



FROST BRIDGE TO CAMPVILLE 115-kV PROJECT

DEVELOPMENT & MANAGEMENT PLAN

for

**NEW 115-kV TRANSMISSION LINE AND RELATED
TRANSMISSION LINE MODIFICATIONS**

VOLUME 1

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Prepared by:

The Connecticut Light and Power Company doing business as Eversource Energy

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VOLUME 1

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VOLUME 3

Transmission Line

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Cross-Sections:	Key map and Cross-Sections 1-6 depicting the alignment of the new 115-kV transmission line within Eversource's ROW)
Key Map:	U.S. Geological Survey 1"=2,000' (1:24,000) map identifying Project location
Mapsheets:	Mapsheets 1-35, 1"=100' maps showing the location of the new 115-kV transmission line, substations, double-circuit separation, construction support sites, access roads, and work pads in relation to environmental features)
Detail Sheets:	<ol style="list-style-type: none">1. Permitted Water Resource Impacts2. Water Resource Protocols (Wetlands Avoidance and Minimization Measures, Watercourse and Waterbodies Avoidance and Minimization Measures, Wetlands Restoration, Wetland Invasive Species Control BMPs)3. Vernal Pool Protocols4. Rare Species Avoidance and Minimization Measures5. Farmland Protection Measures6. Typical Details: Erosion and Sedimentation Control Details7. Typical Details: Erosion and Sedimentation Control Details8. Typical Structure Configuration9. Typical Foundation and Grounding Details10. Watercourse S-F11 Culvert Replacement Plan11. Watercourse S-F11 Culvert Replacement Cross-Section and Details

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1. INTRODUCTION

1.1 PROJECT OVERVIEW AND PURPOSE OF THE PLAN

To bring the electric supply system in northwest Connecticut into compliance with applicable national and regional reliability standards and criteria, The Connecticut Light and Power Company doing business as Eversource Energy (Eversource or the Company) will construct, operate, and maintain a new 115-kilovolt (kV) transmission line and related improvements to the electric system in Litchfield County, Connecticut. These improvements, referred to collectively as the Frost Bridge to Campville 115-kV Project (Project; refer to Figure 1-1), will consist of the following:

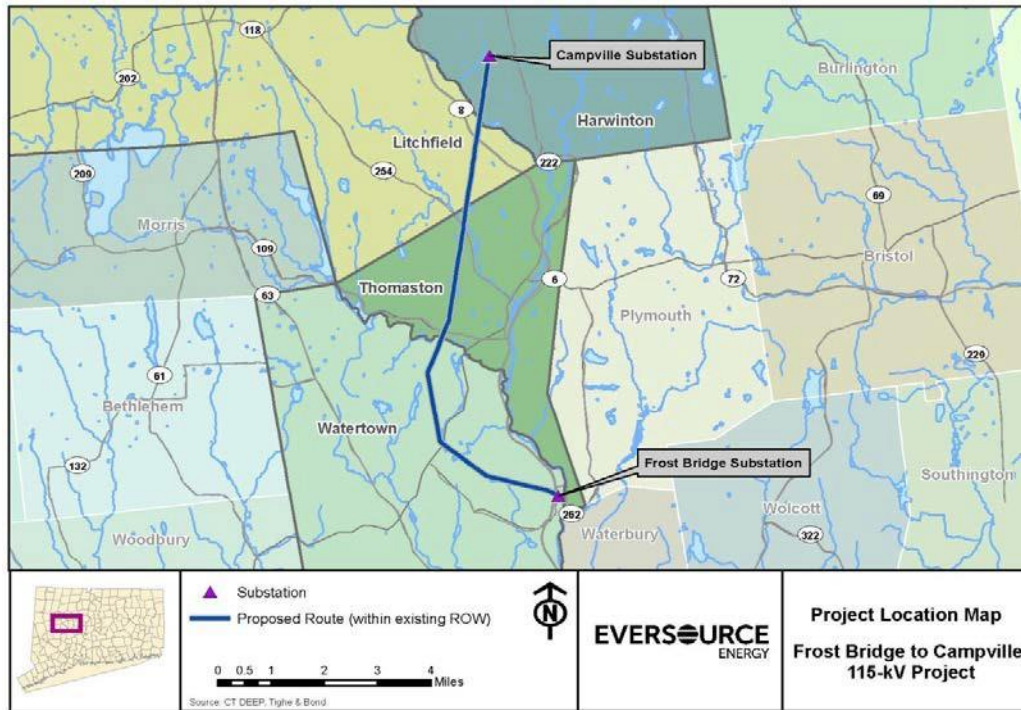
- A new 10.4-mile 115-kV predominantly overhead¹ electric transmission line, to be located entirely within an existing Eversource right-of-way (ROW) and extending between Eversource's Frost Bridge Substation in the Town of Watertown and its Campville Substation in the Town of Harwinton.
- Related improvements to both Frost Bridge and Campville substations to accommodate the new 115-kV line interconnection.
- Reconfiguration of a short (0.4-mile) double-circuit (DCT) segment of two 115-kV circuits (i.e., Eversource's 1191 and 1921 lines), located within a portion of the same ROW as the new 115-kV line. Along this short ROW segment, the two 115-kV lines are supported together on common transmission structures. After the double-circuit reconfiguration, each 115-kV line will be supported by its own set of structures for the entire distance between Frost Bridge and Campville substations (the 1191 Line) and between Thomaston and Campville substations (the 1921 Line).

On December 23, 2015, Eversource submitted to the Connecticut Siting Council (Council, CSC) an Application for a Certificate of Environmental Compatibility and Public Need for the Project (Council Docket No. 466). After public meetings, evidentiary hearings, and technical reviews, the Council approved the Project on April 14, 2016. Condition No. 2 of the Council's Decision and Order approving the Project requires that Eversource prepare two Development and Management (D&M) Plans (one for the new transmission line and double circuit separation and one for the improvements to the substations), in compliance with Sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies (RCSA: *Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements*).

Accordingly, this D&M Plan addresses all construction activities for the new 115-kV transmission line and double-circuit separation.

¹ An approximately 0.1-mile portion of the 115-kV line exit from Frost Bridge Substation will consist of an underground cable system.

Figure 1-1: Project Location Map



The new 115-kV transmission line and the double-circuit separation will be located within an existing Eversource ROW (Project ROW) that varies in width, is presently occupied by one or more overhead transmission lines, and extends across portions of four Litchfield County towns, as summarized below.

Town	ROW Width (feet)	Existing Eversource Transmission Lines (Overhead)	New 115-kV Transmission Line Length (miles)	Double Circuit Separation (miles overhead within ROW)
Watertown	Frost Bridge Substation exit 250 – 400	352 Line (345-kV Wood H-Frame) 1238 Line (115-kV vertical lattice tower / steel monopole) 1191 Line (115-kV lattice tower / wood H-Frame)	0.1 (Underground) 0.1 (Overhead) 4.5	-
Thomaston	250	1191 Line (115-kV lattice tower / wood H-Frame) 1921 Line (115-kV Delta laminate monopole)	2.6	-
Litchfield	250	1191 Line (115-kV lattice tower / wood H-Frame) 1921 Line (115-kV Delta laminate monopole)	1.8	0.2
Harwinton	250 Campville Substation	1191 Line (115-kV lattice tower / wood H-Frame) 1921 Line (115-kV Delta laminate monopole)	1.3	0.2
Total			10.4	0.4

* The 352 and 1238 lines are located within the Project ROW between Frost Bridge Substation and Purgatory Junction. The 1191 Line extends along the entire Project ROW. The 1921 Line is located within the ROW from Walnut Hill Junction to Campville Substation. The existing double-circuit structures that support the 1191 and 1921 lines at the Naugatuck River crossing are steel lattice towers.

