Wetland Delineation and Impact Assessment

823 and 833 Deming Road
Berlin, Connecticut
June 23, 2020

Prepared for:
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MMI #3571-40-05

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ENGINEERING | PLANNING | LANDSCAPE ARCHITECTURE | ENVIRONMENTAL SCIENCE

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1.0 INTRODUCTION

On behalf of Metro Realty Group, Milone & MacBroom, Inc. (MMI) has prepared the following report to describe the existing conditions of inland wetlands and watercourses and potential impacts to identified wetland resources resulting from a proposed multi-family residential development. MMI was retained to identify wetland resources on the property, evaluate potential impacts, and develop engineering drawings to facilitate proposed site improvements. The project will take place on three lots, two existing single-family dwelling parcels and a third undeveloped property, for a total of 11.3 acres. Proposed activities are depicted on the site plans entitled *Proposed Multi-Family Development* dated June 23, 2020.

MMI delineated inland wetlands on the properties in June 2019. Wetland resource areas are located on the eastern portion of the larger, undeveloped 9.36-acre site and consist of the Cold Spring Brook (also known as Little Brook) riparian corridor, which includes palustrine forested wetlands that border the perennial watercourse. The project has been designed to avoid impacts to Cold Spring Brook and abutting wetlands. No direct wetland disturbance is proposed and activities within the 50-foot upland review area are limited to 0.56 acre. The upland review area disturbance is necessitated for grading and stormwater management basins. The proposed stormwater basins will serve as an interface between the proposed hardscape and wetland corridor. The basins will provide functions such as sediment and toxicant retention and bioassimilation that will serve to buffer the wetland and watercourse from cumulative impacts over time.

As described in the following report, the proposed activities do not demonstrate the potential to adversely impact inland wetlands or affect their capacity to perform wetland functions. No direct wetland impact is proposed and indirect wetland impacts have been minimized in the short and long term. Sedimentation and erosion controls will provide wetland protection in the short term, while stormwater management is designed to minimize long-term impacts to on- and off-site wetland systems.

2.0 GENERAL SITE DESCRIPTION

The 11.3-acre subject property consists of three parcels located at 823 and 833 Deming Road in Berlin, Connecticut (Figure 1). The property lies northeast of downtown Berlin, in a moderately developed mixed-use area. Cold Spring Brook Farm abuts the property to the north, an Eversource Energy property lies to the west of the property, and single- and multi-family residential homes are located to the south of Deming Road.

Two single-family residences surrounded by mowed and maintained lawn exist adjacent to Deming Road in the southwest portion of the property and the undeveloped land extends north and east. The property slopes toward the Cold Spring Brook riparian corridor; Cold Spring Brook flows south through the site. The undeveloped portion of the site is dominated by hardwoods including red maple (*Acer rubrum*), black oak (*Quercus velvetina*), slippery elm (*Ulmus* sp.), and black walnut (*Juglans nigra*). Invasive shrubs and vines, including multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), Bell's honeysuckle (*Lonicera bella*), and oriental bittersweet (*Celastrus orbiculatus*), are scattered

throughout the forest. Groundcover also consists primarily of non-native herbs including garlic mustard (*Alliaria petiolata*), Japanese pachysandra (*Pachysandra terminalis*), dames rocket (*Hesperis matronalis*), mugwort (*Artemisia vulgaris*), poison ivy (*Toxicodendron radicans*), and goldenrod (*Solidago* sp.). Upland soils on the property are derived from glaciofluvial deposits, glaciolacustrine deposits, lodgment till, and eolian sands. Wetland soils are derived from alluvium.

Megan B. Raymond, a registered soil scientist and professional wetland scientist (PWS) with MMI, delineated inland wetlands and watercourses on the 11.3-acre site in June 2019 (Figure 2).

3.0 WETLAND DELINEATION

Inland wetlands on the subject property consist of palustrine forested broad-leaved deciduous wetlands surrounding Cold Spring Brook and a 0.03-acre depressional forested wetland located to the west of the riparian corridor.

