THE CONNECTICUT VALLEY ELECTRIC TRANSMISSION RELIABILITY PROJECTS

APPLICATION TO THE

CONNECTICUT SITING COUNCIL

FOR CERTIFICATES OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR

THE CONNECTICUT PORTION

OF THE GREATER SPRINGFIELD RELIABILITY PROJECT

AND FOR

THE MANCHESTER TO MEEKVILLE JUNCTION CIRCUIT SEPARATION PROJECT

BY

THE CONNECTICUT LIGHT & POWER COMPANY

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VOLUME 2: ENVIRONMENTAL – WETLANDS

EX. 1: "Inventory and Delineation of Wetlands and Watercourses Along the Connecticut Portion of the Greater Springfield Reliability Project" by ENSR

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INVENTORY AND DELINEATION OF WETLANDS AND WATERCOURSES

ALONG THE CONNECTICUT PORTION OF

THE GREATER SPRINGFIELD RELIABILITY PROJECT

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1.0 Introduction

This report provides a summary of wetland and watercourse inventories and delineations conducted along the Connecticut portions of the proposed Greater Springfield Reliability Project (GSRP). The GSRP consists of a proposed new 345-kilovolt (kV) electric transmission line and associated improvements to existing 115-kV lines, as well as the expansion and construction of switching and/or substations. Most of these proposed facilities are located along existing transmission line rights-of-way (ROWs).

The GSRP is proposed by Connecticut Light and Power Company (CL&P), and the Western Massachusetts Electric Company (WMECO), which are owned and operated by Northeast Utilities Service Company (NUSCO). The project, the purpose of which is to ensure continued reliable electric power in southern New England, would extend between WMECO's Ludlow Substation in Ludlow, Massachusetts and CL&P's North Bloomfield Substation in Bloomfield, Connecticut.

The Connecticut Portion of the North Bloomfield to Agawam Line Route will traverse the municipalities of Suffield, East Granby and Bloomfield along an existing transmission line ROW, within which overhead 115-kV transmission lines currently exist. In accordance with Energy Facilities Siting Board (EFSB) requirements, NUSCO evaluated an alternative route, known as the Massachusetts Southern Route Alternative. The Connecticut Portion of the Massachusetts Southern Route Alternative would also occupy an existing transmission line ROW through the municipalities of Enfield and Suffield before terminating in Agawam, Massachusetts. The final portion of GSRP is the Manchester to Meekville Junction Circuit Separation Project. This route is located in the municipality of Manchester, and consists of a new transmission line to be constructed within an existing transmission line ROW from Meekville Junction to the Manchester Substation.

Along the Connecticut Portion of the North Bloomfield to Agawam Line Route, the GSRP includes four underground cable route variations in the municipalities of East Granby and Suffield: the Newgate Road Underground Line Variation, the State Route 168/187 Underground Line Variation, the 3.6-Mile in ROW Underground Line Variation and the 4.6-Mile in ROW Underground Line Variation. Along the Connecticut Portion of the Massachusetts Southern Route Alternative in Enfield, the GSRP project includes one underground cable route variation, known as the Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation.

On behalf of CL&P and WMECO, ENSR conducted wetland and watercourse identification and delineations along all of the proposed GSRP routes and variations described above. Offsite desktop analyses, as well as onsite field delineations were employed to determine state and federal wetland boundaries. The onsite and offsite wetland and watercourse investigations were conducted in 2007 and 2008. This report discusses the methods used to identify the wetlands and watercourses encountered on each route and summarizes the findings of the surveys.

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. Appendix C contains the field data forms which were used to document the

wetland and watercourse delineations, and representative wetland and watercourse photographs are located in Appendix D.

2.0 Wetland and Watercourse Regulations

ENSR personnel identified wetlands and watercourses subject to state or federal jurisdiction based upon the Connecticut Inland Wetlands and Watercourses Act and the Federal Clean Water Act.

2.1 Section 404 – Clean Water Act

Wetlands, springs and other waters of the United States are regulated under Section 404 of the Clean Water Act (CWA) by the USACE (EPA 2006). Federal jurisdictional wetlands include interstate wetlands, wetlands adjacent to waters of the United States and intrastate wetlands whose degradation or destruction could affect interstate or foreign commerce as per the application of the CWA. According to the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987; Corps Manual), areas must exhibit three distinct characteristics to be considered wetlands:

1. The prevalent vegetation must consist of plants adapted to life in hydria soil conditions. These species, due to morphological, physiological, and/or reproductive adaptations, can and do persist in anaerobic soil conditions;
2. Soils in wetlands must be classified as hydric or they must possess characteristics that are associated with reducing soil conditions; and,
3. The soil must be inundated either permanently or periodically at mean water depths less than 6.6 feet (two meters) or the soil must be saturated at the surface for some time during the growing season of the prevalent vegetation.

Wetlands meeting these criteria are subject to federal jurisdiction under Section 404 of the Federal Clean Water Act.

2.2 Connecticut Inland Wetlands and Watercourses Act

Connecticut regulates inland wetlands under the Inland Wetlands and Watercourses Act, (Section 22a-36 through 45 of the Connecticut General Statutes; The Act). These state statutes are implemented through the Inland Wetlands and Watercourse Regulations as administered by the individual municipalities. Under Section 2 of The Act, 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 aquatic (saturated) moisture regime as defined by the United States Department of Agriculture (USDA) Cooperative Soil Survey.” As written, these statutes assign no bearing to vegetation when performing wetland delineation activities. According to the Connecticut Department of Environmental Protection (CT DEP) website, approximately 17% of the state’s land area is comprised of wetlands under the Connecticut’ wetland definition; however, “under the federal definition only roughly half of this same area would be classified as wetlands”.

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 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.

3.0 Wetland Delineation Procedures

The wetland delineation methodologies outlined in the Corps Manual, the Connecticut Inland Wetlands and Watercourses Act and the applicable municipal Inland Wetland Rules and Regulations were used to identify and delineate wetlands and watercourses within the survey corridor along the proposed Project alignment. The methods of investigation included both onsite field investigations and offsite analysis to determine the wetland and watercourse resource areas proximate to all of the proposed GSRP routes and variations.

In accordance with the Corps Manual, hydrophytic vegetation, hydric soils, and wetland hydrology must all be present for a wetland to be subject to jurisdiction under Section 404 of the Clean Water Act. Both state and federal methodologies were employed in the field during the course of the delineations.

3.1 Pre-Survey Desktop Investigations

Prior to the commencement of field surveys, ENSR reviewed information from multiple sources to determine the potential extent of wetlands within the survey areas. Pre-survey information reviewed included: USGS topographical quadrangles, National Wetland Inventory Maps, Natural Resource Conservation Service – Web Soil Surveys, and CT DEP online wetland mapping services.