1.2 ORGANIZATION OF THE D&M PLAN

This D&M Plan consists of three volumes:

- **Volume 1** includes information relevant to the 115-kV transmission line construction and double circuit separation. The main text of Volume 1 (Sections 1 through 8) includes information and procedures that are pertinent to construction activities for these transmission facilities, including regulatory requirements, general Project construction procedures and special plans, overall construction schedule, environmental inspection, public outreach, and processes for reporting to the Council concerning the Project and notifying and requesting approval from the Council for changes to the D&M Plan.

Table 1-1 summarizes each of the Council's D&M Plan requirements, pursuant to RCSA Sections 16-50j-60 through 16-50j-62, while Table 1-2 identifies the requirements pertaining to the transmission line facilities as contained in the Council's Decision and Order and Opinion for the Project. For each D&M Plan requirement, Tables 1-1 and 1-2 either identify the location in this D&M Plan where the requirement is addressed or state why the requirement is not relevant to the new 115-kV transmission line or double circuit separation.

Appendices to Volume 1 provide resource- or site-specific construction plans or information regarding the new transmission facilities, as follows:

- Wetland Invasive Species Control Plan (Appendix A).²
- Post-Construction Electric and Magnetic Field Monitoring Plan (Appendix B).
- **Volume 2** includes approvals, permits, and best management practices (BMPs) pertinent to all Project construction activities, including not only the new 115-kV transmission line and double circuit separation, but also the modifications at Frost Bridge and Campville substations. In particular, Volume 2 includes the following:
 - The Council's Decision and Order and Opinion for the Project (Attachment A).
 - Spill Prevention and Control Plan (Attachment B).
 - Snow Removal and De-Icing Procedures (Attachment C).
 - Eversource's *BMP Manual: Connecticut (Construction and Maintenance Environmental Requirements)* (Attachment D).

² The Project's draft *Wetland Invasive Species Control Plan* is currently being reviewed by the Connecticut Department of Energy and Environmental Protection (CT DEEP) and the U.S. Army Corps of Engineers (USACE) and thus is not included in this D&M Plan. After the completion of these agencies' reviews and incorporation of any agency comments, Eversource will provide the *Wetland Invasive Species Control Plan* to the Council for review and, after Council approval, will incorporate it into the D&M Plan as Appendix A. No Project activities in wetlands or watercourses will occur until Council approval of the plan.

- Connecticut Department of Energy and Environmental Protection (CT DEEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities (Attachment E).
- Vegetation Clearing Plan (Attachment F).
- **Volume 3** consists of maps, drawings, and other details relevant to the construction of the 115-kV transmission line and double circuit separation, including:
 - Key Map, depicting the route of the new 115-kV transmission line and double circuit separation (scale 1inch = 2,000 feet or 1”=2,000’, U.S. Geological Survey topographic map base);
 - Cross-sections depicting the alignment of the new 115-kV transmission line and double circuit separation within Eversource’s ROW;
 - Mapsheets, at a scale of 1”=100’ showing the location of the new 115-kV transmission line, double circuit separation, on- and off-ROW access roads, and work pads in relation to environmental features, as well as a summary of the characteristics of each new transmission structure (structure number, type, height, finish, and foundation type);
 - Typical construction drawings of erosion and sedimentation controls and protection measures for use in active farmlands;
 - Detail sheets that summarize water resource impacts and protection measures, threatened and endangered species protection measures, wetland invasive species control measures, vernal pool protection procedures, and typical erosion and sedimentation controls; and
 - Drawings of typical transmission structures, as well as structure foundation and grounding details.

Table 1-1
D&M Plan Directory
Frost Bridge to Campville 115-kV Project: Transmission Line and Related DCT Separation
(Compliance with RCSA Sections 16-50j-60, -61 and -62, as amended through September 7, 2012)

R.C.S.A Section	Description	D&M Plan (Section Reference, as Applicable)
16-50j-60	Requirements for a D&M Plan	
(a)	Purpose. The Council may require the preparation of full or partial D&M Plans for proposed energy facilities, modifications to existing energy facilities, or where the preparation of such a plan would help significantly in balancing the need for adequate and reliable utility services at the lowest reasonable cost to consumers with the need to protect the environment and the ecology of the state.	This D&M Plan applies to the installation of the new 115-kV line and related minor modifications to adjacent line.
(b)	When required. A partial or full D&M plan shall be prepared in accordance with this regulation and shall include the information described in RCSA Sections 16-50j-61 to 16-50j-62, inclusive, for any proposed energy facility for which the Council issues a certificate of environmental compatibility and public need, except where the Council provides otherwise at the time it issues the certificate. Relevant information in the Council’s record may be referenced.	This D&M Plan includes all information applicable to the construction of the new 115-kV transmission line and related facilities.
(c)	Procedure for preparation. The D&M plan shall be prepared by the certificate holder or the owner or operator of the proposed facility or modification to an existing facility. The preparer may consult with the staff of the Council to prepare the D&M plan.	This D&M Plan was prepared by Eversource.
(d)	Timing of plan. The D&M plan shall be submitted to the Council in one or more sections, and the Council shall approve, modify, or disapprove each section of the plan not later than 60 days after receipt of it. If the Council does not act to approve, modify or disapprove the plan or a section thereof within 60 days after receipt of it, the plan shall be deemed approved. Except as otherwise authorized by the Council, no clearing or construction shall begin prior to approval of applicable sections of the D&M plan by the Council.	This D&M Plan addresses the Council’s requirements for the construction of the 115-kV transmission line except for the list of contractor personnel as specified in Section 16-50j-61(c)(8). Contact information for the prime contractors for the transmission line work will be provided to the Council in a supplemental submission, after contract awards.
16-50j-61	Elements of D&M Plan	
(a)	Key Map, 1”=2,000’ USGS topographic map	Volume 3
(b)	Plan Drawings, 1”=100’ or larger, and supporting documents, which shall contain the following information:	Maps and cross-sections are included in Volume 3.

R.C.S.A Section	Description	D&M Plan (Section Reference, as Applicable)
1.	Edges of the proposed site and any existing site contiguous to or crossing the site, portions of the site owned by the company in fee, and the identity of property owners of record of the portions of the site not owned by the company in fee	Volume 3
2.	Public roads and public land crossings or adjoining the site	Volume 3
3.	Approximate location of 50' contours along the site	Volume 3
4.	Probable location, type, and height of the proposed facility and components (including each new transmission structure, position of guys, description of foundations, and locations of any utility or other structures to remain on the site or to be removed	Volume 3 maps and cross-sections.
5.	Probable points of access to the site, and the route and likely nature of accessways, including alternatives	Volume 3
6.	Edges of existing and proposed clearing areas, the type of proposed clearing along each part of the site, and the location and species identification of vegetation that would remain for aesthetic and wildlife value	Volume 3 maps; Volume 1 Section 3.4 and Volume 2, Attachment F, Vegetation Clearing Plan
7.	Identification of sensitive areas and conditions within and adjoining the site, including but not limited to:	
	A. Wetland and watercourse areas regulated under CGS Chapter 440 and any locations where construction may create drainage problems	Volume 1, Section 5.2; Volume 3
	B. Areas of high erosion potential	Volume 1, Section 5.1; Volume 3
	C. Critical habitats or areas identified as having rare, endangered, or threatened, or special concern plant or animal species listed by the state or federal government	Volume 1, Section 5.4; Volume 3
	D. Location of known underground utilities or resources to be crossed (electric line, fuel line, drainage systems and natural or artificial public or private water resources)	Volume 3
	E. Residences or businesses within or adjoining the site that may be disrupted during construction	Volume 3
	F. Significant environmental, historic and ecological features (significantly large or old trees, buildings, monuments, stone walls or features of local interest)	Volume 1, Sections 5.2, 5.6, 5.10; Volume 3
(c)	Supplemental Information	

