblage of plants and animals. The site has tremendous potential because increasing wetland acres, functions, and associated habitats will provide for critical components of the wetland biodiversity. There is potential for enlarging the protected holdings to further increase its substantial value. A large block, 600 acres of undeveloped and roadless mixed farmland, wetland and woodlands includes and surrounds the preserve, and may be a target for conservation as bank credits sell in order to further increase the value of site.

3. Site Protection Instrument

The Wetland Trust (TWT), 4729 State Route 414 Burdett, NY 14818, a 501(c)3 Corporation whose mission is the protection, conservation, and restoration of wetlands. TWT permanently owns, fee simple, approximately 160 contiguous acres known as Overlook Wetlands as described in this

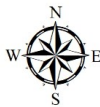
Figure 1: Overlook Wetlands Preserve Mitigation Site Location



Legend

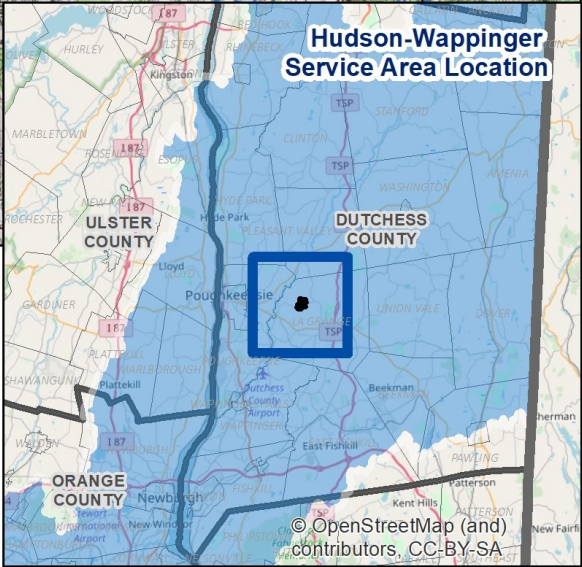
- Property Boundary - 159.8 acres
- 12-digit Watershed Boundary

0 1,625 3,250 6,500 9,750 13,000 Feet



Property Location

Property Centroid Lat/Lon: 41.697, -73.8316
Town of LaGrange, Dutchess County
Northeast of the intersection of Rombout road and Overlook Road
Hudson-Wappinger Service Area



0 3.25 6.5 13 19.5 26 5 Miles

mitigation plan. TWT plans to describe and delineate most of this parcel as a Hudson River Bank Mitigation Site (Figure 2 and record in Dutchess County, NY a USACE approved third party conservation easement, naming the USACE and **The Wetland Conservancy, P.O. Box 220, Burdett, NY 14818-0220**, a 501(c)3 nonprofit as a third-party entity to be notified in the case of violations. TWT is the landowner and Bank Sponsor, which provides for an additional layer of protection, as any protection violation will also impact the viability of the Sponsor's Bank Mitigation Instrument.

4. Credit Accounting

4.1 Determination of credits

The District Engineer (DE) acting in consultation with the IRT will determine credits based on wetland acres that meet or exceed performance standards and the credit ratios when this plan is approved and more specifically described in Section 8. The DE acting in consultation with the IRT will use additional determinations such as adequate buffers of at least 50 meters, where credit production may be reduced, and any available assessment tools, using a sliding scale of quality based on the assessment of functions and services. A table of credit releases has been developed with this plan, and it will be modified as yearly monitoring provides specific information on the size and quality of the wetlands and upland buffers being developed.

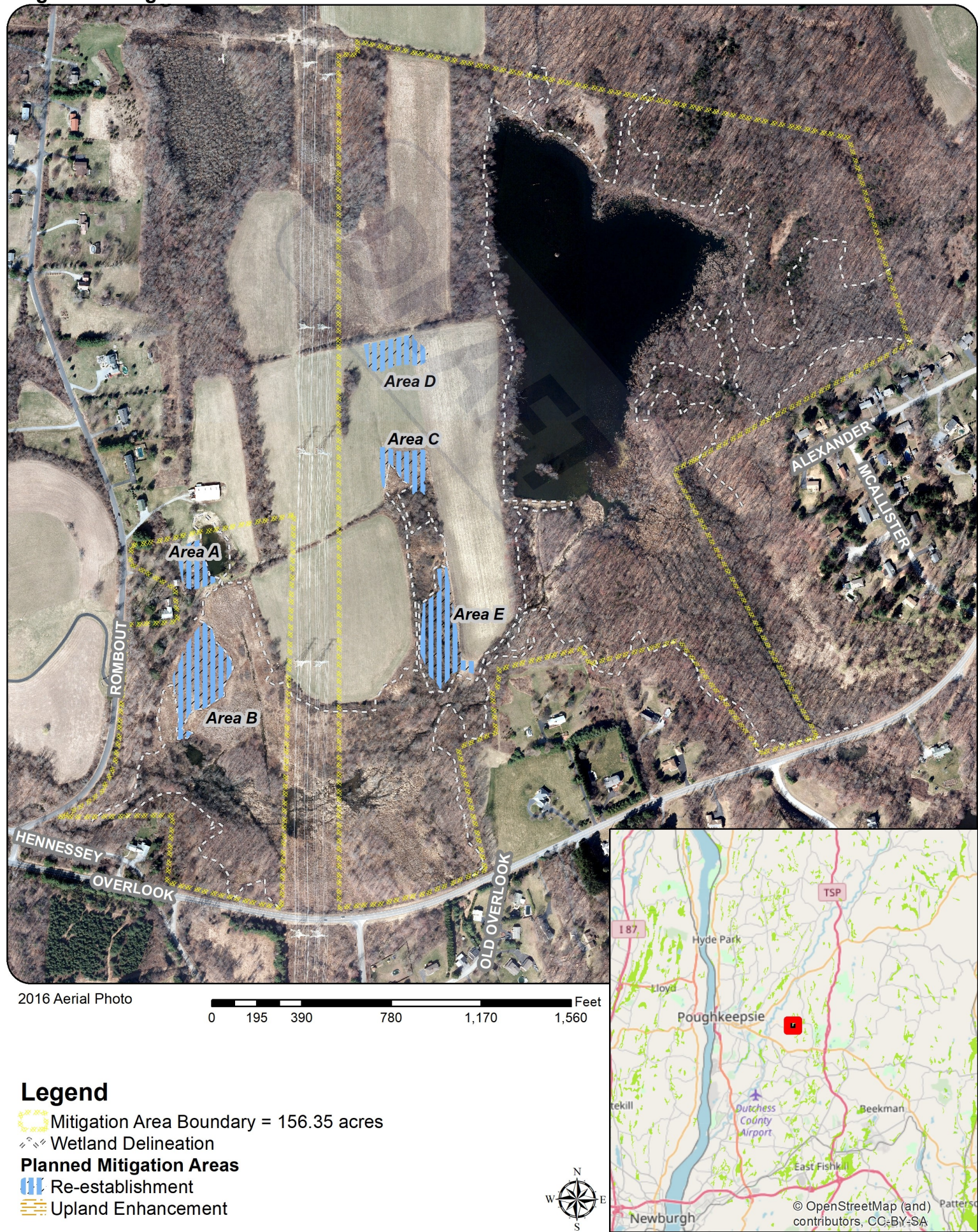
Table 1 Credit Generation: based on wetland type and size featured in Figure 2

Area	Cover type	Acres	Mitigation type	Ratio used	Credits
A	Palustrine Scrub Shrub	0.53	Re-establishment	1:1	0.53
B	Palustrine Scrub Shrub	1.63	Re-establishment	1:1	1.63
C	Palustrine Scrub Shrub	0.68	Re-establishment	1:1	0.68
D	Palustrine Scrub Shrub	0.59	Re-establishment	1:1	0.59
E	Palustrine Scrub Shrub	1.26	Re-establishment	1:1	1.26
Total				Total	4.69

4.2 Credit release schedule

TWT anticipates this site will generate 4.69 credits. Credit release will coincide with satisfaction of success criteria and other mileposts. Twenty percent (0.94) of the total credits will be released upon approval of this mitigation plan, documentation of legal preservation, through a conservation easement recorded with the parcel deed, and establishment of financial assurances. Ten percent (0.47) of the total credits will be released after submittal and approval of the as-built report. Three interim credit release requests will coincide with monitoring activities described in Section 8 of this document. When met, each of three interim goals will release fifteen percent (0.70) of the total credits. The final twenty-five percent (1.18) of total credits will be held back until all performance goals are met. Final credit amounts will be adjusted (up or down) to account for actual acres developed and enhanced/rehabilitated (wetland and upland), and based on the degree to which areas meet performance goals stated in Section 8.

Figure 2: Mitigation Site Plan



5. Baseline Ecological Characteristics

5.1 Historic and existing plant communities, including present delineated wetlands

Historic plant communities

Historic plant community data is not available for the Overlook Wetlands Preserve Mitigation Site, but a review of historic aerial photos shows that the current property configuration and cover has changed little other than to develop woody species in abandoned areas since 1955 (Figure 7).

Present plant communities

While the bulk of the Overlook property has been preserved for over 30 years, the evidence of land manipulation and alteration remain. The fields remain open due to the recent agricultural activity, and much of the wetland area still possesses linear drainage features, some of which are continuing to alter hydrology more than 80 years after the cessation of management efforts in them.

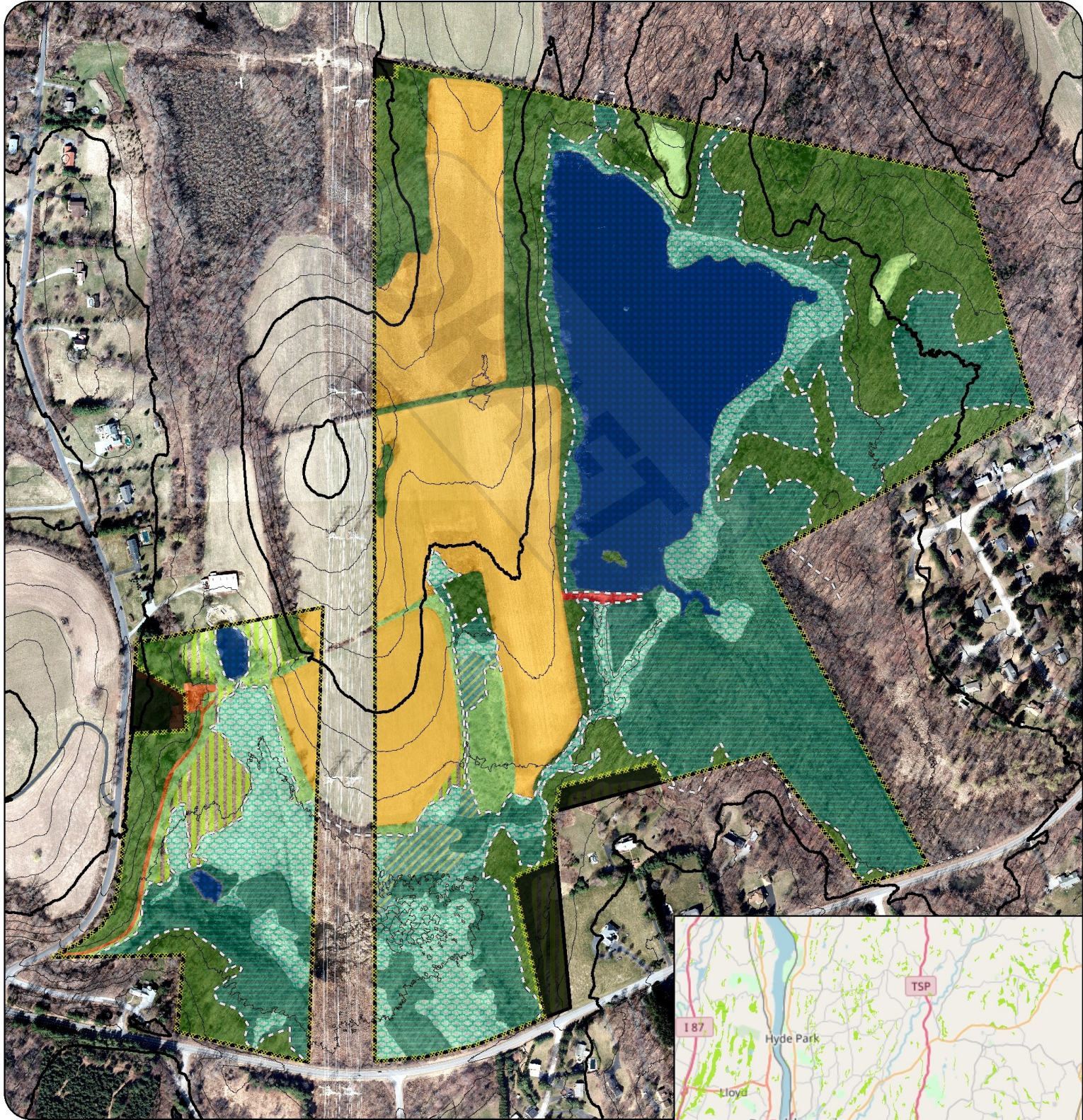
A matrix of wetland and upland forest comprises the eastern and southeastern part of the project area (Figure 3), and the delineation between upland and wetland is in part due to topography, but also in part because drainage activities effectively lowered water elevations, drying out areas that likely would have been wetland otherwise. Agricultural field occupies a large part of the remainder of the property upland areas with a small amount of shrubland, older ag fields called grassland in Figure 3, and several other small upland components. Open water, emergent and scrub shrub wetland communities comprise the remaining wetland portion of the property, and while many different plants are present throughout each, several community dominants are highlighted in the descriptions below.

Upland communities

Dominant woody species found in upland forested areas include green ash (*Fraxinus americana*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), red maple (*Acer rubrum*), black cherry (*Prunus serotina*), multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), and dominant herbaceous species include poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), Canada goldenrod (*Solidago canadensis*), Japanese stiltgrass (*Microstegium vimineum*).

Upland agricultural fields and grassland areas are dominated by old field species and other weedy upland plants with some hydrophytes interspersed in areas. Common upland plants include Canada goldenrod, common milkweed (*Asclepias syriaca*), orchardgrass (*Dactylis glomerata*), hairy vetch (*Vicia villosa*), smooth brome (*Bromus inermis*), poison ivy (*Toxicodendron radicans*), spreading woodfern (*Dryopteris expansa*), bunchberry dogwood (*Cornus canadensis*) and Virginia creeper (*Parthenocissus quinquefolia*). The agricultural field to the immediate west of the Overlook Pond has considerably more weedy species than fields elsewhere on the property, plants common in this community include annual ragweed (*Ambrosia artemisiifolia*), Virginia pepperweed (*Lepidium virginicum*), oxeye daisy (*Leucanthemum vulgare*) and bedstraw (*Gallium* spp.) among others.

Figure 3: Overlook Property Landuse



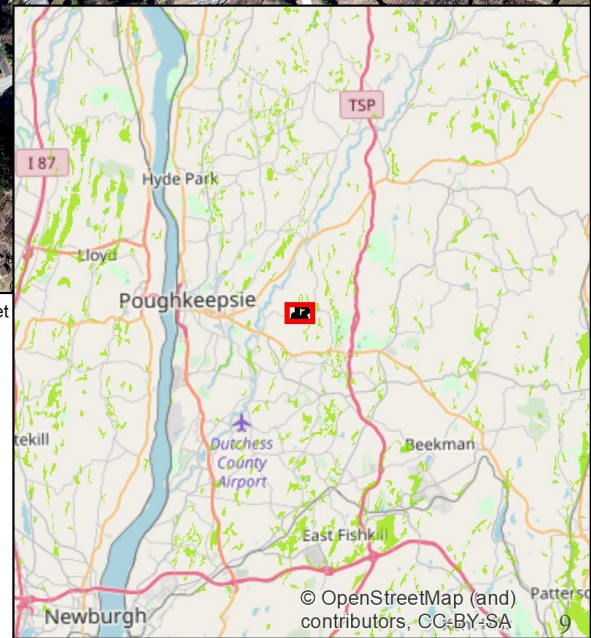
2016 Aerial Photo

Legend

- Property Boundary
- Wetland Delineation
- 10' Contours
- Mitigation Area Boundary = 156.35 acres

Landuse

- Berm = 0.22 acres
- Residence = 0.57 acres
- Agriculture = 31.87 acres
- Grassland = 3.20 acres
- Upland Shrub = 5.10 acres
- Upland Forest = 37.20 acres
- Emergent Wetland = 16.84 acres
- Open Water = 21.64 acres
- Scrub Shrub Wetland = 2.80 acres
- Forested Wetland = 36.92 acres
- TWT owned, but outside of CE boundary



Wetland Communities

Dominant woody species found in the forested wetland areas include green ash, red maple, American elm (*Ulmus americana*), redosier dogwood (*Cornus sericea*), southern arrowwood (*Viburnum recognitum*), and northern spicebush (*Lindera benzoin*) and dominant herbaceous species include upright sedge (*Carex stricta*), sensitive fern (*Onoclea sensibilis*), purple loosestrife (*Lythrum salicaria*), reed canarygrass (*Phalaris arundinacea*), common rush (*Juncus effusus*), narrowleaf cattail (*Typha angustifolia*), poison ivy, jewelweed (*Impatiens capensis*), and wrinkleleaf goldenrod (*Solidago rugosa*).

