

Section 3.0 Wetlands and Surface Water Resources

Site Location and Surroundings

The project is located on approximately 13.78 acres in the Town of Yorktown, on the north side of Underhill Avenue between Glen Rock Street to the west and Saw Mill River Road (Route 118) to the east (see attached location map). An existing 2-story building that was formerly used as a school and conference center occupies the site, along with a number of smaller accessory buildings. The western portion of the site is dominated by second and third growth woodland. The site utilizes existing public sewer and water.

The project site is situated in a developed mixed use corridor in the Yorktown Heights Hamlet area. Multi-family residential developments exist to the north and south of the property. Single-family residences are to the west, and Town Hall, the Caremount facility, and more business and office space exist to the east.

Existing Conditions

Approximately one-half of the existing site is covered with impervious surfaces or maintained landscape, primarily in the eastern part of the site. The western part is undeveloped, with a mix of native and non-native tree and shrub species. Following a review of historic aerial photos and USGS mapping, it was determined that the existing pond on site has existed since at least 1926. The pond outlet previously flowed through a culvert onto the adjacent Beaver Ridge property. When that property was developed in the 1980's, the outlet was piped to a basin as part of the development, then to a culvert under Route 118.

No New York State-mapped wetlands exist on the site. The existing pond is mapped on the National Wetland Inventory as a "freshwater pond". During the site visits, three areas were identified that meet the delineation criteria of Chapter 178 of the Town of Yorktown Code. Representative photos of the site, historic aerial photos, the NRCS soils mapping and relevant information are attached.

Wetland A is made up of a watercourse corridor that flows from a culvert under Glen Rock Street in the southwest corner of the site. The main flow is from collected stormwater runoff, but there is a baseflow component from shallow groundwater discharge that results in the watercourse flowing for a significant part of the year. Based on a review of the aerial photos, the path of this watercourse has changed over the years but always ends up in the site pond. With the construction of the Beaver Ridge development, a new emergency access was created and a culvert installed to carry the flows under this access. However, with time the culvert has clogged and now water and sediments flow across the access, creating a saturated condition that resulted in the flagging of this area as a town wetland. It is likely that if the culvert was cleared and flow restored under the road, and drainage improvements completed on Glen Rock Street, a significant part of this "wetland" would dry out. The wetland exclusive of the pond is approximately 10,000 square feet.

The watercourse flows into the existing pond on site. Known to exist since at least 1926 (see attached 1926 aerial photograph), the pond is relatively shallow and bordering on eutrophic. A significant part of the pond edge is bordered with stone. The pond outlet is a stone culvert on the north side, with a significant drop to a deep culvert underground to and through the Beaver Ridge

property. Total area of the regulated wetland area, including the incoming watercourse and the pond, is approximately 37,000 square feet. A total of 44 flags were hung for Wetland A.

Wetlands B and C are two small pockets of saturated soils (initially delineated at about 2,000 square feet each) on the west side of the emergency access way (Photos 9 and 10). Historically, these wet areas first appear in aerial photographs in 1990 with the completion of the emergency access road from Underhill Avenue. When this access was constructed, soil was stripped and piles of fill were left on either side. Wetland B was likely a borrow pit where soil was extracted to level out the road. This combined with the lack of a culvert under the access created a damming effect that allows water to pool in Wetlands B and C for a significant portion of the growing season. A total of 14 flags were hung for wetlands B and C. Wetland vegetation is largely absent in both wetlands.

In February of 2023, a wetland scientist from Tim Miller Associates walked the Underhill Farms site with the Town's wetland consultant from Barton and Loguidice. During that site walk, Wetland C was expanded to 5,730 sf by adding a portion of regulated wetland to the northern side of the wetland. Wetland B did not change. An additional drainage way that traverses the site from just below the corner of Underhill Avenue and Glen Rock Road was added to Wetland A as a regulated watercourse. This watercourse appears to flow in approximately the same location as the channel shown on the earliest available historic aerials and probably was that drainage way before other site improvements were completed. The current set of site plans includes these changes to the limits of the town-regulated wetlands.

The characteristics of the wetland boundary as flagged would meet the definitions of the Town. Wetland A meets the criteria for the Army Corps of Engineers. Wetlands B and C are not likely to be federally regulated and will disappear once Glen Rock Street drainage improvements are completed.

Soils samples within the wetland identified transitional subsoils. No topsoil was observed. Munsell colors are 10YR4/3 in densely compacted subsoils and are best described as Udorthents, which are typical of previously developed or disturbed areas. The base soils for the majority of the site are Paxton fine sandy loams, which are well drained loamy soils that are deep to bedrock, often with a densely compacted layer at 24 to 30 inches. It is not a hydric soil type. Maps prepared by the DEC Environmental Mapper and National Wetlands Inventory are also included.

Hydrology to Wetlands B and C is provided by overland runoff from the higher elevations to the west. Wetland A is a combination of overland flow and the input from the culvert under Glen Rock Street, which comprises both stormwater runoff and some level shallow lateral flow as baseflow.

The areas adjacent to the wetlands are regulated as wetland "buffers", and have developed into woody areas since the cessation of agricultural activities in the 1970's. Previously disturbed by site activities, these areas are made up primarily of fast growing native and non-native species. The buffers function primarily to slow and filter slope runoff. Since no wetland dependent species have been identified in any of the site wetlands, these areas are not currently functioning to provide buffering to such species from human activity.

The areas adjacent to the pond are currently kept as maintained landscapes and lawn.

Wetland Functional Assessment

Methodology

The following wetland evaluation was completed using a modified version of the Magee Hollands "Rapid Procedure for Assessing Wetland Functional Capacity". While a quantitative analysis was not prepared for each individual wetland (i.e., numerical rankings), wetland functions provided by each area were ranked as high, medium, or low for the sake of this analysis.