R.C.S.A Section	Description	D&M Plan (Section Reference, as Applicable)
1.	Plans (if any) to salvage marketable timber, restore habitat and maintain snag trees within or adjoining the site	Volume 1, Section 3.4; Volume 2, Attachment F, Vegetation Clearing Plan
2.	<p>All construction and rehabilitation procedures with reasonable mitigation that shall be taken to protect areas and conditions identified in 7(b), above, including but not limited to:</p> <p>A. Construction techniques at wetland and watercourse crossings</p> <p>B. S & E control and rehabilitation procedures, consistent with the CT Guideline for Soil Erosion and Sediment Control, as updated and amended for areas of high erosion potential</p> <p>C. Precautions and all reasonable mitigation measures to be taken in areas within or adjoining the site to minimize any adverse impacts of such actions or modifications endangered, threatened, or special concern plant or animal species listed by federal or state agencies and critical habitats that are in compliance with federal and state recommended standards and guideline, as amended</p> <p>D. Plans for modification and rehabilitation of surface, drainage, and other hydrologic features</p> <p>E. Plans for watercourse bank restoration in accordance with Chapter 440 of the C.G.S.</p> <p>F. Plans for the protection of historic and archaeological resources with review and comment from a state historic preservation officer of the CT Department of Economic and Community Development (DECD) or its successor agency</p>	<p>Volume 1, Section 5.2; Volume 2 Attachment D (Eversource BMP Manual), Volume 3 maps/detail sheets</p> <p>Volume 1, Section 3, Section 5.1; Volume 2, Attachment D, BMPs; Volume 3</p> <p>Volume 1, Section 5.4; Volume 3 maps/detail sheets</p> <p>Volume 1, Section 5.2; Volume 2, Attachment D, BMPs</p> <p>Volume 1, Section 5.2; Volume 2, Attachment D, BMPs; Volume 3 detail sheets</p> <p>Volume 1, Section 5.10 (no cultural resources associated with transmission facility sites)</p>
3.	Plans for the method and type of vegetation clearing and maintenance to be used within or adjacent to the site	Volume 1, Section 3.4 and Volume 2, Attachment F
4.	Location of public recreation areas or activities known to exist or being proposed in or adjacent to the site, together with copies of agreements between the company and public agencies authorizing the public recreation use of the site to the extent of the company's rights thereto.	Volume 1, Section 5.6; Volume 3 maps (Easement copies not included herein)
5.	Plans for ultimate disposal of excess excavated material, stump removal, and periodic maintenance of the site	Volume 1, Section 5.7

R.C.S.A Section	Description	D&M Plan (Section Reference, as Applicable)
6.	Locations of areas where blasting is anticipated	None anticipated; refer to Volume 1, Section 5.16
7.	Rehabilitation plans, including but not limited to reseeded and topsoil restoration	Volume 1, Section 3.4; Volume 2, Attachment D BMPs
8.	Contact information for the personnel of the contractor assigned to the project	To be provided after transmission line contract awards.
9.	Such site-specific information as the CSC may require	Refer to Table 1-2: List of requirements per Docket 466 Decision and Order and Opinion
(d)	Notice A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, is submitted to the CSC	Volume 1, Section 7
(e)	Changes to the Plan The CSC may order changes to the D&M plan, including but not limited to vegetative screening, paint color, or fence design at any time during the preparation of the plan	As applicable; refer to Volume 1, Section 7.2 for discussion of Eversource's Change Notice process
16-50j-62	Supplemental Reporting Requirements	
(a)	Site Testing and Staging Areas The certificate holder, or facility owner or operator, shall provide the CSC with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M plan, the CSC may approve such use on terms as it deems appropriate.	Volume 1, Sections 3.3 and 7.1; Volume 3 identifies work pads for the transmission line construction. No site testing is planned. The locations of contractor yards and material staging areas will be identified by the contractor and will be submitted to the Council for review and approval prior to use, pursuant to the Change Notice process described in Section 7.2
(b)	Notice	
1.	The certificate holder, or facility owner or operator, shall provide the CSC, in writing with a minimum of two weeks advance notice of the beginning of:	Volume 1, Section 7.1 summarizes notification procedures

R.C.S.A Section	Description	D&M Plan (Section Reference, as Applicable)
	A. Clearing and access work in each successive portion of the site, and	
	B. Facility construction in that same portion	
2.	The certificate holder, or facility owner or operator, shall provide the CSC with advance written notice whenever a significant change of the approved D&M plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the CSC immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D&M plan shall include, but not be limited to, the following:	
	A. The location of wetland or watercourse crossing	
	B. The location of an accessway or structure in a regulated wetland or watercourse area	Volume 1, Section 7.2 includes Eversource's D&M Plan change process
	C. The construction or placement of any temporary structures or equipment	
	D. A change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures	
	E. Utilization of additional mitigation measure, or elimination of mitigation measures. The CSC or its designee shall promptly review the changes and shall approve, modify, or disapprove the changes in accordance with subsection (d) of Section 16-50j-60 of the RCSA	
3.	The certificate holder, or facility owner or operator, shall provide the CSC with a monthly construction progress report or a construction progress report at intervals determined by the CSC or its designee, indicating changes and deviations from the approved D&M Plan. The CSC may approve changes and deviations, request corrections, or require mitigation measures.	
4.	The certificate holder, or facility owner or operator, shall provide the CSC with written notice of completion of construction and site rehabilitation.	Volume 1, Section 7.1
(c)	Final Report The certificate holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation. The report shall identify:	Volume 1, Section 7.3
1.	All agreements with abutters or other property owners regarding special maintenance precautions	

R.C.S.A Section	Description	D&M Plan (Section Reference, as Applicable)
2.	Significant changes of the D&M plan that were required because of property rights of underlying and adjoining owners for other reasons	
3.	The location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands	
4.	The location of areas where special planting and reseeding have been done	
5.	The actual construction cost of the facility, including but not limited to the following costs:	
	A. Clearing and access	
	B. Construction of the facility and associated equipment	
	C. Rehabilitation; and	
	D. Property acquisition for the site or access to the site	
(d)	Protective Order The certificate holder, or facility owner or operator, may file a motion for protective order pertaining to commercial or financial information related to the site or access to the site.	N/A

**Table 1-2
D&M Plan Directory of Docket No. 466 Decision and Order and Opinion Requirements
Frost Bridge to Campville 115-kV Project: Transmission Line and Double Circuit Separation**