Cold Spring Brook, a perennial watercourse, flows south across the east side of the subject property, is culverted beneath Deming Road, and enters the Mattabessett River approximately 800 feet south of Deming Road. Cold Spring Brook drains a watershed of approximately 1.18-square miles extending from northeastern Berlin across northwestern Rocky Hill. No Federal Emergency Management Act (FEMA) floodplains are mapped on the subject property. The sinuous channel provides riffle and glide habitat consisting primarily of fine sediments, though cobbles are scattered within the substrate near Deming Road. Well-vegetated, stable banks of approximately 3 feet tall confine the channel, which is approximately 5 feet wide with a water depth of approximately 1 foot.

Palustrine forested broad-leaved deciduous wetlands abut both sides of the watercourse. The wetlands are dominated by a red maple canopy with scattered black willows (*Salix nigra*) and speckled alder (*Alnus incana*). Patches of invasive shrubs including glossy buckthorn (*Frangula alnus*) and Japanese barberry are found throughout. Dense herbaceous vegetation covers the ground and consists primarily of jewelweed (*Impatiens capensis*), skunk cabbage (*Symplocarpus foetidus*), and sensitive fern (*Onoclea sensibilis*). Invasive herbs, including Japanese knotweed (*Polygonum cuspidatum*) and common reed (*Phragmites australis*), were observed adjacent to Cold Spring Brook. Wetland hydrology is supported by groundwater discharge and surface flow from Cold Spring Brook. A sanitary sewer line parallels the stream to the west.

A 0.03-acre depressional wetland dominated by a red maple canopy and dense herbaceous ground cover is located west of the riparian corridor, just north of Deming Road. Ground cover consists of jewelweed, dames rocket, Japanese pachysandra, and poison ivy. Two inlet pipes enter the wetland from the west, directing stormwater from the residential property. Stormwater is the primary hydrology source for this wetland.

3.1 Regulatory Definitions

The Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38) defines inland wetlands as "land, including submerged land...which consists of any soil types designated as

poorly drained, very poorly drained, alluvial, and floodplain." Watercourses are defined in the act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The act defines intermittent watercourses as having a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

Upland Review Area, per the Town of Berlin Inland Wetlands and Watercourses Regulations, includes any area within 50 feet of the boundary of any wetland or watercourse.

3.2 Methodology

A second-order soil survey in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) publication *Soil Survey Manual* (1993) was completed within the wetland investigation area in June 2019. The classification system of the National Cooperative Soil Survey was used in this investigation. Soil map units identified at the project site generally correspond to those included in the *Soil Survey of the State of Connecticut* (USDA, 2005).

Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land (e.g., a pond). Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, test pits and/or borings (maximum depth of 2 feet) were completed at the site.

Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

Wetland boundaries were demarcated (flagged) with pink surveyor's tape (hung from vegetation) or small flags (on wire stakes) that are generally spaced a maximum of every 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags. The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies. Wetland boundaries are represented by wetland flags 1a through 16a, 100a through 116a, and 1b to 6b.

3.3 Soil Mapping

Eight soil map units were identified on the property (one wetland and seven upland; Figure 3). Each map unit represents a specific area on the landscape and consists of one or more soils for which the unit is named. Other soils (inclusions that are generally too small to be delineated separately) may account for 10 to 15 percent of each map unit. The mapped units are by name, symbol, and typical characteristics (parent material, drainage class, high water table, depth to bedrock, and slope) (Table 3-1). These characteristics are generally the primary characteristics to be considered in land use

planning and management. A description of each characteristic and its land use implications follows the table. A complete description of each soil map unit can be found in the *Soil Survey of the State of Connecticut* (USDA, 2005) and at *http://soils.usda.gov/technical/classification/osd/index*.

