STATE OF CONNECTICUT
SITING COUNCIL

Eversource Energy Application For A Certificate Of Environmental Compatibility And Public Need For The Construction, Maintenance, And Operation Of A 115-Kilovolt (kV) Bulk Substation Located At 290 Railroad Avenue, Greenwich, Connecticut, And Two 115-kV Transmission Circuits Extending Between The Proposed Substation and The Existing Cos Cob Substation, Greenwich, Connecticut, and Related Substation Improvements	DOCKET NO. 461A May 5, 2017

PETITION OF EVERSOURCE ENERGY FOR RECONSIDERATION OF THE DENIAL OF A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR

THE GREENWICH SUBSTATION AND LINE PROJECT

VOLUME 2

APPENDICES

Submitted by:
The Connecticut Light and Power Company
doing business as
Eversource Energy

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Contents

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Hybrid Transmission Line Component
of
Modified Greenwich Substation and Line Project

WETLAND AND WATERCOURSE REPORT

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1.0 Introduction

The Connecticut Light and Power Company, d/b/a Eversource Energy ("Eversource"), proposes the Modified Greenwich Substation and Line Project, which includes a hybrid underground / overhead double circuit transmission line between the existing Cos Cob Substation and a proposed new Greenwich Substation to be located near the corner of Railroad Avenue and Field Point Road in Greenwich, Connecticut. In this report, this proposed hybrid transmission line is referred to as the "Project." It consists of the installation of two new transmission circuits in an overhead segment in which they will be supported by approximately 19 new overhead double circuit structures (aboveground line) and two underground segments, one connecting the overhead segment to the existing Cos Cob Substation and the other connecting the overhead segment to a proposed new Greenwich substation.

The new overhead transmission line will extend west from the Cos Cob Substation property to Steamboat Road, within the Metro North Railroad ("MNRR") Right-of-Way ("ROW"). At that point, the transmission line will transition to underground and extend north to Greenwich Avenue and west to the proposed new substation site at 290 Railroad Avenue.

This report provides a summary of wetland and watercourse inventories and field delineations conducted by AECOM within the Project area. Specifically, this report discusses applicable federal and state wetland and watercourse regulations, the methodologies used to identify the wetland and watercourse resources encountered along the Project and summarizes the findings of the surveys. These field delineations were conducted to identify both federal and State of Connecticut jurisdictional water resources.

Tables listing all wetlands and watercourses identified during the course of the surveys are located in Appendix A. Appendix B contains the wetland and watercourse mapping associated with the Project. Representative wetland and watercourse photographs are located in Appendix C. Wetland transect data forms are included in Appendix D.

1.1 Physiographic Region and Geologic Overview

The Project area is situated within the Coastal Plain physiographic region within the Southwest Coast Drainage Basin of Connecticut[1]. The Coastal Plain forms a narrow band in the southern portion of the state, along Long Island Sound. Extending up to fifteen miles inland, this physiographic region is characterized by rocky headlands, pocket beaches, coves, and islands, as well as a variety of soils including those developed in glacial outwash and till. The sand and gravel deposited in the Coastal Plain were created by glacial erosion and outwash from underlying bedrock. Soil types are strongly influenced by local bedrock geology.

Bedrock geology mapping indicates the Project area traverses areas predominantly composed of gneiss and schist. As with all of New England, the landscape of Connecticut, including the Coastal Plain was heavily shaped by the late Wisconsinan glaciation episode from the Laurentide ice sheet and the associated outwash meltwaters. It is these glacial influences which resulted in the topography and surficial geology observed within the region today.

[1] Connecticut Geologic Survey Department of Energy and Environmental Protection. 1990, revised 2013.

2.0 Wetland and Watercourse Regulations

In Connecticut, wetlands and watercourses are subject to state and/or federal jurisdiction based upon the federal Clean Water Act ("CWA"; 33 USC 1251 *et seq.*), the Connecticut Inland Wetland and Watercourses Act ("IWWA"; CGS Section 22a-36 through 45) and implementing regulations (RCSA Section 22a-39-1 to 22a-39-15), and the Connecticut Tidal Wetlands Act ("TWA"; CGS Section 22a-28 through 35a) and implementing regulations (RCSA Section 22a-30-1 to 22a-30-17). The following wetland and watercourse regulations are applicable to the Project.

2.1 Section 404 – Clean Water Act

Wetlands, springs, and other waters of the United States are regulated under Section 404 of the CWA (33 USC 1344) by the United States Army Corps of Engineers ("Corps"). Federal jurisdictional "waters of the United States" include:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs (1)-(4) above;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1)-(6) above.

According to the *1987 Corps of Engineers Wetland Delineation Manual*[2] ("Corps Manual"), areas must exhibit three distinct characteristics to be considered wetlands jurisdictional under Section 404 of the CWA:

1. Hydrophytic Vegetation: Plants growing in water or in a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content;

[2] Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

2. Hydric Soils: Soils that, in an undrained condition, are saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation; and,
3. Wetland Hydrology: Inundation or saturation by surface or groundwater at a frequency and duration during the growing season sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

In January 2012, the USACE issued a *Regional Supplement to the Corps of Engineers Delineation Manual*[3] ("Regional Supplement"), which provides further guidance for wetland delineations in the northeastern United States. The Regional Supplement provides wetland indicators, delineation guidance, and other information specific to the Northcentral and Northeast Regions, supplementing the 1987 USACE Manual. Indicators and procedures in the Regional Supplement are designed to identify wetlands as defined jointly by the USACE (33 CFR 328.2) and the U.S. Environmental Protection Agency (40 CFR 230.3) and subject to regulation under Section 404 of the CWA.

2.2 Connecticut Inland Wetland and Watercourses Act

The State of Connecticut Department of Energy and Environmental Protection ("DEEP") regulates work in and around inland wetlands under the IWWA (CGS Section 22a-36 through 45) and implementing regulations (RCSA Section 22a-39-1 to 22a-39-15). Typically, the state statute is implemented through the Inland Wetlands and Watercourse Regulations as administered by individual municipalities.

Under Section 2 of the IWWA, a wetland is defined as "land, including submerged land…which consists of poorly drained, very poorly drained, alluvial and floodplain soils as defined by the National Cooperative Soils Survey. Such areas may include filled, graded or excavated sites which possess an aquic (saturated) moisture regime as defined by the United States Department of Agriculture ("USDA") Cooperative Soil Survey."