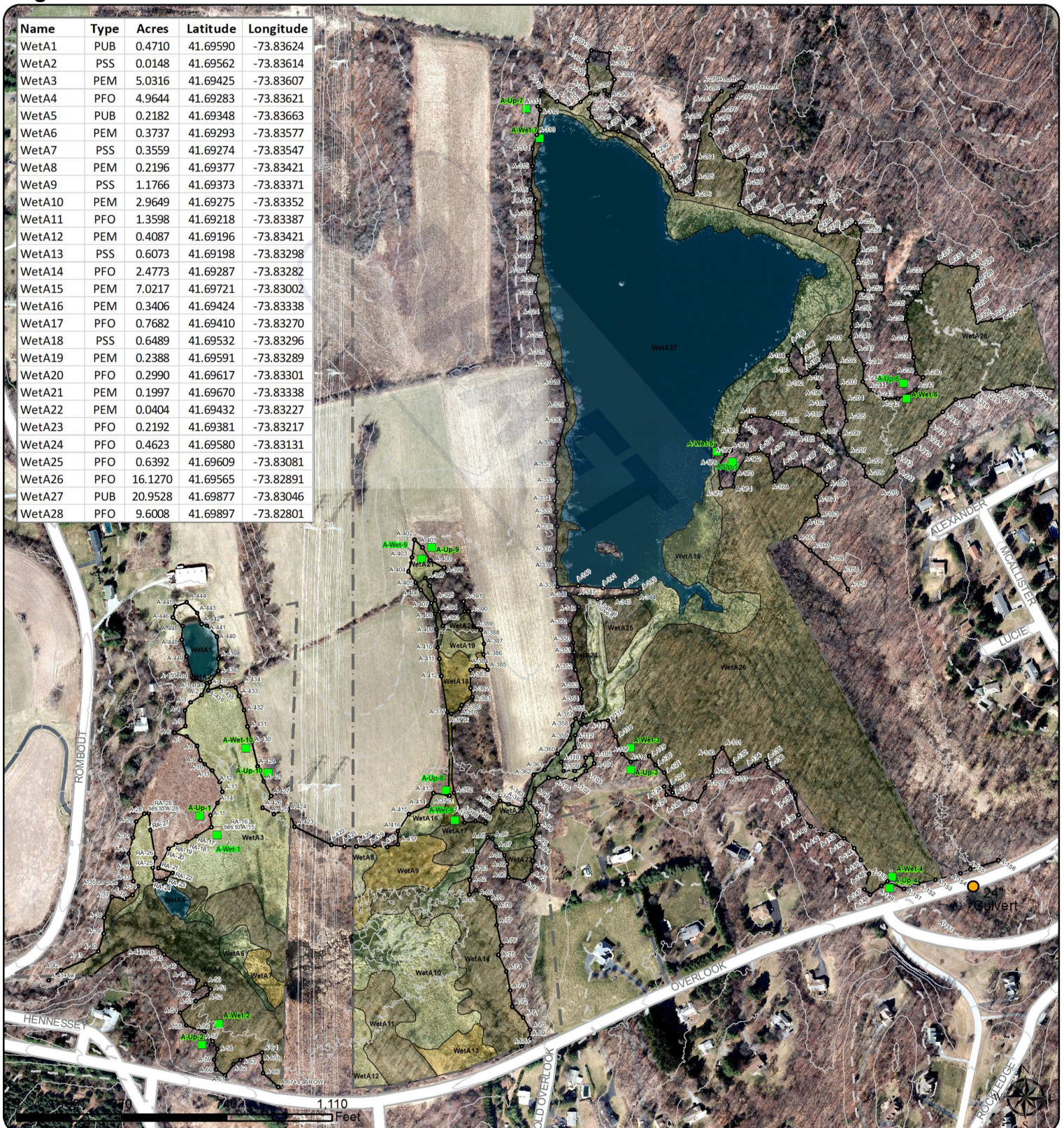
Many different emergent communities are present on the mitigation property. Generally invasive emergent plants do not comprise large percentages of the Overlook emergent communities, but cattail (*Typha* spp.) and purple loosestrife are present in dense stands in the western, most recently farmed wetland areas and are less common in other emergent areas. Wetland A3 (Figure 4 – Overlook Wetland Boundaries Map) and some adjacent upland areas include the densest purple loosestrife communities on the property, with areas of 55% loosestrife coverage but averaging to roughly 20% of the polygon. Purple loosestrife is present in several other communities, though is generally in lower densities, often not exceeding 15%. Galerucella beetle herbivory was observed throughout the wetland communities. Some small patches of giant reed (*Phragmites australis*) can be found in the Overlook Pond, primarily along the constructed berm and in adjacent areas to the west. Communities dominated by upright sedge (*Carex stricta*), woolgrass (*Scirpus cyperinus*), skunk cabbage (*Symplocarpus foetidus*) and longhair sedge (*Carex comosa*) can be found in the more natural emergent communities in the eastern part of the property.

Open water areas are frequently too deep for emergent plants, but floating-leaved, free-floating and submerged plants are common throughout the Overlook Pond. American white waterlily (*Nymphaea odorata*), and duckweed (*Lemna* spp.) are present throughout much of the open water community. Also common in shallower areas are purple loosestrife, buttonbush (*Cephalanthus occidentalis*) and soft rush

5.2 Site land use history, including structures, if any

Past landuse

A review of historic aerial photos (Figures 5 to 8) and historic documents was completed to assist project planners in understanding the property landuse history. The Overlook Wetlands Preserve property recorded history can be traced to prior to 1840, when landowner records indicate the residents, the J.W. Shepherd family were farmers, and according to later census records, owned a prosperous dairy farm when compared to other LaGrange landowner asset records. Early topographic maps and aerial photos show a local landscape largely cleared of forest, and the earliest aerial photos available, 1936, shows nearly the entire parcel denuded of woody vegetation with linear features, indicating efforts to drain the fields, visible. One kettle hole pond, less than 1-acre in size, was present in 1936 photos, and darkened areas throughout the property indicate wet soil conditions despite prevalent ditches. Photos beginning in 1940 show the wettest areas of the

Figure 4: Overlook Wetland Delineation

Drawn: MY
 Date: 08/22/2018
 Scale: 1 inch = 445 feet
 Project: Overlook Wetland Delineation
 Figure: Figure 4

GPS Data Collection Methodology:

The wetland points identified in this Figure were collected with a sub-meter accurate Trimble Geo7x Series Handheld GPS unit with floodlight/real-time correction enabled. At each wetland/flag location, data was recorded and averaged for a minimum of 10-15 seconds to ensure accurate positioning. The GPS points were uploaded and imported into Trimble Pathfinder Office Software. The points were differentially collected using data imported from the nearest available base station. They were then exported to a comma delimited file and imported into Microsoft Excel for final data manipulation and presentation to The Wetland Trust by Diehlux LLC. The final delineation points, listed in Addendum A, Appendix IV were then imported into ArcGIS 10.3.1 and used to create the Delineation Points Pointfile and Delineation Boundary Linefile included in Figure 3 and supplemental project maps.

- Delineation Points
- ▬ Property Boundary
- Data Points
- PEM = 16.84 acres
- PFO = 36.92 acres
- PSS = 2.80 acres
- PUB = 21.64 acres
- ~ Delineation Boundary
- ~ 10' LiDAR-Derived Contours

Figure 5: 1936 Aerial Photo

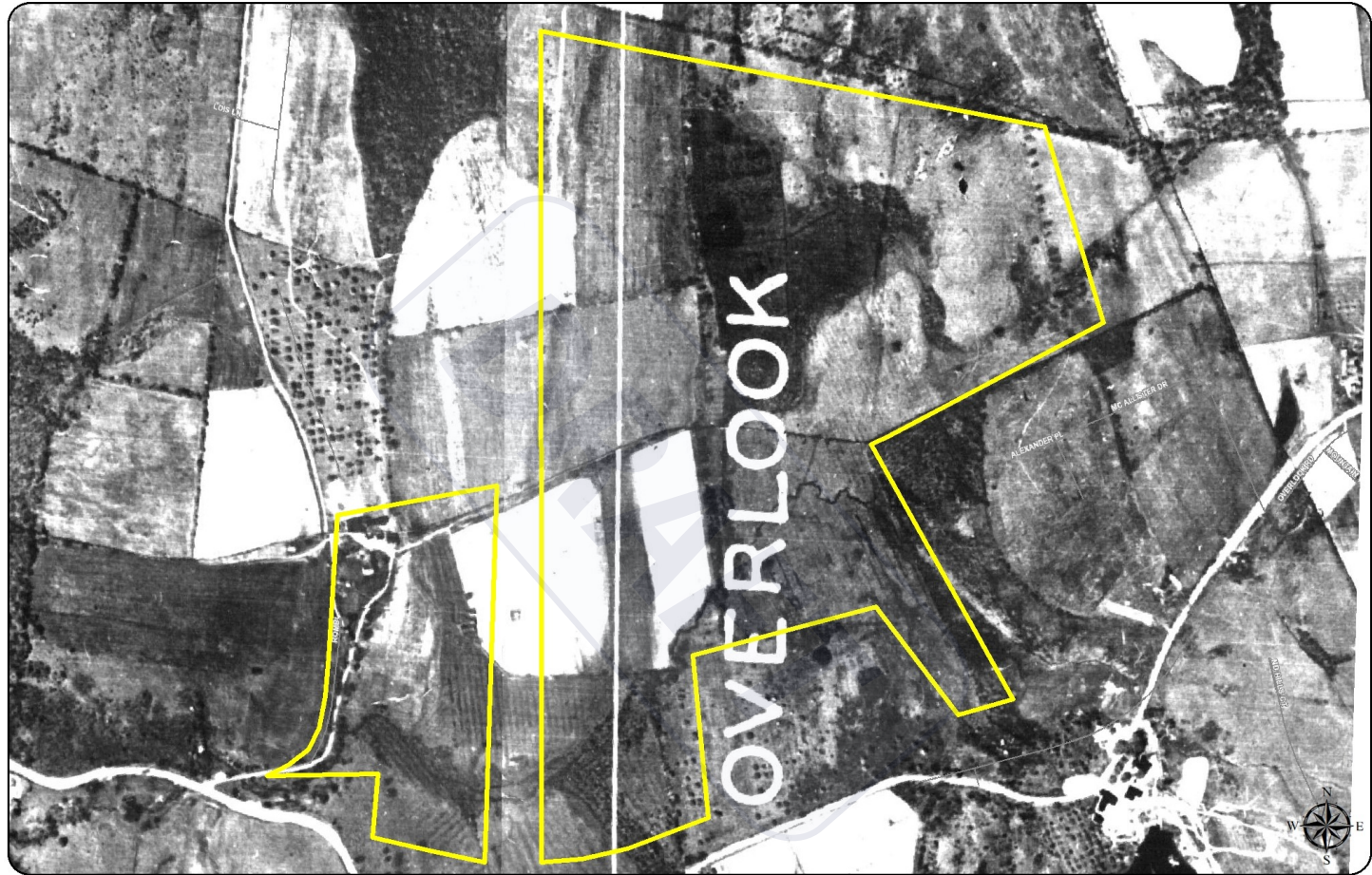


Figure 6: 1940 Aerial Photo



Figure 7: 1955 Aerial Photo

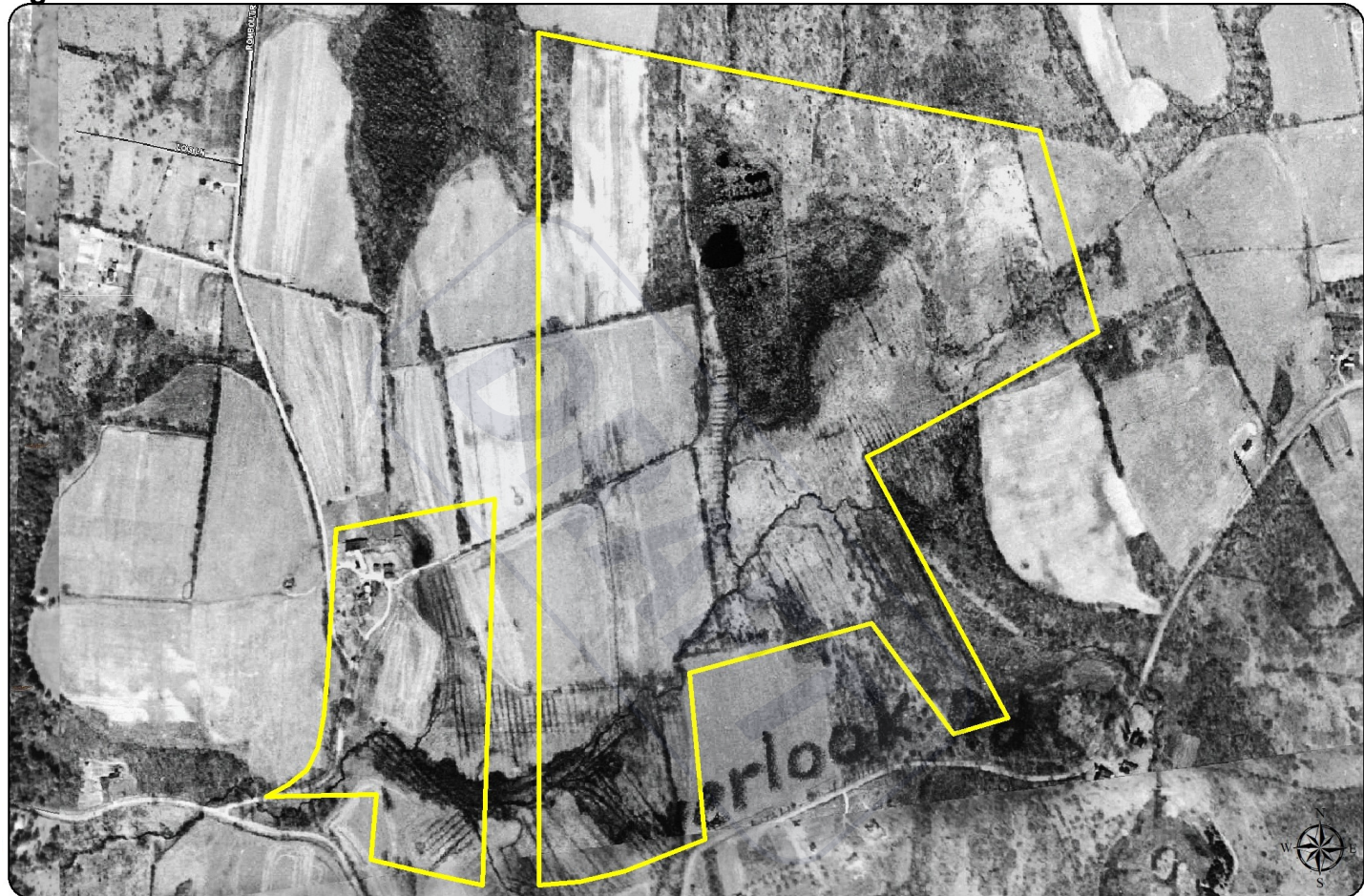
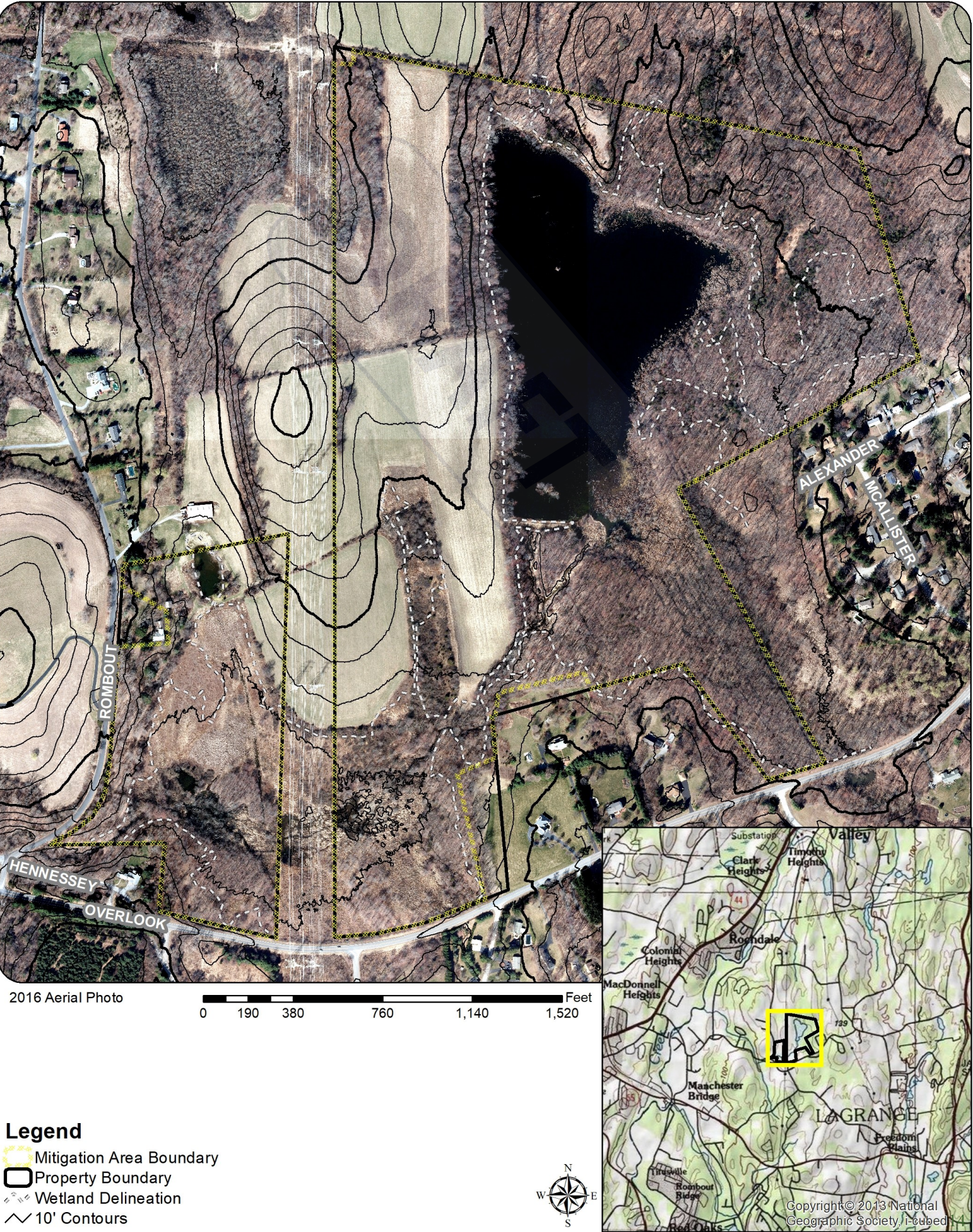


Figure 8: 1970 Aerial Photo



Figure 9: Overlook 2016 Aerial Photo



property in the beginning stages of succession. Active drainage efforts were abandoned generally from wettest to drier areas as the hydric soil areas were left fallow. The exception to the woody plant expansion is evidenced in the 1955 photos, where drainage efforts are clearly present throughout the fields in the southern and western part of the property. Personal correspondence found in the property residence from the fall of 1953 from the landowner to his wife, who was at the residence, says that she was “accomplishing an awful lot - ditching, bulldozing...” throughout the property while he was away. These drainage efforts, and many residual linear features from previous drainage efforts remain visible on current aerial photos despite the continued expansion of secondary forest cover types.

The main Overlook pond was constructed between the 1955 and 1970 photos, and in reviewing historic aerial photos it became evident that water levels have increased in the pond since construction. It was determined that a beaver dam across the area reserved as the pond’s emergency spillway is the cause of the increased levels. The beaver dam effectively captured a significant amount of additional watershed acreage not originally included in the water control structure sizing. This additional watershed and the stream conveying its runoff, was redirected by the beaver into the pond, and resulted in more water than could be handled by the water control structure and elevated water levels despite the fully functioning outlet pipe.