The model is set up to allow evaluation of several parameters related to wetland value and function. These parameters are:

1. Position in the landscape
2. Hydrology
3. Soils
4. Vegetation

These parameters are further divided into a number of specific variables, including:

1. Modification of groundwater discharge
2. Modification of groundwater recharge
3. Storm and Flood-water storage
4. Modification of Stream Flow
5. Modification of Water Quality
6. Export of Detritus
7. Contribution to Abundance and Diversity of Wetland Vegetation
8. Contribution to Abundance and Diversity of Wetland Fauna

By evaluating aspects of each of these variables based on existing site conditions, it is possible to evaluate the functional capacity of the existing wetland and make preliminary planning decisions relative to future conditions.

Individual Wetland Evaluation - Existing Conditions

Wetland A. The wetland corridor that makes up Wetland A starts as a watercourse originating at an existing culvert that drains under Glen Rock Road and is discharged onto the site. Storm runoff is a significant part of this flow, but there is a baseflow component that the drainage system is picking up somewhere that provides hydrology even during drier times. The watercourse flows for a short distance to the north, parallel with Glen Rock Road, then abruptly turns east and flows down the existing slope towards the on-site pond. As described above, the wetland widens at a point where a historic culvert has become clogged, then re-enters the channel to flow the remainder of the distance to the pond. The pond receives this overland runoff as well as a likely groundwater component.

Regarding the functional assessment, this narrow riparian system likely has some functional benefits to the larger stream/waterbody system. There is some contribution from groundwater discharge and shallow lateral flow as well as surface runoff. This serves to keep baseflow moving through the system and provides some input during seasonally dry times, described for this

assessment as a modification of stream flow. Storm and flood storage is absent for the upper reaches of the wetland due to a consistent downward slope, lack of significant microtopography, and the well-defined channel. Flood storage is high once the flows reach the man-made pond.

While some aeration of conveyed flows does occur in the eroded and stone-lined channel, there is no filtering by vegetation and root systems or bioattenuation of nutrients by deep organic soils. Leaves and decaying vegetative matter do enter the system during storm events, contributing to the export of detritus in the system, but considering the suburban nature of the site and surrounding watershed this can be a cause of concern for eutrophication as much as a benefit for downstream systems.

Because the wetland is dominated by an eroded channel and large pond, the wetland system as a whole does not provide a high or moderate level of vegetative diversity. The small area at the blocked culvert under the emergency access road is the only location where there is a dense vegetation component, and this is dominated by non-native species including *Phragmites*. Although the majority of the vegetation is non-native, this portion of the wetland does function to filter storm flows, allow for sediment deposition and provide some level of bioattenuation of nutrients during the growing season. This function is limited by the small size of the area.

The upper reaches of the system also do not contribute to an “abundance and diversity of wetland fauna”, especially due to this lack of vegetative diversity or abundance and the landscape structure required to support wetland-dependent species. The pond portion of the system however does support waterfowl, fish, and common amphibians. It also may support painted turtles although none have been observed to date.

Wetland A Results of Wetland Evaluation, Existing Condition	
	Functional Capacity
Modification of Groundwater Discharge	moderate
Storm and Flood-water Storage	low
Modification of Stream Flow	moderate
Modification of Water Quality	low
Export of Detritus	moderate
Contribution to abundance and diversity of Wetland Vegetation	low
Contribution to abundance and diversity of Wetland Fauna	low

Wetland A, therefore, functions primarily as a linear wetland/stormwater conveyance to the larger pond in the center of the site. The upper portions of the channel are eroded, exposing the roots of the woody vegetation growing adjacent to it. Downstream from this point, the wetland is mostly confined to the existing channel and narrow seepage areas on either side. This segment also functions to convey flows to the pond and provides some aeration with the potential for habitat for benthic organisms in the streambed.

Wetland B. Wetland B is a depression man-made wetland located in the southwest corner of the Project Site and is 2,065 sf (0.05 acres) in size. There is no wetland vegetation within this

small ponded area, although there are some facultative tree and shrub species immediately adjacent to it.

As noted above, historical evidence indicates that this small impoundment was created during the work associated with the construction of the emergency access road. Serving as a borrow pit, native soils were removed from the area and likely used as a base for the access drive. This depression is now permanently inundated, resulting in a small, shallow water body. It does serve some capacity for retention of stormwater flows during the growing season, as some freeboard becomes available with evapotranspiration of the standing water by the surrounding trees and warmer temperatures. This function is severely limited by the small size and geometry of the basin.

The remaining wetland functions are not provided by this wetland. Being without significant wetland vegetation, the contribution to the abundance and vegetative diversity is absent. The small ponded area may support some individuals of common frog species such as spring peepers or green frogs, but none have been observed to date in the wetland. The wetland is too small to significantly contribute to stream flow or water quality. The lack of a defined outlet and receiving stream limits the export of detritus to downstream parts of the system.

Wetland B	
Results of Wetland Evaluation, Existing Condition	
	Functional Capacity
Modification of Groundwater Discharge	Low
Storm and Flood-water Storage	Low/Moderate
Modification of Stream Flow	Low
Modification of Water Quality	Low
Export of Detritus	Low
Contribution to abundance and diversity of Wetland Vegetation	Low
Contribution to abundance and diversity of Wetland Fauna	Low

Wetland C. Wetland C is just south of Wetland B, and is associated with the same site work that created Wetland B. Wetland C is not as deep or surrounded by woody vegetation as Wetland B, and dries out during the growing season except immediately following storm events.