Watercourses are defined in the IWWA 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." Under Connecticut law, vernal pools, which contain a specific ecology, are one type of vernal watercourse. Additionally, the IWWA defines Intermittent Watercourses as having a defined permanent channel bed and bank and the occurrence of two of the following: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration of longer than a particular storm incident, or C) the presence of hydrophytic vegetation. Any intermittent watercourses that lack one or more of the above criteria or only exhibit ephemeral flow as result of storm incidents would be considered non-jurisdictional ditches.

2.3 Tidal Wetlands Act

The DEEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at

[3] U.S. Army Corps of Engineers. 2011a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

or waterward of the high tide line, authorization from the DEEP's Land and Water Resources Division would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

Tidal wetlands are "those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marshes, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water; and upon which may grow or be capable of growing some, but not necessarily all, of [a list of specific plant species - see Connecticut General Statutes (CGS) section 22a-29(2)]" [CGS section 22a-29, as referenced by CGS section 22a-93(7)(E)]. In general, tidal wetlands form in "low energy" environments protected from direct wave action. Low marsh areas are flooded by tidal waters twice a day, while high marsh areas are flooded a few times a month. All tidal wetlands support a diverse ecosystem of vegetation and wildlife.

3.0 Wetland and Watercourse Delineation Procedures

On behalf of Eversource, AECOM conducted wetland and watercourse identification and delineations along the Project corridor on November 8 and 9, 2016 to determine state and federal wetland boundaries in accordance with applicable state and federal regulations. The methods of investigation and procedures used include pre-survey desktop investigations and on-site field surveys to determine the wetland and watercourse resource areas within the Project area.

3.1 Pre-survey Desktop Investigations

Prior to the commencement of field surveys, AECOM reviewed information from multiple sources to determine the potential extent of state and federal wetlands within the Project area. Pre-survey information reviewed included:

- United States Geological Survey ("USGS") 7.5-minute topographical quadrangles;
- USGS National Hydrography Dataset ("NHD");
- National Wetlands Inventory ("NWI") map data;
- Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") data;
- U.S. Department of Agriculture Natural Resource Conservation Service ("NRCS") web soil surveys; and,
- CT DEEP inland wetland soils mapping.

3.2 Field Surveys

The wetland delineation methodologies outlined in the Corps Manual and the Regional Supplement and definitions included in the IWWA were used in conjunction with NRCS soil surveys to identify and delineate wetlands along Project area. During the process of delineating wetlands within the Project corridor, both state and federal methodologies were employed and state and federal wetland criteria were evaluated. In order to meet federal jurisdictional wetland status, wetlands must meet the hydric soil, hydrophytic vegetation, and wetland hydrology criteria per the Corps Manual and Regional Supplement. Connecticut-only jurisdictional wetlands consist of areas of poorly drained, very poorly drained, alluvial, and floodplain soils.

Field surveys were initiated with an inspection of the Project corridor to identify soil types, topographic and drainage features, and plant associations that would indicate the potential presence of jurisdictional wetlands. Soil profiles were sampled using a Dutch auger to determine if any alluvial, floodplain, poorly drained, very poorly drained or hydric soil indicators were present. The indicator status of dominant plant species in each vegetation layer stratum was evaluated in the field to determine whether a hydrophytic plant association was present. Indicators of wetland hydrology were also observed and recorded. Specific methods for characterizing and evaluating the soil, vegetation, and hydrologic indicators are described below.

3.2.1 Soils

At the center of each wetland data plot, AECOM observed and documented the soil profile morphology to classify the soil type and depth to evidence of aquic conditions. Typically, a soil

pit was dug to 20 inches with a Dutch auger or to refusal to provide a soil profile for examination. The information collected for each soil profile included soil horizons, depth, texture, color, and the presence or absence of redoximorphic features (mottles and other features). Colors of the soil matrix and mottles were identified using Munsell Soil Color Charts. AECOM based all hydric soil determinations on criteria established in the Corps Manual, Regional Supplement, and *Field Indicators for Identifying Hydric Soils in New England* (NEIWPCC 2004). Additionally, AECOM noted the presence of any saturation and/or standing water encountered during the soil profile description.

3.2.2 Vegetation

Species abundance in both upland and wetland communities was visually estimated. Dominant trees and shrubs/saplings were recorded within a 30-foot and 15-foot radius, respectively, from the center of each documentation plot. Woody vines were recorded within a 30-foot radius plot. Dominant herbaceous vegetation was recorded within a 5-foot radius plot. AECOM identified plant species using appropriate botanical reference material for the region. The hydrophytic indicator status of each species was identified using *The National Plant List: 2016 Wetland Ratings*[4] (Lichvar et al. 2016).

3.2.3 Hydrology

The term wetland hydrology encompasses all hydrologic characteristics for areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Site hydrology was evaluated during field surveys by initially observing whether the soil at the surface was inundated or saturated. If the ground surface was dry, the depth to freestanding groundwater or saturated soil was measured, and the presence or absence of other indicators of wetland hydrology (e.g., drift lines, water-stained leaves, etc.) was noted. The wetland hydrology criterion was met if one or more primary or two or more secondary field indicators were present.

3.2.4 Wetland and Watercourse Boundary Flagging

For the purposes of documenting and organizing the wetland and watercourse information on maps and tables for this Project, each wetland and watercourse was assigned a unique alpha-numeric code. Wetlands were labeled with a "GW" prefix (i.e., Greenwich Wetland) and watercourses were labeled with a "WC" prefix (i.e., Water Course). Tables 1 and 2 (Attachment A) list the delineated wetlands and watercourses identified within the Project area, respectively.

During the field investigations, the boundaries of each resource were identified by sequentially-numbered vinyl surveyor's flagging tape tied to vegetation and spaced at regular intervals. Wetland/upland boundaries were flagged with pink ribbon and watercourses were flagged with blue ribbon. Watercourses less than ten feet wide were field-identified with a single series of flags established along the centerline of the stream. In instances where the watercourse was greater than ten feet wide, the ordinary high water mark ("OHWM") boundary on each bank was flagged.

3.2.5 Global Positioning System Mapping

All wetland boundary flags, wetland/upland data plots, and watercourse centerline or OHWM boundary flags were located using a hand-held Trimble® Global Positioning System ("GPS")

[4] Lichvar, R.W., D.L. Banks, W.N.Kirchner, and N.C. Melvin. 2016. The National Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. http://wetland_plants.usace.army.mil/

unit. Where possible, a minimum of 30 static measurements with a positional dilution of precision ("PDOP") of 6.0 were collected at each survey point to obtain sub-meter accuracy. Real time positions were then post-processed for additional accuracy using static data available at public continuously operating reference stations ("CORS") and referenced to the Connecticut State Plane Coordinate System North American Datum ("NAD") 83.