3.2 Field Surveys

Vegetation, soils, and hydrology data were assessed during the field surveys to determine if the wetland parameters described above were satisfied for each potential wetland area. ENSR used the "top of bank" to demarcate the limits of a watercourse when no wetlands were adjacent to the channel. During the field investigations along the ROWs, ENSR biologists identified the boundary between the water resource (wetland and/or watercourse) and the upland area, and delineated the boundary with survey flagging. Wetlands were delineated in the field with survey tape hung on vegetation at approximately 15 – 30 foot intervals. Documentation of the wetland boundaries was taken at specific locations within each wetland series. ENSR generated wetland resource field data summary sheets, which were completed for the wetland and watercourse resource surveys (see Appendix C: Wetlands and Watercourses Field Data Forms). Representative photographs of each wetland were taken during the delineation (see Appendix D: Representative Site Photographs). Each wetland and waterbody was given a unique alphanumeric designation.

The specific methods for characterizing and evaluating vegetation, hydrology, and soils for a wetland determination were performed as follows:

Soils: At the center of each data plot, ENSR characterized the soil profile to determine the hydric soil status. Borings were taken with a hand-held auger to depths necessary to accurately determine a soil's hydric status (typically 18-24 inches below ground surface). 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. ENSR based all hydric soil determinations on criteria established in the USACE Wetlands Delineation Manual (Environmental Laboratory 1987), along with *Field Indicators of Hydric Soils in the United States* (NRCS 2006) and *Field Indicators for Identifying Hydric Soils in New England* (NEIWPCC 2004). Additionally, ENSR noted the presence of any saturation and/or standing water encountered during the soil profile description.

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 of the plot. Dominant herbaceous vegetation was recorded within a 5-foot radius of the plot. ENSR identified plant species using appropriate botanical reference material for the region. The indicator status of each species was identified using the *National List of Plant Species That Occur in Wetlands, Region 1- Northeast* (Resource Management Group 1999). Hydrophytic vegetation was determined to be prevalent when greater than 50 percent of the dominant species were classified as having a wetland indicator status of facultative (FAC+ or FAC), facultative wetland (FACW) or obligate (OBL).

Hydrology: 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 (Environmental Laboratory 1987).

Wetland and watercourse flag positions and data point locations were field located by ENSR personnel using a Trimble global positioning system (GPS) data collection device capable of sub-meter accuracy. The collected GPS data points were then corrected, geo-referenced and plotted out on aerial photograph imagery.

3.3 Wetland Classification

While in the field, ENSR wetland scientists classified the various wetlands and watercourses according to the "Cowardin system", which is a process discussed in the "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et. al). Identified wetlands were classified as Palustrine Forested (PFO), Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS) and Palustrine Open Water (POW) and 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.

Palustrine Forested Wetlands (PFO)
Forested wetlands are characterized by woody vegetation that is six meters (approximately 20 feet) tall or taller and normally includes an overstory of trees, an understory of young trees and/or shrubs and an herbaceous layer.

Palustrine Scrub-Shrub Wetlands (PSS)
Scrub-shrub wetlands are typically dominated by woody vegetation less than six meters (approximately 20 feet) tall. Scrub-shrub land types may represent a successional stage leading to a forested wetland and includes shrubs, saplings, and trees or shrubs that are small and/or stunted due to environmental conditions.

Palustrine Emergent Wetlands (PEM)
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.

Palustrine Open Water (POW)
Areas of permanent open water that border on palustrine systems are referred to as POW. Areas of open water may exist as man-made or natural waterbodies.

3.4 Post-Survey Desktop Analysis

The wetland and watercourse boundaries were plotted on aerial imagery and subsequently reviewed and confirmed by ENSR personnel. The aerial-based wetland plans in Appendix B: Greater Springfield Reliability Project Maps, Connecticut Wetlands and Watercourses, show the locations of the delineated resources relative to the proposed limits of the Project. In several instances, additional offsite desktop analysis was required, as access to some wetlands and watercourses was limited or prohibited due to one or more factors. Field limitations to wetland or watercourse access included high water, deep organic accumulations, livestock, electric fences, the resources' location inside of a highway median and/or lack of survey access permission. Wetland boundaries and watercourse locations for inaccessible areas were obtained from aerial photograph interpretation and/or from distant field observations. USGS topographical quadrangles, National Wetland Inventory Maps, Natural Resource Conservation Service maps and CT DEP wetland maps were utilized in determining approximate wetland boundaries in inaccessible areas. Wetland boundaries for areas that were not accessible are shown on the plans as "approximate". Because of a combination of factors, including thick canopies, steep topography and/or heavy cloud cover, the GPS unit sometimes experienced poor satellite reception and/or geometry; therefore, it was not possible to accurately map certain portions of the wetland boundaries in the field. Areas of poor satellite reception are also shown on the plans as "approximate", and the resource boundaries are based upon field observations and upon interpretation of mapped resources. Water quality designations were determined using CT DEP mapping resources.

4.0 Results

As illustrated in Tables A-1 through A-6 (Appendix A), a total of 158 wetlands and 75 watercourses were identified in association with the Connecticut GSRP study areas during the 2007 and 2008 investigations. A total of 115 wetlands and 60 watercourses were identified in association with the Connecticut Portion of the North Bloomfield to Agawam Line Route and its underground Line variations. Thirty wetlands and 8 watercourses were identified in association with the Connecticut Portion of the Massachusetts Southern Route Alternative and its underground variation. There were 13 and 19 wetlands identified on the 3.6-Mile and 4.6-Mile in ROW Underground Line Variations respectively. In addition, there are 4 and 6 watercourses identified on the 3.6-Mile and 4.6-Mile in ROW Underground Line Variations respectively. There were 13 wetlands and 7 watercourses identified along the Manchester to Meekville Junction Circuit Separation Project.

During the process of delineating the wetlands associated with the subject ROWs both state and federal methodologies were employed and state and federal wetland criteria were evaluated. In Connecticut, state and federal boundaries are often different. Frequently this is a result of areas of alluvial and floodplain soils, which may not also exhibit a wetland plant community and evidence of wetland hydrology, emanating from wetland areas which do possess the three parameters discussed above which qualify them as federal wetlands. As a result, some locations on the Connecticut landscape do require distinct state and federal wetland boundaries. However, based upon the field and desktop investigations, ENSR determined that in all cases state and federal wetland boundaries are concurrent along the subject ROWs.

Ninety-nine wetlands examined in this study are classified either wholly or in-part as PFO. Sixty-three wetlands examined during this study are classified either wholly, or in-part, as PSS and another 63 wetlands examined during this study are classified either wholly, or in-part, as PEM. Five wetlands examined during this study were classified either wholly, or in-part, as palustrine open water (POW).

Appendix A includes tables highlighting the Wetlands and Watercourses identified during these investigations. Appendix B provides a project map sheet index depicting the locations of the inventoried wetlands and watercourses; Appendix C includes the wetlands and watercourses data forms; and Appendix D provides representative site photographs of wetlands and watercourses located within the Connecticut portions of the GSRP study area.