Before beaver establishment, the main Overlook Wetland was shallow to the east with a thin band of buttonbush, paralleling the shoreline. These shrubs are evident on the 1970 aerial photos (Figure 8) and were still present at least until the spring 2000 photo.

Current landuse

The present land uses within the mitigation site include 37.20 acres upland forest, 37.02 acres of agricultural field that previously were in a corn/hay rotation, grassland and other open upland cover types, 3.94 acres upland shrub cover and 78.20 acres wetland and open water. The wetlands are more specifically, 16.84 acres emergent, 2.80 acres scrub shrub, 36.92 acres forest and 21.64 acres open water (Figure 3).

The present neighbor, and most important local landowner relative to the site is an active dairy farm with adjacent fields in corn, hay and soybeans. Indeed, a portion of the mitigation site has been farmed as recently as 2014, just prior to TWT ownership.

Existing structures

The one structure present in the mitigation area is a Class A dam, built by NYSDEC in 1960. On the TWT parcel, but not on the site proper is a 1820 post and beam farm house and associated out buildings, which reflect the area’s history and timeline that agriculture was present. A high-tension transmission line and a narrow strip of property owned by Consolidated Edison Company, NY, runs through the TWT property.

TWT obtained the three parcels totaling 159.8 acres from The Nature Conservancy (TNC) in 2015

and Dale Rigg in 2016. TNC obtained the original 135 acres as a trade land in 1984 and decided to retain ownership. The same landowner donated an additional 16 acres to TNC in 2000, and the final 8.8 acres was donated to TWT by its owner, Dale Rigg.

5.3 Historic and existing hydrology

The site is near the headwaters of a small drainage that flows into Wappinger Creek, a tributary to the Hudson River. Hydrology at the site has been modified significantly as evidenced by historic aerial photos (Figures 5 through 9), with no photos or maps available of the property prior to 1936, more than 100 years after intensive management of the property began. Ditching appears to be the primary method of hydrological modification throughout the site aside from the earthen dam, and while much of the property has been abandoned from agriculture, the linear ditching is still common. Soil analysis at the site discussed in Section 5.4 also indicates there was wetland fill obvious in two of the six soil test pits.

5.4 Soil descriptions

The Overlook Wetland Mitigation Site contains an assortment of soils types including several poorly drained soils (Ca, Pc, Su, and Wy) providing evidence of the historic wetland presence and long-term natural support for sustainable wetland complexes on site (Figure 10). Wetland re-establishment, enhancement and establishment activities as part of this mitigation plan will occur within these target soils, or in areas immediately adjacent to these soils. A soils report prepared by a retired NRCS Soil Scientist is included as Appendix C of this report based on soil test pits completed on May 9, 2018. Mr. Case found that several soils were mapped incorrectly, most notably the soils at reestablishment Area B, where soils were actually Wayland silt loam filled with udorthents. The summarizing paragraph of the report states that “Test Pits 1 through 5 are in reasonable proximity to existing wetland and when cut and graded and planted should successfully convert to wetlands.”

Poorly drained complexes:

Ca- Canandaigua silt loam - deep poorly drained

Pc - Natchaug muck - highly decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till, often found in depressions

Su - Sun silt loam; deep poorly drained soils

Wy - Wayland silt loam; poorly drained soils, silty and clayey alluvium considered hydric

Well drained soils:

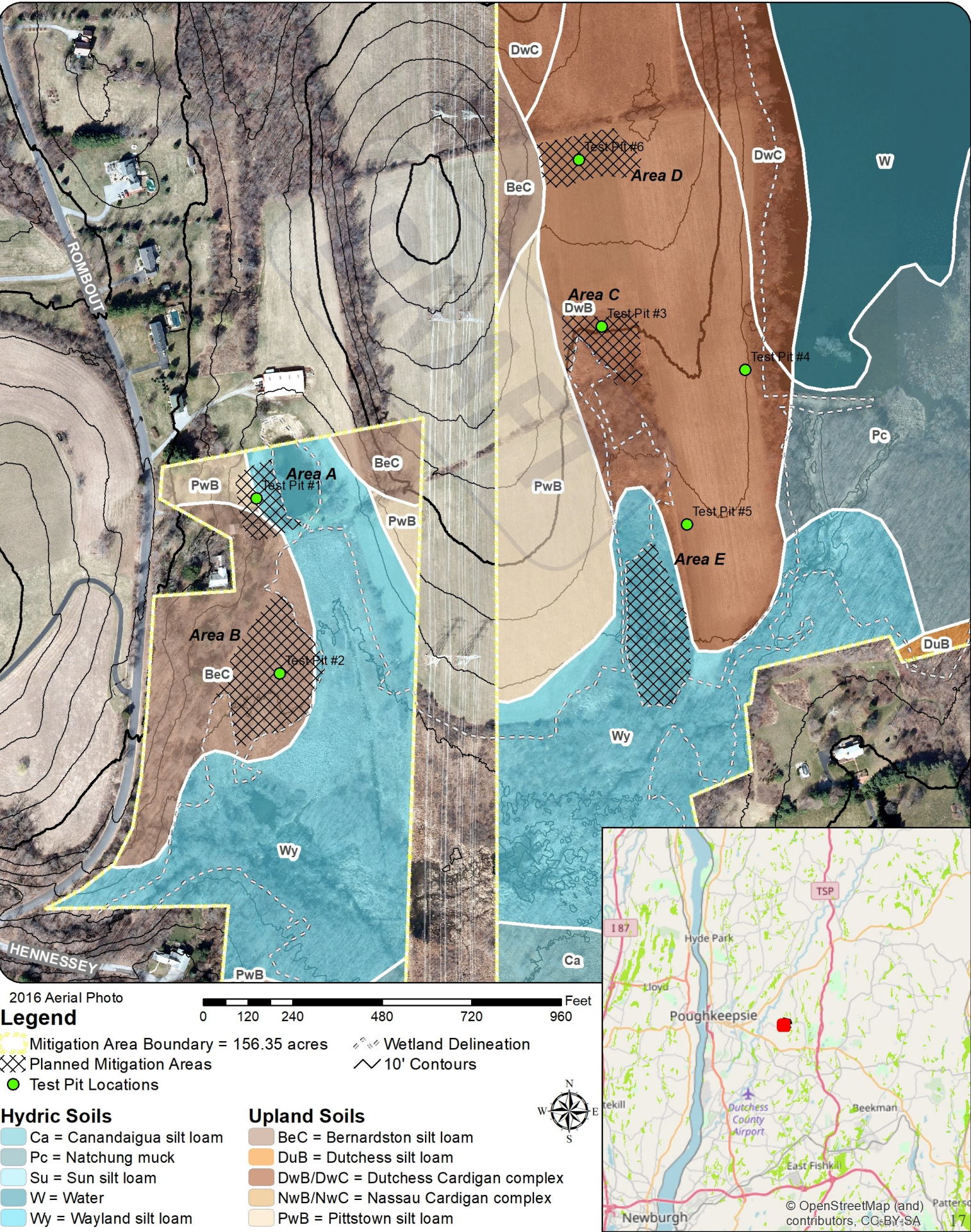
BeC - Bernardston silt loam - very deep and well drained soils in glacial till deposits

DwB/DwC - Dutchess Cardigan complex - well drained loamy till derived mainly from phyllite, slate, schist and shale

NwB/NwC - Nassau Cardigan complex - shallow to bedrock, well drained

PwB - Pittstown silt loam - moderately well drained loamy till soil that may be 18 to 36 inches depth to water table.

Figure 10: Overlook Property Soils Map



5.5. Animal species including endangered species

Table 2a: Wildlife Species Identified.

Common Name	Scientific Name	Conservation Status	Notes
Mammals			
eastern coyote	<i>Canis latrans</i>		
Virginia opossum	<i>Didelphis virginiana</i>		
whitetail deer	<i>Odocoileus virginianus</i>		
raccoon	<i>Procyon lotor</i>		
eastern gray squirrel	<i>Sciurus carolinensis</i>		
striped skunk	<i>Mephitis mephitis</i>		
North American beaver	<i>Castor canadensis</i>		
muskrat	<i>Ondatra zibethicus</i>		
Indiana bat	<i>Myotis sodalis</i>	federally endangered	
Fish			
common carp	<i>Cyprinus carpio</i>		
large-mouth bass	<i>Micropterus salmoides</i>		
Reptiles			
snapping turtle	<i>Chelydra serpentina</i>		
eastern painted turtle	<i>Chrysemys picta</i>		
wood turtle	<i>Glyptemys insculpta</i>		
spotted turtle	<i>Clemmys guttata</i>		
eastern box turtle	<i>Terrapene carolina</i>		
eastern garter snake	<i>Thamnophis sirtalis</i>		
northern water snake	<i>Nerodia sipedon</i>		
Amphibians			
American bullfrog	<i>Lithobates catesbeianus</i>		
green frog	<i>Lithobates clamitans</i>		
wood frog	<i>Lithobates sylvaticus</i>		
pickerel frog	<i>Lithobates palustris</i>		
gray treefrog	<i>Hyla versicolor</i>		
American Toad	<i>Anaxyrus americanus</i>		
eastern newt	<i>Notophthalmus viridescens</i>		

Table 2b: Bird Species Identified.

Common Name	Scientific Name	Conservation Status	Notes
cooper's hawk	<i>Accipiter cooperii</i>	Special Concern	
red-winged blackbird	<i>Agelaius phoeniceus</i>		
wood duck	<i>Aix sponsa</i>		
mallard	<i>Anas platyrhynchos</i>		
great blue heron	<i>Ardea herodias</i>		
tufted titmouse	<i>Baeolophus bicolor</i>		
cedar waxwing	<i>Bombycilla cedrorum</i>		
Canada goose	<i>Branta canadensis</i>		
red-tailed hawk	<i>Buteo jamaicensis</i>		
northern cardinal	<i>Cardinalis cardinalis</i>		
chimney swift	<i>Chaetura pelagica</i>		
killdeer	<i>Charadrius vociferus</i>		
northern flicker	<i>Colaptes auratus</i>		
rock pigeon	<i>Columba livia</i>		
eastern wood-pewee	<i>Contopus virens</i>		
American crow	<i>Corvus brachyrhynchos</i>		
blue jay	<i>Cyanocitta cristata</i>		
bobolink	<i>Dolichonyx oryzivorus</i>		
pileated woodpecker	<i>Dryocopus pileatus</i>		
gray catbird	<i>Dumetella carolinensis</i>		
least flycatcher	<i>Empidonax minimus</i>		
willow flycatcher	<i>Empidonax traillii</i>		
American kestrel	<i>Falco sparverius</i>		
common yellowthroat	<i>Geothlypus trichas</i>		
house finch	<i>Haemorhous mexicanus</i>		
barn swallow	<i>Hirundo rustica</i>		
Baltimore oriole	<i>Icterus galbula</i>		
belted kingfisher	<i>Megaceryle alcyon</i>		
swamp sparrow	<i>Melospiza georgiana</i>		
song sparrow	<i>Melospiza melodia</i>		
black-capped chickadee	<i>Peocile atricapillus</i>		
common grackle	<i>Quiscalus quiscula</i>		
eastern phoebe	<i>Sayornis phoebe</i>		
yellow warbler	<i>Setophaga petechia</i>		
American redstart	<i>Setophaga ruticilla</i>		
white-breasted nuthatch	<i>Sitta carolinensis</i>		
American goldfinch	<i>Spinus tristis</i>		
chipping sparrow	<i>Spizella passerina</i>		
European starling	<i>Sturnus vulgaris</i>		
tree swallow	<i>Tachycineta bicolor</i>		
brown thrasher	<i>Toxostoma rufum</i>		
house wren	<i>Troglodytes aedon</i>		
American robin	<i>Turdus migratorius</i>		
eastern kingbird	<i>Tyrannus tyrannus</i>		
warbling vireo	<i>Vireo gilvus</i>		
red-eyed vireo	<i>Vireo olivaceus</i>		
mourning dove	<i>Zenaida macroura</i>		

6. Mitigation Work Plan

6.1 Geographic boundaries

The geographic boundaries of this site are within the parcel boundaries as depicted in Figure 2. The entire parcels encompasses approximately 159 acres and is bounded by Rombout Road to the West, a private property subdivision to the East, Overlook Road (County Route 46) to the South and a dairy farm to the North.

6.2 Construction methods, timing and sequencing

The site has several areas of construction proposed:

Areas A, B and C: These areas are adjacent to existing wetlands and will be reshaped to lower the surface topography and extend the wetland hydrology into the newly configured areas.

Area D: This area will require excavation to suitable site elevations and compaction of sub soils to ensure the capture and retention of precipitation and overland flow.

Area E: This area is adjacent to existing wetlands with drainage features present. Re-establishment in this area will involve primarily ditch plugging with a minor amount of surface contouring to achieve desired soil and hydrological conditions. Work in this area will require the selective removal of existing vegetation which is comprised primarily of invasive shrub cover.

Table 3: Construction Methods, Timing and Sequencing

Activity	Timing	Construction Phase
Remove any potential bat roost trees >3" dbh within the site work permitted dates of November 1 to March 31 (Areas A and E).	Immediately after plan approval and within the permit-approved window.	Pre-construction preparation
Install shallow dikes and re-grade to expand existing wetland into adjacent uplands (All restoration areas)	Following plan approval and weather permitting	Phase I Topographic reconfiguration
Site stabilization	Initiated at completion of grading for each project area	Phase II Planting/ Seeding
Tree, shrub and herbaceous plug planting/ seeding in wetland areas	<p>Wetland seed mixes will be applied at the completion of construction of each project area, and again the when moist soil conditions are present.</p> <p>Herbaceous plugs will be installed in spring following construction during conditions of suitable hydrology.</p> <p>Woody plants will be installed during the dormant period immediately following the completion of construction for all the project areas</p>	
Supplemental plug and woody plant installation	As needed throughout the monitoring period	
		Phase III Maintenance

6.3. Grading plan, including elevations and slopes of substrate

Figures 11 through 15 show the grading plans for wetland re-establishment and establishment Areas A, B, C, D, and E.