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
Condition Number	Decision and Order	
(1)	The Certificate Holder shall construct the proposed transmission line overhead along the proposed route and perform related Project improvements, as proposed, subject to modifications during final site design and approval of the D&M Plan for the Project.	D&M Plan, Volumes 1-3
(2)	<p>The Certificate Holder shall prepare two Development and Management (D&M) Plans for this Project; one specific to the proposed substation improvements and one specific to the proposed construction of the new transmission line and improvements to the existing transmission lines. Both D&M Plans shall be in compliance with Sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies. The D&M Plans shall be served on the Towns of Watertown, Thomaston, Litchfield, Harwinton, and Plymouth and the City of Waterbury for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction. The D&M Plans shall include:</p> <p>a. Detailed site plans showing the placement of the access roads, structure foundations, equipment and material staging areas for the overhead route;</p> <p>b. A site plan that includes fencing detail for the replacement fence at Campville Substation with the recommendation of less than 2-inch mesh fencing;</p> <p>c. Identification of areas for staging and equipment lay down, field office trailers, sanitary facilities, and parking;</p> <p>d. A site plan including landscaping at Frost Bridge Substation</p> <p>e. An erosion and sediment control plan, consistent with the 2002 <i>Connecticut Guideline for Soil Erosion and Sediment Control</i> as amended;</p>	<p>D&M Plan, Volumes 1-3; see in particular Volume 1, Section 8</p> <p>Volume 3 maps</p> <p>N/A Refer to the Substations D&M Plan</p> <p>Volume 3 maps (Contractor yard locations to be submitted to the Council separately pursuant to process detailed in Volume 1, Section 7.2)</p> <p>N/A Refer to the Substations D&M Plan</p> <p>Volume 1, Section 5.1; Volume 2, Attachments D and E</p>

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
	<p>f. Identification of wetland and watercourse resources, related temporary and permanent construction impacts and methods to reduce such impacts, including a measure to allow the natural removal of decoy pools by providing appropriate road drainage features;</p> <p>g. Details of ground disturbance;</p> <p>h. Vegetative clearing plan;</p> <p>i. Wetland restoration plan;</p> <p>j. A spill prevention and countermeasures plan;</p> <p>k. Invasive species control plan</p> <p>l. Provisions to manage the discovery of undocumented Native American Archaeological resources;</p> <p>m. A schedule of construction hours;</p> <p>n. A blasting plan, if necessary;</p> <p>o. Plans and strategies to prevent post-construction the use of the right-of-way by all-terrain vehicles;</p> <p>p. Provisions for site specific measures to reduce impacts to State listed endangered, threatened, and special concern species; and</p> <p>q. EMF Monitoring Plan.</p>	<p>Volume 1, Sections 5.2 and 5.3; Volume 3 maps and Detail Sheets</p> <p>Volume 3</p> <p>Volume 2, Attachment F</p> <p>Volume 3, Detail Sheet</p> <p>Volume 2, Attachment B</p> <p>Volume 1, Appendix A (plan to be provided separately); Volume 3, Detail Sheet 2 includes BMPs to be used during construction to control the spread of invasive species in wetlands</p> <p>Volume 1, Section 5.10.2</p> <p>Volume 1, Section 4</p> <p>Volume 1, Section 5.16</p> <p>Volume 1, Section 5.13</p> <p>Volume 1, Section 5.4; Volume 3 maps and Detail Sheet</p> <p>Volume 1, Section 5.15, Appendix B</p>
(3)	<p>The Certificate Holder shall comply with the Department of Energy and Environmental Protection recommendations, or coordinate with the Department of Energy and Environmental Protection, for construction of the route in the area of endangered, threatened, or special concern species identified along the Project route.</p>	<p>Volume 1, Section 5.4; Volume 3 maps and Detail Sheet</p>
(4)	<p>The Certificate Holder shall hire an independent environmental inspector, subject to Council approval, to monitor and provide a bi-weekly report to the Council regarding environmental compliance with the approved D&M Plan.</p>	<p>Volume 1, Section 6.1</p>

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
(5)	The Certificate Holder shall obtain necessary permits from the United States Army Corps of Engineers and the Connecticut Department of Energy and Environmental Protection prior to the commencement of construction, in areas where said permits are required.	Volume 1, Section 2
(6)	The Certificate Holder shall conform to the Council's Best Management Practices for Electric and Magnetic Fields.	Project represents BMPs for EMF, per Council D&O
(7)	The Certificate Holder shall comply with all future electric and magnetic field standards promulgated by State or federal regulatory agencies. Upon the establishment of any new standards, the facilities granted in this Decision and Order shall be brought into compliance with such standards.	Volume 1, Section 5.15, Appendix B
(8)	The Certificate Holder shall provide to the Council an operating report within three months after the conclusion of the first year of operation of all facilities herein, and annually thereafter for a period of three years, with information relevant to the overall condition, safety, reliability, and operation of the new transmission line.	Volume 1, Section 7.3
(9)	This Decision and Order shall be void if all construction authorized herein is not completed within four years of the effective date of the Decision and Order, or within four years after all appeals to this Decision and Order have been resolved.	Volume 1, Section 4 (schedule for Project construction)
(10)	This Certificate may be surrendered by the Certificate Holder upon written notification to the Council.	N/A
(11)	In accordance with Section 16-50j-62 of the RCSA, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.	Volume 1, Section 7
(12)	The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under CGS §16-50v.	N/A
(13)	This Certificate may be transferred in accordance with CGS §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under CGS §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide to the Council a written agreement as to the entity responsible for any quarterly assessment charges under CGS §16-50v(b)2 that may be associated with this facility.	N/A

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
Page No.	Opinion	
3	RE: Landscaping at Frost Bridge Substation. The Council will require Eversource to consider landscaping at Frost Bridge Substation.	N/A Refer to Substations D&M Plan
4	RE: Decoy Vernal Pools. The Council is aware decoy pools may result in harm to amphibian fauna because they may not hold water long enough to allow amphibians to develop. The Council will order Eversource to include a measure to allow the natural removal of decoy pools by providing appropriate road drainage features.	Volume 1, Section 5.3; Volume 3 maps and Detail Sheet
4	RE: Trail Crossings. Eversource would coordinate with CT DEEP and other managers of the affected trails to ensure public notification of construction activities and temporary closure of trails.	Volume 1, Section 5.6; Volume 3 maps
5	RE: Visibility of Structures. The Council recognizes Eversource's effort to minimize visibility and encourages Eversource to investigate decreasing the height of the proposed transmission line structures to the greatest extent possible as part of the D&M Plan for the Project.	Volume 1, Section 3.1; Volume 3
6	RE: Status Reports. In order to verify consistency with the Council's Decision and Order, the Council will require the Certificate Holder to document compliance with environmental requirements and prepare periodic status reports.	Volume 1, Sections 6 and 7

2. REGULATORY APPROVALS AND CONSULTATIONS

2.1 REGULATORY APPROVALS AND REQUIREMENTS

This D&M Plan conforms to the specifications of Sections 16-50j-60 through 16-50j-62 of the RCSA (*Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements*); incorporates Eversource's commitments as contained in the record of the Council's Docket 466 regulatory process; and reflects adherence to the conditions of the Council's certificate for the Project and other relevant, previously received or anticipated regulatory approvals. The federal and state permits and approvals needed for the Project are listed in Table 2-1. Volume 2 includes copies of the following:

- The Council's Decision and Order and Opinion for the Project (refer to Volume 2, Attachment A); and
- The CT DEEP *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities*, which applies to the management of the discharge of stormwater and dewatering wastewaters from construction sites (Volume 2, Attachment E).

2.2 CONSULTATIONS

During the planning of the Project, Eversource consulted with representatives of the four towns traversed by the 115-kV transmission line, as well as with representatives of various state and federal agencies, including the U.S. Army Corps of Engineers (USACE), New England District; U.S. Fish and Wildlife Service (USFWS); CT DEEP; State Historic Preservation Office (SHPO), and Connecticut Department of Transportation (ConnDOT). In addition, Eversource coordinated with property owners along the transmission line ROW.