Similar to Wetland B the primary benefit provided by Wetland C is for stormwater storage. This function is limited by the small size (5,730 sf, 0.13 acres) and shallow depth. When there is more than a foot of water in the depressional area, water overflows through the remains of the access drive without direct connection to downstream waters.

The lack of significant vegetation in or adjacent to this low area results in low functional capacity for water quality, export of detritus, and vegetative diversity. Some common suburban animals (deer, raccoons, squirrels, and resident birds) might utilize the standing water, but no wetland-dependent species were observed within or near Wetland C. Due to the seasonal nature of this standing water, the wetland was observed in late March through early April to determine if any breeding salamanders or frogs were utilizing it, but none were observed.

Wetland C	
Results of Wetland Evaluation, Existing Condition	
	Functional Capacity
Modification of Groundwater Discharge	Low
Storm and Flood-water Storage	Low/Moderate
Modification of Stream Flow	Low
Modification of Water Quality	Low
Export of Detritus	Low
Contribution to abundance and diversity of Wetland Vegetation	Low
Contribution to abundance and diversity of Wetland Fauna	Low

Due to the time they have had to develop and the lack of suitable substrate for the development of a significant hydrophytic vegetation community, Wetlands B and C are limited in function beyond the capture and seasonal detention of overland storm flows. This function does slow overland flow and reduces the potential for erosion of the slopes leading to the pond. It may also provide an opportunity for the settling of silty sediments that could remove phosphorus from the water column, reducing the potential for further eutrophication of the receiving waters.

Proposed Development

The applicant proposes the development of approximately 10.9 acres of the existing site for a residential community. It is noted that 6.2 acres of the site are already developed and included in this total disturbance area. The two smaller pockets of identified wetland (Wetlands B and C) would be filled, for a total of 7,907 square feet of wetland disturbance. A small portion of Wetland A (approximately 520 sf) would be filled for the construction of a four unit residential building on the southwest corner of the site. A segment of this stream channel was previously proposed to be diverted and re-created on an earlier site plan, but this has changed and the original channel will now be maintained. The two buildings currently shown in this area (one four-unit building and one two-unit building) have been moved 25 feet further to the south than on earlier plans to reduce wetland impacts along the stream channel. Direct impacts associated with the two-unit building have been eliminated.

A second two-unit building, which was located in the buffer adjacent to the northwest corner of the pond, has been relocated to the north end of the site, thereby reducing buffer impacts. The submitted landscape plan includes additional native plantings within the buffer and now provides for the preservation of a number of trees along the north edge of the pond which previously were slated for removal. Similarly, rain gardens that were originally shown along the pond shoreline and in the proposed mitigation area are no longer necessary and have also been removed.

The swale that was flagged in February of 2023 will be filled for the construction of the four-unit building. Capture and control of the runoff from Glen Rock Street with curbing and catch basins is a significant part of this proposal, and would result in diversion of the runoff that currently drains to the swale. Runoff will still be conveyed to the main watercourse in Wetland A. This captured

runoff will first be passed through a hydrodynamic separator to improve water quality entering the site.

A new culvert will be installed to convey this channel under the new driveway. Total disturbance to town-regulated wetlands is expected to be 8,427 sf.

The buffer along the watercourse of Wetland A will be narrowed with the construction of residential buildings. Provision has been made for the planting of shrubs and low maintenance native grasses to provide filtration and aesthetics to the stream corridor between buildings. The proposed hydrodynamic separator will serve to improve water quality entering the site as it is conveyed to the channel.

As noted above, Wetlands B and C are largely man-made features that capture runoff from the road and slopes above and below Glen Rock Street until it overflows the former emergency accessway. There is no significant wetland vegetation or wetland-dependent wildlife component to the function of these two areas. The west side of the existing buffers to these two features is made up of opportunistic tree species such as cottonwood and black locust, which offer little in the way of habitat or vegetative diversity, and are typically considered to be “nuisance” species (see attached narrative on site trees). With the capture and diversion of runoff from Glen Rock Street, these two areas would not have the requisite hydrology to continue to function as wetlands.

The portion of Wetland A that will be disturbed is the narrow swale that conveys runoff from the upgradient areas and Glen Rock Street. As noted above, clearing of the existing culvert or restoration of an open channel across the access road would likely result in the loss of hydrology to the surrounding soils. The identified drainage swale would lose its hydrology following the proposed improvements to Glen Rock Street. These improvements would convey water directly into the existing channel, maintaining hydrologic input to the overall system. This would then spread into a wetland expansion area that is proposed for the west end of the pond to enhance wetland habitat and provide water quality treatment for water entering the pond (See Mitigation, below). Restoration of native vegetation in the corridor is proposed as part of the overall landscaping/mitigation plan.

Mitigation

In order to offset the loss of 8,427 sf (0.19 acres) of town-regulated wetland; the applicant proposes a wetland enhancement and restoration plan that will include the expansion of the existing pond. The proposal is to excavate and/or regrade the upland area at the western end of the pond to create a shallow marsh environment immediately adjacent to the pond. By varying the topography from six inches below the existing water elevation to 12 inches above, a variety of microhabitats can be created for different plant species, enhancing the potential for the presence of wetland dependent and wetland utilizing wildlife species. The plan then would create shallow depressional areas and intercept shallow lateral flow as grading continues up the slope on either side of the stream channel.

All introduced plant species will be native to the northeast and provide food and cover for wetland dependent animal species. This represents a significant improvement over the current wetland conditions. Typical species that may be included are provided on the list below.