Figure 11: Area A Grading Plan

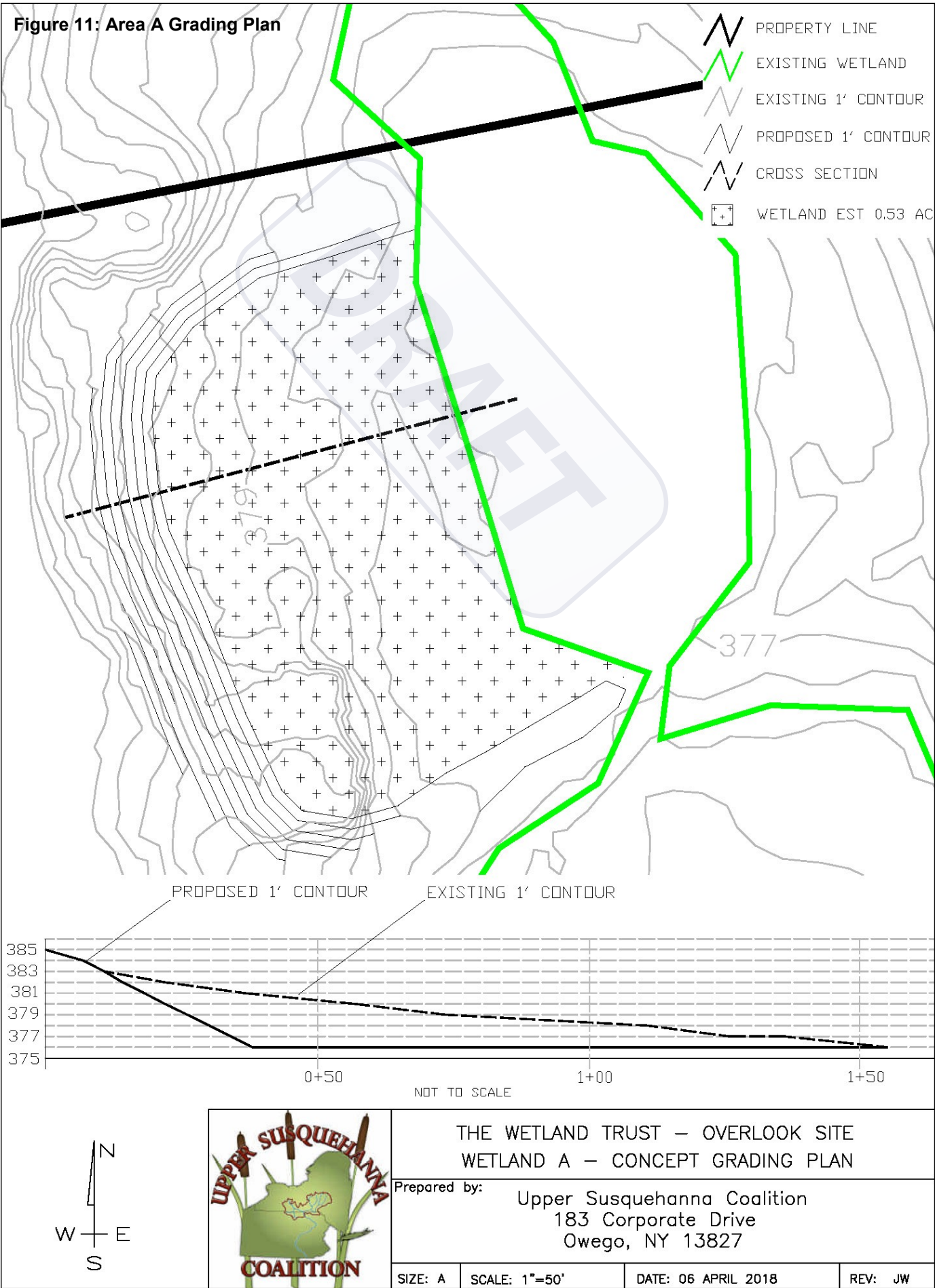


Figure 12: Area B Grading Plan

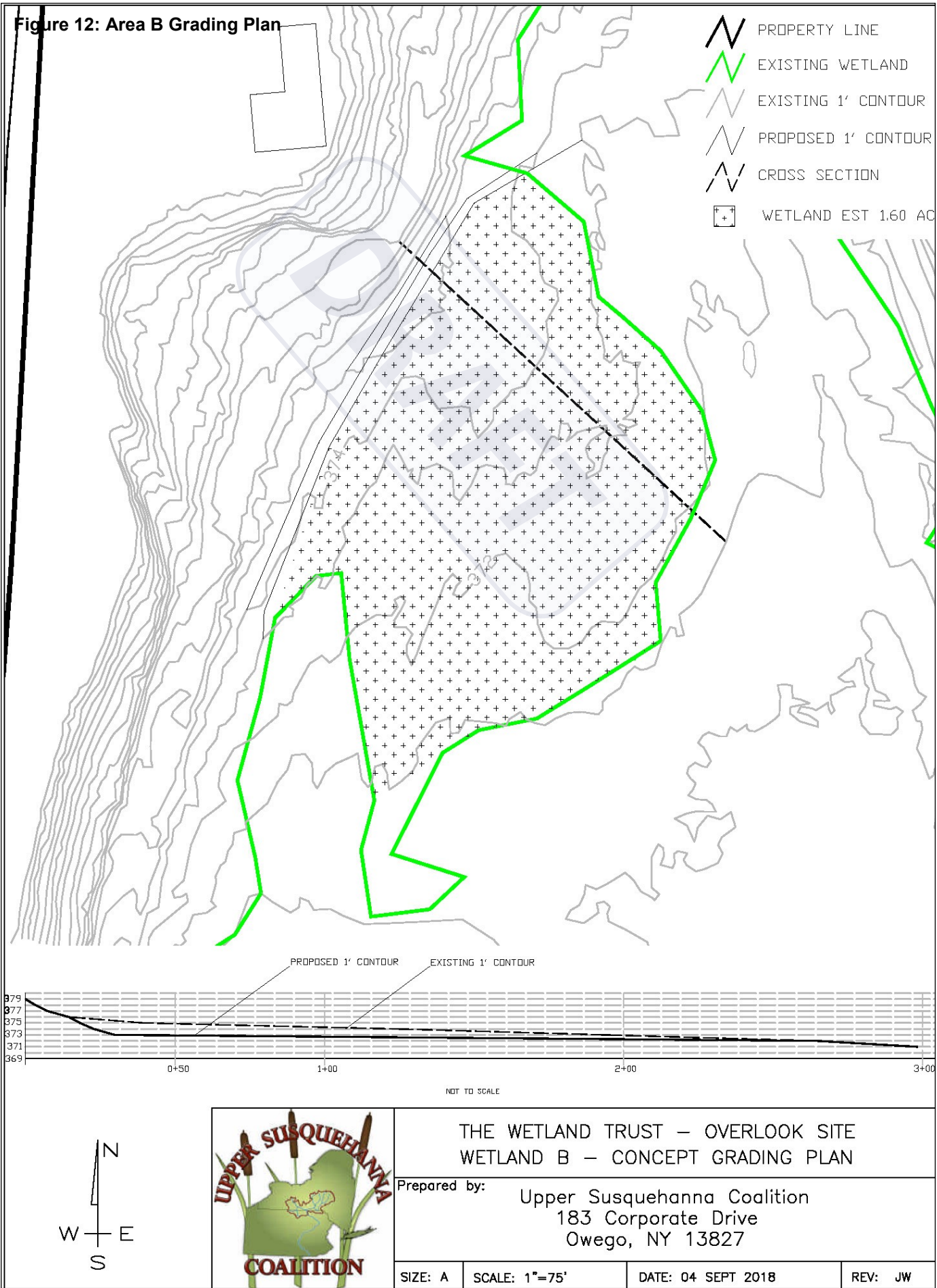
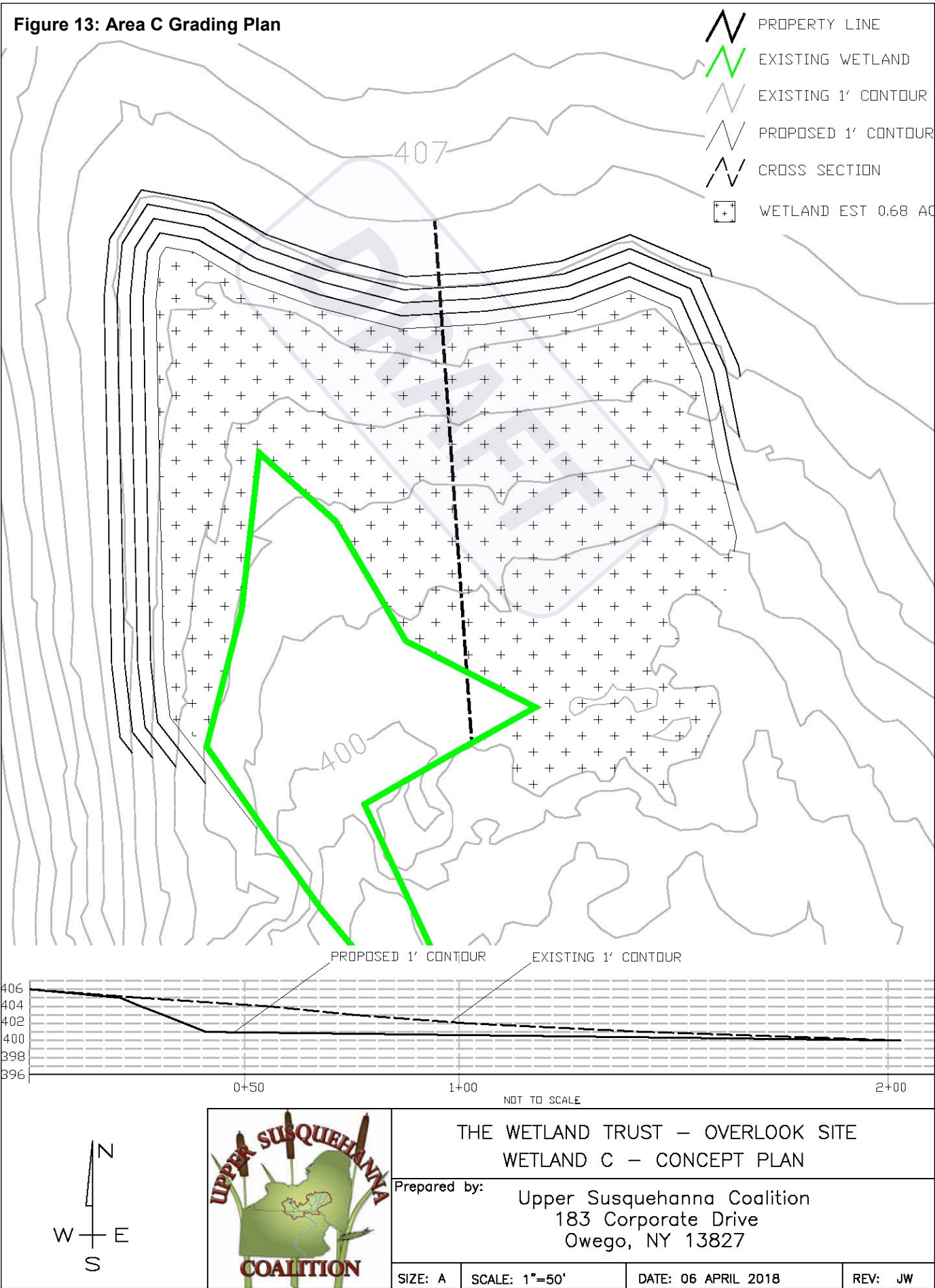


Figure 13: Area C Grading Plan



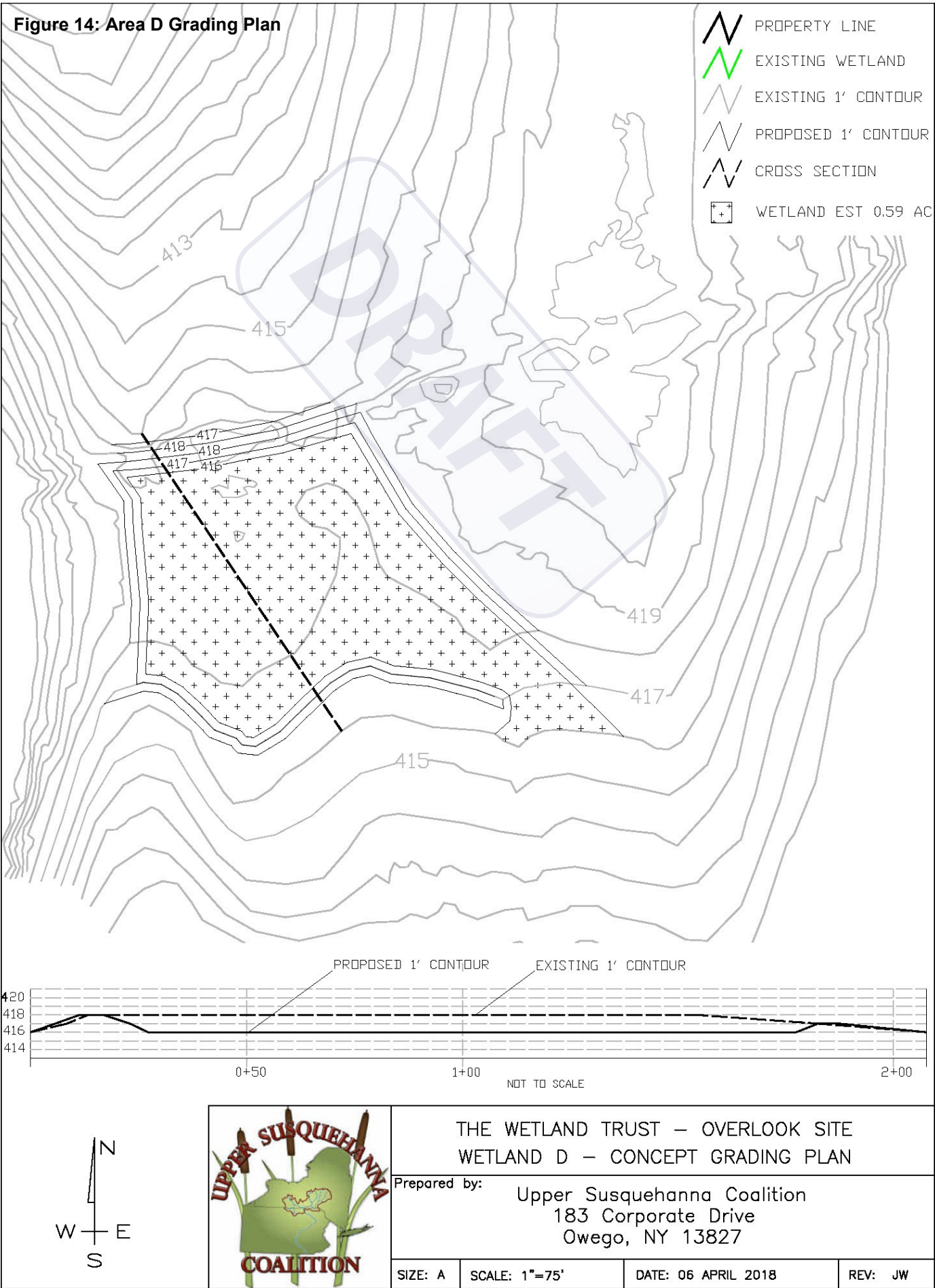
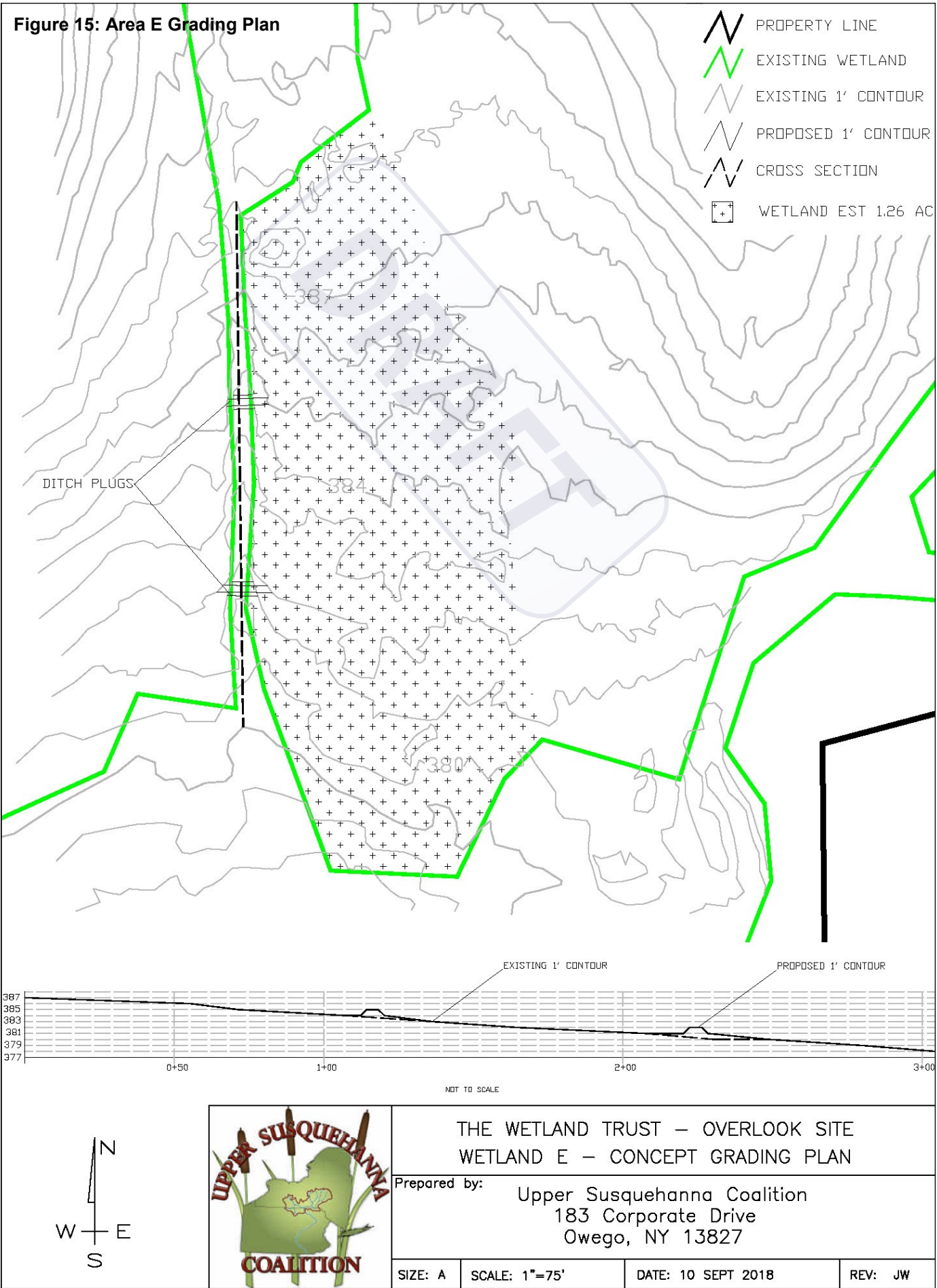


Figure 15: Area E Grading Plan



6.4. Methods for establishing desired plant community

The desired plant community will be established through broadcasting high-quality seeds and hand planting herbaceous plugs and shrubs. A sample of the planned planting species and proposed quantities are described in Table 4.

Table 4: List of Species to be Planted at Mitigation Site

Emergent Plants

Common Name	Latin Name	Indicator Status	CoC	Planting Rate
American water-plantain	<i>Alisma subcordatum</i>	OBL	3	Combination of 5 lbs/ acre and/or Plugs at density of 3ft on center
longhair sedge	<i>Carex comosa</i>	OBL	4	
bottlebrush sedge	<i>Carex hystericina</i>	OBL	5	
upright sedge	<i>Carex stricta</i>	OBL	3	
swamp loosestrife	<i>Decodon verticillatus</i>	OBL	7	
three way sedge	<i>Dulichium arundinaceum</i>	OBL	7	
common spikerush	<i>Eleocharis palustris</i>	OBL	5	
royal fern	<i>Osmunda regalis</i>	OBL	6	
duck potato	<i>Sagittaria latifolia</i>	OBL	4	
woolgrass	<i>Scirpus cyperinus</i>	OBL	5	
water parsnip	<i>Sium suave</i>	OBL	5	
bur-reed	<i>Sparganium americanum</i>	OBL	5	
marsh fern	<i>Thelypteris palustris</i>	FACW	5	

Woody Plants

Common Name	Latin Name	Indicator Status	CoC	Planting Rate
buttonbush	<i>Cephalanthus occidentalis</i>	OBL	6	350/acre
silky dogwood	<i>Cornus amomum</i>	FACW	4	100/acre
winterberry	<i>Ilex verticillata</i>	FAC	4	
sweet gale	<i>Myrica gale</i>	OBL	8	
pussy willow	<i>Salix discolor</i>	FACW	3	
black willow	<i>Salix nigra</i>	OBL	4	
arrow-wood	<i>Virburnum dentatum</i>	FAC	4	

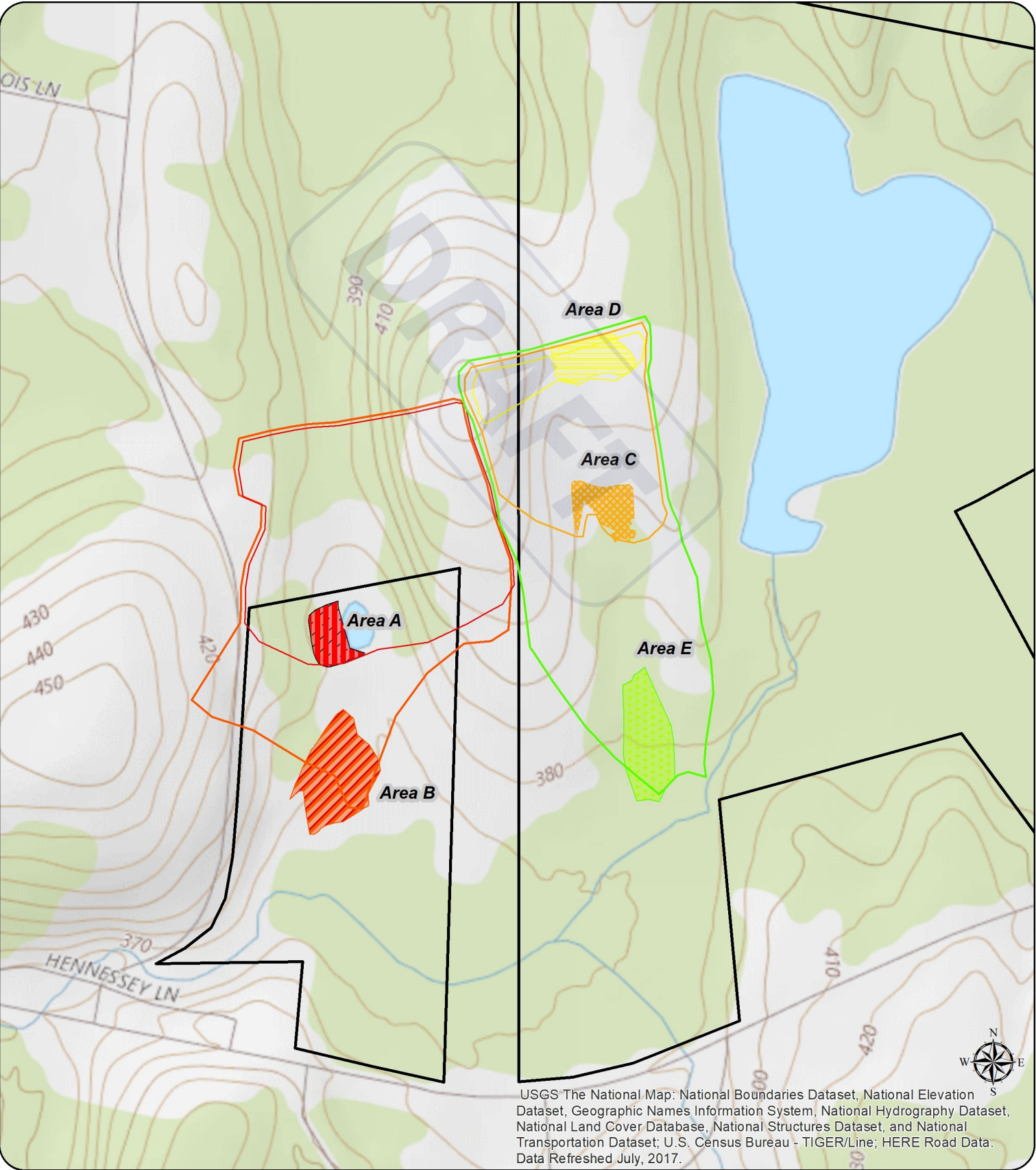
6.5 Sources of water, connections to existing waters, and upland runoff

Each potential wetland work area has a different source of hydrology. Areas A, B, C and E will all utilize a combination of overland flow, direct precipitation and interception of groundwater hydrology feeding existing adjacent wetland communities. Watershed acreages for each site are listed in Figure 16, along with color-coded watershed boundary delineations. Area D will receive overland flow and direct precipitation.