3.3 Wetland Classification

While in the field, AECOM soil and wetland scientists classified the various wetlands and watercourses according to the "Cowardin system", which is a process discussed in *Classification of Wetlands and Deepwater Habitats of the United States*[5]. Identified wetlands were classified as Palustrine Forested ("PFO"), Palustrine Scrub-Shrub ("PSS"), or Palustrine Emergent ("PEM"), all of which are further described below. In some cases, a wetland complex contained more than one wetland classification type. In those situations, each wetland type is listed and the first classification type represents the more dominant characteristic. Wetland vegetation found in these community types within the Project area are described in Section 4.0.

3.3.1 Palustrine Forested Wetlands

Palustrine forested wetlands are characterized by woody vegetation that is six meters (approximately 20 feet) tall or taller. These areas normally contain an overstory of trees, an understory of saplings and/or shrubs, and an herbaceous layer.

3.3.2 Palustrine Scrub-Shrub Wetlands

Palustrine scrub-shrub wetlands are typically dominated by woody vegetation less than six meters (approximately 20 feet) tall. Areas classified as scrub-shrub cover types may represent a successional stage that through natural processes would transition to a forested wetland; or may contain trees or shrubs that are small and/or stunted due to environmental conditions, such as prolonged saturation and/or inundation.

3.3.3 Palustrine Emergent Wetlands

Palustrine emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes not including mosses and lichens. These wetlands maintain the same appearance year after year and are typically dominated by perennial plants that are present for the majority of the growing season. The plant community within PEM wetlands may also contain a significant component of annual plants.

3.4 Watercourses

According to the IWWA, "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" are considered watercourses. The "top of bank", or OHWM, was used to demarcate the limits of a watercourse. Watercourses were investigated to determine if they are listed as a National Wild and Scenic River under the National Wild and Scenic Rivers Act (16 USC §§ 1271-1287) or rivers designated by the CT DEEP Protected Rivers Act (CGS §§ 25-200 through 25-210). Water quality designations were determined using CT DEEP mapping resources.

[5] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Fish and Wildlife Service Biological Report 79/31. Washington, D.C.

3.5 Post-Survey Desktop Analysis

The wetland and watercourse boundaries were plotted on aerial imagery and subsequently reviewed and confirmed by AECOM field personnel. The aerial-based maps show the locations of the delineated resources relative to the proposed limits of the Project.

4.0 Results

A total of four (4) wetlands, three (3) watercourses and one non-jurisdictional ditch (which receives storm water from Interstate 95 ["I-95"] and the MNRR), were identified within and along the proposed Project corridor. These areas are proximal to proposed Project activities, as shown on mapping presented in Appendix B. A summary of the wetlands and watercourses are presented in Tables 1 and 2, respectively, in Appendix A.

The landscape in and adjacent to the proposed Project corridor is heavily developed, with I-95, the MNRR, and residential and commercial development strongly influencing the character of the area. Virtually all soils observed in both upland and wetland locations were heavily disturbed and very few areas showed any organized, relatively undisturbed soil profiles. In addition, plant communities observed exhibited strong components of invasive species such as common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), Japanese honeysuckle (*Lonicera japonica*), other honeysuckles (*Lonicera spp*.), multiflora rose (*Rosa multiflora*), tree of heaven (*Ailanthus altissima*), Japanese knotweed (*Polygonum cuspidatum*), garlic mustard (*Alliaria petiolata*), and black locust (*Robinia psuedoacacia*).

Significant historic disturbance within the Project corridor has heavily altered the topography and hydrology of the area, which in turn has influenced the extant plant communities. Some small isolated wetlands occurring in the corridor are also heavily shaded by adjacent upland trees, resulting in sparsely vegetated wetlands, with low plant diversity.

4.1 Wetlands

4.1.1 Wetland Vegetation

Palustrine emergent wetlands and other low lying areas within the Project corridor are frequently dominated by Japanese knotweed and common reed. Other herbaceous plant species observed within emergent wetlands include purple loosestrife, sensitive fern (*Onoclea sensibilis*), reed canary grass (*Phalaris arundinacea*), soft rush (*Juncus effusus*), spotted jewelweed (*Impatiens capensis*), common beggarticks (*Bidens frondosa*), poison ivy (*Toxicodendron radicans*) and smartweeds (*Polygonum spp*.). In addition to the PEM vegetation noted above, common dominant woody species observed within PSS wetlands include multiflora rose and common elderberry (*Sambucus nigra*).

Palustrine forest wetland vegetation included the PEM and PSS vegetation identified above. In addition, the overstory of these PFO communities exhibited trees such as red maple (*Acer rubrum*), Eastern cottonwood (*Populus deltoides*), American sweet gum (*Liquidambar styraciflua*) and Norway maple (*Acer platanoides*).

4.1.2 Wetland Soils

The soil types in the various wetlands were identified as disturbed, poorly drained to very poorly drained, mineral soils with varying amounts of organic matter and variable texture. AECOM did not document the presence of any excessively-drained, well-drained, moderately well-drained, or somewhat poorly-drained alluvial or floodplain soils; therefore, state and federal wetland boundaries coincide for all delineated wetlands encountered within the Project area.

All areas delineated as wetland consisted of disturbed poorly-drained and/or very poorly drained soils that exhibited various field indicators for classification as hydric soils. Some areas had a predominance of hydrophytic vegetation, and all areas exhibited indicators of hydrology.

4.1.3 Wetland Hydrology

Most of the wetlands encountered within the Project area are classified as having a seasonally flooded or seasonally saturated water regime. Wetland hydrology indicators were observed in each wetland area. Primary hydrology indicators observed included surface water/inundation, high water table, saturated soils, water marks on vegetation, water stained leaves, and oxidized rhizospheres on living roots. Common secondary indicators observed include drainage patterns in wetlands, geomorphic position, and micro-topographical relief.

4.2 Watercourses

A total of three (3) watercourses were identified within the Project area, and are included in the watercourse summary table (Table 2) in Appendix A.

No watercourses along the Project fall under the jurisdiction of the National Wild and Scenic Rivers Act or are designated as wild and scenic under the CT DEEP Protected Rivers Act.

Appendix A
Wetland and Watercourse Summary Tables

Table 1 – Summary of Wetlands Delineated along the Hybrid Transmission Line

Table 2 – Summary of Watercourses Delineated along the Hybrid Transmission Line

Table 1. Summary of Wetlands along the Hybrid Transmission Line.