Wetland Vegetation

The wetlands inventoried during the course of these investigations ranged from the drier PFO wetlands, to PEM wetlands and deepwater habitat. Common species encountered in the various PFO wetlands during the investigations included: red maple (*Acer rubrum),* American elm (*Ulmus americana*), northern arrowwood (*Viburnum dentatum*), spicebush (*Lindera benzoin*), arrowleaf tearthumb (*Polygonum sagittatum*), skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*), winterberry (*Ilex verticillata*), cinnamon fern (*Osmunda cinnamomea*), poison ivy (*Toxicodendron radicans*), jewelweed (*Impatiens*

capensis), barberry (*Berberis thunbergii*) and red oak (*Quercus rubra*). The common vegetation species encountered during the PSS wetland investigations included: red maple, speckled alder (*Alnus rugosa*), silky dogwood (*Cornus amomum*), northern arrowwood, arrowleaf tearthumb, sensitive fern, jewelweed, woolgrass (*Scirpus cyperinus*), steeplebush (*Spiraea tomentosa*), tussock sedge (*Carex stricta*), and reed canary grass (*Phalaris arundinacea*). Common vegetation types found within the PEM wetland areas included: common cattail (*Typha latifolia*), jewelweed, arrowleaf tearthumb, tussock sedge, woolgrass, common duck weed (*Lemna minor*), willow (*Salix* spp.), arrowwood, meadowsweet (*Spiraea latifolia*), purple loosestrife (*Lythrum salicaria*), lurid sedge (*Carex lurida*), rice cutgrass (*Leersia oryzoides*), goldenrods (*Solidago* spp.), soft rush (*Juncus effusus*), Joe-Pye-weed (*Eupatorium maculatum*), sedges (*Carex* spp.) and sensitive fern. See Appendix C for additional details and site specific information for each wetland area.

Wetland Soils

Multiple soil types representing a wide variety of soil series designations were identified during this wetland and watercourse inventory. Soils described in the various wetlands appear to have formed in parent material including glacial till, glaciolacustrine sediments and glacial outwash. The soil types were identified as poorly drained to very poorly drained mineral soil with varying degrees of organics, and included fine sandy loams, gravelly sandy loams, silt loams, sandy loams and mucks. Many areas were also identified as frequently flooded. Poor drainage was noted in areas with the presence of deep organic soils, sapric material in the surface layers, high organic contents in the topsoil and/or prolonged standing water. Additionally, varying degrees of stoniness and rockiness were observed. In the more developed and industrial portions of the study area, the wetland soils were often described as, or officially mapped as, disturbed.

See Appendix C for additional details and site specific information for each wetland area.

Watercourses

The watercourses encountered during this inventory varied greatly in type, size and character. “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, according to the CT Inland Wetlands and Watercourses Act. Some of the streams that were inventoried are natural, whereas others were man-made. Silty sediments, sand, rock, gravel, riprap, and/or cobble bottoms dominated the natural stream beds that were inventoried. The shape, height, susceptibility to erosion and direction of flow of the individual watercourses also varied. Man made watercourses that were inventoried included those with culverts and corrugated and smooth drainage pipes, retention ponds, and man-made farm ponds.

See Appendix C for additional details and site specific information for each watercourse area.

5.0 Discussion

Tables 5-1 and 5-2 show the distribution of wetlands and watercourses by municipality for each route. East Granby is the municipality with the highest number of wetlands and watercourses,

with 78 and 40 respectively identified along the various routes. Suffield has the second most wetlands and watercourses identified, with 37 and 23 respectively. Twenty-four wetlands and 5 watercourses were identified on the Enfield routes, and 8 wetlands and 3 watercourses were identified in Bloomfield. The Manchester to Meekville Junction Circuit Separation Project investigations revealed 13 wetlands and 7 watercourses.

Tables 5-3 and 5-4 summarize the wetland and watercourse classifications of the water resources identified along the various GSRP routes. Many of the wetlands inventoried had a mixed vegetation cover type. A majority (approximately 62%) of the wetlands identified during the course of these investigations are classified either wholly or in part as palustrine forested wetland (PFO). Approximately 40 percent of the inventoried wetlands are classified wholly or in part as palustrine scrub-shrub wetland (PSS), and approximately 40 percent of the wetlands are classified either wholly or in part as palustrine emergent wetlands (PEM). Additionally another three percent of the wetland areas were classified as open water (POW). Furthermore, a majority of the wetlands within the ROWs exhibit complete or partial scrub-shrub cover type, as is typical of most periodically maintained ROWs; and outside of the maintained portions of the ROWs forested wetlands often border an existing PSS wetland.

5.1 Connecticut Portion of the North Bloomfield to Agawam Line Route and Underground Line Variations

The Connecticut Portion of the North Bloomfield to Agawam Line Route passes through the municipalities of Bloomfield, East Granby, and Suffield, CT. In addition to the proposed overhead utility transmission line, four underground variations to this proposed route exist. A total of 115 wetlands and 61 watercourses were identified in association with the Connecticut Portion of the North Bloomfield to Agawam Line Route and its underground line variations.

See Tables A-1 and A-2 for additional details regarding the wetlands and watercourses encountered along the Preferred Route and its Underground Variations.

5.1.1 Connecticut Portion of the North Bloomfield to Agawam Line Route

This section of the GSRP route is approximately 12 miles long. This proposed route would be constructed along existing utility ROWs, starting at the North Bloomfield Substation and would continue north to the CT-MA border. Sixty wetlands and 23 watercourses were identified on this route.

5.1.2 Newgate Road Underground Line Variation

The Newgate Road Underground Line Variation is approximately 5.8-miles long, and would replace approximately 4.5 miles of the Connecticut Portion of the North Bloomfield to Agawam Line Route. In general, this variation would extend along or adjacent to state and local roads (e.g., State Route 20, Old Road, Newgate Road, Phelps Road) from Granby Junction to an area along the existing ROW just north of Phelps Road in Suffield. The northern portion of this route variation would be along or within Newgate Road, which is directly west of and parallel to the existing overhead ROW containing the proposed Connecticut Portion of the North Bloomfield to Agawam Line Route.

Although the underground variation would likely be located primarily within or adjacent to paved roadways, it is possible that deviations from the paved corridor would be required. As a result, streams and wetlands were delineated and mapped adjacent to the road ROWs. This variation would traverse 13 wetlands and 22 watercourses, 14 of which are assumed to be perennial. No vernal pools were identified immediately adjacent to this variation. In contrast, there are a total of 18 wetlands and 8 watercourses on the section of the Connecticut Portion of the North Bloomfield to Agawam Line Route that would be replaced by this variation. Some of the wetlands and watercourses associated with this route are also associated with the State Route 168/187 Underground Line Variation.

5.1.3 State Route 168/187 Underground Line Variation

The State Route 168/187 Underground Line Variation would be approximately 7.2 miles long, and would replace approximately 5 miles of the Connecticut Portion of the North Bloomfield to Agawam Line Route. In general, this variation would extend along or adjacent to roads (e.g., State Routes 20, 187, and 168) from Granby Junction to an area along the existing ROW just east of Route 168 in Suffield.