6.6 Invasive species control

TWT will monitor and adaptively manage invasive species within the mitigation areas on Overlook Property through hand pulling, mechanical removal, and as a last resort, application

Figure 16: Overlook Property Mitigation Area Watersheds



USGS Topo Map

0 160 320 640 960 1,280 Feet

Legend

Property Boundary = 159.87 acres

Planned Mitigation Area Watershed Boundaries

- | | | |
|---------------------|--------------------|---------------------|
| Area A - 14.1 | Area C - 8.1 acres | Area E - 17.5 acres |
| Area B - 19.9 acres | Area D - 2.0 acres | |

of herbicide in accordance with all state and federal regulations. Invasive plant species will be observed during site visits and mapped via GPS to be used to direct future control measures.

Other appropriate methods for control will be determined at the time the species are encountered. Long-term tasks will include routine inspections in early summer (late June through mid-July) to determine invasive species presence or absence and abundance. Species found will be rapidly controlled through manual extraction or the application of herbicides before seeds reach maturity.

6.7 Soil management and erosion control measures

All slopes, soils, substrates, and constructed features within and adjacent to the work site will follow stabilization protocols described in the Overlook Preserve Erosion and Sediment Control plan submitted to NYS DEC prior to initiation of those activities.

7. Maintenance Plan

Yearly site visits (Section 9) will document any management concerns, and appropriate adaptive management strategies will be developed, reviewed, and implemented as necessary. Examples of maintenance considerations for the implementation areas include but are not limited to:

- Unforeseen environmental conditions that affect the project but their effects can generally be managed through early detection including: flooding, drought, invasive species, site degradation, decreased plant health and vigor and erosion.
- Unwanted plant species establishment, trash dumping.
- Excessive deer herbivory requiring management either by construction of deer exclusionary fencing, or the cooperation with licensed hunters operating in accordance with all state and local laws to assist with control of deer populations
- Excessive impacts from other herbivories including beaver or muskrat may also require management.
- Corrective measures may include adding or removing plants as conditions warrant, modifying local topography to ensure wetland hydrology, and additional mulching and seeding as needed.

8. Performance Standards

Success within the mitigation site is based on meeting the USACE criteria for the three parameters described in the 1987 Corps of Engineers Wetland Delineation Manual and 2009 Regional Supplement.

These parameters require sufficient:

wetland hydrology to support adequate
hydrophytic vegetation, ultimately forming
hydric soils, all of which describe a functioning wetland.

The performance standards will be monitored over a 10-year term that begins the year following the submittal of the post-construction as-built report. Performance standards are based on three interim

and one final goal. Credits will be released when each goal is met. The credit release schedule is describe Section 4.1. The credit amount or final release will be adjusted if performance goals at the end of the 10-year monitoring period are not met.

8.1 First Vegetative Interim Goals

- 50% relative cover by native perennial hydrophytes (FAC or wetter); and
- Any PSS area will have at least 150 shrubs/trees per acre from species listed in Table 4; and
- No more than 25% of wetland area is composed of invasive species such as but not limited to: purple loosestrife, common reed, cattails and Japanese knotweed (*Polygonum cuspidatum*).

8.2 Second Vegetative Interim Goals

- 60% relative cover by native perennial hydrophytes (FAC or wetter); and
- Any PSS area will have at least 200 shrubs/trees per acres from species listed in Table 4; and
- No more than 20% of wetland area is composed of invasive species such as but not limited to: purple loosestrife, common reed, cattails and Japanese knotweed; and
- Reestablishment areas achieve 50% of final VIBI goal.

8.3 Third Vegetative Interim Goals

- 75% relative cover by native perennial hydrophytes (FAC or wetter); and
- Any PSS area will have at least 300 shrubs/trees per acres from species listed in Table 4; and
- No more than 20% of wetland area is composed of invasive species such as but not limited to: purple loosestrife, common reed, cattails and Japanese knotweed; and
- Reestablishment areas achieve 75% of final VIBI goal.

8.4 Final Vegetative Goals at end of the 10-Year Monitoring Period

- 90% relative cover by native perennial hydrophytes (FAC or wetter); and
- Any PSS area will have at least 450 shrubs/trees per acres from species listed in Table 4; and
- No more than 10% of wetland area is composed of invasive species such as but not limited to: purple loosestrife, common reed, cattails and Japanese knotweed; and
- A VIBI goal of 45 will be required for Reestablishment areas.

9. Monitoring Requirements

9.1 Monitoring report requirements

Annual site monitoring will begin after construction is completed and will continue for ten (10) years. Monitoring reports will be submitted as outlined in Table 5. Monitoring locations will be determined in the site as-built post construction report.

Monitoring will consist of the following.

- Post construction, monitoring report complete with photographs, baseline ecological descriptions, as-builts, and estimates of absolute cover of invasive plant species.
- Descriptions of the monitoring inspection protocols used.
- Hydrology data from permanent water wells as well as hydrology information derived from Wetland Determination Data Forms completed throughout the site. Locations of each water well and data point will be indicated on the as-built survey map.
- Concisely describe remedial actions completed during the monitoring year to meet the three success standards – actions such as, replanting, controlling invasive plant species (with biological, herbicidal, or mechanical methods), re-grading the site, adjusting site hydrology, etc.
- Description of other remedial actions taken.
- Report on the status of all erosion control measures on the mitigation site. Identify whether they are functioning. Descriptions of the necessity of any planned additional temporary measures.
- Review of all information collected to meet all performance goals (8.1, 8.2, 8.3, 8.4) as appropriate.
- Photographs taken from permanent photo points shown on a site plan.
- List of wildlife observed and other interesting biological occurrences.
- Description of the general plant health, vigor and mortality, including a prognosis for their future survival.
- VIBI scores will be recorded for all reestablishment areas generating credits.

9.2 Reporting schedule

Monitoring reports and an initial Post-Construction Report, by unique year and number, will be submitted by the following 28 February to describe conditions in the prior growing season. All reports in hard copy and digital format will be submitted to District Engineer, Department of the Army, New York District Corps of Engineers 26 Federal Plaza, New York, New York 10278-0090. All monitoring, reporting, requests and adaptive management implementation will be the responsibility of TWT. Measures requiring additional soil manipulation or changes in hydrology will be undertaken only after written approval from the New York District Engineer.

Table 5: Reporting Schedule

Activity	Description	Year
Post-Construction Report	Submitted in February of the year following construction completion and planting	0
1st Monitoring Report	First full year of vegetation growth, template developed to be used for all reports	1
2nd Monitoring Report	Third full year of vegetation growth	3
3rd Monitoring Report	Fifth full year of vegetation growth	5
4th Monitoring Report	Seventh full year of vegetation growth	7
Final Monitoring Report	Tenth full year of vegetation growth	10

In the event that construction takes more than one growing season to be completed, an interim construction

report will be submitted by no later than February 28 and will describe completed tasks and those remaining. The monitoring timeline will begin following the completion of construction activities described herein.

10. Long-term Management Plan, Including Financial Arrangements

A long-term management strategy will be implemented after the site has successfully completed its initial monitoring and review period. The strategy will advocate a sustainable approach, minimizing active management activities, opting for natural wetland processes to prevail. The adaptive management plan in Section 11 describes the approach to ensure the site is sustainable. The site will be available for study and research; we expect SUNY ESF, among other universities, may use the site for graduate research. This academic partnership helps meet educational objectives for this site and also provides site visits that may reveal adaptive management needs. The parcel will be posted for protection against trespassing as well as to delineate the boundaries for academic activities.

To ensure financial stability TWT will continue to own the site fee simple in perpetuity. Being a 501(c) 3 nonprofit, TWT has received tax-exempt status for the site, which helps assure its long-term protection. TWT has a director-controlled Stewardship Management Investment Account specifically established for the Mitigation Bank. Ten percent of all gross credit sales will be deposited in the account, with the investment income (investment instruments are low risk and broad based) used to support permanent long-term management. Tying financial support to credits sales provides a mechanism to tie support directly to the degree of restoration activity.

11. Adaptive Management Plan, Including Addressing Invasive Species Control

Every wetland site has its own unique characteristics that should be addressed with an adaptive management plan for long-term viability. Proper monitoring of the site will ensure adaptive management activities are implemented as new information is gathered. Regular maintenance activities such as invasive species and trash removal during routine monitoring trips will reduce the need for larger intervention. TWT will regularly review the status of this site to confirm that all necessary activities have been implemented. The Rigg property provides access and parking for wetland observation or maintenance.

Unforeseen environmental conditions can also affect a wetland's viability. Flooding, prolonged drought, invasive species, site degradation (i.e., trash dumping, illegal logging, ATV travel), erosion and vandalism are examples of some adverse conditions that with early detection and proper management can be overcome.

If the mitigation site is not adequately vegetated by the end of the third year, a remedial planting plan will be developed. Plant or seed material will be obtained from nurseries or, if possible, from nearby wetlands. If the DE acting in consultation with the IRT determines that the site (or any portion thereof) is failing to establish and is not making satisfactory progress towards meeting the performance goals within the monitoring period, TWT must develop a remedial action plan to correct the deficiencies, or

alternately a reduction of credits may be levied against underperforming areas. In the former case, the remedial action plan must be submitted to the DE within three months of receipt of written notification of deficiencies. Within two months of receipt of the remedial action plan, the DE acting in consultation with the IRT must provide written acceptance of the submitted plan or a modified plan acceptable to the DE acting in consultation with the IRT. The DE acting in consultation with the IRT accepted remedial action plan (as submitted by TWT or as modified by the DE acting in consultation with the IRT) will then be returned to TWT and TWT shall implement the measures specified in the remedial action plan within six months or along a timeline as otherwise provided in the remedial action plan.

12. Financial Assurances

TWT will provide sufficient assurance to **"ensure a high level of confidence that the compensatory mitigation project will be successfully completed"** (Section 332.3(n)(1) through a performance bond naming the USACE New York District as the Obligee, who can then designate a third party. TWT will provide the USACE New York District with a cost estimate for appropriate costs that need to be assured, such as construction and monitoring of the project should TWT not complete these Mitigation Plan Tasks. TWT plans on using the bonding company it presently uses to meet its assurance obligations for another NY Mitigation Bank, the Salt Marsh Bank in Montezuma, NY.

Literature Cited:

Bried, J.T., Strout, K.L., Portante, T., 2012, Coefficients of conservatism for the vascular flora of New York and New England: Inter-state Comparisons and Expert Opinion Basis. Northeast Natural History Conference 2011. Selected Papers 6:101-114.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Environmental Laboratory, 1987. Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1) U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.

Morgan, M. 2017. Wilson Hill WMA "Cornfield" Restoration and Management Plan with contributions by Angela Ross, Glenn Johnson, and Gian Dodici. Slightly update draft 4 April 2017. 13p.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed Feb 2014.



Appendix A



Upper Susquehanna Coalition

Jeremy Waddell, Wetland Biologist

183 Corporate Drive

Owego, NY 13827

Phone: 607.687.3553

Fax: 607.687.9440

Email: jwaddell@u-s-c.org

Website: www.u-s-c.org

Locally led conservation in the Upper Susquehanna River Watershed

George Casey

August 22, 2018

US Army Corps of Engineers
Upstate Regulatory Field Office
3rd Floor North
1 Buffington Street, Watervliet Arsenal
Watervliet, NY 12189-4000

Re: Overlook Wetland Bank Site Jurisdictional Determination Request

Dear Mr. Casey,

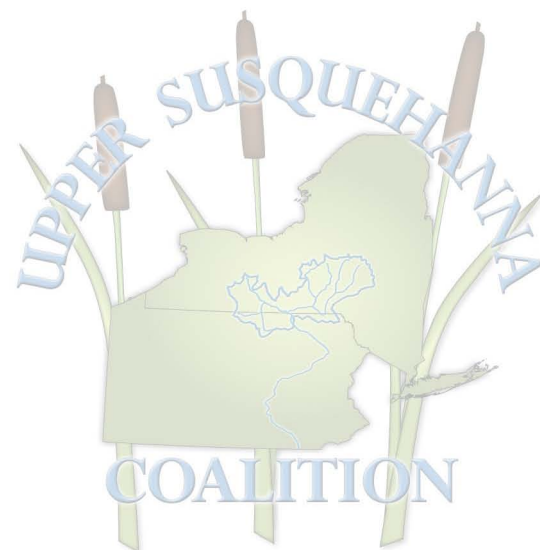
On behalf of the applicant and property owner The Wetland Trust (4729 State Route 414, Burdett, NY 14818; 607-765-4780), USC has prepared the attached information to request a Jurisdictional Determination at the TWT 159.8-acre parcel of land located at the junction of Rombout and Overlook Roads in the Town of LaGrange, Dutchess County (Figure 1). TWT proposes to re-establish wetlands and enhance upland buffer areas that have been historically impacted on the property, and confirmation of the wetland boundaries in the immediate vicinity of the potential work areas identified in Figure 2 is the primary goal of this request.

In 2017, TWT contracted with Diehlux, LLC (2434 County Road 39, East Bloomfield, NY 14469; 607-742-0977) to delineate the on-site wetlands and provide a report (Addendum A).

If you have any questions or require additional information at this time, please don't hesitate to contact me.

Thank you,

Jeremy R. Waddell



Wetland Delineation Report

Overlook Wetlands Preserve

Town of LaGrange
Dutchess County, New York

Prepared by: The Upper Susquehanna Coalition
with Overlook Site Delineation Performed by: Diehlux LLC

August 22, 2018

Property Description

The Overlook Wetlands Preserve is 159.8 acres of land at the junction of Rombout and Overlook roads in the Town of LaGrange, Dutchess County and located in the 12-digit HUA 020200080205, Great Spring Creek-Wappinger Creek, (Latitude/longitude = 41.698533, -73.830013 and Figure 1).

Past landuse

The Overlook Wetlands Preserve property agriculture history can be traced to before the mid-1850's, with no information available as to how much before. The property has primarily been a dairy farm. Early topographic maps and aerial photos show a local landscape largely cleared of forest, and the earliest aerial photos available, 1936, shows nearly the entire parcel denuded of woody vegetation with linear features, indicating efforts to drain the fields, visible. One kettle hole pond, less than 1-acre in size, was present in 1936 photos, and darkened areas throughout the property indicate wet soil conditions despite prevalent ditches.

Current landuse

The present land uses within the mitigation site include 37 acres upland forest, 37 acres of agricultural field that recently were in a corn/hay rotation until the property was acquired by TWT, grassland and other open upland cover types, 4 acres upland shrub cover and 78 acres of wetland and open water complex. The wetland on site is all connected and labeled Wetland A in Figure 3, where it is subdivided by cover type into 16.84 acres emergent, 2.80 acres scrub shrub, 36.92 acres forest and 21.64 acres open water.

Distance to Traditionally Navigable Waters

Wetland A and all of its components are directly connected to an un-named perennial RPW that drains 1.7 miles west, northwest before entering Wappinger Creek and continuing southwest for 12.6 miles to a TNW, the Hudson River. Wetland A and the Overlook Property are 5.3 aerial miles east of the Hudson River in Poughkeepsie, NY.

Present Plant Communities

A matrix of wetland and upland forest comprises the eastern and southeastern part of the Overlook Property and agricultural field occupies a large part of the remainder of the property upland areas with a small amount of shrubland, older ag fields and several other small upland components. Open water, emergent, forest, and scrub shrub wetland communities cover the remaining wetland portion of the property, and while many different plants are present throughout each, several community dominants are highlighted in the descriptions below.

Upland communities

Dominant woody species found in upland forested areas include green ash (*Fraxinus americana*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), red maple (*Acer rubrum*), black cherry (*Prunus serotina*), multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), and

dominant herbaceous species include poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), Canada goldenrod (*Solidago canadensis*), Japanese stiltgrass (*Microstegium vimineum*).