Species Name	Common Name
Tress and shrubs	
<i>Acer rubrum</i>	Red maple
<i>Amelanchier canadensis</i>	Shadblow
<i>Cercis canadensis</i>	Redbud
<i>Clethra alnifolia</i>	Summersweet
<i>Cornus florida</i>	Flowering dogwood
<i>Cornus sericea</i>	Redosier dogwood
<i>Ilex verticillata</i>	Winterberry
<i>Kalmia latifolia</i>	Mountain laurel
<i>Rhododendron viscosum</i>	Swamp azalea
<i>Salix discolor</i>	Pussy willow
<i>Thuja occidentalis</i>	Northern white cedar
<i>Vaccinium corymbosum</i>	Highbush blueberry
<i>Viburnum lentago</i>	Possumhaw viburnum
<i>Viburnum trilobum</i>	American cranberrybush
Flowers and grasses	
<i>Acorus calamus</i>	Sweetflag
<i>Aster novi-belgii</i>	New York aster
<i>Carex stricta</i>	Tussock sedge
<i>Carex crinita</i>	Fringed sedge
<i>Iris versicolor</i>	Blue flag iris
<i>Juncus effusus</i>	Soft rush
<i>Lobelia cardinalis</i>	Cardinal flower
<i>Osmunda cinnamomea</i>	Cinnamon fern
<i>Osmunda regalis</i>	Royal fern
<i>Scirpus tabernaemontanii</i>	Softstem bulrush
<i>Sparganium americanum</i>	American burred

By incorporating this mitigation plan into the larger site plan, the applicant will offset the loss of 0.19 acres of marginal, locally regulated wetland with the creation of 0.33 acres (more than 14,000 sf) of diverse wetland community (a greater than 1:1 functional replacement for wetlands lost). This new landscape will also improve the long-term water quality of the runoff entering the pond, and preserve a feature that is expected to be used as both an active and passive recreation amenity for residents of the town.

The proposed stormwater pollution prevention plan will also mimic and improve upon the retention/detention and water quality functions of the site wetlands, especially Wetlands B and C, replacing those functions lost with the filling of B and C. The SWPPP provides additional detention, filtering, and water quality improvement to storm flows as they move through the site. The existing channels will be armored as necessary to prevent further erosion, with plantings along the banks for further stabilization. Expansion of the existing pond/wetland system will

provide greater opportunity for habitat use with a series of different ecotomes suitable for use by a variety of migrant and resident species. A pedestrian walking trail is also proposed to add recreational benefit to the site and access to views of both the pond and wetland from various points on the property. Access to the pond and trail will be available to the public.

Environmental Resource Mapper

Base Map: Topographical Using this map

Search

Tools

Layers and Legend

All Layers

★ Unique Geological Features

Waterbody Classifications for Rivers/Streams

Waterbody Classifications for Lakes

State Regulated Freshwater Wetlands (Outside of the Adirondack Park)

State Regulated Wetland Checkzone

Imperiled Mussels

Mussel Screening Ponded Waters

Mussel Screening Streams

Significant Natural Communities

Natural Communities Near This Location

Rare Plants or Animals

Base Flood Elevation Plus 72/75 Inches Sea-level Rise

Other Wetland Layers

Reference Layers

Tell Me More...

Need A Permit?

Contacts



NYSDEC Wetland Map
Underhill Farm
Underhill Avenue, Yorktown
Source: DEC Environmental Resource Mapper



Environmental Resource Mapper

Base Map: Topographical Using this map

Search

Tools

Layers and Legend

Other Wetland Layers

National Wetlands Inventory

-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Other
-  Riverine

Reference Layers

Tell Me More...

Need A Permit?

Contacts



National Wetland Inventory Wetland Map
Underhill Farm
Underhill Avenue, Yorktown
Source: DEC Environmental Resource Mapper



1926 Aerial Photo
Underhill Farm
Underhill Avenue, Yorktown
Source: Town of Yorktown



Basemap Gallery

Aerial Photos Street Parcel Outlines

1947 1960 1976 1990 2000 2004 2007 2009 2010 2011 2013 2016 2018 2021 Map

Default Map	Topographic	OpenStreetMap
World Imagery (Firefly)	Streets	Terrain with Labels
Navigation	Community	Aerial 2021
USDA Imagery 2019	USDA Infrared Imagery 2019	Westchester County
Planimetric Basemap		

0 100 200ft
-73.784 41.267 Degrees

1947 Aerial Photo
Underhill Farm
Underhill Avenue, Yorktown
Source: Westchester County GIS

Map navigation controls: Zoom in (+), Zoom out (-), Home, Refresh, Full Screen, Back, Forward



Basemap Gallery

Aerial Photos Street Parcel Outlines

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Navigation	Community	Aerial 2021
USDA Imagery 2019	USDA Infrared Imagery 2019	Westchester County
Planimetric Basemap		