Although the underground variation would likely be located primarily within or adjacent to paved roadways, it is possible that deviations from the paved corridor would be required. As a result, streams and wetlands were delineated and mapped adjacent to the road ROWs. A total of 42 wetlands and 16 watercourses were delineated along this variation. No vernal pools were identified immediately adjacent to this variation. In contrast there are a total of 19 wetlands and 9 watercourses on the section of the Connecticut Portion of the North Bloomfield to Agawam Line Route that would be replaced by this variation. Some of the wetlands and watercourses associated with this route are also associated with the Newgate Road Underground Line Variation.

5.1.4 3.6-Mile in ROW Underground Line Variation

This underground variation occurs in the towns of East Granby and Suffield and is within the same existing ROW corridor as the Connecticut Portion of the North Bloomfield to Agawam Line Route. There are 13 wetlands and 4 watercourses that occur on the 3.6-Mile in ROW Underground Line Variation.

5.1.5 4.6-Mile in ROW Underground Line Variation

This underground variation occurs in the towns of East Granby and Suffield and is within the same existing ROW corridor as the Connecticut Portion of the North Bloomfield to Agawam Line Route. There are 19 wetlands and 6 watercourses on the 4.6-Mile in ROW Underground Line Variation. However, 13 of the wetlands and 4 of the watercourses also occur on the 3.6 mile in ROW underground variation.

5.2 Connecticut Portion of the Massachusetts Southern Route Alternative and Underground Variation

The Connecticut Portion of the Massachusetts Southern Route Alternative passes through the municipalities of Suffield and Enfield, CT. In addition to the proposed overhead utility transmission line, one underground variation to this proposed route exists. A total of 30

wetlands and 8 watercourses were identified in association with the Connecticut Portion of the Massachusetts Southern Route Alternative and its underground line variation.

See Tables A-3 and A-4 for additional details regarding the wetlands and waterways encountered along the Connecticut Portion of the Massachusetts Southern Route Alternative and the underground variation.

5.2.1 Connecticut Portion of the Massachusetts Southern Route Alternative

This proposed route would be constructed along existing utility ROWs within the municipalities of Suffield and Enfield. A total of 27 wetlands and 5 watercourses have been identified and delineated on this route.

5.2.1 Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation

A total of 3 wetlands and 3 watercourses are located on this variation. In contrast there are 16 wetlands and 4 watercourses on the section of the Connecticut Portion of the Massachusetts Southern Route Alternative that would be replaced by this variation.

5.3 Manchester to Meekville Junction Circuit Separation Project

Thirteen wetlands and 7 watercourses were identified along this route. In comparison to the other study areas, this Route passes through more developed industrial and commercial areas and disturbed soils were frequently observed. Consistent with the disturbed soils findings more invasive plant species, including common reed (*Phragmites australis*) and Japanese knotweed (*Polygonum cuspidatum*), were observed than in other portions of the GSRP study area.

See Tables A-5 and A-6 for additional details regarding the wetlands and waterways encountered along this route.

6.0 References

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Table 5-1
Wetlands Identified Along the Connecticut Portions of the GSRP Routes – By Town

Parameter	Connecticut Portion of the North Bloomfield to Agawam Line Route	Newgate Road Underground Line Variation	State Route 168/187 Underground Line Variation	3.6-Mile in ROW Underground Line Variation	4.6-Mile in ROW Underground Line Variation	Connecticut Portion of the Massachusetts Southern Route Alternative	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation	Manchester to Meekville Junction Circuit Separation Project	Grand Total: CT Wetlands Identified on GSRP Route
Total Number of Wetlands	**60**[1]	**13**[2]	**42**[3]	**13**	**19**	**27**[4,5]	**3**[6]	**13**	**158**[7]
Municipality: **Bloomfield**	8	-	-	**-**	**-**	-	-	-	**8**
Municipality: **East Granby**	41	11	26	9	15	-	-	-	**78**
Municipality: **Suffield**	12	2	16	4	4	7	-	-	**37**
Municipality: **Enfield**	-	-	-	**-**	**-**	21	3	-	**24**
Municipality: **Manchester**	-	-	-	**-**	**-**	-	-	13	**13**

1 – One wetland (W01HF014 / W9-257) located on the Connecticut Portion of the North Bloomfield to Agawam Line Route spans the border of two municipalities - East Granby and Suffield. This wetland has been included in the inventory for both municipalities but was counted only once in the Total Number of Wetlands.
2 – Eighteen wetlands were identified on the section of the Connecticut Portion of the North Bloomfield to Agawam Line Route that would be replaced by the Newgate Road Underground Line Variation. These 18 wetlands are included within the Connecticut Portion of the North Bloomfield to Agawam Line Route Total Number of Wetlands.
3 – Nineteen wetlands were identified on the section of the Connecticut Portion of the North Bloomfield to Agawam Line Route that would be replaced by the State Route 168/187 Underground Line Variation. These 19 wetlands are included within the Connecticut Portion of the North Bloomfield to Agawam Line Route Total Number of Wetlands.
4 – One wetland (W04HA026 / W8-142) located along the Connecticut Portion of the Massachusetts Southern Route Alternative spans the border of two municipalities – Suffield, CT and Agawam, MA. This wetland has been included in the inventory for both municipalities (accounted for in the MA report under separate cover) but was counted only once in the CT Grand Total.
5 – One wetland (W04HD034 / W8-148) located on the Connecticut Portion of the Massachusetts Southern Route Alternative spans the border of two municipalities – Enfield and Suffield. This wetland has been included in the inventory for both municipalities but was counted only once in the Total Number of Wetlands.
6 – Sixteen wetlands were identified on the section of the Connecticut Portion of the Massachusetts Southern Route Alternative that would be replaced by Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation. These 16 wetlands are included within the Noticed-Alternative "Southern" Route: CT Portions Total Number of Wetlands.
7 – Many wetlands overlap with the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Newgate Road, State Route 168/187, 3.6-Mile in ROW, and 4.6-Mile in ROW Underground Line Variations. All these wetlands are only counted once in the Grand Total.

Table 5-2
Watercourses Identified Along the Connecticut Portions of the GSRP Routes – By Town

Parameter	Connecticut Portion of the North Bloomfield to Agawam Line Route	Newgate Road Underground Line Variation	State Route 168/187 Underground Line Variation	3.5-Mile In ROW Underground Line Variation	4.6-Mile In ROW Underground Line Variation	Connecticut Portion of the Massachusetts Southern Route Alternative	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation	Manchester to Meekville Junction Circuit Separation Project	Grand Total: CT Watercourses Identified on GSRP Route
Total Number of Watercourses	**23**[1]	**22**[2]	**16**[3]	**4**	**6**	**5**	**3**[4]	**7**	**61**
Municipality: **Bloomfield**	3	-	-	-	-	-	-	-	3
Municipality: **East Granby**	13	13	14	4	5	-	-	-	40
Municipality: **Suffield**	8	9	2	2	2	3	-	-	23
Municipality: **Enfield**	-	-	-	-	-	2	3	-	5
Municipality: **Manchester**	-	-	-	-	-	-	-	7	7

1 – One watercourse (S08HF002 / S9-81) located on the Connecticut Portion of the North Bloomfield to Agawam Line Route spans the border of two municipalities - East Granby and Bloomfield. This watercourse has been included in the inventory for both municipalities but was counted only once in the Total Number of Watercourses.
2 – Eight watercourses were identified on the section of the Connecticut Portion of the North Bloomfield to Agawam Line Route that would be replaced by the Newgate Road Underground Line Variation. These 8 watercourses are included within the Connecticut Portion of the North Bloomfield to Agawam Line Route Total Number of Watercourses.
3 – Nine watercourses were identified on the section of the Connecticut Portion of the North Bloomfield to Agawam Line Route that would be replaced by the State Route 168/187 Underground Line Variation. These 9 watercourses are included within the Connecticut Portion of the North Bloomfield to Agawam Line Route Total Number of Watercourses.
4 – Four watercourses were identified on the section of the Connecticut Portion of the Massachusetts Southern Route Alternative that would be replaced by the Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation. These 4 watercourses are included within the Connecticut Portion of the Massachusetts Southern Route Alternative Total Number of Watercourses.