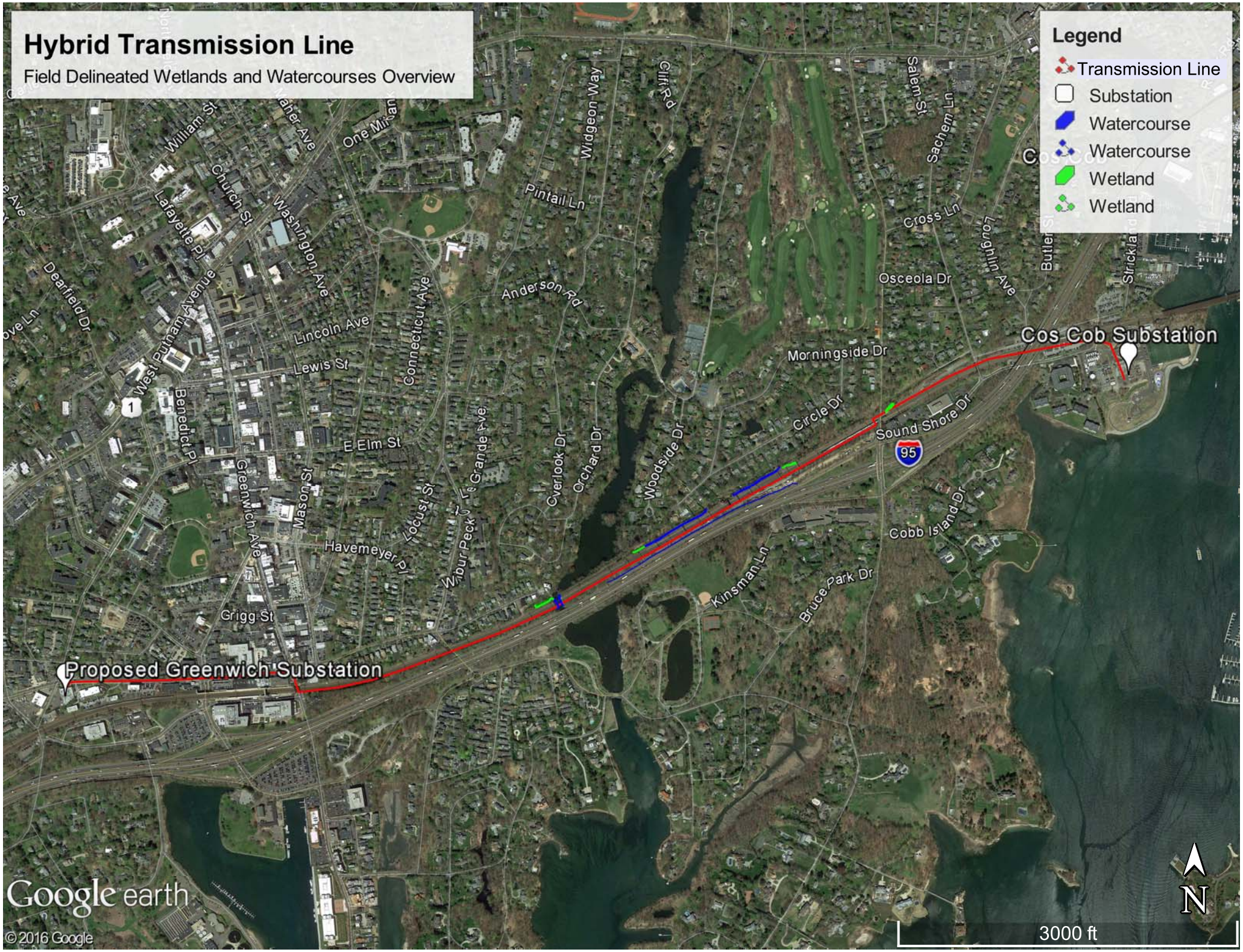
Wetland ID	Map Sheet	Wetland Type	Potential Vernal Pool	Associated Watercourse	General Description
GW-1	2	PSS/PEM	No	None	Small, isolated wetland. Federal jurisdiction unlikely.
GW-2	3	PEM/PSS	No	None	Small, isolated wetland. Adjacent but not connected to Watercourse 1. Federal jurisdiction unlikely.
GW-3	4	PEM/PSS	Unlikely	WC-2	Large areas of un-vegetated wetland soils indicate extended hydroperiod. While unlikely the area may function as vernal pool habitat and/or amphibian breeding habitat.
GW-4	5	PFO	No	WC-3	This PFO discharges to WC-3, which is Greenwich Creek.