0 100 200ft
-73.783 41.267 Degrees

1960 Aerial Photo
Underhill Farm
Underhill Avenue, Yorktown
Source: Westchester County GIS



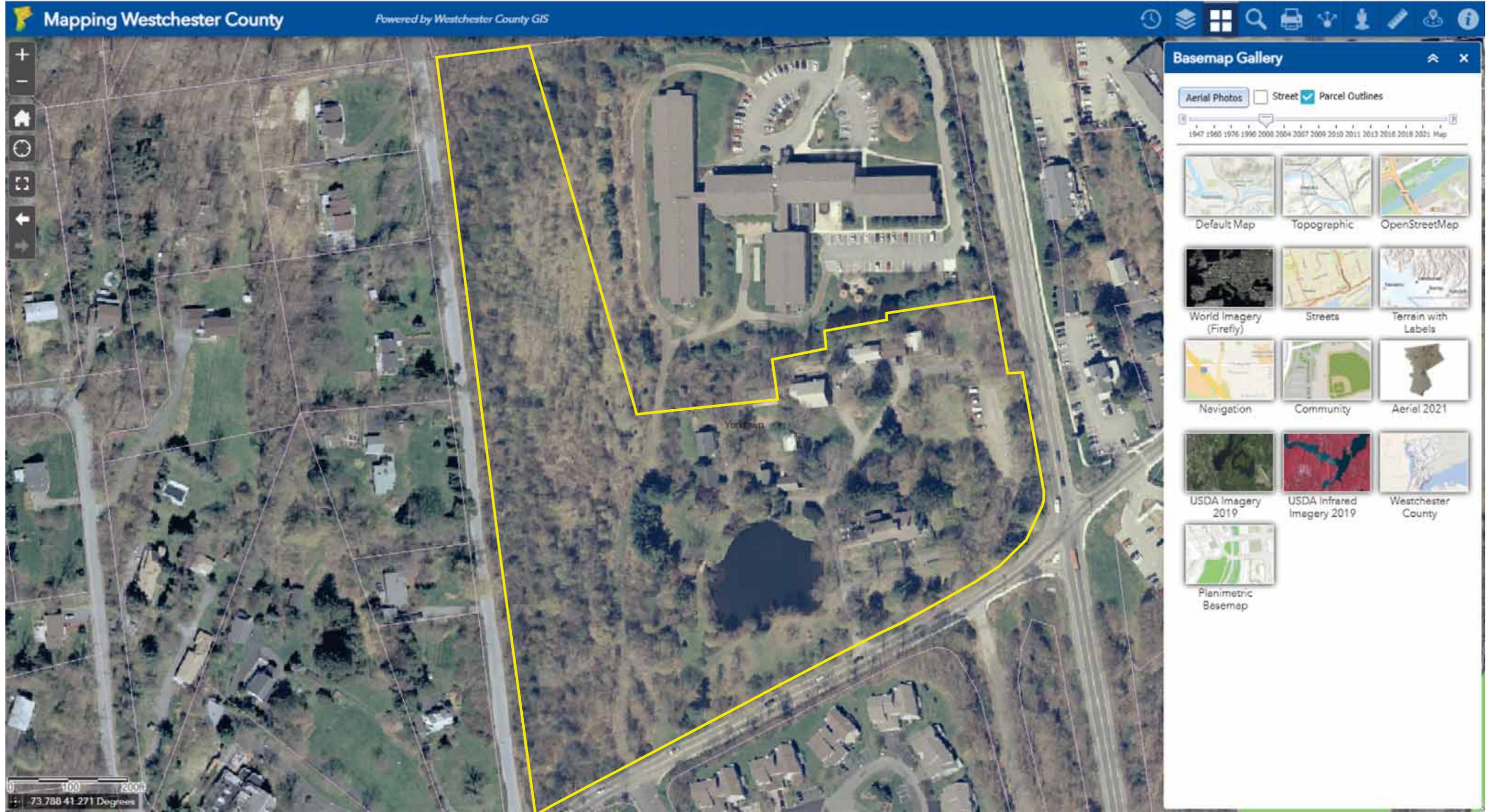
Basemap Gallery

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Planimetric Basemap		

1990 Aerial Photo
Underhill Farm
Underhill Avenue, Yorktown
Source: Westchester County GIS



2000 Aerial Photo
Underhill Farm
Underhill Avenue, Yorktown
Source: Westchester County GIS



Basemap Gallery

Aerial Photos Street Parcel Outlines

1947 1960 1976 1990 2000 2004 2007 2009 2010 2011 2013 2016 2018 2021 Map

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Navigation	Community	Aerial 2021
USDA Imagery 2019	USDA Infrared Imagery 2019	Westchester County
Planimetric Basemap		

2021 Aerial Photo
Underhill Farm
Underhill Avenue, Yorktown
Source: Westchester County GIS



Photo 1 - Existing Pond Looking East



Photo 2 - Existing Pond Looking South



Photo 3 - Existing Pond Looking North



Photo 4 - Existing Pond Outlet



Photo 5 - Wetland A west of access road



Photo 6 - Wetland A with outlet from clogged culvert in foreground,
Glen Rock Street in background



Photo 7 - Wetland A looking west towards pond



Photo 8 - Existing access road looking south (gate in background)



Photo 9 - Wetland C looking north



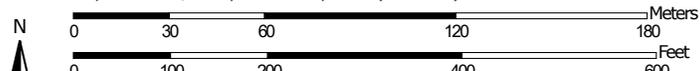
Photo 10 - Wetland B looking south

Soil Map—Westchester County, New York
(Underhill Farm, Yorktown)



Soil Map may not be valid at this scale.

Map Scale: 1:2,360 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

5/4/2022
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York

Survey Area Data: Version 17, Sep 1, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 8, 2020—Oct 14, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CrC	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	0.3	2.0%
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	9.5	68.8%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	3.5	25.3%
W	Water	0.5	4.0%
Totals for Area of Interest		13.8	100.0%

Wetland B - 2,065 sf

Wetland C - 5,730 sf

Wetland A - 10,035 sf



Wetland Existing Conditions Map
Underhill Farm
Underhill Avenue, Town of Yorktown
Source: Site Design Consultants

Notes:

- Nuisance and non-native vegetation will be removed from within the wetland expansion/enhancement area, as shown, including phragmites, multi-floral rose, climbing bitternsweet, and ailanthus. No native species will be removed. Where possible existing native trees will be preserved.
- During re-grading the work area will be isolated with silt fence. If necessary a diversion pipe will be used to convey water from the small pond south of the existing accessway to the pond to avoid siltation. Access to the work area will be from the new trail proposed along the north edge of the mitigation area. The proposed check dams and flow diverters will be placed by hand. The goal is to establish a wider flow area through the two new expansion areas, providing hydrology to a larger area while still funneling flows to the existing outlet points at the western edge of the pond.
- The site drains to a tributary of the New Croton Reservoir.
- A minimum of 13 large trees, 12 small trees and 80 shrubs will be planted to enhance the hydrophytic plant community on site as per the plant list below. Wetland seed mix will be spread over the entire area. Up to 500 herbaceous wetland plants will be planted in areas along the pond edge and where water pools on the new slope.