TABLE 3-1
Soil Unit Properties

Map Unit		Parent Material	Slope (%)	Drainage Class	High Water Table			Depth To Bedrock (inches)
Sym	Name				Depth (feet)	Kind	Months	
Upland Soil								
26B	Berlin silt loam	Glaciolacustrine deposits	3-8	Moderately well drained	1.0-2.5	Apparent	Jan-Apr; Oct-Dec	>80
30B	Branford silt loam	Eolian deposits over glaciofluvial deposits	3-8	Well drained	-	-	-	>80
33A	Hartford sandy loam	Glaciofluvial deposits	0-3	Somewhat excessively drained	-	-	-	>80
33B	Hartford sandy loam	Glaciofluvial deposits	3-8	Somewhat excessively drained	-	-	-	>80
37A	Manchester gravelly sandy loam	Glaciofluvial deposits	0-3	Excessively drained	-	-	-	>80
37E	Manchester gravelly sandy loam	Glaciofluvial deposits	15-45	Excessively drained	-	-	-	>80
87B	Wethersfield loam	Lodgment till	3-8	Well drained	1.5-2.5	Perched	Feb-Apr	20-40
Wetland Soil								
104	Bash silt loam	Alluvium	0-3	Somewhat poorly drained	0.5-6.0	Apparent	Jan-Dec	>80

3.4 Wetland Functional Assessment

A functional evaluation of on-site wetlands based on MMI field observations is summarized (Table 3-2 and 3-3). The first column lists the functions and values generally ascribed to wetlands while the second column summarizes the rationale used to determine whether these functions and values are being performed within the subject wetland and/or watercourse. The identified wetlands contribute to the majority of known wetland functions.

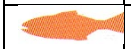
TABLE 3-2
Wetland Functions and Values Assessment – Cold Spring Brook Riparian Corridor

	Functions and Values	Comments
	Groundwater Recharge/Discharge	Yes – The wetland areas are supported by groundwater discharge and provide some recharge.
	Flood Flow Alteration (Storage & Desynchronization)	Yes – Though no mapped FEMA floodplain exists on the property, abutting wetlands provide some storage and attenuation of flood flows from Cold Spring Brook.
	Fish & Shellfish Habitat	Yes – The perennial hydrology of Cold Spring Brook may support fish habitat.
	Sediment/Toxicant Retention	Yes – Vegetated riparian wetlands provide mechanisms for sediment and toxicant retention.
	Nutrient Removal/Retention/ Transformation	Yes – Vegetated wetlands contribute to this function.
	Production Export (Nutrient)	Yes – Structural complexity and vegetative diversity allows for trophic level interaction within the wetland and watershed.
	Sediment/Shoreline/Watercourse Bank Stabilization	Yes – The landscape position and morphology of these wetlands contributes to bank stability.
	Wildlife Habitat	Yes – Structural complexity and native vegetative diversity across strata provide opportunities for wildlife habitat utilization.
	Recreation (Consumptive & Non-Consumptive)	No – These wetlands do not provide recreational opportunities.
	Educational Scientific Value	No – These wetlands do not provide educational opportunities.
	Uniqueness/Heritage	No – This area does not present unique attributes.
	Visual Quality/Aesthetics	No – The wetlands do not contain inherent visual quality or aesthetic value.
ES	Endangered Species	Yes – This area is mapped as Natural Diversity Data Base (NDDB) area as outlined by the Connecticut Department of Energy & Environmental Protection (CT DEEP) NDDB map dated December 2019, though no state listed flora or fauna was observed during the wetland delineation.

The principal functions of the wetlands include the following:

- Groundwater Recharge/Discharge
- Flood Flow Alteration
- Fish and Shellfish Habitat
- Sediment/Toxicant Retention
- Nutrient Removal/Transformation
- Production Export
- Bank Stabilization
- Wildlife Habitat