During consultations with town representatives, property owners and lessees, and the interested public, Eversource provided information regarding the D&M Plan process, the planned transmission line construction activities, and Eversource's outreach procedures and points-of-contact prior to and during construction. In accordance with Condition 2 of the Council's Decision and Order, Eversource also issued this D&M Plan to the four municipalities that the Project traverses, as well as to the City of Waterbury, the Town of Plymouth, and all parties and intervenors on the service list for this docket. Additional information regarding Eversource's public outreach process is included in Section 8.

**Table 2-1
 Permits, Reviews, and Approvals Required for the Project**

Agency	Certificate, Permit, Review, Approval or Confirmation	Activity Regulated
FEDERAL		
USACE, New England District	Section 404 CWA (Permit requires conformance with National Historic Preservation Act (NHPA), Section 106; see SHPO, below)	Discharge of dredge or fill material into waters of the U.S. (wetlands or watercourses)
U.S. Fish and Wildlife Service	Coordinates with USACE regarding endangered or threatened species	Activities that may affect federally-listed endangered or threatened species
U.S. Environmental Protection Agency	Provides input to USACE permit application review	Activities that may affect water, air, or other resources
CONNECTICUT		
Connecticut Siting Council	Certificate of Environmental Compatibility and Public Need (Docket 466, April 14, 2016; refer to Volume 2, Attachment A) D&M Plan approvals	General transmission line need, siting, construction, environmental compatibility, safety, and operation / maintenance and ROW management procedures
CT DEEP	401 Water Quality Certification	Conformance to Section 401 of the CWA
	General Permit (refer to Volume 2, Attachment E)	Stormwater management during construction
	Threatened, Endangered, and Special Concern Species	Approval of species-specific mitigation plans
CT DEEP Public Utilities Regulatory Authority	Approval pursuant to CGS Section 16-243	Method & Manner of Construction Approval to Energize Line
SHPO	Approval of proposed Project consistency with the NHPA; comments during Council and USACE processes	Construction and operation activities that may affect archaeological or historic resources (Note: investigations revealed that no cultural sites will be affected by transmission line facilities)
Connecticut Department of Transportation (ConnDOT)	Encroachment permits	Transmission line crossings of state highways

Eversource consulted with federal and state agencies both as part of permitting efforts and as part of the preparation of resource-specific protection measures included in this D&M Plan. For example, Eversource coordinated with the CT DEEP and the USFWS regarding threatened and endangered species. The results of Eversource's consultations with CT DEEP are reviewed in Section 5 of this Volume and reflected on the Volume 3 maps and applicable Detail Sheets.

In addition, as specified in the D&M Plan requirements, RCSA Section 16-50j-61(c)(2)(F), Eversource consulted with representatives of the SHPO and involved Native American tribes³ regarding the potential effects of the 115-kV transmission line on archaeological or historic resources and the measures to mitigate such effects, as necessary. No cultural resource sites were identified within the areas proposed for transmission facility construction.

³ Mohegan, Mashantucket Pequot, and Wampanoag Tribal Historic Preservation Offices.

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3. GENERAL CONSTRUCTION PROCEDURES

This section describes the typical construction procedures and plans for the new 115-kV transmission line and the double-circuit separation. Sections 3.1 through 3.3 provide an overview of the transmission line facilities to be constructed, construction management, and contractor yards / staging areas required to support the transmission line construction. Section 3.4 discusses procedures for the construction of the new overhead 115-kV transmission line, while Section 3.5 describes the procedures for the underground cable construction for the line exit at Frost Bridge Substation. Section 3.6 reviews the construction procedures for the double-circuit separation and replacement of a lattice steel tower on the 1191 Line near Frost Bridge Substation.

Additional special construction procedures, plans, or mitigation measures will be implemented to protect or minimize impacts to the public, environmental resources (e.g., water resources; vernal pools; threatened, endangered and special concern species), and public recreational areas. Such measures are described in Section 5 and appendices to this volume, in Volume 2, and / or in Volume 3 (maps and detail sheets). The Volume 3 maps include site-specific information regarding the underground cable segment, as well as transmission line structure characteristics (i.e., structure number, type, height, finish, and foundation), environmental features along the ROW, property owners, construction work areas, and the locations where special resource protection measures will be implemented.

3.1 SUMMARY OF NEW TRANSMISSION FACILITIES

New Transmission Line: Overview of Underground and Overhead Segments

The new 115-kV transmission line, designated as the 1304 Line, will extend for approximately 10.4 miles. After exiting underground from Frost Bridge Substation, the new 1304 Line will consist of 97 new structures, identified by town as follows:

Town	Structure No.	Town	Structure No.
Watertown	1A, 1B, 2-46	Litchfield	72-86
Thomaston	47-71	Harwinton	87-97*

* Structure No. 89 was eliminated during the Project design phase.

The new approximately 0.1-mile underground segment of the transmission system line exit at Frost Bridge Substation will consist of a single-circuit cross-linked polyethylene (XLPE) cable system⁴, which will be contained within a concrete-encased duct bank (consisting of several polyvinyl chloride [PVC]

⁴ Note: No splice vault will be required as part of this cable system.

conduits). The underground 115-kV cable will be interconnected to the overhead portion of the new line via transition structures (refer to the Volume 3 maps).

Along the remaining 10.3 miles, the new 115-kV transmission line will be installed on weathering steel monopoles, in a delta or vertical configuration. Self-supported vertical tubular steel monopoles will be used at angle points and as deadend structures. At the Naugatuck River crossing, the new 115-kV line will be supported on delta tubular steel structures.

To accommodate the new 115-kV line exit from Frost Bridge Substation within the ROW, one steel lattice structure on the existing 1191 Line (Structure 3080) will be removed and replaced in a different on-ROW location (refer to the Volume 3 maps). The replacement Structure 3080 will consist of a tubular weathering steel monopole in a vertical configuration, supported on a drilled shaft foundation. Short-term outages of the 115-kV 1191 Line circuit will be required to safely install the new vertical deadend monopole structure, remove the existing conductor and steel lattice tower, install the 115-kV line on the new vertical monopole structure, and interconnect the new conductor segment to the 1191 Line.

Double-Circuit Separation

Within upland portions of the ROW on either side of the Naugatuck River crossing, the two lattice steel structures that presently support Eversource’s 1191 and 1921 lines will be removed and each circuit will be reconstructed on separate vertical steel monopoles. The existing and new structure numbers are:

Town	Existing Structure No.	New Structure Nos.
Litchfield	3171	3171 (1191 Line) 3236 (1921 Line)
Harwinton	3174	3174 (1191 Line) 3235 (1921 Line)

Results of Investigations: Options for Reducing the Heights of New Structures to Minimize Visibility

As requested by the Council (refer to the Council’s Opinion, page 5), as part of the engineering studies for this D&M Plan, Eversource evaluated options for reducing the heights of the new 115-kV transmission line structures to further limit their visibility. As a result of these analyses, Eversource determined that the new 115-kV structures, as planned, represent optimized heights, taking into consideration design and cost considerations. Consequently, the only alternatives for further reducing structure heights would be to implement one of the following design revisions:

1. Add additional mid-span tangent structures to the new 115-kV line. This would potentially reduce the heights of the new structures by 15 feet. However, each new mid-span structure would increase the cost of the Project by approximately \$100,000. Further, the installation of the mid-span tangent structures would increase environmental and social impacts associated with the additional access roads and work pads required to access each new structure site; would result in additional long-

term aesthetic impacts due to views of the additional structures; and would extend the Project construction schedule.