Planting Details

Plant choices for the wetland expansion were made according to existing site conditions and locally common species.

All planting will proceed by hand. Materials will be brought to the site in good condition (see below) and then placed in central drop locations. The materials will then be hand-carried to their planting locations and in turn, planted by hand. Only rounded, shallow planting shovels will be used in this effort.

Criteria for selecting plant material will include (1) the plant's ability to withstand the expected light and saturation conditions; (2) its demonstrated survival on this site and other nearby sites; (3) the plant must be native and non-invasive; and (4) whether the plant material is available at nurseries in the same region as the site. See table below for complete plant species list. Seed mix was chosen based on the species' ability to survive in moist areas adjacent to the road with some sun.

Planting will be done in spring or early summer (between April 1 and July 1). Shrubs may also be planted in the late summer to early fall (September 1 to October 30). In all cases, a hole will be dug twice as deep as the root ball. The only shovels allowed are rounded, shallow spades. The hole will then be backfilled with a thin layer of rich, organic topsoil, the plant placed inside, the hole backfilled to the top and then gently tamped down.

Container-grown plant material delivered to the job site will be inspected to assure moist soil/root masses. Any dry and light weight plants will not be accepted. If not planted immediately the container will be stored out of the sun and wind and kept moist (i.e., a means of watering will be provided and watering will occur daily). When removed from the containers, the plants will be the size of the specified container. If in leaf, the plants will appear healthy with no spots, leaf damage, discoloration, insects or fungus. If not in leaf, the buds will be firm and free of damage, discoloration, insects or fungus. Containers will be a minimum of quart size for shrubs and gallon size for trees.

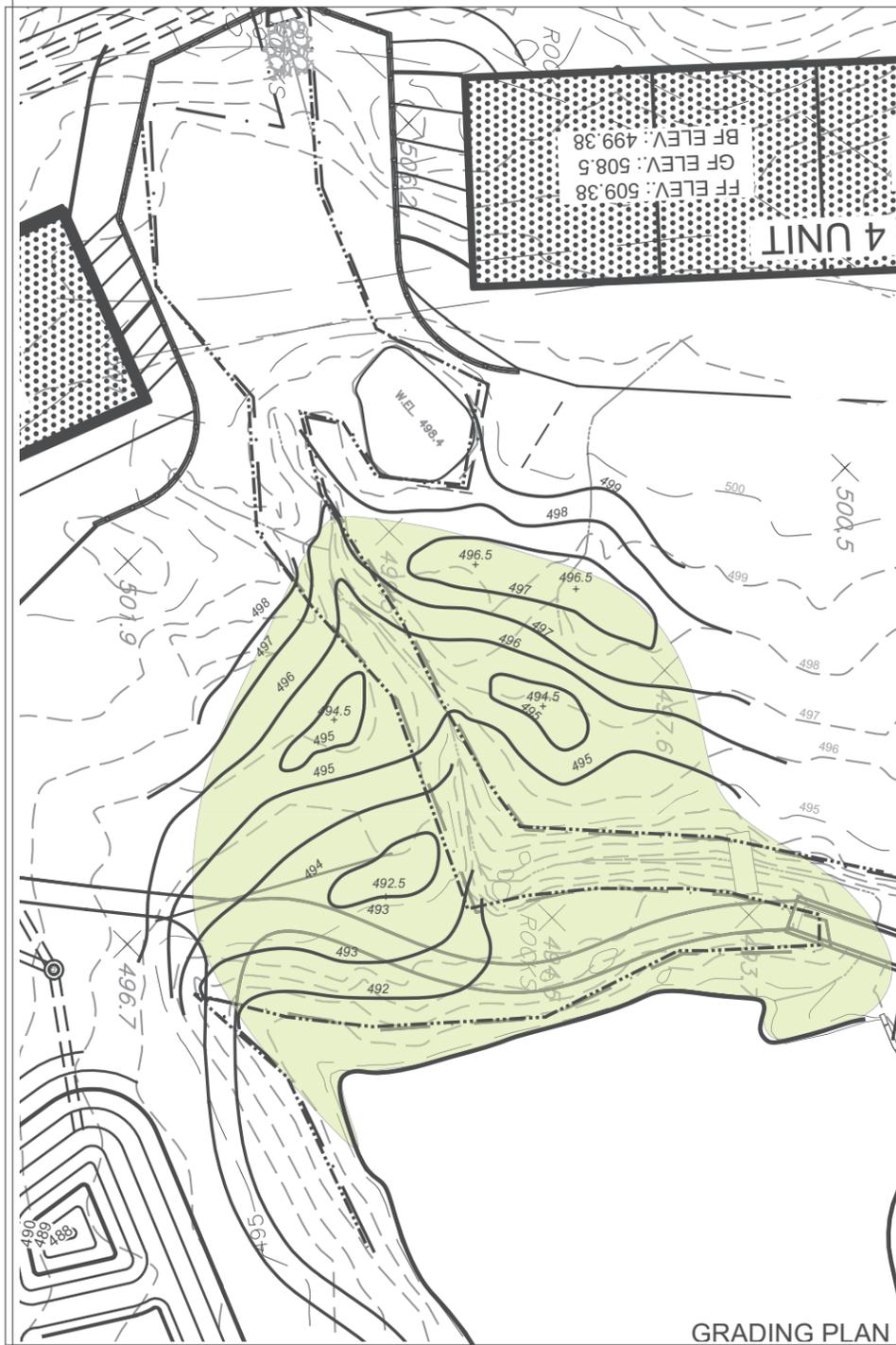
Bare roots plants will be shipped from the nursery immediately after lifting from the field and will be planted immediately upon arrival at the site. If they cannot be planted as soon as arriving at the site, they will be stored in the shade, protected from sun and wind, and kept moist by the use of straw, peat moss, compost, or other suitable materials. Plants not having an abundance of well developed terminal buds on the leaders and branches will be rejected. The stems and branches of all plants will be turgid and the cambium healthy or the plants rejected. Any bare root plants that are in leaf or have leaflets will be rejected.