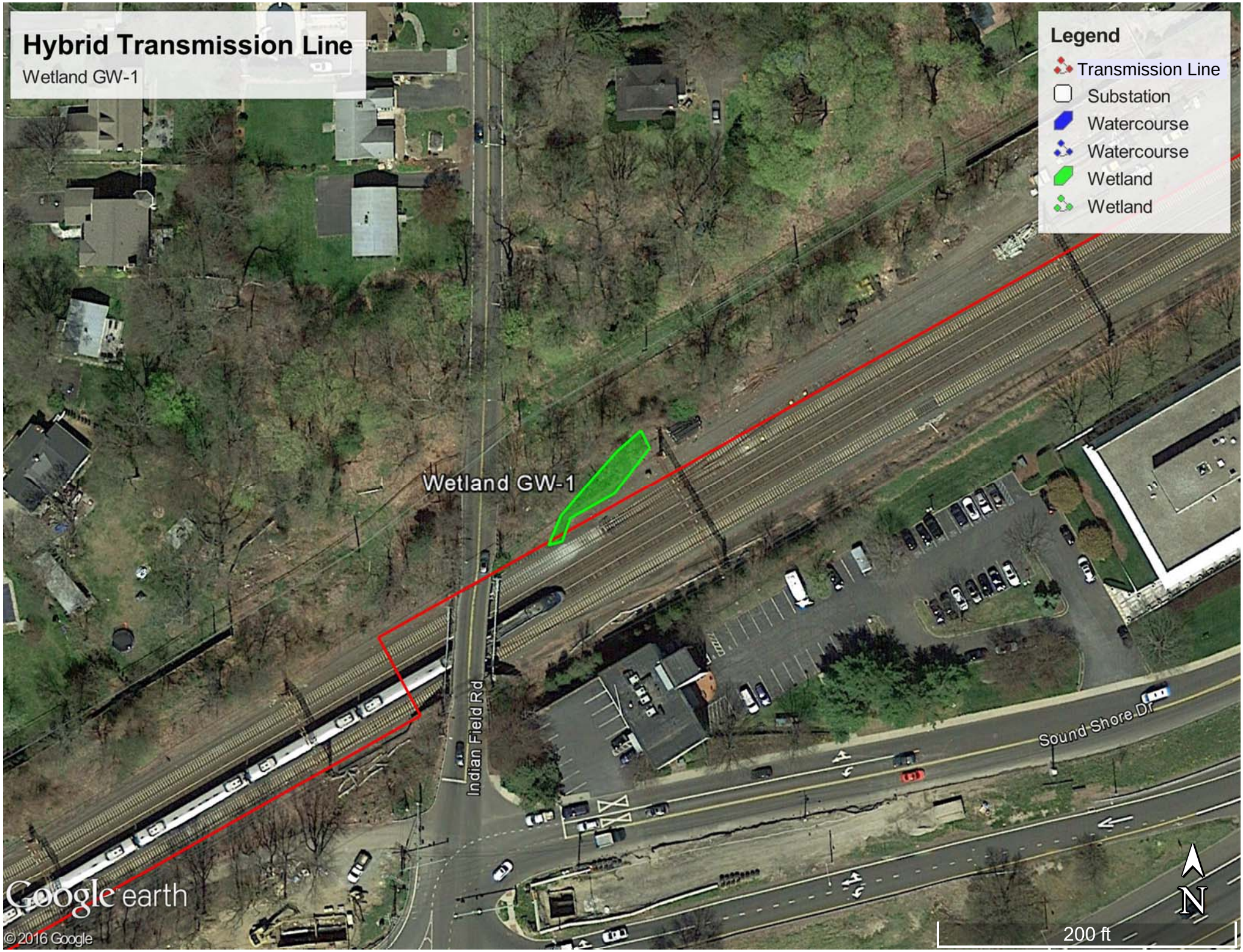
Table 2. Summary of Watercourses along the Hybrid Transmission Line.

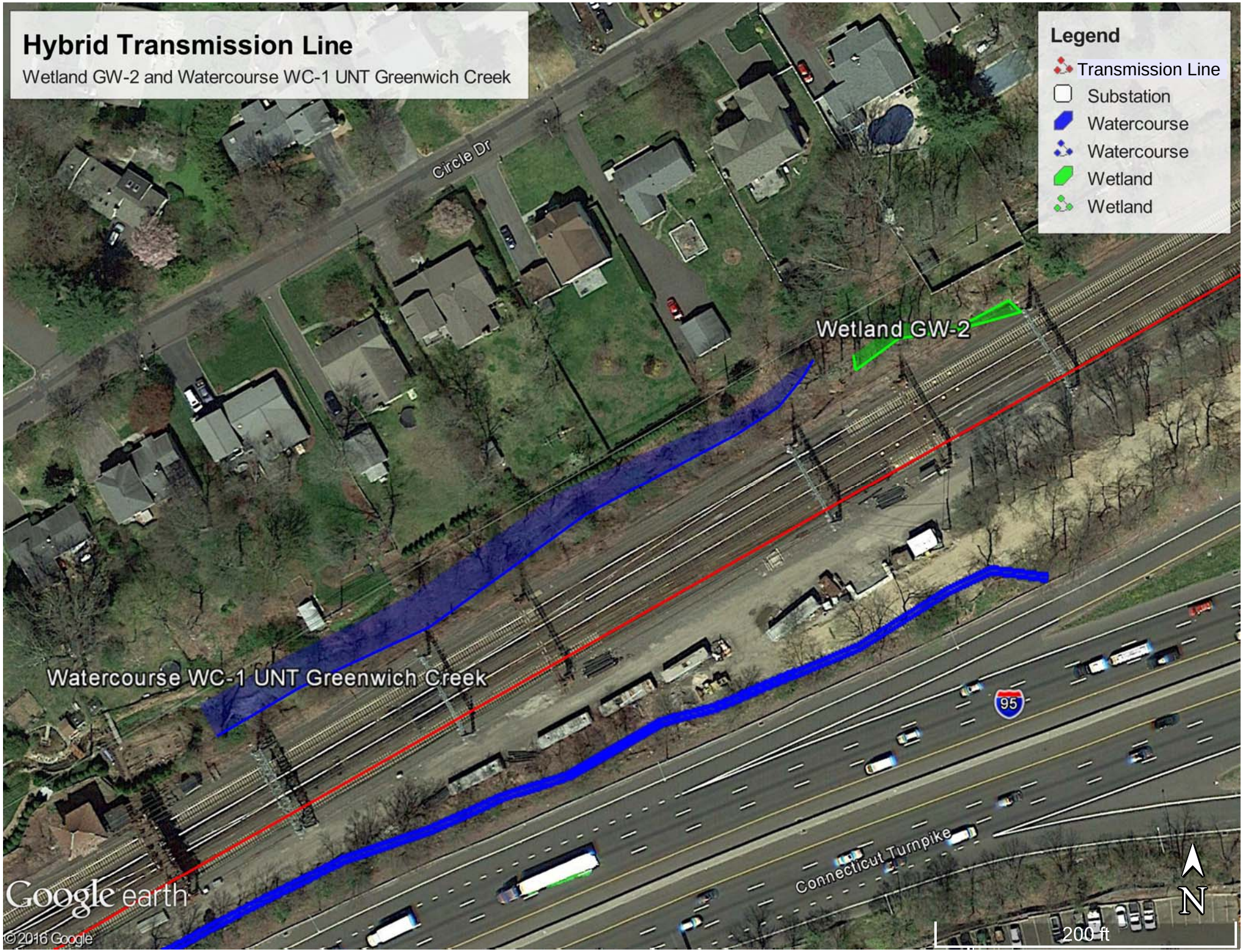
Watercourse ID	Map Sheet	Watercourse Name	Flow Regime	CT DEEP Water Quality Designation[1]	Associated Wetland
WC-1	3	Unnamed Tributary to Greenwich Creek	Intermittent	SA	None
WC-2	4	Unnamed Tributary to Greenwich Creek	Intermittent	SA	GW-3
WC-3	5	Greenwich Creek	Perennial	SA	GW-4