2. Convert 10 of the planned new 115-kV tangent structures to strain structures. The height of these particular 10 tangent structures (which are located at various locations along the Project ROW) is dictated by uplift (upward pressure on the insulators), rather than mandated clearance requirements. As a result, the proposed tangent structures at these 10 locations could be replaced with strain structures, thereby allowing the heights of these 10 structures, on average, to be reduced by approximately 10 feet. However, strain structures would require drilled shaft foundations (rather than the direct embed method for the tangent structures) and also would be wider than the tangent structures (refer to the Volume 3 Detail Sheets for an example of strain structures). In addition, the use of strain structures, instead of tangent structures, would cost an additional \$80,000 per structure, for a total additional Project cost of approximately \$800,000.

The results of these analyses demonstrate that the potential benefits to the visual environment that could be achieved by reducing the heights of the new 115-kV line structures would be outweighed by the additional Project costs and/or environmental and social impacts. For these reasons, Eversource proposes to retain the line design and structure heights as presented in the Application and this D&M Plan.

3.2 CONSTRUCTION MANAGEMENT AND CONTACT INFORMATION

Eversource expects to award contracts for the transmission line work in the fall of 2016. After contract awards, but prior to the commencement of the contractor's on-site work on the new 115-kV transmission line or double circuit separation, Eversource will provide the Council with contact information for the prime construction contractors, consisting of the names of the firms, primary contacts, corporate addresses, telephone numbers, and e-mails.

The Project transmission line construction will be overseen by personnel from Eversource and Eversource's Project manager, Burns & McDonnell Engineering (Burns & McDonnell). Eversource and/or Burns & McDonnell personnel will directly monitor construction activities, including adherence to safety, engineering, and environmental requirements.

3.3 CONSTRUCTION FIELD OFFICES, CONTRACTOR YARDS, AND STAGING AREAS

To support the construction of the new transmission facilities, temporary contractor yards, construction field offices, and staging areas (including equipment and material staging sites, temporary storage areas, and laydown areas) will be required. These sites typically will be 2 to 5 acres. The preferred locations for contractor yards, as well as temporary storage and staging sites, are in the general vicinity of the ROW, including on Eversource property. If Eversource property is not suitable, previously developed lands (e.g., parking lots) or vacant land will be considered.

The Volume 3 maps identify Eversource properties along the ROW that could potentially be used for staging or material storage during construction. However, the Project construction contractors will be

responsible for identifying proposed locations for contractor yards, field construction offices, and staging areas, and for entering into agreements with the property owners for the use of such sites during construction. In accordance with the Change Notice Approval Process described in Section 7.2, Eversource will submit the proposed locations of these construction support areas to the Council staff for review and approval prior to use.

3.4 CONSTRUCTION PROCEDURES: OVERHEAD TRANSMISSION LINE

3.4.1 General Construction Sequence

Eversource will construct the new overhead transmission line facilities in several stages, some overlapping in time. The following summarizes the sequence of construction activities:

- Prepare material staging sites (e.g., storage, staging and laydown areas) to support the construction effort.
- Establish construction field office area(s), typically including space for an office trailer, equipment storage and maintenance, sanitary facilities, and parking.
- Survey and stake the ROW boundaries (where necessary), vegetation clearing boundaries, and new structure locations.
- Mark the boundaries of previously delineated wetland and watercourse areas, including vernal pools.
- Identify and mark areas to be avoided or otherwise protected (e.g., habitats for threatened, endangered, or special concern species).
- Identify other areas, as appropriate, where special construction considerations will apply (e.g., areas that require particular construction treatment pursuant to landowner agreements).
- Perform vegetation clearing.
- Install erosion and sedimentation controls.
- Construct new access roads or improve existing roads. Prepare level work pads as necessary at new structure sites and conductor pulling sites (and, later, guard structure or equivalent sites).
- Construct foundations and erect/assemble new structures.
- Install shield wires and conductors.
- Install structure grounding systems, including counterpoise (where needed).
- Remove temporary roads and construction debris and restore disturbed sites.
- Maintain temporary erosion and sediment controls until vegetation is re-established or disturbed areas are otherwise stabilized.

3.4.2 Clearing and Vegetation Removal

Vegetation removal, the first step in the preparation of the ROW for construction, will be performed as described in the *Vegetation Clearing Plan* (refer to Volume 2, Attachment F). The Volume 3 maps identify vegetation clearing limits for construction along the ROW. Within these limits, tall-growing tree species will be removed to meet the established minimum vegetation clearances from the new transmission line conductors. Along presently un-managed portions of the ROW, the vegetation removal limits represent the “new edge of ROW vegetation management” as illustrated on the cross-section drawings provided in Volume 3 and as described below:

- Cross-Section 1: not applicable (within and adjacent to Frost Bridge Substation)
- Cross-Section 2: no expansion to the width of ROW vegetation management
- Cross-Section 3: 45 foot expansion to the width of ROW vegetation management
- Cross-Section 4: 40 foot expansion to the width of ROW vegetation management
- Cross-Section 5: 70 foot expansion to the width of ROW vegetation management
- Cross-Section 3: 40 foot expansion to the width of ROW vegetation management

Within the vegetation clearing limits for construction, other types of vegetation (e.g., shrubland) also will be removed as needed for transmission line construction. Some clearing thus will be performed within presently managed portions of the ROW. Outside of the vegetation clearing limits shown on the Volume 3 maps, trees and herbaceous or low-growing scrub/shrub species will only be cleared as needed to facilitate Project construction activities along on- and off-ROW access roads. Further, after initial vegetation removal (particularly after the new conductors are installed), trees adjacent to cleared areas may need to be selectively removed or pruned to achieve clearances from conductors.

Temporary erosion and sedimentation controls may be installed before vegetation removal, depending on site-specific characteristics. After vegetation removal, soil erosion and sedimentation controls typically will be installed around work limits (e.g., access roads, work pads) in or near wetlands, streams, and other water resources. (Refer to the typical drawings of erosion and sedimentation control measures in the BMP Manual [Volume 2, Attachment D] and in Volume 3.)

In addition, during this phase of construction, flagging, exclusion fencing, or other types of boundary markings will typically be installed, if necessary, to demarcate areas of restricted construction access or environmental resource sensitivity.

3.4.3 Access Roads and Work Pads

3.4.3.1 Access Roads

On-ROW access roads will provide the principal means for equipment and material to reach transmission line structure locations. The locations of existing and planned new on-ROW access roads (including alternative road alignments) are illustrated on the Volume 3 maps.

In some areas, to avoid traversing along the ROW over rugged terrain or through sensitive environmental or cultural resources, access roads to the ROW will be developed across private property or across land

owned by Eversource (“off-ROW access roads”). The Volume 3 maps illustrate the off-ROW access roads to be used during construction and identify the property owner, parcel (line list) number, and the public road from which the road will provide access to the ROW.

To support the heavy construction equipment required to install 115-kV transmission line structures and foundations, all access roads (on- or off-ROW) must be sufficiently wide, with a stable base and grades that typically must be 10% or less. Access roads will have a typical 16-to-20-foot-wide travel way and, overall, a 20-to-25-foot-wide footprint (including road shoulders). However, access road widths will vary depending on site-specific conditions (principally slope and presence of wetlands) and on factors such as the amount of grading (cutting and filling) required and on whether a particular section of road must accommodate equipment turning radii and/or equipment passing/turn-out locations.

Eversource’s existing access roads for maintaining the lines that presently occupy the ROW will be upgraded and widened, as necessary, for the new transmission line construction. Access road improvements typically will include removing adjacent vegetation and widening roads as needed to provide a minimal travel width (additional width will be necessary as discussed above).