Deer repellent will be used for the first growing season, with shrub masses being enclosed in deer fencing as appropriate. Extent of deer fencing may increase if browsing becomes a serious issue after the first growing season.

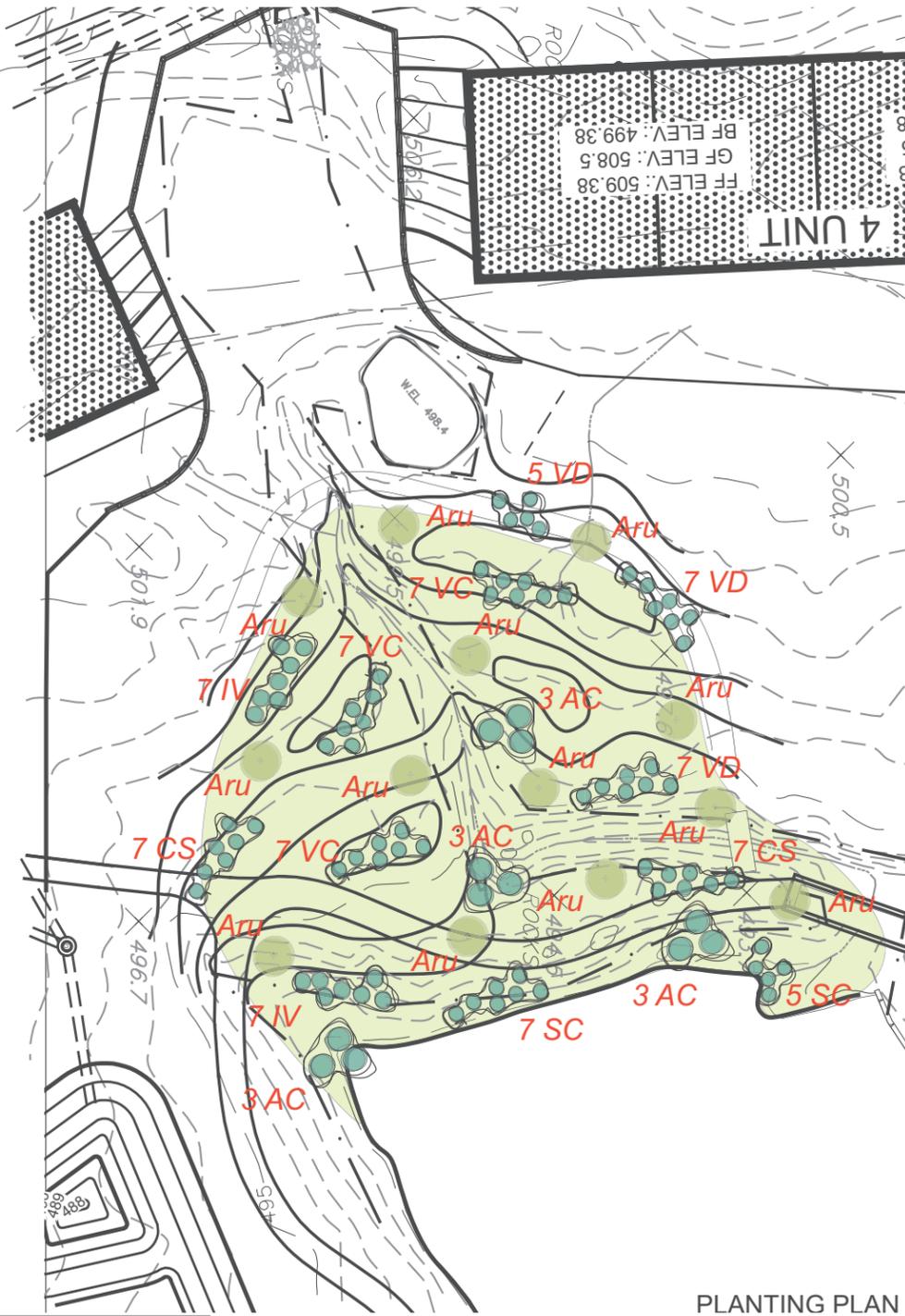
Monitoring and Maintenance

At least one pre-construction meeting will occur between the chosen grading and/or planting contractor/subcontractor and the site environmental monitor prior to beginning construction on site. The construction monitor will have experience in wetland construction and a Bachelor of Science degree in Natural and/or Physical Resources.

Monitoring and maintenance efforts for the mitigation plantings will take place over a three year period following construction. This will include monthly visits for the first growing season, and then twice a year for the next two years, with additional inspections as required depending on conditions. Invasive species will be cut as observed during these routine site visits. The applicant's environmental monitor will conduct a survey of the site and site conditions will be noted and adjusted as necessary. An annual report will be provided to the Town Wetland Inspector at the end of the growing season for each of the three years.



GRADING PLAN



PLANTING PLAN

Invasive Species Monitoring and Control Program

Japanese barberry, oriental bitternsweet, *Phragmites australis* and multiflora rose are all noted as present within and adjacent to the wetlands on the project site. These invasive species favor areas of disturbed soils and edge areas. This plan will implement an invasive species monitoring and manual control program for the duration of construction and development of the project. It has been designed to carry over into the needed maintenance plans that will need to be developed and implemented by the Project Owner.