TABLE 3-3
Wetland Functions and Values Assessment – Depressional Wetland

	Functions and Values	Comments
	Groundwater Recharge/Discharge	No – The wetland does not provide groundwater recharge or discharge. The wetland is supported by stormwater runoff.
	Flood Flow Alteration (Storage & Desynchronization)	No – The wetland is not located within a mapped FEMA floodplain and its geomorphic position does not allow for contributions to this function.
	Fish & Shellfish Habitat	No – The wetland does not provide fish habitat.
	Sediment/Toxicant Retention	Yes – The vegetated nature of the wetland provides mechanisms for sediment and toxicant retention.
	Nutrient Removal/Retention/ Transformation	Yes – The vegetated nature of the wetland allows for contribution to this function.
	Production Export (Nutrient)	Yes – Structural complexity and vegetative diversity allows for trophic level interaction within the wetland.
	Sediment/Shoreline/Watercourse Bank Stabilization	No – The landscape position of the wetland does not allow for contribution to bank stability.
	Wildlife Habitat	Yes – Structural complexity and native vegetative diversity across strata provide opportunities for wildlife habitat utilization. However, the small size and proximity to the roadway limits use.
	Recreation (Consumptive & Non-Consumptive)	No – The wetland does not provide recreational opportunities.
	Educational Scientific Value	No – The wetland does not provide educational opportunities.
	Uniqueness/Heritage	No – This area does not present unique attributes.
	Visual Quality/Aesthetics	No – The wetland does not contain inherent visual quality or aesthetic value.
ES	Endangered Species	Yes – This area is mapped as NDDB area as outlined by the CT DEEP NDDB map dated December 2019, though no state listed flora or fauna was observed during the wetland delineation.

The principal functions of the wetlands include the following:

- Sediment/Toxicant Retention
- Nutrient Removal/Transformation

4.0 PROPOSED PROJECT

Connecticut regulates activities in and adjacent to wetlands and watercourses due to the potential for land development to result in short- and long-term direct and indirect impacts to wetlands and watercourses. This project has been designed to avoid direct and indirect impacts to wetlands and watercourses from a short- and long-term perspective. No direct wetland impacts are proposed. Work within the upland review area has been designed to avoid indirect wetland impacts.

The proposed project involves construction of 11 multi-family residential units and associated appurtenances in the western portion of the 11.3-acre site. The dwellings will be accessed to the north from Deming Road and arranged around the periphery of the development envelope, with vehicle access and parking located internal. In addition to the dwelling, recreational amenities are proposed, such as a swimming pool and walking trail. Portions of the proposed activities, 0.56 acre, are located within the 50-foot upland review area.

Proposed work within the upland review area involves site grading and installation of stormwater management basins. No impervious area is proposed within the upland review area. The creation of basins within the interface between the proposed development and the wetland corridor will provide a number of benefits related to water quality. The basins will be seeded with a wetland mix consisting of herbs and forbs and planted with native shrubs and saplings around the perimeter. The stormwater basins will allow renovation of stormwater through bioassimilation, infiltration, and evaporation. The vegetated features are intended to provide localized wildlife habitat for insects and song birds. The creation of wetlands within the upland review area will serve to protect and maintain the physical characteristics of the wetland corridor in the long term.

Portions of the subject property is mapped by NDDB as potential habitat for state listed flora and fauna. Correspondence with NDDB have determined that the site may provide habitat for Eastern box turtles (*Terrapene carolina carolina*). Cold Spring Brook and its receiving stream, the Mattabesset River, may provide fisheries habitat. To avoid impairment to these species, turtle protection protocols are provided on the plan set. These protections include hiring a biologist to perform sweeps of the site following silt fence installation and to make contractors aware of potential encounters with the species. Fish protections will be in place by maintaining the forested cover to the watercourse as well as protecting water quality.

4.1 Sediment and Erosion Control Measures

A Sediment and Erosion (S&E) Control Plan has been developed to mitigate any potential short-term impacts of development during construction. The S&E Control Plan includes descriptive specifications concerning land grading, topsoiling, temporary and permanent vegetative cover, and erosion checks. Details have been provided for all erosion controls with corresponding labels on the S&E Control Plan. All S&E controls provided are in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*.