Access roads in upland areas will likely be improved by installing clean processed rock and/or gravel. In some locations, particularly on steep slopes and at intersections with public roads, asphalt millings will be used to improve road stability and vehicle traction. Eversource also will require the construction contractors to use the BMPs as warranted by site-specific conditions to maintain access road stability and minimize the potential for erosion and sedimentation.

Where access roads traverse streams or wetlands, special construction procedures will include the use of culverts, timber mats, or equivalent (refer to Section 5.2 and Volume 3, Detail Sheets). Within and near wetlands and watercourses, erosion and sedimentation controls will be installed as necessary before the commencement of any improvements to or development of access roads.

Access roads in uplands will be left in place to facilitate future transmission line maintenance, unless directed to be removed by the landowner. Access roads located in active agricultural lands or within manicured or otherwise improved residential, commercial, or industrial areas will typically be removed unless the landowner requests that they remain in place.

As part of the Project, a culvert will be replaced along one existing permanent on-ROW access road (located north of Valley Road in Town of Harwinton); this culvert replacement and associated access road reconstruction will require permanent fill in wetland W-F11. In addition, this existing access road will be improved through wetland W-F12, requiring a small amount of permanent fill. The Project will not require any other permanent fill in wetlands or streams as a result of access road construction or improvements. If, during Project construction, Eversource determines that permanent access is needed across water resources, additional approvals from the involved regulatory agencies would be required.

The locations where permanent access roads will remain are identified on the Volume 3 maps and will be listed in the end-of-Project report to the Council (refer to Section 7).

During construction, at points where on or off-ROW access roads intersect with public roads, Eversource's construction contractors will install signs as needed along the public roads specifying "construction work zone / entrance ahead" (or equivalent). Signs also will be installed at the access road entrances specifying that the roads are for construction purposes and are restricted from public use. In addition, where on- or off-ROW access roads intersect with public roads, rock aprons or equivalent will be installed to minimize tracking of dirt from the access road onto the public road as a result of construction vehicle movements. Public roads in the vicinity of access roads also will be periodically swept to remove dirt that is tracked from construction activities.

After the completion of Project construction, the ROW will be monitored, pursuant to Eversource's General Stormwater Permit from CT DEEP (refer to Volume 2, Attachment D), until restoration is deemed to be successful, which typically is defined as suitable revegetation or otherwise stabilization of areas affected by construction. Access road conditions will also be monitored during this Project ROW inspection effort. Project personnel will identify areas of concern on access roads on steep slopes or on slopes leading to water resources, and these areas will be noted in patrol tools that will be used by Eversource maintenance personnel, who perform inspections each year to assess and identify any line maintenance or ROW vegetation management needs.

3.4.3.2 Work Pads

Work pads will be required at each transmission line structure site, as well as at conductor and optical groundwire (OPGW) pulling sites and at locations where temporary guard structures will be erected or boom trucks will be positioned during conductor and OPGW installation. These work pad locations are depicted on the Volume 3 maps.

At each transmission line structure, a work pad will be required to stage structure components for final on-site assembly and to provide a safe, level base for the construction equipment used to install foundations and erect the structure. The size and dimensions of the work pad at each structure will vary based on site-specific conditions; however, a typical working surface for a tangent structure pad will average about 100 feet by 100 feet and for a deadend structure will average about 200 feet by 100 feet.

A typical (upland) installation of a work pad at a structure location involves several steps, beginning with the removal of vegetation, if necessary. The work pad site then will be graded to create a level work area and, if necessary, the upper 3 to 6 inches of topsoil (which is typically unsuitable to support the necessary construction activities) will be removed. The topsoil will be temporarily stockpiled within the ROW near the work pad. A rock base, which allows drainage, will be layered on top of filter fabric (if used). Additional layers of rock with dirt/rock fines will typically be placed directly over this rock base. Finally, a roller typically will be used to flatten and compact the pad.

Pulling work pads, which will be required in certain locations along the ROW for conductor and OPGW installation, typically will be 100 feet by 200 feet, but can be as large as 100 feet by 300 feet. Pulling work pads will be constructed using similar techniques to those described for the work pads at structure locations.

Temporary guard structures or boom trucks with “bat wings”, which will be located at road and other crossings during conductor and OPGW installation, will require work pads of approximately 50 feet by 80 feet, with an associated 20-foot-wide access road.

In areas where work pads must be located in wetlands, timber mats or equivalent will typically be used to construct the pads.

Upon completion of the transmission line installation, work pads at structure sites in uplands will remain in place, unless directed to be removed by the landowner. Work pads located in active agricultural lands or within manicured or otherwise improved residential, commercial, or industrial areas will typically be removed unless the landowner requests that they remain in place.

All work pads or portions of work pads in wetlands will be removed and the affected wetlands restored, pursuant to Project permits and approvals. Guard structure pads and pulling pads also typically will be removed.

Where work pads remain in place, topsoil stripped from beneath the work pad and stockpiled nearby also typically would remain in place or be spread over nearby upland areas of the ROW and re-seeded. In locations where gravel work pads must be removed, the rock base and fabric materials will be excavated and removed for appropriate off-site disposal or re-use.

3.4.4 Structure Installation

3.4.4.1 Foundation Types and Excavation

The new 115-kV transmission line structures will be either direct embedded or drilled shaft foundations. The tangent structures will typically be direct embedded. Angle and deadend structures will typically have a drilled shaft foundation. The Volume 3 maps identify the foundation type for each new transmission line structure.

Excavations for line-structure foundations are expected to be accomplished using mechanical excavators (drill rigs) and pneumatic hammers. During non-working hours, fencing or other barricades will be placed around or over open foundation excavations for structures.

Based on the results of borings taken at the new transmission line structure locations, blasting is not expected to be required for the new line construction. If blasting is required, a controlled drilling and blasting plan will be developed by a certified blasting contractor in compliance with state and local regulations. Section 5.16 includes the basic elements of such a plan. Nearby residents would be contacted in advance of the blasting, and pre-blast surveys would be performed as appropriate. In the unlikely event that there is damage to a property as a result of blasting, Eversource will compensate the property owner for the actual damage.

Excavated material will either be reused on-site or disposed of off-site in accordance with standard Eversource specifications and applicable regulatory requirements.

If groundwater is encountered in excavations, the water will be pumped from the excavated area and discharged in accordance with applicable requirements. The water may be discharged on-site into an appropriate sediment control basin or into a dewatering bag; pumped into a temporary fractionation (frac) tank and then discharged into the municipal stormwater system; or pumped into a tanker truck for disposal at appropriate wastewater treatment facilities. Residual silt/sediment collected at the bottom of the frac tanks or other BMPs will be disposed in appropriate upland areas within the ROW (i.e., not in protected resource areas) or at an appropriately designated disposal facility. Where the ROW intersects public roads containing stormwater systems, catch-basin inlet protection will be installed if needed to block sedimentation or construction debris from entering storm sewers.

3.4.4.2 Structure Placement

Structures (weathering steel poles and arms) will be delivered to installation locations in sections, then assembled and installed with a crane. Insulators (typically brown in color) connecting hardware and conductor pulling blocks will be installed on most structures at this time.

3.4.4.3 Structure Grounding

In addition to the natural grounding of the transmission line structures that is provided by their foundation contacts with earth, a ground ring and ground rods will be buried around each foundation (refer to Volume 3, Detail Sheet). The ground ring will be installed after the completion of the foundation and the installation of the structure, but before shield wires are installed. The need for and location of counterpoise or additional ground rods (forms of supplemental grounding for transmission line structures) will be determined based on soil resistivity and/or footing resistance testing, which will be performed as part of the construction process.