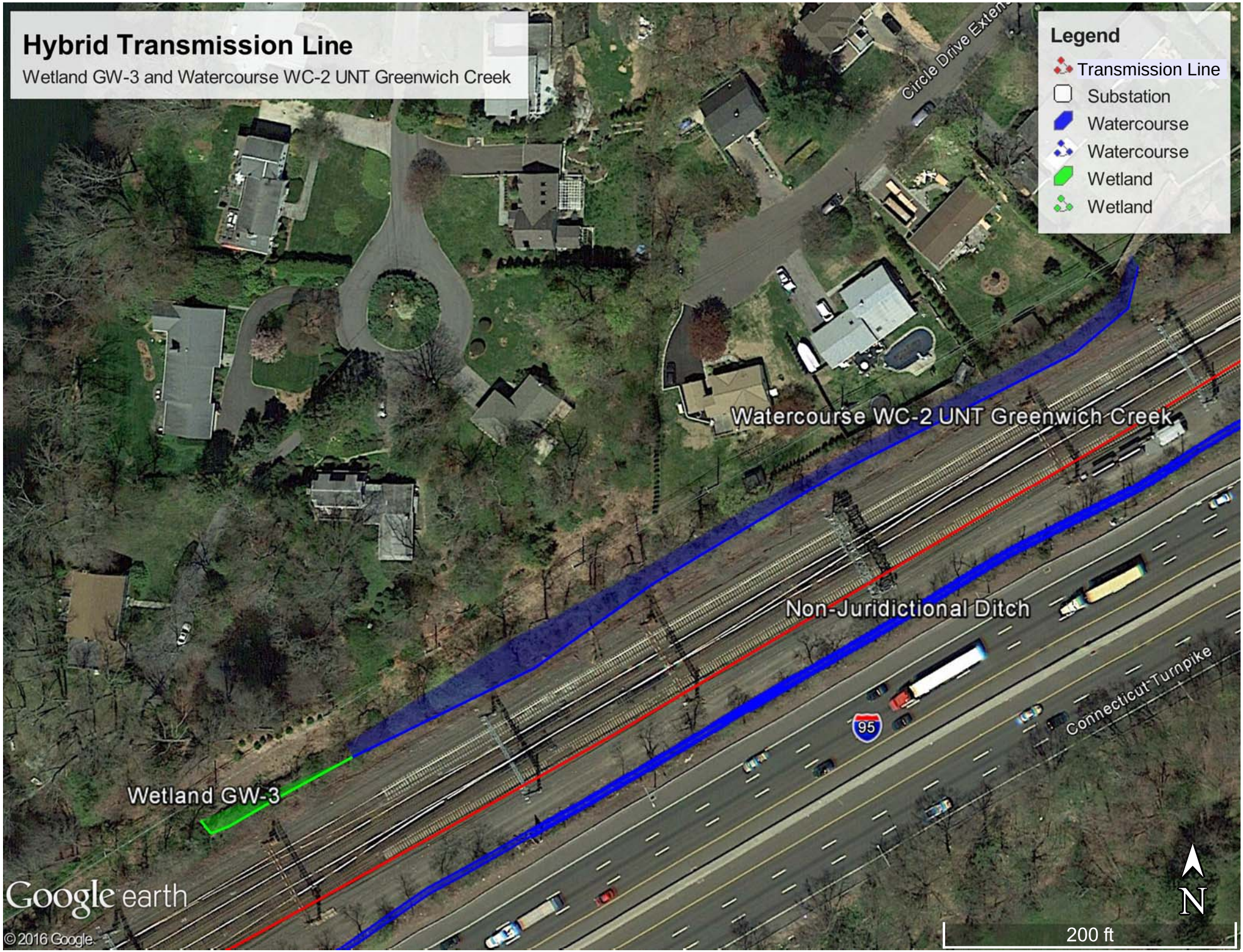
1. CT DEEP Water Quality Standards set under RCSA Section 22a-426-1 to 22a-426-9, inclusive. Class SA waters are habitat for marine fish, other aquatic life and wildlife; shellfish harvesting for direct human consumption; recreation; industrial water supply; and navigation.