4.2 Stormwater Management and Water Quality Protection

The project includes a stormwater management system that has been designed and will be installed and maintained in accordance with town and state standards. The system design and components employ standard engineering practices that are regularly used throughout the town and the northeast to prevent stormwater pollution.

The majority of on-site drainage will be directed via catch basins and yard drains through high density polyethylene (HDPE) storm drains into one of three proposed stormwater management basins, two located east of the proposed dwellings and one to the south, adjacent to Deming Road. The basins will treat stormwater generated by the site and outlet via an outlet control structure or high-level overflow riprap splash pad. The stormwater management basins will provide stormwater quality and quantity functions. The basins will be seeded and planted and serve as an interface between proposed improvements and the wetland corridor.

The project maintains consistency with state standards with the proposed central stormwater feature sized to accommodate the water quality volume (WQV). The *2004 Connecticut Stormwater Quality Manual* recommends methods for sizing stormwater treatment measures with WQV computations. The WQV addresses the initial stormwater runoff commonly referred to as the "first flush," which is the runoff generated by the first 1" of rainfall and tends to contain the highest concentrations of pollutants.

5.0 CONCLUSION

The proposed project includes construction of a multi-family residential development at 823 and 833 Deming Road in Berlin, Connecticut. Portions of the proposed activities, 0.56 acre, will take place within the upland review area to on-site wetlands. These activities consist of site grading and stormwater management measures. No impervious material is proposed within the upland review area. No direct wetland impacts are proposed. Indirect impacts will be managed by sediment and erosion control measures in the short term and stormwater management in the long term. Due to the implementation of short- and long-term site protections, the proposed project will not impact or affect the physical characteristics of the adjacent inland wetland system associated with Cold Spring Brook.

If there are any questions regarding this report or the wetlands and watercourses on this site, I may be reached at (203) 344-7889 or mraymond@mminc.com.

Very truly yours,

MILONE & MACBROOM, INC.

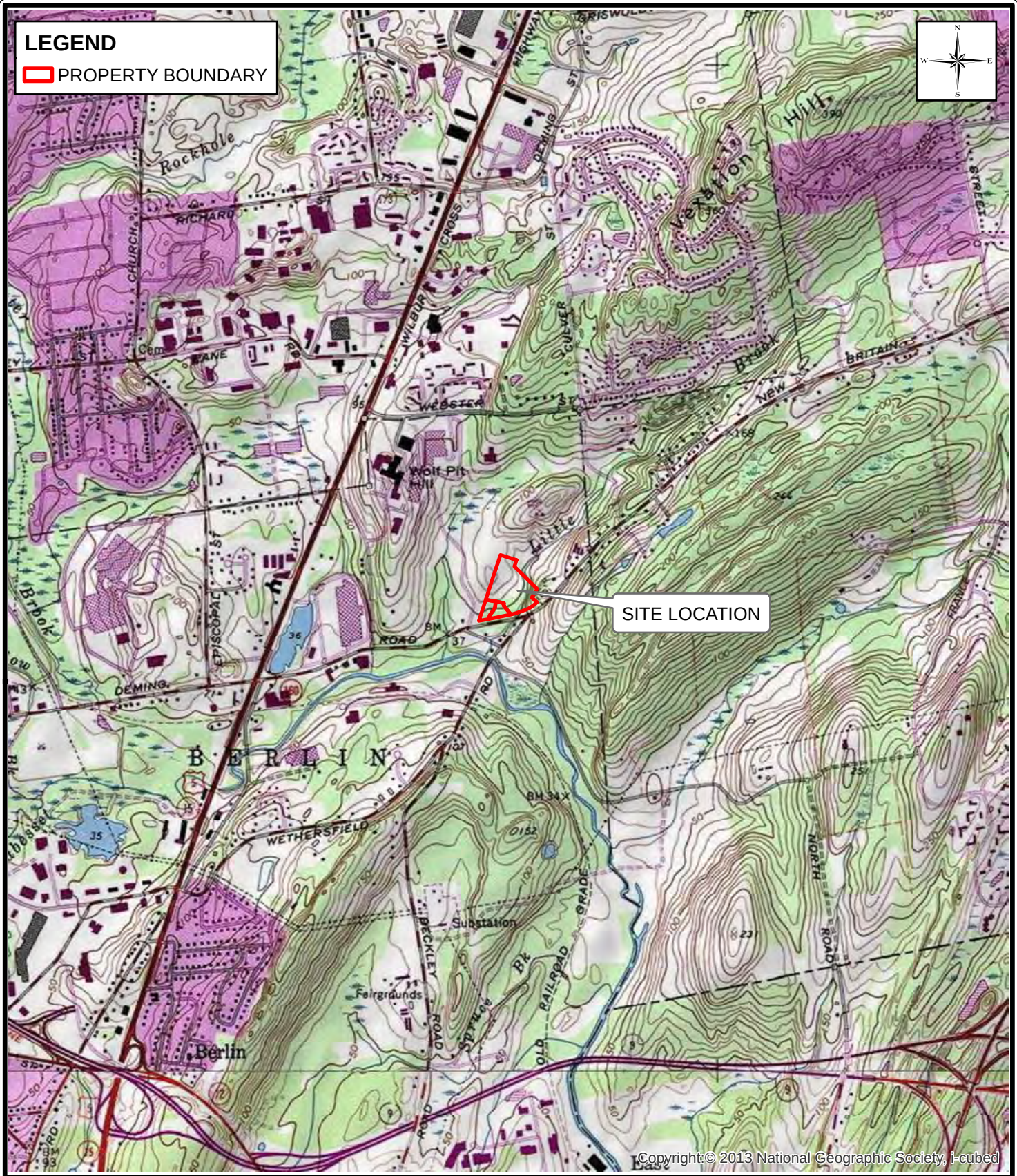
Megan B. Raymond, MS, PWS, CFM
Senior Project Manager, Environmental Science