Upland agricultural fields and grassland areas are dominated by old field species and other weedy upland plants with some hydrophytes interspersed in areas. Common upland plants include Canada goldenrod, common milkweed (*Asclepias syriaca*), orchardgrass (*Dactylis glomerata*), hairy vetch (*Vicia villosa*), smooth brome (*Bromus inermis*), poison ivy (*Toxicodendron radicans*), spreading woodfern (*Dryopteris expansa*), bunchberry dogwood (*Cornus canadensis*) and virginia creeper (*Parthenocissus quinquefolia*). The agricultural field to the immediate west of the Overlook Pond has considerably more weedy species than fields elsewhere on the property, plants common in this community include annual ragweed (*Ambrosia artemisiifolia*), Virginia pepperweed (*Lepidium virginicum*), oxeye daisy (*Leucanthemum vulgare*) and bedstraw (*Gallium* spp.) among others.

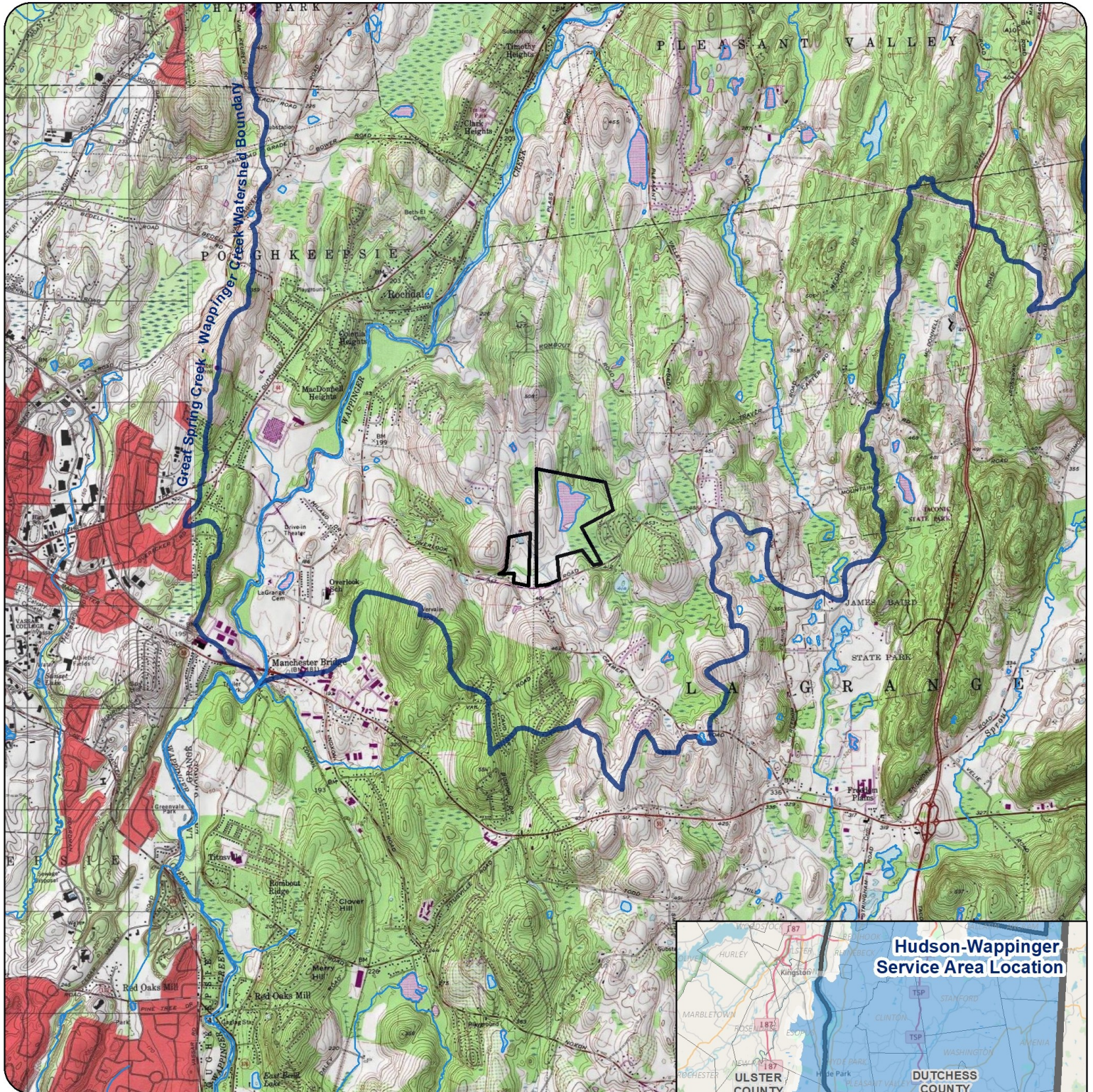
Wetland Communities

Dominant woody species found in the forested wetland areas include green ash, red maple, American elm (*Ulmus americana*), redosier dogwood (*Cornus sericea*), southern arrowwood (*Viburnum recognitum*), and northern spicebush (*Lindera benzoin*) and dominant herbaceous species include upright sedge (*Carex stricta*), sensitive fern (*Onoclea sensibilis*), purple loosestrife (*Lythrum salicaria*), reed canarygrass (*Phalaris arundinacea*), common rush (*Juncus effusus*), narrowleaf cattail (*Typha angustifolia*), poison ivy, jewelweed (*Impatiens capensis*), and wrinkleleaf goldenrod (*Solidago rugosa*).

Emergent communities vary across the project site, with cattail (*Typha* spp.), purple loosestrife and reed canarygrass common throughout the property, but in dense communities in the western, most recently farmed portions. Communities dominated by upright sedge (*Carex stricta*), woolgrass (*Scirpus cyperinus*), skunk cabbage (*Symplocarpus foetidus*) and longhair sedge (*Carex comosa*) can be found in the more natural emergent communities in the eastern part of the property. Some small patches of giant reed (*Phragmites australis*) can be found in the Overlook Pond, primarily along the constructed berm and in adjacent areas to the west.

Open water areas are frequently too deep for emergent plants, but floating-leaved, free-floating and submerged plants are common throughout the Overlook Pond. American white waterlily (*Nymphaea odorata*), and duckweed (*Lemna* spp.) are present throughout much of the open water community. Also common in shallower areas are purple loosestrife, buttonbush (*Cephalanthus occidentalis*) and soft rush.

Figure 1: Overlook Wetlands Preserve Mitigation Site Location



Legend

- Property Boundary - 159.8 acres
- 12-digit Watershed Boundary

0 1,625 3,250 6,500 9,750 13,000 Feet



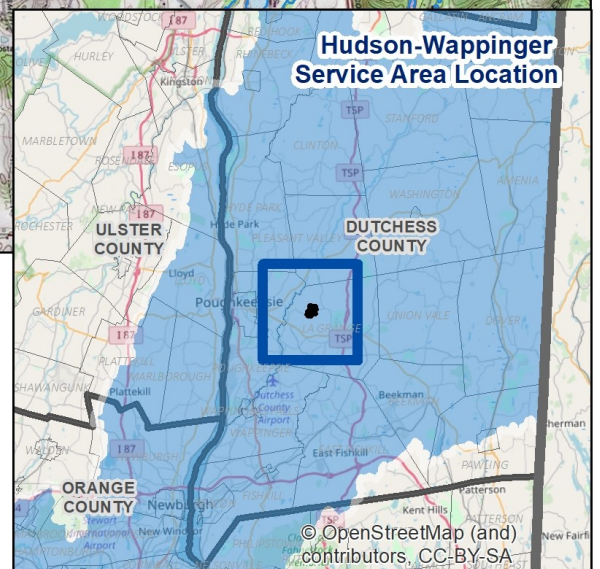
Property Location

Property Centroid Lat/Lon: 41.697, -73.8316

Town of LaGrange, Dutchess County

Northeast of the intersection of Rombout road and Overlook Road

Hudson-Wappinger Service Area



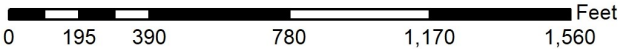
0 3.25 6.5 13 19.5 26 5 Miles

© OpenStreetMap (and) contributors, CC-BY-SA

Figure 2: Mitigation Site Plan

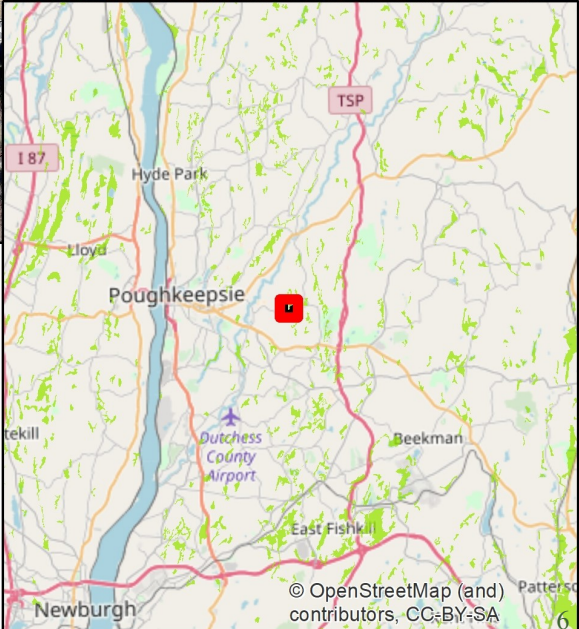


2016 Aerial Photo



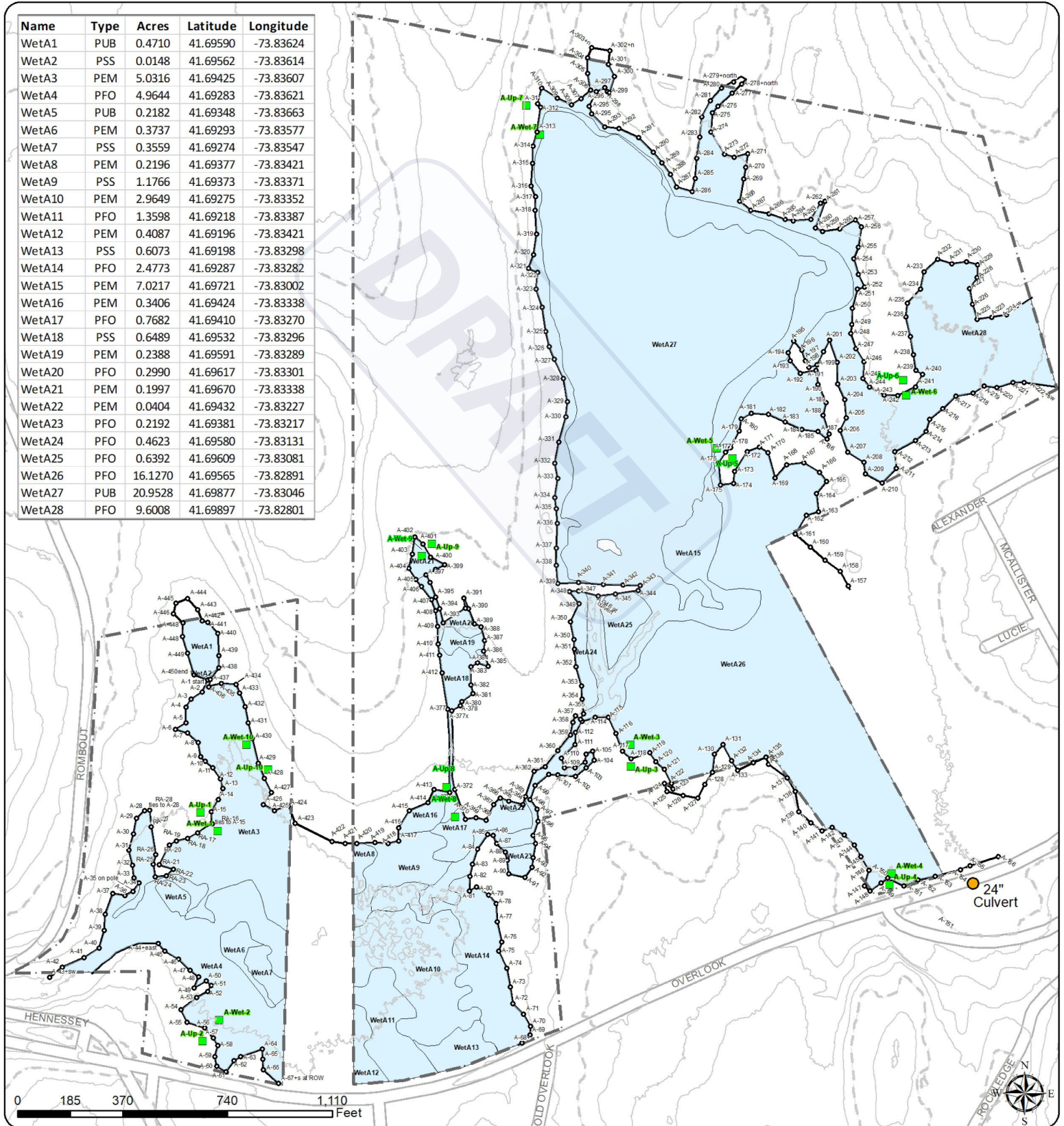
Legend

- Mitigation Area Boundary = 156.35 acres
- Wetland Delineation
- Planned Mitigation Areas**
- Re-establishment
- Upland Enhancement



Overlook Wetland Boundaries

Name	Type	Acres	Latitude	Longitude
WetA1	PUB	0.4710	41.69590	-73.83624
WetA2	PSS	0.0148	41.69562	-73.83614
WetA3	PEM	5.0316	41.69425	-73.83607
WetA4	PFO	4.9644	41.69283	-73.83621
WetA5	PUB	0.2182	41.69348	-73.83663
WetA6	PEM	0.3737	41.69293	-73.83577
WetA7	PSS	0.3559	41.69274	-73.83547
WetA8	PEM	0.2196	41.69377	-73.83421
WetA9	PSS	1.1766	41.69373	-73.83371
WetA10	PEM	2.9649	41.69275	-73.83352
WetA11	PFO	1.3598	41.69218	-73.83387
WetA12	PEM	0.4087	41.69196	-73.83421
WetA13	PSS	0.6073	41.69198	-73.83298
WetA14	PFO	2.4773	41.69287	-73.83282
WetA15	PEM	7.0217	41.69721	-73.83002
WetA16	PEM	0.3406	41.69424	-73.83338
WetA17	PFO	0.7682	41.69410	-73.83270
WetA18	PSS	0.6489	41.69532	-73.83296
WetA19	PEM	0.2388	41.69591	-73.83289
WetA20	PFO	0.2990	41.69617	-73.83301
WetA21	PEM	0.1997	41.69670	-73.83338
WetA22	PEM	0.0404	41.69432	-73.83227
WetA23	PFO	0.2192	41.69381	-73.83217
WetA24	PFO	0.4623	41.69580	-73.83131
WetA25	PFO	0.6392	41.69609	-73.83081
WetA26	PFO	16.1270	41.69565	-73.82891
WetA27	PUB	20.9528	41.69877	-73.83046
WetA28	PFO	9.6008	41.69897	-73.82801



Drawn: MY
 Date: 08/22/2018
 Scale: 1 inch = 445 feet
 Project: Overlook Wetland Delineation
 Figure: Figure 3

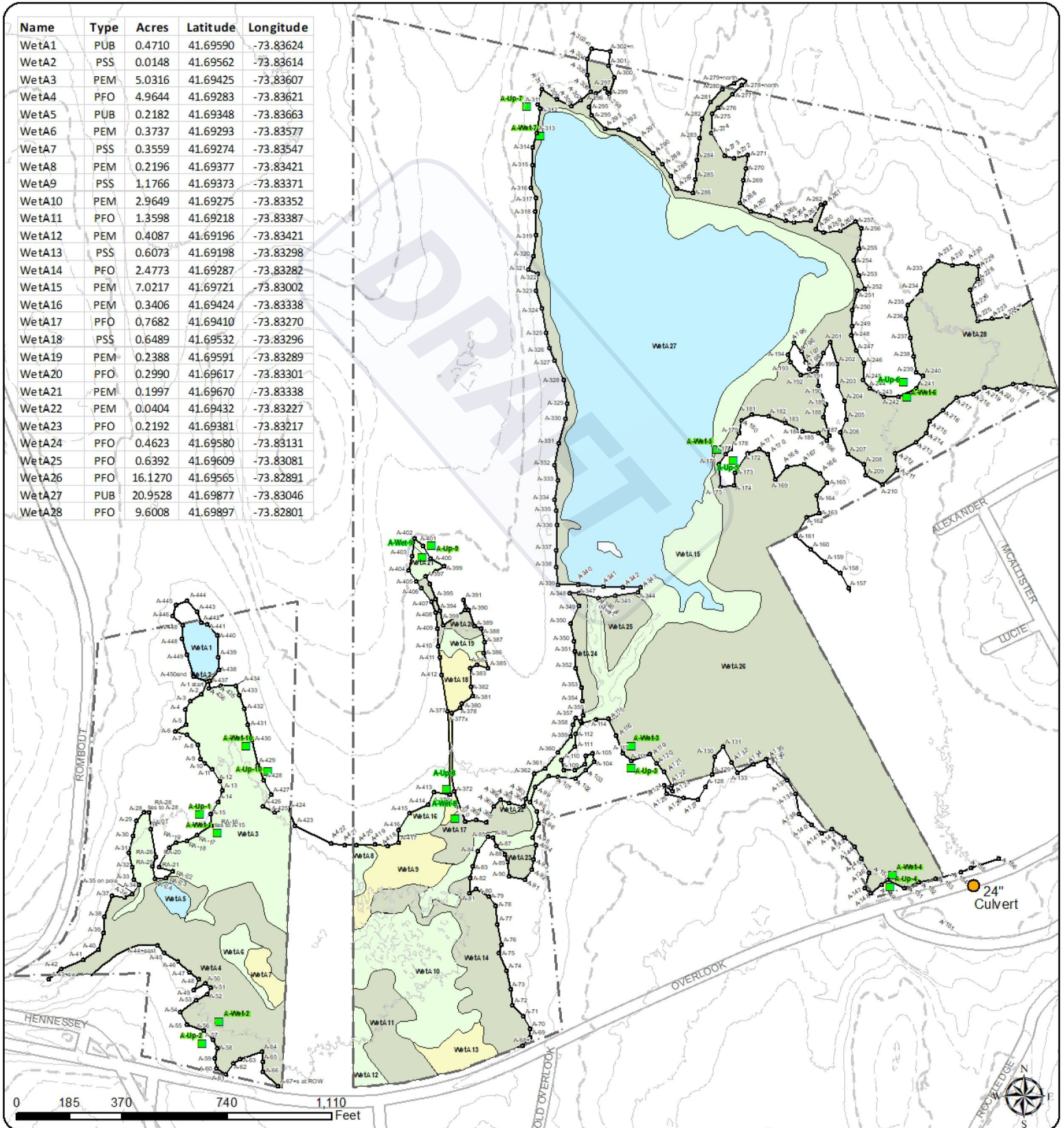
GPS Data Collection Methodology:

The wetland points identified in this Figure were collected with a sub-meter accurate Trimble Geo7x Series Handheld GPS unit with floodlight/real-time correction enabled. At each wetland/flag location, data was recorded and averaged for a minimum of 10-15 seconds to ensure accurate positioning. The GPS points were uploaded and imported into Trimble Pathfinder Office Software. The points were differentially collected using data imported from the nearest available base station. They were then exported to a comma delimited file and imported into Microsoft Excel for final data manipulation and presentation to The Wetland Trust by Diehlux LLC. The final delineation points, listed in Addendum A, Appendix IV were then imported into ArcGIS 10.3.1 and used to create the Delineation Points Pointfile and Delineation Boundary Linefile included in Figure 3 and supplemental project maps.