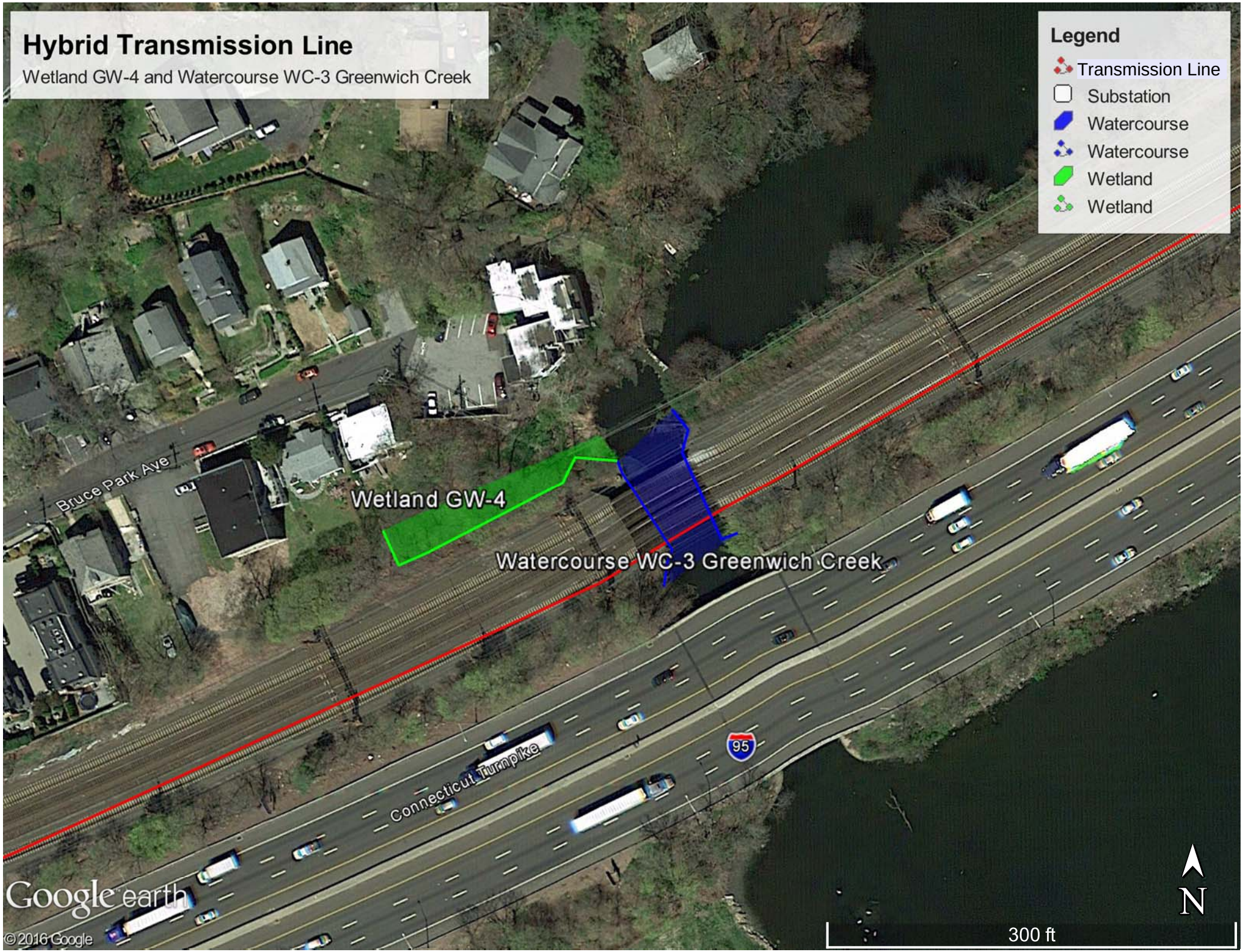
Appendix B
Project Mapping


Hybrid Transmission Line
Field Delineated Wetlands and Watercourses Overview
Legend
Transmission Line
Substation
Watercourse
Watercourse
Wetland
Wetland
Cos Cob Substation
Proposed Greenwich Substation
William St
Church St
Lafayette Pl
Washington Ave
Pintail Ln
Widgeon Way
Cliff Rd
Salem St
Sachem Ln
Cross Ln
Loughlin Ave
Osceola Dr
Anderson Rd
Lincoln Ave
Lewis St
West Putnam Avenue
Connecticut Ave
Dearfield Dr
Benedict Pl
E Elm St
Greenwich Ave
Mason St
Locust St
La Grande Ave
Overlook Dr
Orchard Dr
Woodside Dr
Morningside Dr
Circle Dr
Sound Shore Dr
95
Cobb Island Dr
Kinsman Ln
Bruce Park Dr
Havemeyer Pl
Wilbur Peck Ct
Grigg St
Google earth
© 2016 Google
N
3000 ft


Hybrid Transmission Line
Wetland GW-1
Legend
Transmission Line
Substation
Watercourse
Watercourse
Wetland
Wetland
Wetland GW-1
Indian Field Rd
Sound Shore Dr
N
200 ft
Google earth
© 2016 Google


Hybrid Transmission Line
Wetland GW-2 and Watercourse WC-1 UNT Greenwich Creek
Legend
Transmission Line
Substation
Watercourse
Watercourse
Wetland
Wetland
Circle Dr
Wetland GW-2
Watercourse WC-1 UNT Greenwich Creek
95
Connecticut Turnpike
N
200 ft
Google earth
© 2016 Google


Hybrid Transmission Line
Wetland GW-3 and Watercourse WC-2 UNT Greenwich Creek
Legend
Transmission Line
Substation
Watercourse
Watercourse
Wetland
Wetland
Circle Drive Extens
Watercourse WC-2 UNT Greenwich Creek
Non-Juridictional Ditch
Connecticut Turnpike
95
Wetland GW-3
Google earth
© 2016 Google
N
200 ft


Hybrid Transmission Line
Wetland GW-4 and Watercourse WC-3 Greenwich Creek
Legend
Transmission Line
Substation
Watercourse
Watercourse
Wetland
Wetland
Bruce Park Ave
Wetland GW-4
Watercourse WC-3 Greenwich Creek
Connecticut Turnpike
95
Google earth
© 2016 Google
N
300 ft

Appendix C
Photographic Documentation

AECOM

PHOTOGRAPHIC LOG

Client Name: Eversource Energy	Site Location: Hybrid Transmission Line, Greenwich, CT	Project No. 60520136

Photo No.	Date:
1	11/7/16

Photo Direction:
North

Description:

Wetland GW-1

Photo No.	Date:
2	11/7/16

Photo Direction:
Northwest

Description:

Wetland GW-2

AECOM

PHOTOGRAPHIC LOG

Client Name: Eversource Energy	Site Location: Hybrid Transmission Line, Greenwich, CT	Project No.60520136

Photo No.	Date:
3	11/7/16

Photo Direction:
Northeast

Description:

Wetland GW-3

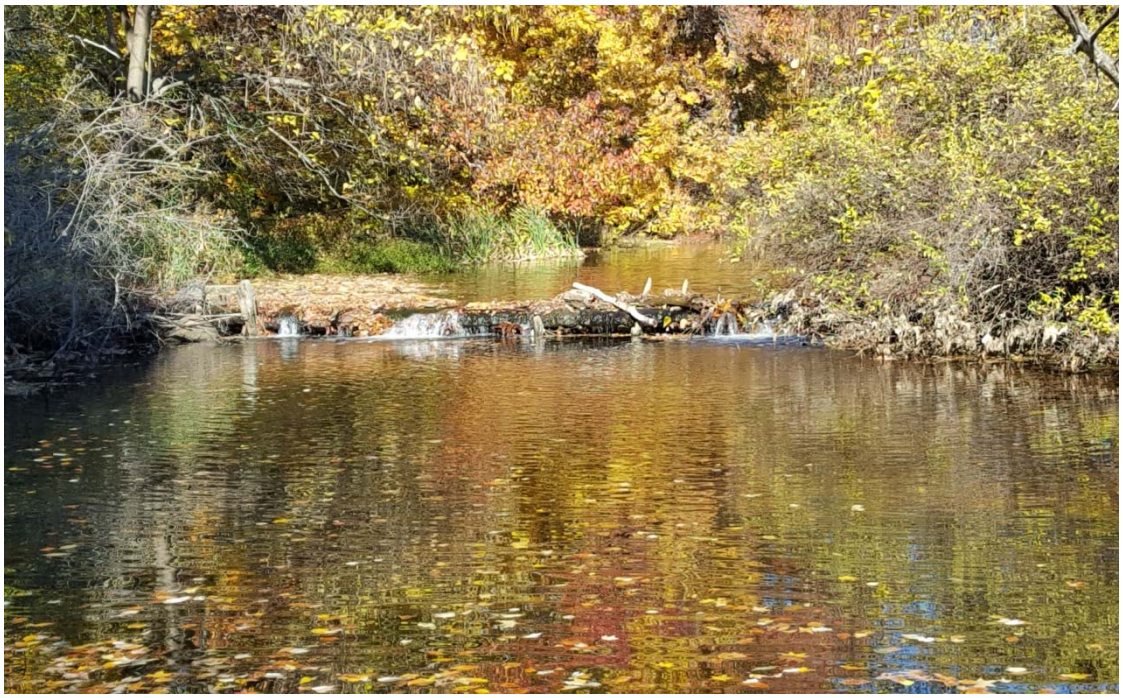
Photo No.	Date:
4	11/7/16

Photo Direction:
North

Description:

Watercourse WC-3

Greenwich Creek



AECOM

PHOTOGRAPHIC LOG

Client Name: Eversource Energy	Site Location: Hybrid Transmission Line, Greenwich, CT	Project No.60520136

Photo No.	Date:
5	11/7/16

Photo Direction:
South

Description:

Watercourse WC-3

Greenwich Creek

Photo No.	Date:
6	11/7/16

Photo Direction:
West

Description:

Watercourse WC-2

Unnamed Tributary to Greenwich Creek

Appendix D
Wetland Transect Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-1A

Investigator(s): O'Sullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? yes Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

-upland area located adjacent to MNR tracks
- Highly disturbed landscape setting

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

-Highly disturbed upland area located adjacent to MNR tracks

VEGETATION – Use scientific names of plants.

Sampling Point: GW-1A

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	50	Y	FAC
2. Acer rubrum	17	Y	FAC
3. Prunus serotina	17	Y	FACU
4. Acer platanoides	17	Y	UPL
5.			
6.			
7.			
	120	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15'r)			
1. Lonicera tatarica	86	Y	FACU
2. Quercus rubra	14	N	–
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Herb Stratum (Plot size: 5'r)			
1. Alliaria petiolata	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	= Total Cover	

Woody Vine Stratum (Plot size: 30'r)			
1. Vitis labrusca	100	Y	FACU
2.			
3.			
4.			
	25	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 29% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No _____

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

SOIL

Sampling Point: CW-1A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR4/4	60					SL	Historic Fill
	10YR5/6	40						

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

- Soil is highly disturbed and appears to be fill material brought in as part of the MNR track bed.
- Well drained sandy loam

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-1B

Investigator(s): O'Sullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? yes Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

- Highly disturbed wetland adjacent to MNR tracks.

SOIL

Sampling Point: GW-1B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR2/1	70	7.5YR5/6	20	C	M	SL	
	10YR5/1	30						

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

- Highly disturbed wetland soil with gravel mixed in profile.
- Subjected to historic and periodic present day disturbance.

VEGETATION – Use scientific names of plants.

Sampling Point: GW-1B

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' r)			
1. Rosa multiflora	56	Y	FACU
2. Lonicera tatarica	44	Y	FACU
3.			
4.			
5.			
6.			
7.			
	90 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Phragmites australis	77	Y	FACW
2. Euphorbia cyparissias	23	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	130 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/06

Applicant/Owner: Eversource Energy State: CT Sampling Point: GWDA

Investigator(s): O'Sullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? YES Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: GW-2A

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer platanoides	80	Y	UPL
2. Fraxinus americana	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' r)			
1. Acer platanoides	62	Y	UPL
2. Robinia pseudoacacia	23	Y	FACU
3. Ulmus americana	15	N	FACW
4.			
5.			
6.			
7.			
	65	= Total Cover	

Herb Stratum (Plot size:)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	

Woody Vine Stratum (Plot size: 30' r)			
1. Lonicera sp	100	Y	–
2.			
3.			
4.			
	25	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

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

SOIL

Sampling Point: GW-2A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
—	—	—						see Below

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

- This area was entirely gravel deposited for use as MNR track bedding material.
- No actual soil observed

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-2B

Investigator(s): O'Sullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Yes Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

- Isolated, highly disturbed wetland with significant accumulation of garbage/debris.
- Adjacent to MNR tracks

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: GW-2B

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5' r)			
1. Lythrum salicaria	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

Woody Vine Stratum (Plot size:)			
1. None			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

- Due to heavy shading from adjacent trees, wetland is sparsely vegetated.

SOIL

Sampling Point: GW-2B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	10YR2/1	100					SL	mucky mineral soil

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-3A

Investigator(s): O'Sullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? yes Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: GW-3A

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya glabra	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' r)			
1. Euonymus alatus	60	Y	FACU
2. Rosa multiflora	30	Y	FACU
3. Lonicera tatarica	10	N	–
4.			
5.			
6.			
7.			
	100 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Alliaria petiolata	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1. Celastrus orbiculatus	66	Y	UPL
2. Lonicera sp	33	Y	–
3.			
4.			
	90 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

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

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR3/3	100					SL	refusal @ 0" above 16" multiple times

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-3B

Investigator(s): OSullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? yes Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

- Soil saturated @ mineral soil surface
- See profile description for more information

VEGETATION – Use scientific names of plants.

Sampling Point: GW-3B

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' r)			
1. Sambucus nigra	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Rubus frondosa	50	Y	FACW
2. Impatiens capensis	50	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1. Vitis labrusca	100	Y	FACU
2.			
3.			
4.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

- large unvegetated areas in wetland due to extended periods of flooding/standing H_2O.

SOIL

Sampling Point: GW-3B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
6-0"	—							Oa
0-13"	10YR2/1	100					VFSL	A
13-18"+	10YR5/2	50	7.5YR5/6	10	C	M	SL	Bg
	10YR5/1	50					SL	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: ES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-4A

Investigator(s): OSullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation ___X___, Soil ___X___, or Hydrology ___X___ significantly disturbed? yes Are "Normal Circumstances" present? Yes _____ No ___X___

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ___X___

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: EW-4A

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer platanoides	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' r)			
1. Quercus rubra	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
Herb Stratum (Plot size:)			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1. none			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No _____

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

- upland plot located on very steep gravel embankment for MNR tracks.

SOIL

Sampling Point: GW-4A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
								See below

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

- upland plot located on very steep gravel embankment for MNR tracks.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: LES Greenwich Line City/County: Greenwich/Fairfield Sampling Date: 11/7/16

Applicant/Owner: Eversource Energy State: CT Sampling Point: GW-4B

Investigator(s): O'Sullivan Section, Township, Range: _____

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

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

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? yes Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: GW-4B

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciFlua	100	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	80 = Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5' r)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ____

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

- wetland sparsely vegetated due to heavily shaded conditions produced by adjacent embankment and tree canopy.

SOIL

Sampling Point: GW-4B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR2/1	100					VFSL	mucky

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

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- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
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- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ✓ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
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- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

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