Table 5-3
Wetlands Identified Along the Connecticut portions of the GSRP Routes – By Type

Parameter	Connecticut Portion of the North Bloomfield to Agawam Line Route	Newgate Road Underground Line Variation	State Route 168/187 Underground Line Variation	3.6-Mile in ROW Underground Line Variation	4.6-Mile in ROW Underground Line Variation	Connecticut Portion of the Massachusetts Southern Route Alternative	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation	Manchester to Meekville Junction Circuit Separation Project	Grand Total: CT Wetlands Identified on GSRP Route
Total Number of Wetlands	**62**	**13**	**42**	**18**	**32**	**27**	**3**	**13**	**208**
Wetland Classification: **PFO**[1]	35	6	24	9	16	24	2	8	**124**
Wetland Classification: **PSS**[1]	25	7	11	4	11	10	1	9	**78**
Wetland Classification: **PEM**[1]	23	-	15	5	5	16	2	7	**73**
Wetland Classification: **POW**[1]	3	-	1	-	-	1	-	-	**5**

1 – Wetlands were classified according to Cowardin et al. PEM = palustrine emergent wetland; PSS = palustrine scrub-shrub wetland; PFO = palustrine forested wetland; POW = palustrine open water. The wetland areas identified along each route were classified by ENSR biologists. The Total Number of Wetlands reflects the actual number of wetlands areas identified along each route; multiple Cowardin classifications may apply to a particular wetland area, resulting in the appearance of a discrepancy in the tabulations.

Table 5-4
Watercourses Identified Along the Connecticut Portions of the GSRP Routes – By Type

Parameter	Connecticut Portion of the North Bloomfield to Agawam Line Route	Newgate Road Underground Line Variation	State Route 168/187 Underground Line Variation	3.6-Mile In ROW Underground Line Variation	4.6-Mile In ROW Underground Line Variation	Connecticut Portion of the Massachusetts Southern Route Alternative	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation	Manchester to Meekville Junction Circuit Separation Project	Grand Total: CT Wetlands Identified on GSRP Route
Total Number of Watercourses	**23**	**22**	**16**	**4**	**6**	**5**	**3**	**7**	**86**
Water Quality Classification: **A**[1]	19	22	16	6	7	4	3	2	79
Water Quality Classification: **B**[1]	4[3]	-	-	-	-	1	-	5	10
Water Quality Classification: **C**[1]	-	-	-	-	-	-	-	5	5
Watercourse Frequency: **I**[2]	16	8	7	-	-	-	-	2	33
Watercourse Frequency: **P**[2]	7	14	9	-	-	5	3	5	43

1 – Watercourses were classified using the CT Water Quality Standards classifications: AA = drinking water supply, A = potential drinking water supply, contact recreation, B = non-contact recreation, C = unacceptable water quality. The Total Number of Watercourses reflects the actual number of watercourses identified along the route. Multiple Water Quality Classifications may apply to a particular watercourse area, resulting in the appearance of a discrepancy in the tabulations.
2 - Watercourse frequency is designated using the CT Inland Wetland and Watercourses Act: P = Perennial, I = Intermittent.
3 – Fisheries Classifications were identified for 2 of the watercourses on the Preferred "Northern" Route: North Bloomfield to CT-MA Border. Watercourse S08HF003/S9-82 has a Fisheries Classification of Coldwater (trout) and warm water (small mouth bass); Watercourse S08HF003/S9-82 is designated a Coldwater Fishery.

Appendix A
Connecticut Wetlands and Watercourses Identified Along the Greater Springfield Reliability Project

Table A-1
Wetlands Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
North Bloomfield	W04HF001	W9-212	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W04HF012	W9-213	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W08HF002	W9-215	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W08HF003	W9-216	PEM/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W08HF004	W9-215	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W08HF006	W9-214	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W08HF008	W9-217	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	W08HF009	W9-218	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W08HF011	W9-219	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W09HF001	W9-220	PFO/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W09HF002	W9-221	PFO/PSS/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W04HF003	W9-222	PFO/PSS/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W04HF004	W9-223	PFO/PSS/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W04HF005	W9-224	PFO/PSS/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF019	W9-225	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF018	W9-226	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF017	W9-227	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF016	W9-229	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF015	W9-228	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF014	W9-230	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF013	W9-231	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF012	W9-232	PFO/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF011	W9-232A	POW	Connecticut Portion of the North Bloomfield to Agawam Line Route

Table A-1
Wetlands Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
East Granby	W07HF010	W9-233	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF009	W9-234	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF008	W9-235	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF007	W9-236	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF007A	W9-236	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF006	W9-237	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF005	W9-238	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF004	W9-239	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF004A	W9-240	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF003	W9-241	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF002	W9-242	POW	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	W07HF001	W9-243	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	W01HF001	W9-244	PFO/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	W01HF002	W9-245	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	W01HF003	W9-246	PFO/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	W01HF004	W9-248	PSS/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	W01HF005	W9-247	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6 in ROW in Underground Variation
East Granby	W01HF006	W9-249	PSS/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	W01HF007	W9-250	PSS/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations

Table A-1
Wetlands Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
East Granby	W01HF008	W9-251	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	W01HF009	W9-252	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	W01HF010	W9-253	PFO/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	W01HF011	W9-254	PEM/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	W01HF012	W9-255	PEM/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	W01HF013	W9-256	PEM/POW	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
E. Granby/Suffield	W01HF014	W9-257	PFO/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	W01HF015	W9-258	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	W01HF016	W9-259	PFO/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	W01HF017	W9-260	PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	W01HF018	W9-261	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF019	W9-262	PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF020	W9-263	PFO/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF021	W9-264	PFO/PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF022	W9-265	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF023	W9-266	PEM	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF024	W9-267	PEM/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	W01HF025	W1-1	PEM/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route