- Delineation Points
- ▬ Property Boundary
- Data Points
- ▬ Delineated Wetland 78.02 acres
- ~ Delineation Boundary
- ~ 10' LiDAR-Derived Contours

Overlook Wetland Boundaries

Name	Type	Acres	Latitude	Longitude
WetA1	PUB	0.4710	41.69590	-73.83624
WetA2	PSS	0.0148	41.69562	-73.83614
WetA3	PEM	5.0316	41.69425	-73.83607
WetA4	PFO	4.9644	41.69283	-73.83621
WetA5	PUB	0.2182	41.69348	-73.83663
WetA6	PEM	0.3737	41.69293	-73.83577
WetA7	PSS	0.3559	41.69274	-73.83547
WetA8	PEM	0.2196	41.69377	-73.83421
WetA9	PSS	1.1766	41.69373	-73.83371
WetA10	PEM	2.9649	41.69275	-73.83352
WetA11	PFO	1.3598	41.69218	-73.83387
WetA12	PEM	0.4087	41.69196	-73.83421
WetA13	PSS	0.6073	41.69198	-73.83298
WetA14	PFO	2.4773	41.69287	-73.83282
WetA15	PEM	7.0217	41.69721	-73.83002
WetA16	PEM	0.3406	41.69424	-73.83338
WetA17	PFO	0.7682	41.69410	-73.83270
WetA18	PSS	0.6489	41.69532	-73.83296
WetA19	PEM	0.2388	41.69591	-73.83289
WetA20	PFO	0.2990	41.69617	-73.83301
WetA21	PEM	0.1997	41.69670	-73.83338
WetA22	PEM	0.0404	41.69432	-73.83227
WetA23	PFO	0.2192	41.69381	-73.83217
WetA24	PFO	0.4623	41.69580	-73.83131
WetA25	PFO	0.6392	41.69609	-73.83081
WetA26	PFO	16.1270	41.69565	-73.82891
WetA27	PUB	20.9528	41.69877	-73.83046
WetA28	PFO	9.6008	41.69897	-73.82801

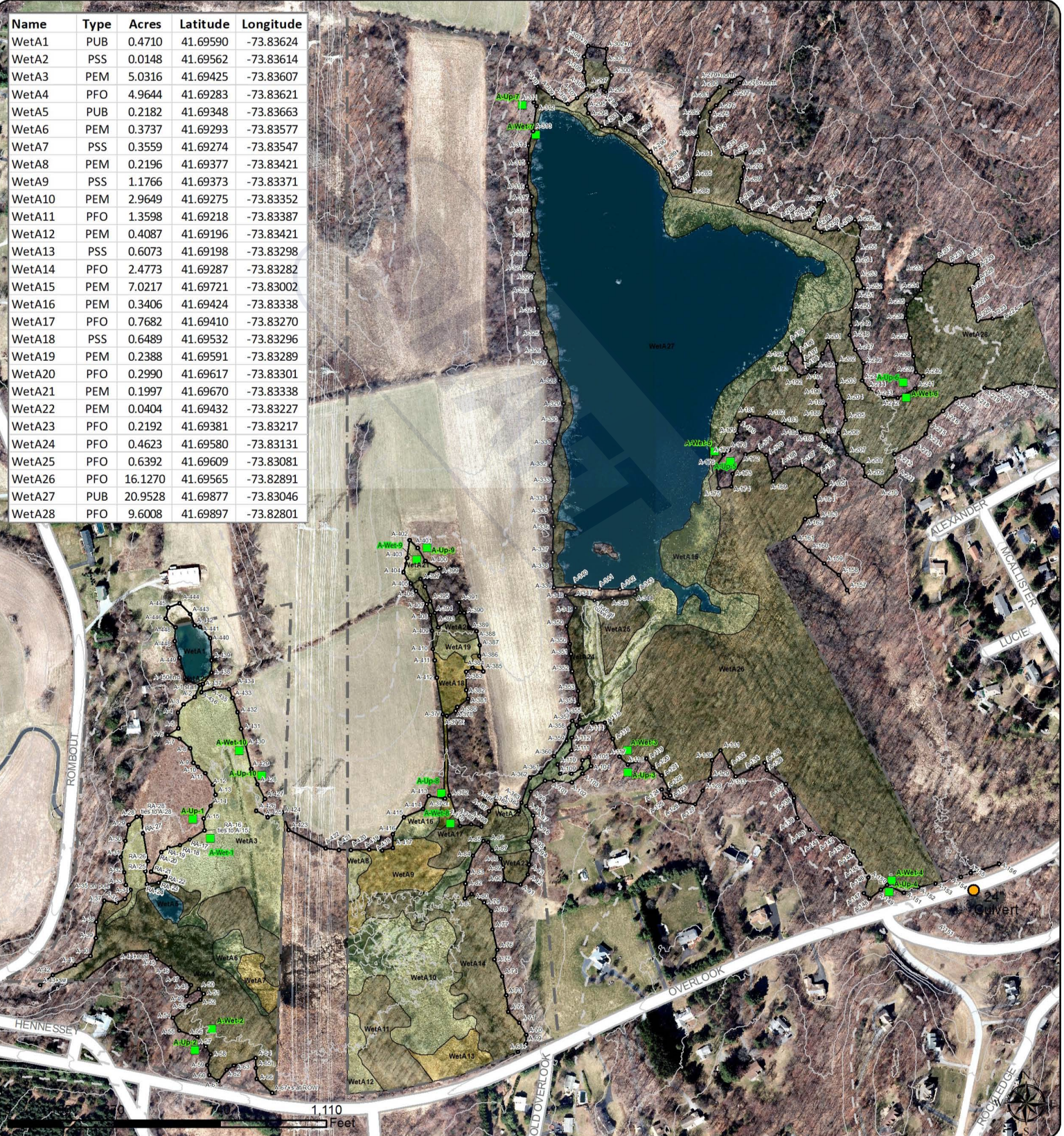


Drawn: MY
 Date: 08/22/2018
 Scale: 1inch = 445 feet
 Project: Overlook Wetland Delineation
 Figure: Figure 3a

GPS Data Collection Methodology:
 The wetland points identified in this Figure were collected with a sub-meter accurate Trimble Geo7x Series Handheld GPS unit with floodlight/real-time correction enabled. At each wetland/flag location, data was recorded and averaged for a minimum of 10-15 seconds to ensure accurate positioning. The GPS points were uploaded and imported into Trimble Pathfinder Office Software. The points were differentially collected using data imported from the nearest available base station. They were then exported to a comma delimited file and imported into Microsoft Excel for final data manipulation and presentation to The Wetland Trust by Diehlux LLC. The final delineation points, listed in Addendum A, Appendix IV were then imported into ArcGIS 10.3.1 and used to create the Delineation Points Pointfile and Delineation Boundary Linefile included in Figure 3 and supplemental project maps.

- Delineation Points
- Property Boundary
- Data Points
- PEM = 16.84 acres
- PFO = 36.92 acres
- PSS = 2.80 acres
- PUB = 21.64 acres
- ~ Delineation Boundary
- ~ 10' LiDAR-Derived Contours

Overlook Wetland Boundaries



2016 Aerial Photo

Drawn: MY
 Date: 08/22/2018
 Scale: 1 inch = 445 feet
 Project: Overlook Wetland Delineation
 Figure: Figure 3b

GPS Data Collection Methodology:
 The wetland points identified in this Figure were collected with a sub-meter accurate Trimble Geo7x Series Handheld GPS unit with floodlight/real-time correction enabled. At each wetland/flag location, data was recorded and averaged for a minimum of 10-15 seconds to ensure accurate positioning. The GPS points were uploaded and imported into Trimble Pathfinder Office Software. The points were differentially collected using data imported from the nearest available base station. They were then exported to a comma delimited file and imported into Microsoft Excel for final data manipulation and presentation to The Wetland Trust by Diehlux LLC. The final delineation points, listed in Addendum A, Appendix IV were then imported into ArcGIS 10.3.1 and used to create the Delineation Points Pointfile and Delineation Boundary Linefile included in Figure 3 and supplemental project maps.

- Delineation Points
- Property Boundary
- Data Points
- PEM = 16.84 acres
- PFO = 36.92 acres
- PSS = 2.80 acres
- PUB = 21.64 acres
- ~ Delineation Boundary
- ~ 10' LiDAR-Derived Contours

ID	Longitude	Latitude	Elevation	Comment/Flag No.
1	-73.83616537	41.69557741	266.474	A-1 start
2	-73.836241	41.69546078	265.525	A-2
3	-73.83638386	41.69539374	266.064	A-3
4	-73.836453	41.69531608	266.788	A-4
5	-73.83645099	41.69516715	267.539	A-5
6	-73.83659201	41.69510294	261.465	A-6
7	-73.83643798	41.69506618	264.343	A-7
8	-73.83630245	41.69497405	263.53	A-8
9	-73.83626833	41.69483555	263.144	A-9
10	-73.83620982	41.69479432	262.817	A-10
11	-73.83611633	41.69473003	262.828	A-11
12	-73.83601878	41.69461903	262.493	A-12
13	-73.83598865	41.69452548	262.102	A-13
14	-73.83605247	41.69441785	261.985	A-14
15	-73.83614573	41.69430172	262.277	A-15
16	-73.83606423	41.69410965	260.776	A-Wet-1
17	-73.83620382	41.6941598	261.263	A-16
18	-73.83628312	41.69429365	263.175	A-Up-1
19	-73.83635625	41.69421115	262.559	A-17
20	-73.83635434	41.69432509	263.44	A-18
21	-73.83631353	41.69440603	263.341	A-19
22	-73.8363568	41.69453209	263.436	A-20
23	-73.83648611	41.69444787	262.8	A-21
24	-73.83662134	41.69452655	263.681	A-22
25	-73.83676007	41.69455707	261.211	A-23
26	-73.83683541	41.69460797	264.247	A-24
27	-73.83683955	41.69468111	272.225	A-25
28	-73.8370029	41.69458481	265.615	A-26
29	-73.83703653	41.69445163	264.632	A-27
30	-73.83700047	41.69432301	265.013	A-28
31	-73.83710602	41.69424716	265.049	A-29
32	-73.83714782	41.69409601	262.562	A-30
33	-73.8372094	41.69394068	263.182	A-31
34	-73.83716842	41.69379424	261.494	A-32
35	-73.83715241	41.69367397	268.172	A-33
36	-73.8370854	41.69362578	254.638	A-34
37	-73.83716673	41.69353976	262.682	A-35 on pole
38	-73.83727029	41.69350459	257.613	A-36
39	-73.83742717	41.69352485	254.426	A-37
40	-73.83753096	41.69332469	254.306	A-38
41	-73.8375428	41.69316878	255.587	A-39
42	-73.83761694	41.69300101	253.465	A-40
43	-73.83765527	41.69291604	259.897	Stream CL 20'
44	-73.83781194	41.6929096	282.466	A-41
45	-73.8380956	41.69281977	271.542	A-42
46	-73.83825975	41.69272248	258.611	A-43+sw

47	-73.83795639	41.69277343	249.678	Stream CL 20'w
48	-73.83685259	41.69303613	269.865	A-44+east
49	-73.8367685	41.69296249	270.153	A-45
50	-73.83659559	41.6928791	262.789	A-46
51	-73.8364451	41.69277295	276.459	A-47
52	-73.83633226	41.6927063	263.799	A-48
53	-73.83639506	41.69260001	276.297	A-49
54	-73.83623763	41.69266786	276.072	A-50
55	-73.83617611	41.69262252	254.485	A-51
56	-73.83621747	41.69256227	281.839	A-52
57	-73.83636381	41.69250727	257.137	A-53
58	-73.83657156	41.69239439	280.218	A-54
59	-73.83649323	41.6922699	284.217	A-55
60	-73.83626694	41.69221259	269.302	A-56
61	-73.83607431	41.69228468	267.956	A-Wet-2
62	-73.83615592	41.69211618	271.178	A-57
63	-73.83609599	41.69203909	274.371	A-58
64	-73.83629469	41.69207989	282.826	A-Up-1
65	-73.8361392	41.69193555	268.399	A-59
66	-73.83611455	41.69184131	277.934	A-60
67	-73.83599954	41.69178528	272.961	A-61
68	-73.83589248	41.69189095	266.716	A-62
69	-73.83580502	41.69193066	266.813	A-63
70	-73.83552414	41.69200032	267.042	A-64
71	-73.83552192	41.69190055	271.186	A-65
72	-73.83551362	41.69180141	265.584	A-66
73	-73.83532073	41.69166473	265.412	A-67+s at ROW
74	-73.83217277	41.69202497	269.255	A-68+
75	-73.83207029	41.69210285	273.816	A-69
76	-73.83206241	41.69218483	272.556	A-70
77	-73.83214747	41.69230402	268.781	A-71
78	-73.83228861	41.69240954	270.605	A-72
79	-73.83231434	41.69256702	275.492	A-73
80	-73.83235991	41.69274884	280.063	A-74
81	-73.83245745	41.69291612	288.133	A-75
82	-73.83241737	41.69300294	274.738	A-76
83	-73.83247464	41.69320074	262.956	A-77
84	-73.83248607	41.69337635	279.578	A-78
85	-73.83257704	41.69346269	270.411	A-79
86	-73.83273371	41.69354159	270.726	A-80
87	-73.83282523	41.69350241	290.099	A-81
88	-73.83281533	41.69364469	272.727	A-82
89	-73.83278133	41.69375867	269.56	A-83
90	-73.83282326	41.69393216	270.883	stream CL 10'w
91	-73.83271357	41.693907	263.296	A-84
92	-73.83257997	41.69404783	262.701	A-85
93	-73.83258066	41.69405759	260.215	Stream CL 10'w

94	-73.83249267	41.69404522	273.823	Stream CL 10'w
95	-73.83251266	41.69403559	276.13	A-86
96	-73.83246514	41.69395763	262.467	A-87
97	-73.83240981	41.69395564	276.831	Stream CL 10'w
98	-73.8323586	41.69387522	259.156	A-88
99	-73.83233319	41.69379491	271.774	A-89
100	-73.83231585	41.69366118	268.958	A-90
101	-73.83210977	41.6936285	272.813	A-91
102	-73.83201498	41.69372174	277.428	A-92
103	-73.83199761	41.69381816	266.478	A-93
104	-73.83196132	41.69395314	272.968	A-94
105	-73.83199824	41.69403228	277.843	A-95
106	-73.83197974	41.69412262	264.683	Stream CL 10'w
107	-73.83192715	41.69416545	285.154	A-96
108	-73.83194128	41.69428487	274.645	A-97
109	-73.83202729	41.69437607	286.096	A-98
110	-73.83201408	41.6945169	272.929	Stream CL 10'w
111	-73.83195972	41.69451518	274.295	A-99
112	-73.83178754	41.69465242	269.154	Stream CL 10'w
113	-73.8317802	41.69461963	270.324	A-100
114	-73.83166718	41.69461515	292.98	A-101
115	-73.8314403	41.6945981	280.19	A-102
116	-73.83130055	41.6946772	277.161	A-103
117	-73.8311932	41.69475236	292.459	A-104
118	-73.83121332	41.6948377	291.85	A-105
119	-73.8312982	41.69480983	290.449	A-106
120	-73.83130953	41.69473309	275.936	A-107
121	-73.83144199	41.69467931	301.721	A-108
122	-73.83158176	41.694682	268.21	A-109
123	-73.83161435	41.69477251	251.062	A-110
124	-73.83160467	41.69486589	290.45	Stream CL 12'w
125	-73.83143762	41.694905	281.258	A-111
126	-73.83143154	41.69502425	275.902	A-112
127	-73.8313465	41.69513006	286.395	A-113
128	-73.83117047	41.69516591	279.759	A-114
129	-73.83100677	41.69516593	280.305	A-115
130	-73.83091125	41.69500848	283.548	A-116
131	-73.83082714	41.69483712	287.155	A-117
132	-73.8307188	41.69476226	284.137	A-118
133	-73.83072222	41.69468396	285.402	A-Up-3
134	-73.83071921	41.69489519	284.395	A-Wet-3
135	-73.83047849	41.69481782	281.092	A-119
136	-73.83039601	41.69472794	288.18	A-120
137	-73.83029035	41.69465224	285.126	A-121
138	-73.8302	41.69451573	278.087	A-122
139	-73.83018517	41.69446028	278.417	A-123
140	-73.83029463	41.69451776	265.43	A-124