Those areas of the site that are closest to the existing wetlands and watercourses have been disturbed and re-graded over the years. These are the portions of the site that are known to support invasive species which are altering the character of the wetlands and adjacent areas and represent a long term risk to the native vegetative community.

By controlling exotic vegetation, and reducing deer populations due to increased human activity on the site, nearby native plants will have less competition and therefore have more resources available for their own growth. An invasive species monitoring and control program will be implemented at the project site as part of the overall development plan. Species targeted for removal include the following:

- Tree-of-heaven (*Ailanthus altissima*)
- Multiflora rose (*Rosa multiflora*)
- Mugwort (*Artemisia vulgaris*)
- Autumn olive (*Elaeagnus umbellata*)
- Garlic mustard (*Alliaria petiolata*)
- Purple loosesstrife (*Lythrum salicaria*)
- Common reed (*Phragmites australis*)
- Oriental bitternsweet (*Celastrus orbiculatus*)
- Poisonberry (*Amelanchier canadensis*)
- Japanese Barberry (*Berberis thunbergii*)
- Japanese Still Grass (*Microstegium vimineum*)
- Winged Euonymus (*Euonymus alatus*)

The above listed species and all other invasive non-native plants that are detrimental to the ecology of the project site will be removed during site development to the extent practicable. The goal of this program is to reduce the presence of exotic/invasive species to a threshold of less than ten percent total cover within the areas shown on the Wetland Restoration and Buffer Enhancement Plan (the "Plan"). A qualified biologist/botanist will supervise the removal of invasive species. Invasive species can be removed in several ways, depending on the location and species of the plant:

- If a shrub is isolated and does not have its root system entwined with other plants, it may be removed mechanically. As much of the root system as possible should be removed to prevent the possibility of the invasive plant sprouting from root pieces left behind.
- If a shrub is growing amongst other native plants in a way that uprooting it may disturb surrounding native plants warranting preservation, the plant may be most safely and effectively removed by chemical means. To remove by chemical means, the plant shall first be cut back to a few stubs and stumps, about twelve inches from the base. An EPA approved solution of glyphosate (Round-up or equivalent) shall be painted on the ends of the stumps. This technique shall be applied in the early fall months before the onset of plant dormancy. Proper notification must be made prior to the application of all restricted pesticides, and application made by a licensed applicator, if required. During project construction, glyphosate will only be applied by a licensed herbicide applicator, as coordinated with the Environmental Site Monitor. Only hand-cutting and removal will be allowed within the Wetland Controlled Area.
- Highly invasive groundcovers, such as Japanese honeysuckle, are difficult to eliminate due to their habit of rooting along the stem. Groundcovers of this type will be removed by hand or mechanically. If after the second year of treatment the species persists, it may be sprayed with glyphosate, using a very close and targeted application during the active growing season. If the plant is growing among other herbaceous or shrub material that would be harmed by spraying, the glyphosate shall be applied by brush or mechanical removal should be considered. Repeated treatments may be necessary to remove the plant completely.
- Highly invasive annuals, such as garlic mustard, are difficult to eliminate due to their growth from seed that is widespread among the soil seed bank where the plants are found. Several methods may be utilized in removing this type of invasive plants. If the species is growing densely without other plants, the area will be sprayed with glyphosate during the active growing season, following the manufacturer's recommendations. Species will also be removed by hand. Both methods should be performed before plants set seed. Both methods shall be performed multiple times over a season and possibly over several seasons to completely eradicate the target species.

Monitoring and Maintenance Schedule

Following development of the site, a maintenance plan will include the regular inspection of undisturbed areas as shown on the Plan, and removal of these species as necessary. This represents the transitional areas that are most susceptible to opportunistic settling of invasive species. It is anticipated that a schedule of inspections three times a year for the first three years following full project build out (early, mid and late growing season) will be adequate for the identification and removal of the invasive species in this area.

The Town Building Inspector and Wetlands Inspector will be consulted prior to the proposed removal of invasive species within the controlled area. In addition, all activities related to invasive species control, monitoring and assessment of achievement of the 10 percent tolerance threshold for coverage by all invasive species on the project site will be coordinated with the Environmental Site Monitor. These inspections will include the mapping and identification of locations and extent of cover of invasive species, and identify the methods to be used for the subsequent removal. Following treatment, a brief report outlining extent, location and removal method for each species shall be prepared and filed with the Town Planning Office.

Plant species selection for wetland creation and enhancement areas:

- 14 Winterberry holly - *Ilex verticillata* (IV)
- 19 Arrowwood - *Viburnum dentatum* (VD)
- 21 Highbush blueberry - *Vaccinium corymbosum* (VC)
- 12 Elderberry - *Sambucus canadensis* (SC)
- 12 Red maple - *Acer rubrum* (Aru)
- 12 Shadblow - *Amelanchier canadensis* (AC)
- 14 Redosier dogwood - *Cornus sericea* (CS)

All shrubs to be in 3 to 5 gallon containers.
 Trees to be in 15 gallon containers.

- Herbaceous plugs
- 200 Soft rush - *Juncus effusus*
- 200 Tussock sedge - *Carex stricta*
- 200 Fringed sedge - *Carex crinita*
- 200 Rice cutgrass - *Leeria ozyroides*
- 200 Joe-pye weed - *Eupatorium maculatum*

Seed mix - ERNST ERNMX-122 FACW Wetland Meadow
 Mix or equivalent - applied at 20 lbs/acre



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WETLAND MITIGATION PLAN
UNDERHILL FARMS

Underhill Avenue
 Yorktown Heights, NY