Table A-1
Wetlands Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
East Granby	W01HF003UG	W10-268	PFO/PSS	Connecticut Portion of the North Bloomfield to Agawam Line Route; Newgate Road & State Route 168/187 Underground Line Variations
East Granby	W01HF004UG	W10-269	PSS	Newgate Road Underground Line Variation
East Granby	W01HF005UG	W10-270	PSS	Newgate Road Underground Line Variation
East Granby	W01HF006UG	W10-271	PSS	Newgate Road Underground Line Variation
East Granby	W01HF007UG	W10-272	PSS	Newgate Road Underground Line Variation
East Granby	W01HF008UG	W10-273	PFO	Newgate Road Underground Line Variation
East Granby	W01HF009UG	W10-276	PSS	Newgate Road Underground Line Variation
East Granby	W01HF010UG	W10-274	PFO	Newgate Road Underground Line Variation
East Granby	W01HF012UG	W10-275	PSS	Newgate Road Underground Line Variation
East Granby	W05HD001UG	W11-308	PFO	Newgate Road Underground Line Variation
East Granby	W05HD002UG	W11-309	PFO	Newgate Road Underground Line Variation
Suffield	W05HD003UG	W11-310	PFO	Newgate Road Underground Line Variation
Suffield	W05HD004UG	W11-311	PFO	Newgate Road Underground Line Variation
East Granby	W01HF001	W9-244	PSS/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; State Route 168/187 Underground Line Variation
East Granby	W01HF002	W9-245	PSS/PFO	Connecticut Portion of the North Bloomfield to Agawam Line Route; State Route 168/187 Underground Line Variation
East Granby	W01HF003UG	W10-268	PFO/PSS	State Route 168/187 Underground Line Variation
East Granby	W01HF004UG	W10-269	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF005UG	W10-270	PEM	State Route 168/187 Underground Line Variation
East Granby	W01HF006UG	W10-271	PEM/PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF007UG	W10-272	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF008UG	W10-273	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF009UG	W10-276	PEM	State Route 168/187 Underground Line Variation
East Granby	W01HF010UG	W10-274	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF011UG	W10-279	PEM	State Route 168/187 Underground Line Variation
East Granby	W01HF012UG	W10-275	PSS	State Route 168/187 Underground Line Variation
East Granby	W01HF013UG	W10-280	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF014UG	W10-277	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF015UG	W10-282	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF016UG	W10-278	PEM	State Route 168/187 Underground Line Variation
East Granby	W01HF017UG	W10-285	PSS	State Route 168/187 Underground Line Variation
East Granby	W01HF018UG	W10-281	PEM/PSS	State Route 168/187 Underground Line Variation
East Granby	W01HF019UG	W10-286	PEM	State Route 168/187 Underground Line Variation
East Granby	W01HF020UG	W10-283	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF021UG	W10-289	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF022UG	W10-284	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF023UG	W10-291	PFO/PSS	State Route 168/187 Underground Line Variation
East Granby	W01HF024UG	W10-287	PFO	State Route 168/187 Underground Line Variation
East Granby	W01HF025UG	W10-293	PEM	State Route 168/187 Underground Line Variation
East Granby	W01HF026UG	W10-288	PSS/PEM	State Route 168/187 Underground Line Variation
Suffield	W01HF027UG	W10-296	PFO	State Route 168/187 Underground Line Variation

Table A-1
Wetlands Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
Suffield	W01HF028UG	W10-290	PFO	State Route 168/187 Underground Line Variation
Suffield	W01HF029UG	W10-297	PEM	State Route 168/187 Underground Line Variation
Suffield	W01HF030UG	W10-292	PEM	State Route 168/187 Underground Line Variation
Suffield	W01HF031UG	W10-300	PEM	State Route 168/187 Underground Line Variation
Suffield	W01HF032UG	W10-294	PEM/POW	State Route 168/187 Underground Line Variation
Suffield	W01HF033UG	W10-301	PSS/PFO	State Route 168/187 Underground Line Variation
Suffield	W01HF034UG	W10-295	PFO	State Route 168/187 Underground Line Variation
Suffield	W01HF035UG	W10-303	PFO	State Route 168/187 Underground Line Variation
Suffield	W01HF036UG	W10-298	PEM	State Route 168/187 Underground Line Variation
Suffield	W01HF037UG	W10-304	PFO/PSS	State Route 168/187 Underground Line Variation
Suffield	W01HF038UG	W10-299	PSS/PEM	State Route 168/187 Underground Line Variation
Suffield	W01HF039UG	W10-305	PFO	State Route 168/187 Underground Line Variation
Suffield	W01HF040UG	W10-302	PFO	State Route 168/187 Underground Line Variation
Suffield	W01HF041UG	W10-306	PSS	State Route 168/187 Underground Line Variation
Suffield	W01HF042UG	W10-307	PFO	State Route 168/187 Underground Line Variation

1: Wetland series number generated by ENSR to identify wetlands within and adjacent to the Project corridor; 2: wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; POW = Palustrine Open Water.

Table A-2
Watercourses Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Watercourse Series Number[1] & Name (Where Applicable)	CL&P Watercourse Number	Water Quality / Fisheries Classification [2] (where applicable)	Watercourse Frequency Type (P or I)[3]	Project Segment / Route
North Bloomfield	S08HF001	S9-78	B	P	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield	S08HF006	S9-79	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
North Bloomfield/ East Granby	S08HF002	S9-81	B/Coldwater & Warmwater	P	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S08HF003	S9-82	B/Coldwater	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S08HF004	S9-83A	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S07HF008A	S9-83	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S07HF008B	S9-84	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S07HF003	S9-85	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S07HF002 Holcomb Brook/Muddy Brook	S9-87	B	P	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S07HF001	S9-90	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S01HF001A	S9-91	A	P	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	S01HF001	S9-92	A	P	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation

Table A-2
Watercourses Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Watercourse Series Number[1] & Name (Where Applicable)	CL&P Watercourse Number	Water Quality / Fisheries Classification [2] (where applicable)	Watercourse Frequency Type (P or I)[3]	Project Segment / Route
East Granby	S01HF002	S9-93	A	P	Connecticut Portion of the North Bloomfield to Agawam Line Route; 4.6-Mile in ROW Underground Line Variation
East Granby	S01HF003	S9-94	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
East Granby	S01HF004	S9-95	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	S01HF005	S9-96	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	S01HF006	S9-97	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	S01HF007	S9-98	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route; 3.6-Mile and 4.6-Mile in ROW Underground Line Variations
Suffield	S01HF018A	S9-99	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	S01HF008	S9-100	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	S01HF009	S9-101	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	S01HF010	S9-102	A	I	Connecticut Portion of the North Bloomfield to Agawam Line Route
Suffield	S01HF025	S1-1	A	P	Connecticut Portion of the North Bloomfield to Agawam Line Route
East Granby	S01HF001UG	S10-103	A	I	Newgate Road Underground Line Variation