3571-40-05-jn2220-rpt

APPENDIX A

NATURAL RESOURCE MAPS

MXD: Y:\3571-40\Maps\3571_40_OVERVIEW.mxd



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VICINITY MAP

HUNTERS RIDGE

823 & 833 DEMING ROAD
BERLIN, CONNECTICUT

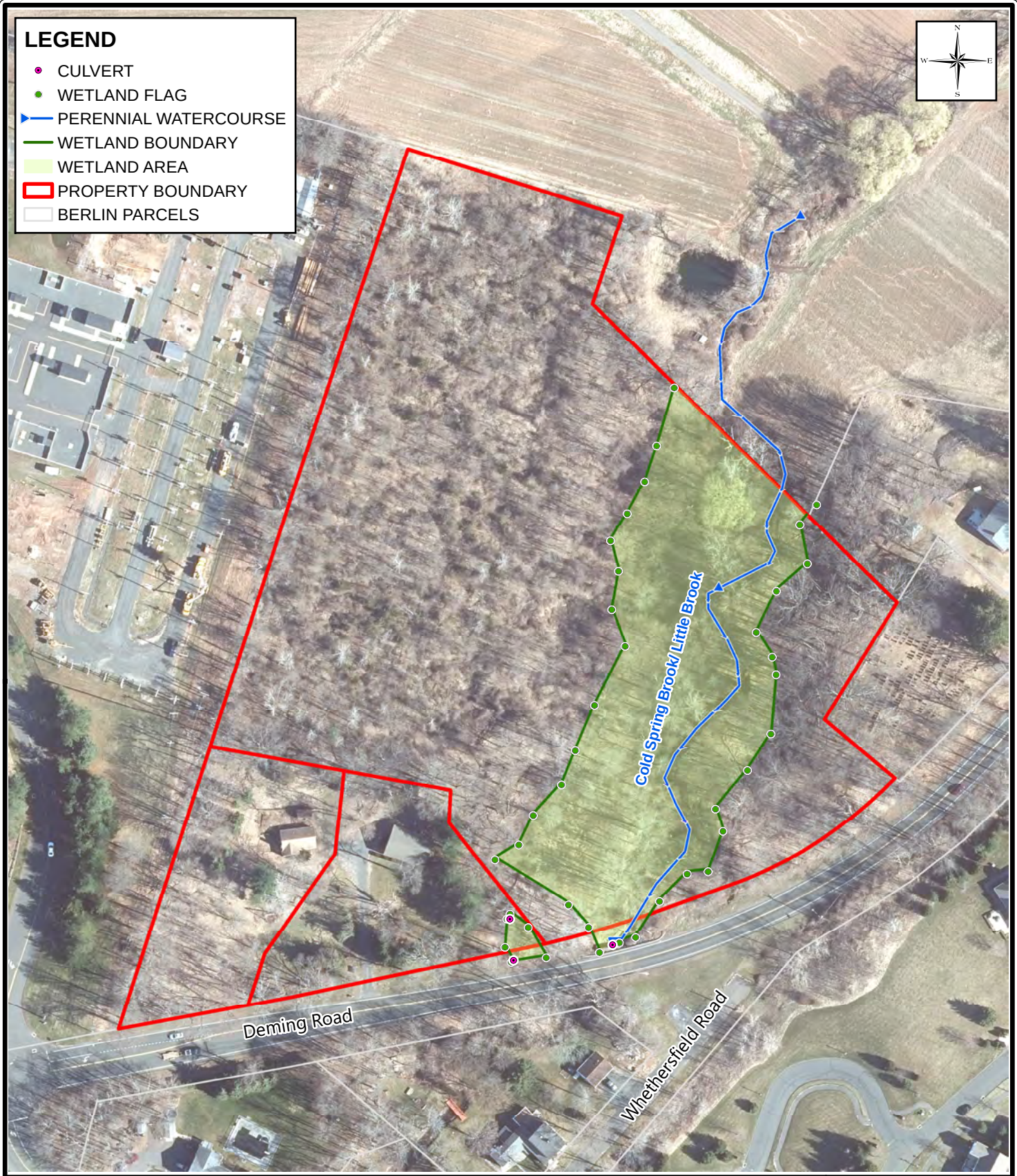
SOURCE: 2013 TOPOGRAPHIC MAP, NATIONAL GEOGRAPHIC SOCIETY

DATE: APRIL 8, 2020		
SCALE: 1 " = 2,000 '		
PROJ. NO.: 3571-40		
DESIGNED AYO	DRAWN AYO	CHECKED MBR

DRAWING NAME:

FIG. 1

MXD: Y:\3571-40\Maps\3571_40wetlands_.mxd



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WETLAND DELINEATION

HUNTERS RIDGE

823 & 833 DEMING ROAD
BERLIN, CONNECTICUT

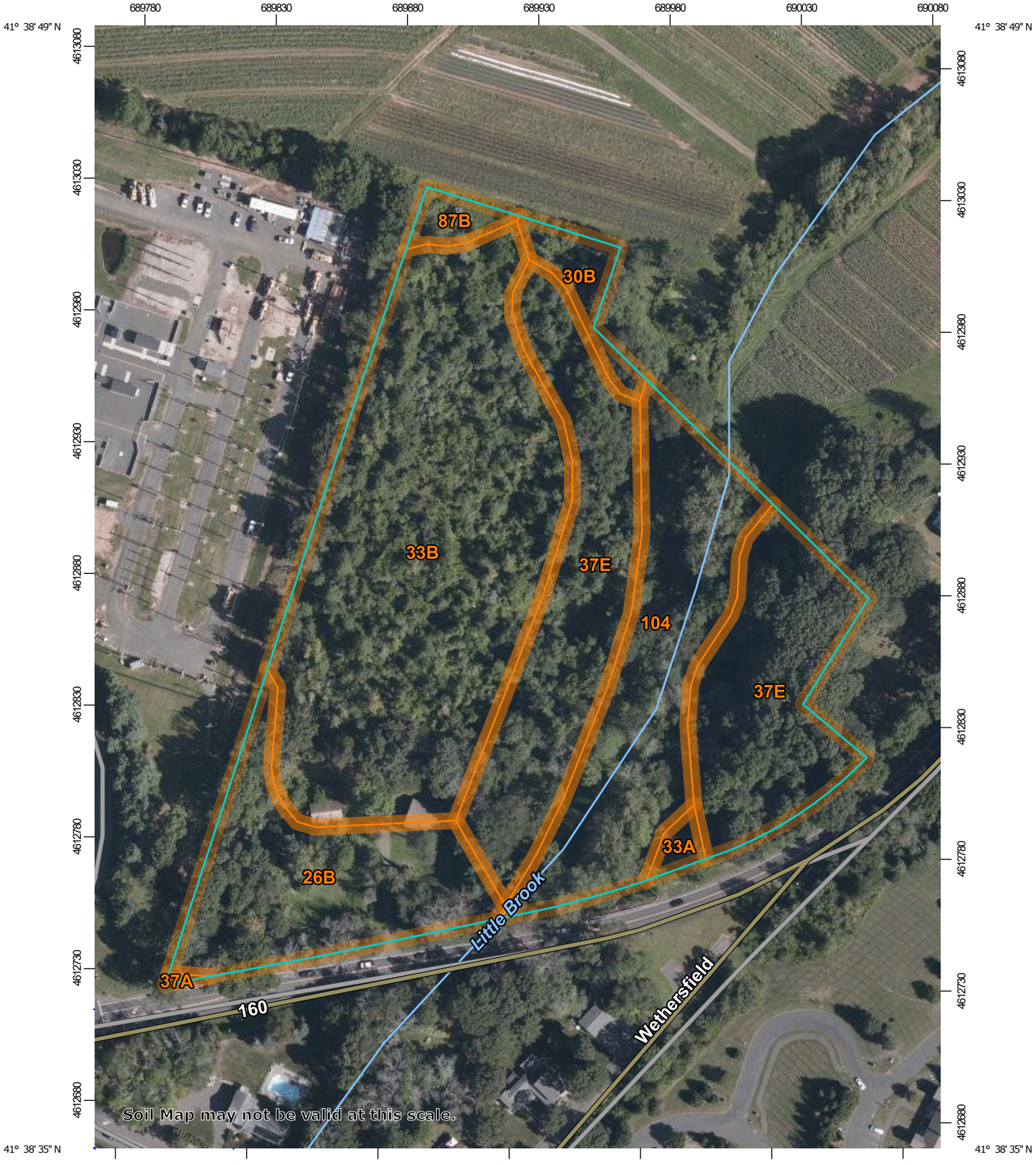
SOURCE: 2019 AERIAL PHOTO, CT DEEP

DATE: APRIL 8, 2020		
SCALE: 1 " = 150 '		
PROJ. NO.: 3571-40		
DESIGNED AYO	DRAWN AYO	CHECKED MBR

DRAWING NAME:

FIG. 2

Soil Map—State of Connecticut
(Deming Road)



Map Scale: 1:2,080 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

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

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: State of Connecticut
Survey Area Data: Version 19, Sep 13, 2019

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

Date(s) aerial images were photographed: Aug 30, 2019—Oct 15, 2019

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
26B	Berlin silt loam, 3 to 8 percent slopes	1.5	13.4%
30B	Branford silt loam, 3 to 8 percent slopes	0.3	2.2%
33A	Hartford sandy loam, 0 to 3 percent slopes	0.1	0.7%
33B	Hartford sandy loam, 3 to 8 percent slopes	4.3	38.1%
37A	Manchester gravelly sandy loam, 0 to 3 percent slopes	0.0	0.1%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	3.2	28.0%
87B	Wethersfield loam, 3 to 8 percent slopes	0.1	1.2%
104	Bash silt loam	1.8	16.2%
Totals for Area of Interest		**11.3**	**100.0%**