141	-73.83026079	41.69443906	279.576	A-125
142	-73.83005177	41.69439592	290.396	A-126
143	-73.82986599	41.69437215	292.301	A-127
144	-73.82976829	41.69450035	295.371	A-128
145	-73.82967301	41.69461817	285.548	A-129
146	-73.8296412	41.69479264	294.326	A-130
147	-73.82953073	41.69488617	280.976	A-131
148	-73.82941933	41.69472774	295.861	A-132
149	-73.82934735	41.69463318	282.838	A-133
150	-73.82913813	41.69470636	286.812	A-134
151	-73.82897517	41.69475998	289.915	A-135
152	-73.82894704	41.6946883	306.259	A-136
153	-73.82870577	41.69455417	289.772	A-137
154	-73.82860774	41.69442077	298.406	A-138
155	-73.82856457	41.69422524	297.446	A-139
156	-73.82840786	41.69411502	305.157	A-140
157	-73.82826867	41.6940349	303.028	A-141
158	-73.82813748	41.69407212	284.533	A-142
159	-73.82798297	41.69399394	284.543	A-143
160	-73.82785292	41.69389855	289.331	A-144
161	-73.8277693	41.69378414	274.346	A-145
162	-73.82766712	41.69364826	292.873	A-146
163	-73.82773163	41.69349791	298.939	A-147
164	-73.82765539	41.69344813	279.731	A-148
165	-73.82751178	41.69352854	275.282	A-149
166	-73.82743037	41.69357428	287.868	A-150
167	-73.82737223	41.69361492	287.578	A-Wet-4
168	-73.82740368	41.69350444	298.707	A-Up-4
169	-73.82721874	41.69349548	311.716	A-151
170	-73.82703414	41.69354973	293.092	A-152
171	-73.82681246	41.69358103	278.43	A-153
172	-73.82648959	41.69364165	287.058	A-154
173	-73.82636219	41.69367986	286.821	A-155 at 24 culvert
174	-73.82599838	41.69376275	294.286	A-156
175	-73.82632589	41.6935095	286.223	concrete culvert
176	-73.82788764	41.69640214	288.788	A-157
177	-73.82798771	41.69654742	298.564	A-158
178	-73.82818035	41.69665761	283.787	A-159
179	-73.82836763	41.69678186	280.214	A-160
180	-73.82855976	41.69691493	268.661	A-161
181	-73.82841322	41.69709092	271.842	A-162
182	-73.82825363	41.69712526	287.753	A-163
183	-73.82828113	41.69730123	293.445	A-164
184	-73.82814514	41.69741793	274.826	A-165
185	-73.82823539	41.69750698	308.536	A-166
186	-73.82843878	41.69760149	288.35	A-167
187	-73.82865769	41.69758397	282.91	A-168

188	-73.82880936	41.69745974	269.013	A-169
189	-73.82889866	41.69770396	279.613	A-170
190	-73.8290105	41.69775608	295.971	A-171
191	-73.82916749	41.69771746	307.005	A-172
192	-73.82955754	41.69774953	291.412	A-Wet-5
193	-73.82935388	41.69764799	275.41	A-Up-5
194	-73.82932919	41.69752872	288.971	A-173
195	-73.82934761	41.69740889	268.71	A-174
196	-73.82951334	41.69739549	273.654	A-175
197	-73.82953995	41.69761132	280.636	A-176
198	-73.82944384	41.69771398	299.299	A-177
199	-73.82937606	41.69775843	274.729	A-178
200	-73.82926796	41.69791538	282.559	A-179
201	-73.82923446	41.69803231	291.68	A-180
202	-73.82910274	41.69808717	301.825	A-181
203	-73.82888535	41.69807206	312.641	A-182
204	-73.8286678	41.69800091	291.961	A-183
205	-73.82845612	41.69792266	301.66	A-184
206	-73.82825092	41.69790351	293.349	A-185
207	-73.82813481	41.69782704	285.355	A-186
208	-73.82810379	41.69787601	296.555	A-187
209	-73.82818302	41.69805882	306.623	A-188
210	-73.82813969	41.69817706	304.923	A-189
211	-73.82824084	41.69835826	289.056	A-190
212	-73.8282614	41.69849372	301.749	A-191
213	-73.82846478	41.69846347	290.013	A-192
214	-73.82859596	41.69858809	291.257	A-193
215	-73.82862024	41.69866682	276.754	A-194
216	-73.82854261	41.69877956	281.176	A-195
217	-73.82844583	41.69869172	289.922	A-196
218	-73.82840084	41.69858982	294.236	A-197
219	-73.82835456	41.69852146	289.146	A-198
220	-73.82824845	41.6985452	290.647	A-199
221	-73.82816531	41.69867137	282.471	A-200
222	-73.82808361	41.69878301	283.474	A-201
223	-73.82799069	41.69857004	285.828	A-202
224	-73.82798597	41.69835828	299.879	A-203
225	-73.82790023	41.69820538	294.864	A-204
226	-73.8278829	41.6980277	298.778	A-205
227	-73.82796311	41.6979072	303.268	A-206
228	-73.82786846	41.69769772	285.282	A-207
229	-73.82766195	41.69759536	291.224	A-208
230	-73.82764097	41.69748707	298.544	A-209
231	-73.8274277	41.69739441	284.095	A-210
232	-73.82724797	41.6975335	274.331	A-211
233	-73.82726078	41.69769794	276.861	A-212
234	-73.82699344	41.69780147	282.508	A-213

235	-73.82685506	41.69788912	304.468	A-214
236	-73.82680709	41.69800449	296.171	A-215
237	-73.82663729	41.69810583	296.354	A-216
238	-73.82646297	41.69822323	315.802	A-217
239	-73.82623941	41.69825289	284.581	A-218
240	-73.82609788	41.69831876	305.603	A-219
241	-73.82593482	41.69830382	313.629	A-220
242	-73.8257269	41.69835223	316.979	A-221
243	-73.82557777	41.69834852	311.496	A-222+sw
244	-73.82598594	41.69898469	314.297	A-224
245	-73.82579526	41.6990041	294.505	A-223+W
246	-73.82617604	41.69896327	295.595	A-225
247	-73.82623013	41.69911183	288.191	A-226
248	-73.82626988	41.69926637	306.001	A-227
249	-73.82616828	41.69937166	299.861	A-228
250	-73.82615847	41.6994935	321.354	A-229
251	-73.82630475	41.6995232	335.416	A-230
252	-73.82649388	41.69950517	303.926	A-231
253	-73.82667374	41.69955044	306.114	A-232
254	-73.82685522	41.69942988	332.33	A-233
255	-73.82689859	41.69926503	303.398	A-234
256	-73.82707317	41.69913029	319.021	A-235
257	-73.82709195	41.69899806	297.766	A-236
258	-73.82704159	41.69880985	314.409	A-237
259	-73.82700164	41.69863359	309.599	A-238
260	-73.82697284	41.69847857	320.923	A-239
261	-73.82688729	41.69844107	301.202	A-240
262	-73.82698241	41.6983196	309.733	A-241
263	-73.82713823	41.69838215	299.398	A-Up-6
264	-73.82710138	41.69823614	303.194	A-Wet-6
265	-73.82721157	41.69823898	318.965	A-242
266	-73.82738831	41.6982444	282.718	A-243
267	-73.82757351	41.69832629	291.182	A-244
268	-73.82766152	41.69840722	297.913	A-245
269	-73.82764289	41.69857074	302.61	A-246
270	-73.82774658	41.69869822	303.795	A-247
271	-73.8278107	41.69884506	295.59	A-248
272	-73.82779437	41.69893537	296.996	A-249
273	-73.82778623	41.69908971	297.873	A-250
274	-73.82771791	41.69927341	281.247	A-251
275	-73.82762496	41.69929192	291.357	A-252
276	-73.82769729	41.6994169	292.011	A-253
277	-73.8277584	41.69956612	290.444	A-254
278	-73.82769684	41.69967758	292.327	A-255
279	-73.82765171	41.69987256	313.522	A-256
280	-73.82772999	41.69994206	305.347	A-257
281	-73.82793363	41.69985569	285.763	A-258

282	-73.82815181	41.69983547	289.718	A-259
283	-73.82824421	41.6998732	286.931	A-260
284	-73.82820816	41.70012618	309.378	Several large bedrock outcrops
285	-73.82811938	41.70012671	308.699	A-261
286	-73.82817857	41.70010791	312.861	A-262
287	-73.82830395	41.69995221	293.065	A-263
288	-73.8285301	41.69994261	284.184	A-264
289	-73.82863339	41.69995975	294.331	A-265
290	-73.82884282	41.70001339	278.373	A-266
291	-73.82907543	41.70004954	281.518	A-267
292	-73.82921686	41.70013814	288.654	A-268
293	-73.82916509	41.70035439	297.678	A-269
294	-73.82913432	41.70046451	292.352	A-270
295	-73.82910716	41.70059875	291.758	A-271
296	-73.82928307	41.70056638	301.068	A-272
297	-73.82940492	41.70059487	287.798	A-273
298	-73.82957955	41.70081512	307.381	A-274
299	-73.82955634	41.70100044	281.604	A-275
300	-73.82948166	41.7010592	314.893	A-276
301	-73.82930042	41.70118806	297.848	A-277
302	-73.82917311	41.70127397	291.782	A-278+north
303	-73.82927305	41.70129126	311.936	A-279+north
304	-73.82943063	41.70123425	302.882	A-280
305	-73.82957618	41.70111522	297.95	A-281
306	-73.82969461	41.70095823	301.991	A-282
307	-73.82972424	41.70076594	294.625	A-283
308	-73.82976708	41.70055897	300.414	A-284
309	-73.82978888	41.70036701	297.812	A-285
310	-73.82982698	41.70023919	290.01	A-286
311	-73.83002956	41.70028376	277.378	A-287
312	-73.8301055	41.70040715	281.241	A-288
313	-73.8302127	41.70052167	284.603	A-289
314	-73.83032693	41.70062381	275.492	A-290
315	-73.83050995	41.70076907	275.288	A-291
316	-73.83076592	41.70086126	285.501	A-292
317	-73.83094298	41.70087357	278.365	A-293
318	-73.83111299	41.7010034	274.831	A-295
319	-73.83114202	41.70107968	283.336	A-295
320	-73.83105224	41.70121645	291.5	A-296
321	-73.8309394	41.7012576	300.165	A-297
322	-73.83090743	41.70121664	301.531	A298
323	-73.83087972	41.70120635	302.31	A-299
324	-73.83081018	41.70136269	302.591	A-300
325	-73.8308909	41.70147861	285.404	A-301
326	-73.83086688	41.70161469	290.054	A-302+n
327	-73.83110071	41.70164609	279.393	A-303+north
328	-73.83115379	41.70154675	269.299	A-304

329	-73.83115921	41.70139462	285.937	A-305
330	-73.83112336	41.70123151	289.957	A-306
331	-73.83125008	41.70115173	260.683	A-307
332	-73.83137116	41.70109341	273.962	A-308
333	-73.83155584	41.70115939	285.572	A-309
334	-73.83143736	41.70127729	306.64	tent platform
335	-73.8317548	41.70126226	290.102	A-310
336	-73.83180561	41.70111106	281.665	A-311
337	-73.83177077	41.70107504	272.619	A-312
End 9.19.2017 and Start 9.20.2017				
1	-73.8319523	41.7010908	290.253	A-Up-7
2	-73.83182285	41.70083768	282.534	A-313
3	-73.83178325	41.70080418	279.799	A-Wet-7
4	-73.83187773	41.70069972	305.864	A-314
5	-73.83188165	41.70053292	283.171	A-315
6	-73.83190642	41.70031146	271	A-316
7	-73.8318485	41.70021116	274.187	A-317
8	-73.83185837	41.70007837	275.568	A-318
9	-73.83184732	41.69984997	281.842	A-319
10	-73.83188664	41.69965038	280.924	A-320
11	-73.83195602	41.69951585	284.06	A-321
12	-73.83183584	41.69947866	279.96	A-322
13	-73.83186239	41.69931698	276.988	A-323
14	-73.83178393	41.69914128	289.681	A-324
15	-73.8317415	41.69890699	278.188	A-325
16	-73.83170197	41.69875698	279.398	A-326
17	-73.83163775	41.69863536	279.211	A-327
18	-73.83152324	41.69844716	279.268	A-328
19	-73.83147783	41.69822363	282.979	A-329
20	-73.83150019	41.69807754	282.305	A-330
21	-73.83159486	41.69783479	281.254	A-331
22	-73.83164937	41.69762989	279.354	A-332
23	-73.83161307	41.69747967	282.853	A-333
24	-73.83165689	41.69729571	279.297	A-334
25	-73.83163645	41.69718885	276.348	A-335
26	-73.83162613	41.6970483	285.781	A-336
27	-73.83164396	41.69680538	281.489	A-337
28	-73.83165164	41.69664256	282.154	A-338
29	-73.83163287	41.69646681	280.24	A-339
30	-73.83136608	41.69647067	273.84	A-340
31	-73.83104694	41.69644959	277.758	A-341
32	-73.83079056	41.69644075	277.381	A-342
33	-73.83057112	41.69643543	284.485	A-343
34	-73.83059832	41.69638468	275.494	A-344
35	-73.83089132	41.69635424	287.1	A-345
36	-73.83111282	41.6963371	273.859	A-346 at culvert
37	-73.83136545	41.69638782	279.467	A-347

38	-73.83148364	41.69638713	276.321	A-348
39	-73.83135917	41.69626645	282.755	A-349
40	-73.83147546	41.69609368	288.941	A-350
41	-73.83143581	41.69592101	300.789	A-350
42	-73.83142898	41.69582822	284.491	A-351
43	-73.8314151	41.69565961	288.408	A-352
44	-73.8313438	41.69547323	289.461	A-353
45	-73.83134063	41.69534163	278.331	A-354
46	-73.83132329	41.69520151	283.939	A-355
47	-73.83136295	41.69514928	280.53	A-356
48	-73.83142389	41.69518434	271.637	A-357
49	-73.83146257	41.6951196	271.931	A-358
50	-73.83149786	41.69500016	284.449	A-359
51	-73.83166189	41.69485058	301.122	A-360
52	-73.83182729	41.69469617	286.74	A-361
53	-73.83197308	41.69464976	277.608	A-362
54	-73.83204121	41.69444523	279.658	Stream CL 10'wide
55	-73.83208345	41.6944087	266.1	A-363
56	-73.83211846	41.69433143	266.194	A-364
57	-73.83230158	41.69436538	270.74	A-365
58	-73.8324118	41.69439871	266.032	A-366
59	-73.83249917	41.69433381	270.099	A-367
60	-73.83259793	41.69418361	273.484	A-368
61	-73.83272651	41.69420795	268.603	A-369
62	-73.83286937	41.69419546	268.002	A-370
63	-73.83299634	41.69421777	267.727	A-Wet-8
64	-73.83306107	41.69445862	262.176	A-372x
65	-73.8331027	41.69450866	270.368	A-Up-8
66	-73.83300051	41.69448777	269.02	A-372
67	-73.83306987	41.69461542	265.47	A-373x
68	-73.83303274	41.69461903	272.741	A-373
69	-73.83305461	41.6948138	268.558	A-374x
70	-73.83301255	41.6948204	265.96	A-374
71	-73.83305612	41.69497008	277.597	A-375x
72	-73.83301817	41.69496414	281.754	A-375
73	-73.83305926	41.69507997	284.839	A-376x
74	-73.83301896	41.69509755	278.785	A-376
75	-73.83307244	41.69526539	277.369	A-377x
76	-73.83302619	41.69524983	277.158	A-377
77	-73.83291199	41.69529714	281.231	A-378
78	-73.83289027	41.69533356	277.787	A-380
79	-73.83274931	41.69541081	277.974	A-381
80	-73.83276936	41.69549649	278.158	A-382
81	-73.83277024	41.69567175	279.337	A-383
82	-73.83268309	41.69570787	279.302	A-384
83	-73.83254838	41.6956714	278.955	A-385
84	-73.83259897	41.6958216	281.014	A-386

85	-73.83258749	41.69592262	281.679	A-387
86	-73.83263005	41.69605743	280.575	A-388
87	-73.83271774	41.69608624	284.954	A-389
88	-73.83278726	41.69623521	288.956	A-390
89	-73.83284754	41.69633773	296.254	A-391
90	-73.83283126	41.69623702	301.557	A-392
91	-73.83312085	41.69609843	303.443	A-393
92	-73.83316143	41.69623622	287.104	A-394
93	-73.833211	41.69635107	288.464	A-395
94	-73.83328069	41.69649197	290.743	A-396
95	-73.83333429	41.69656542	288.75	A-397
96	-73.83320801	41.69661619	294.758	A-398
97	-73.83309115	41.69666277	289.836	A-399
98	-73.83327075	41.69673592	290.42	A-400
99	-73.83337941	41.69674814	290.287	A-Wet-9
100	-73.83324869	41.69686122	291.323	A-Up-9
101	-73.83336313	41.6968647	291.142	A-401
102	-73.83346625	41.69693519	292.038	A-402
103	-73.83350339	41.69676706	291.564	A-403
104	-73.83355129	41.69663137	291.676	A-404
105	-73.83345966	41.6965242	289.913	A-405
106	-73.83339487	41.69645229	299.833	A-406
107	-73.83326391	41.69632499	296.577	A-407
108	-73.83321541	41.69621731	287.122	A-408
109	-73.83319397	41.69606665	284.063	A-409
110	-73.83318746	41.69589286	282.648	A-410
111	-73.83316961	41.69578664	281.084	A-411
112	-73.83314329	41.69561782	279.539	A-412 connect to A-377x
113	-73.83326528	41.69448654	269.236	A-413 connect to 373x
114	-73.83334262	41.69436037	268.342	A-414
115	-73.83358587	41.69428451	268.585	A-415
116	-73.83373035	41.69412447	267.271	A-416
117	-73.83373074	41.69399639	277.624	A-417
118	-73.83387055	41.69397058	265.528	A-418
119	-73.83403562	41.69398289	265.11	A-419
120	-73.83426992	41.69397798	264.083	A-420
121	-73.83442318	41.69397973	264.378	A-421
122	-73.83459355	41.69400046	263.332	A-422
123	-73.83506148	41.69417955	262.761	A-423
124	-73.8351474	41.69434945	263.231	A-424
125	-73.83532577	41.6943052	262.16	A-425
126	-73.83546938	41.69436523	261.978	A-426
127	-73.83536248	41.69447831	263.205	A-427
128	-73.83545137	41.69461863	264.113	A-428
129	-73.83552721	41.69476823	263.003	A-429
130	-73.83567606	41.69494504	263.034	A-Wet-10
131	-73.83560316	41.6950082	263.525	A-430

132	-73.83565111	41.695156	264.362	A-431
133	-73.8356906	41.69531433	265.001	A-432
134	-73.83575444	41.69544721	265.696	A-433
135	-73.83580019	41.69553311	265.542	A-434
136	-73.83599158	41.6955407	265.721	A-435
137	-73.83613581	41.69558533	267.505	A-437
138	-73.83615088	41.69551193	265.68	A-436
139	-73.83601812	41.69569542	265.987	A-438
140	-73.83601754	41.69581361	267.155	A-439
141	-73.8360303	41.69602578	266.988	A-440
142	-73.83615372	41.69613496	267.15	A-441
143	-73.83622906	41.69614983	262.782	A-442
144	-73.83628157	41.69625641	268.284	A-443
145	-73.83641228	41.69636601	269.241	A-444
146	-73.83656023	41.69632416	269.009	A-445
147	-73.83659678	41.69622088	269.136	A-446
148	-73.83647405	41.69613236	266.211	A-448
149	-73.83648386	41.69600051	267.675	A-448
150	-73.83642301	41.69584174	266.941	A-449
151	-73.83634179	41.69562854	264.519	A-450end connect to A-1