Table A-2
Watercourses Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Watercourse Series Number[1] & Name (Where Applicable)	CL&P Watercourse Number	Water Quality / Fisheries Classification [2] (where applicable)	Watercourse Frequency Type (P or I)[3]	Project Segment / Route
East Granby	S01HF002UG	S10-104	A	I	Newgate Road Underground Line Variation
East Granby	S01HF003UG	S10-106	A	I	Newgate Road Underground Line Variation
East Granby	S01HF004UG	S10-105	A	P	Newgate Road Underground Line Variation
East Granby	S01HF005UG	S10-107	A	I	Newgate Road Underground Line Variation
East Granby	S01HF006UG	S10-108	A	P	Newgate Road Underground Line Variation
East Granby	S01HF007UG	S10-109	A	P	Newgate Road Underground Line Variation
East Granby	S05HD001UG	S11-119	A	P	Newgate Road Underground Line Variation
East Granby	S05HD002UG	S11-120	A	P	Newgate Road Underground Line Variation
East Granby	S05HD003UG	S11-121	A	I	Newgate Road Underground Line Variation
East Granby	S05HD004UG	S11-122	A	I	Newgate Road Underground Line Variation
East Granby	S05HD005UG	S11-123	A	P	Newgate Road Underground Line Variation
East Granby	S05HD006UG	S11-124	A	P	Newgate Road Underground Line Variation
Suffield	S05HD007UG	S11-126	A	I	Newgate Road Underground Line Variation
Suffield	S05HD008UG	S11-125	A	I	Newgate Road Underground Line Variation
Suffield	S05HD009UG	S11-127	A	P	Newgate Road Underground Line Variation
Suffield	S05HD010UG	S11-128	A	P	Newgate Road Underground Line Variation
Suffield	S05HD011UG	S11-129	A	P	Newgate Road Underground Line Variation
Suffield	S05HD012UG	S11-130	A	P	Newgate Road Underground Line Variation
Suffield	S05HD013UG	S11-133	A	P	Newgate Road Underground Line Variation
Suffield	S05HD014UG	S11-131	A	P	Newgate Road Underground Line Variation
Suffield	S05HD015UG	S11-132	A	P	Newgate Road Underground Line Variation
East Granby	S01HF001UG Muddy Brook	S10-103	A	I	State Route 168/187 Underground Line Variation
East Granby	S01HF002UG	S10-104	A	I	State Route 168/187 Underground Line Variation
East Granby	S01HF003UG	S10-106	A	I	State Route 168/187 Underground Line Variation
East Granby	S01HF004UG	S10-105	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF005UG	S10-107	A	I	State Route 168/187 Underground Line Variation
East Granby	S01HF006UG	S10-108	A	P	State Route 168/187 Underground Line Variation

Table A-2
Watercourses Identified Along the Connecticut Portion of the North Bloomfield to Agawam Line Route and the Underground Line Variations

Municipality	ENSR Watercourse Series Number[1] & Name (Where Applicable)	CL&P Watercourse Number	Water Quality / Fisheries Classification [2] (where applicable)	Watercourse Frequency Type (P or I)[3]	Project Segment / Route
East Granby	S01HF007UG	S10-109	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF008UG	S10-111	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF009UG	S10-110	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF010UG	S10-113	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF010aUG	S10-112	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF011UG	S10-114	A	I	State Route 168/187 Underground Line Variation
East Granby	S01HF012UG	S10-115	A	P	State Route 168/187 Underground Line Variation
East Granby	S01HF013UG	S10-116	A	P	State Route 168/187 Underground Line Variation
Suffield	S01HF014UG	S10-118	A	I	State Route 168/187 Underground Line Variation
Suffield	S01HF015UG	S10-117	A	I	State Route 168/187 Underground Line Variation

1: Stream series number generated by ENSR to identify streams within and adjacent to the Project corridor.
2: Connecticut Water Quality Standards Classification (AA = drinking water supply, A = potential drinking water supply, contact recreation, B = non-contact recreation, C = unacceptable water quality.
3 P = perennial, I = intermittent.

Table A -3
Wetlands Identified Along the Connecticut Portion of the Massachusetts Southern Route Alternative and the Underground Variation

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
Suffield/Agawam	W04HA026	W8-142	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	W04HD027	W8-143	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	W04HD028	W8-144	PSS/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	W04HD029	W8-145	PSS/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	W04HD030	W8-146	PEM	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	W04HD031	W8-147	PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield/Suffield	W04HD034	W8-148	PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD033	W8-150	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HA032	W8-149	PFO/PEM	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD035	W8-151	PEM/PFO/PSS	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD036	W8-152	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD037	W8-152A	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD039	W8-152B	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD040	W8-152C	PSS/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD041	W8-152D	PSS/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD043	W8-152E	POW/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD044	W8-152F	PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD045	W8-152G	PSS/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD046	W8-152H	PEM/PSS	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD047	W8-152I	PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD048	W8-152J	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD049	W8-152K	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative

Table A -3
Wetlands Identified Along the Connecticut Portion of the Massachusetts Southern Route Alternative and the Underground Variation

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
Enfield	W04HD050	W8-152L	PEM	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD053	W8152M	PEM/PFO	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD054	W8-152N	PEM/PFO/PSS	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD055	W8-152O	PFO/PSS	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W04HD056	W8-153	PEM/PFO/PSS	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	W01HF043 UG	W8-151A	PEM	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation
Enfield	W01HF044 UG	W8-152G	PFO/PSS/PEM	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation
Enfield	W01HF046 UG	W8-151B	PFO	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation

1: Wetland series number generated by ENSR to identify wetlands within and adjacent to the Project corridor; 2: wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; POW = Palustrine Open Water.

Table A-4
Watercourses Identified Along the Connecticut Portion of the Massachusetts Southern Route Alternative and the Underground Variation

Municipality	ENSR Watercourse Series Number[1] & Name (Where Applicable)	CL&P Watercourse Number	Water Quality / Fisheries Classification [2] (where applicable)	Watercourse Frequency Type (P or I)[3]	Project Segment / Route
Suffield	S04HD029	S8-56	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	S04HD008	S8-57	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative
Suffield	S04HD009	S8-58	B	P	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	S04HD010	S8-59	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	S04HD012	S8-59A	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative
Enfield	S01HF016UG	S8-59B	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation
Enfield	S01HF017UG	S8-59C	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation
Enfield	S04HD010	S8-59	A	P	Connecticut Portion of the Massachusetts Southern Route Alternative Underground Line Variation

1: Stream series number generated by ENSR to identify streams within and adjacent to the Project corridor.
2: Connecticut Water Quality Standards Classification (AA = drinking water supply, A = potential drinking water supply, contact recreation, B = non-contact recreation, C = unacceptable water quality.
3: P = Perennial, I = Intermittent.

Table A-5
Wetlands Identified Along the Manchester to Meekville Junction Circuit Separation Project

Municipality	ENSR Wetland Number[1]	CL&P Wetland Number	Wetland Class[2]	Project Segment / Route
Manchester	W01HF001	W15-501	PSS/PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W88HA021	W15-500	PSS/PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W88HA021A	W15-502	PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF002	W15-503	PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF003	W15-504	PEM/PSS/PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W88HA013	W15-507	PSS/PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF004	W15-512	PEM/PSS	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF005	W15-513	PEM	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF006	W15-514	PEM/PSS/PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF007	W15-515	PEM	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF008	W15-516	PEM/PSS	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF009	W15-518	PEM/PSS/PFO	Manchester to Meekville Junction Circuit Separation Project
Manchester	W01HF010	W15-517	PSS	Manchester to Meekville Junction Circuit Separation Project

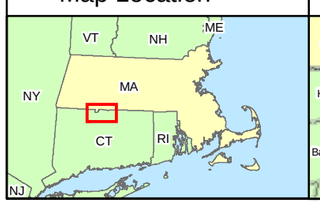
1: Wetland series number generated by ENSR to identify wetlands within and adjacent to the Project corridor; 2: wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; POW = Palustrine Open Water.

Table A-5 Watercourses Identified Along the Manchester to Meekville Junction Circuit Separation Project, CT					
Municipality	ENSR Watercourse Series Number[1] & Name (Where Applicable)	CL&P Watercourse Number	Water Quality / Fisheries Classification [2] (where applicable)	Watercourse Frequency Type (P or I)[3]	Project Segment / Route
Manchester	S01HF001	S15-201	C/B	P	Manchester to Meekville Junction Circuit Separation Project
Manchester	S01HF002	S15-200	A	I	Manchester to Meekville Junction Circuit Separation Project
Manchester	S01HF003	S15-202	C/B	P	Manchester to Meekville Junction Circuit Separation Project
Manchester	S01HF004	S15-203	C/B	P	Manchester to Meekville Junction Circuit Separation Project
Manchester	S01HF005	S15-204	C/B	P	Manchester to Meekville Junction Circuit Separation Project
Manchester	S01HF006	S15-205	C/B	P	Manchester to Meekville Junction Circuit Separation Project
Manchester	S01HF007	S15-207	A	I	Manchester to Meekville Junction Circuit Separation Project

1: Stream series number generated by ENSR to identify streams within and adjacent to the Project corridor.
2: Connecticut Water Quality Standards Classification (AA = drinking water supply, A = potential drinking water supply, contact recreation, B = non-contact recreation, C = unacceptable water quality.
3: P = Perennial, I = Intermittent.

Appendix B
Greater Springfield Reliability Project Maps:
Connecticut Wetlands and Watercourses

Map Location



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- MAHW Flag
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- Threatened Species
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- Access Road Flag
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- Natural Feature
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- State Boundary

N

0 200 400 Feet

1:2000 1" = 167'

Data Souce: 2006-7 Imagery, ENSR Survey: Summer, Fall 2007

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Agawam to North Bloomfield Substation
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ENSR Survey: Summer, Fall 2007

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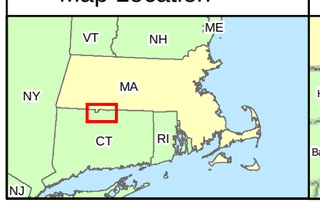
Map Location



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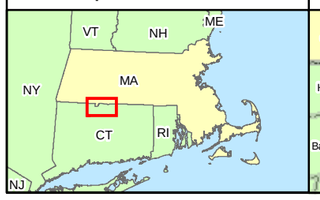
North Stone St

Spruce St

Ratley Rd

W01022

Map Location



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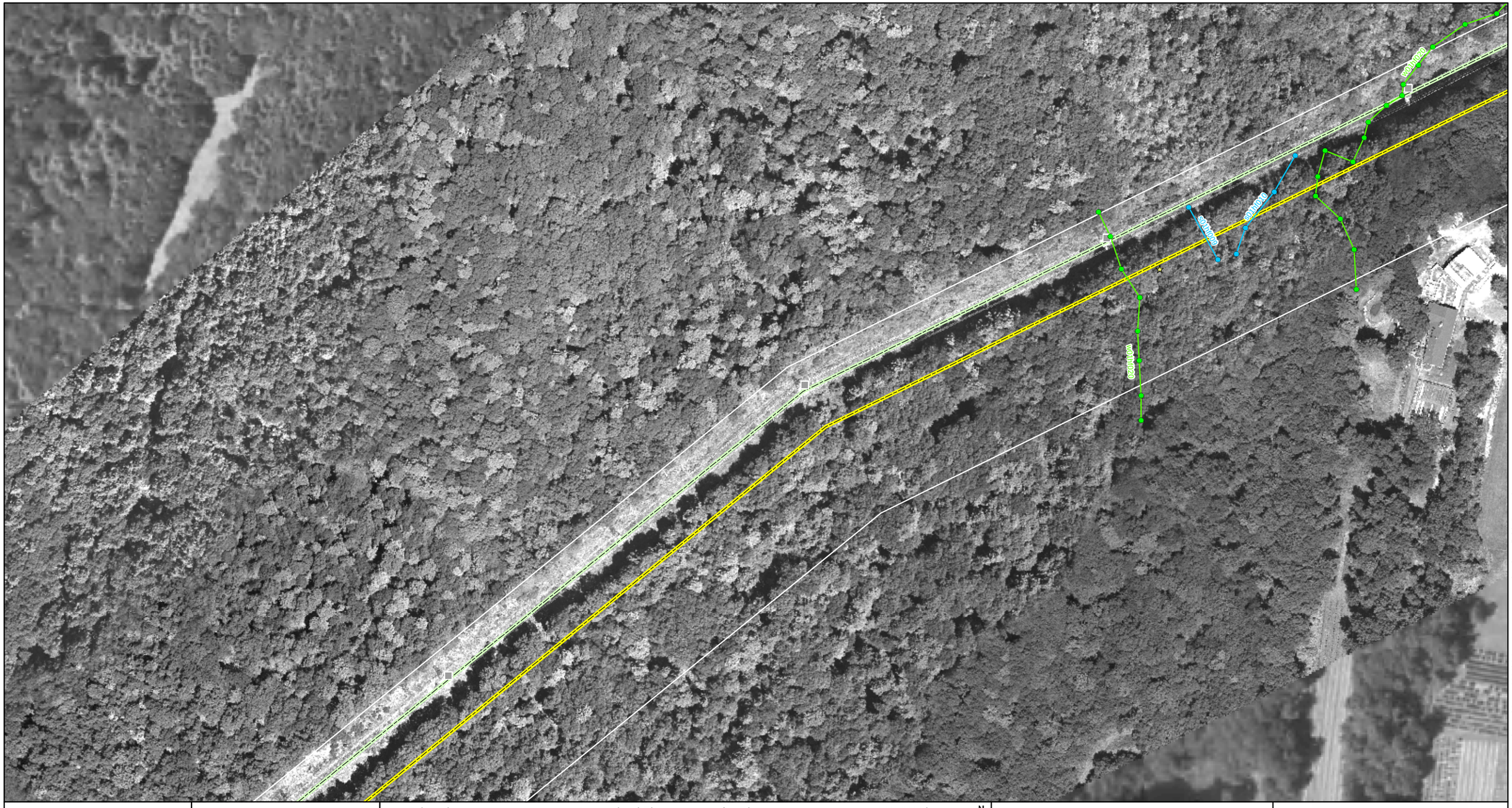

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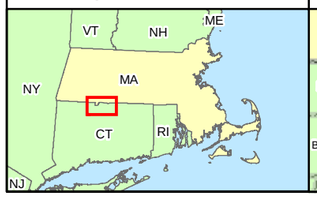

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