Where required, counterpoise wires will extend longitudinally from the ground rings around the transmission line structures. Small equipment (e.g., a ditch witch, small excavator, or equivalent) will typically be used to bury the counterpoise wires; the small equipment will excavate a narrow (approximately 12 inches wide) trench, into which the counterpoise wire will be fed. Ground rods, which may be used in conjunction with counterpoise, will typically be buried between or near the ground rings.

3.4.5 Conductor Installation

The installation of the overhead line conductors and shield wires will require the use of pulling and tensioning equipment, and reels of conductor, which will be positioned at pre-determined locations (temporary pulling work pads) along the ROW at typical intervals of 1 to 2 miles. Helicopters may be used to install pulling ropes at the commencement of the conductor/shield-wire pulling process. To maintain clearance at road and other crossings during conductor and OPGW installation, temporary guard structures or boom trucks will be positioned adjacent to the crossings. Temporary pulling work pad and guard structure pads are illustrated on the Volume 3 maps.

The conductors will be pulled under tension to avoid contacting the ground and other objects. The remaining insulators and hardware will then be installed at angle and deadend structures. Finally, in

accordance with industry standards and design specifications, the conductors and shield wires will be pulled to their design tensions and attached to the hardware. Linemen in bucket trucks will perform this operation.

3.4.6 Cleanup and Restoration

ROW cleanup and restoration activities will include the removal of construction debris, signs, flagging, fencing, temporary access roads, and temporary work pads. Areas affected by construction will be re-graded as practical and stabilized using revegetation or other measures.

Materials used in temporary access road and work-pad construction, as well as other construction debris, will be removed from the ROW. Such materials will either be properly disposed of or otherwise repurposed.

In locations where access roads and work pads will not remain in place, areas affected by construction generally will be re-graded (back-bladed) or otherwise restored to approximate preconstruction contours, where practical. However, given the rugged terrain along portions of the ROW (e.g., slopes, bluffs), some areas affected by construction activities cannot be fully restored to original contours. In such situations, localized topographic contours will be modified and the affected areas will be stabilized as warranted by site-specific conditions.

To restore areas affected by construction in actively used farmlands, the soil may be de-compacted by disking or using equivalent methods. In wetlands and at watercourses, temporary crossings will be removed and the affected areas re-graded to match the contours of areas outside of the construction work zone, to the extent applicable.

After final grading, upland areas affected by construction will be seeded with appropriate seed mixes and fertilized as appropriate. Seed mix(es) will be selected by Eversource to provide a quick vegetative cover until vegetation recolonizes the ROW naturally (refer to Section 5 of Eversource's *BMP Manual* [Volume 2, Attachment D]). In most locations, pre-construction shrub and herbaceous vegetative communities are expected to re-establish dominance along the ROW. Supplemental erosion and sedimentation controls (e.g., erosion control blankets, mulch) will be used as appropriate based on site-specific conditions and the time-of-year in which final grading is performed. In some areas, permanent erosion and sedimentation controls, such as water diversion bars or crushed stone, will be installed as appropriate.

Wetland areas affected by construction will be stabilized with annual rye grass, a wetland seed mix, or an equivalent mix (40 pounds/acre, unless standing water is present), which will serve to provide a temporary vegetative cover until wetland species become reestablished. No fertilizer, lime, or mulch will be applied in wetlands unless specified by the USACE or CT DEEP regulatory approvals for the Project.

Temporary erosion and sedimentation controls will be left in place and maintained until final stabilization is achieved. Steep areas may be stabilized with bio-degradable, pre-made erosion and sedimentation control fabric containing seed, mulch, and fertilizer, or the equivalent.

Stone walls affected by construction will typically be rebuilt by Eversource's construction contractors, if required by landowner agreements. Flagging (or equivalent markers) denoting wetlands, streams, and other environmentally sensitive resource avoidance or protection areas will be maintained (and reflagged or marked as needed), typically until the completion of ROW restoration activities.

Restoration typically will be deemed successful, based on the effectiveness of stabilization measures (such as percent vegetative cover) as defined in accordance with Project-specific permit and certificate requirements. Based on the results of post-construction inspections of ROW stabilization, Eversource will determine the appropriate time frame for removing temporary erosion controls.

Vegetative species compatible with the use of the ROW for transmission line purposes are expected to regenerate naturally over time. Eversource will promote the re-growth of desirable species by implementing vegetation management practices to control tall-growing trees, and where practicable, undesirable invasive species, thereby enabling native plants to dominate the ROW. Vegetation management practices along the ROW also will conform to Project-specific conditions regarding habitat restoration and enhancement as may be included in approvals from the Council, CT DEEP, and USACE.

3.5 CONSTRUCTION PROCEDURES: UNDERGROUND LINE SEGMENT

The Volume 3 maps illustrate the location of the approximately 0.1-mile cable system segment at Frost Bridge Substation, and provide typical drawings of the cable system and associated structures for the transition of the cable system to the overhead portion of the new 115-kV line. The following typical activities will be involved in the construction of the underground cable system within and adjacent to Frost Bridge Substation:

- Conduct pre-construction surveys to identify underground facilities along the cable system route, as well as to characterize soil and groundwater conditions.
- Survey and mark the cable system route.
- Establish material staging locations.
- Establish erosion and sedimentation controls, if necessary, at work sites where earth will be disturbed or spoil will be temporarily stored.
- Install construction work zone signs and implement other traffic control procedures, as needed, along Frost Bridge Road.
- Excavate a trench for the cable conduits.
- Install the conduits.
- Encase the conduits in concrete.
- Backfill the trench with a concrete-like substance known as a fluidized thermal backfill (FTB) and restore disturbed areas.
- Pull the cables into the conduits.

- Terminate the cables on the transition structures.
- Stabilize areas affected by construction, using gravel (within the substation) or seeding (outside the substation), as necessary.

The sequence in which some of these construction activities will be performed will depend on construction scheduling. The types of activities generally expected to be involved in the underground cable system installation at Frost Bridge Substation are summarized below.

Construction of the underground portion of the Project will conform to the Eversource's BMPs (refer to Volume 2, Attachment D). To install the duct bank, a trench will be excavated approximately 6 to 10 feet deep and approximately 5 feet wide (for trench depths requiring shoring to stabilize the sidewalls). Excavated soil and rock will typically be placed directly into dump trucks and hauled away to a suitable disposal site or hauled to a temporary storage area on-site for screening/testing prior to final disposal or re-used in the excavations for backfill. Rock will be removed using mechanical methods; blasting is not anticipated. If groundwater is encountered, dewatering will be performed in accordance with authorizations from applicable regulatory agencies and may involve discharge to catch basins, temporary settling basins, temporary holding tanks (frac tanks), or vacuum trucks.

The duct bank system will consist of four 8-inch PVC conduits for the XLPE cables; one 2-inch PVC conduit for the ground continuity conductor; two 2-inch conduits for temperature sensing fiber cables (DTS); and two 4-inch PVC conduits for the fiber optic relaying cables. The conduit will be installed in sections, each of which will be about 10 to 20 feet long and will have a bell and spigot connection. Conduit sections will be joined by swabbing the bell and spigot with glue then pushing the sections together. After installation in the trench, the conduits will be placed into spacers that hold the conduit in the desired configuration and then encased in high strength concrete. The trench will then be backfilled with FTB with sufficient thermal characteristics to help dissipate the heat generated by the cables.

Small portions of the trench (~200 feet) may have to be left open between work shifts. However, all such areas will be on Eversource property. During non-work hours, temporary cover (plywood or steel plates) will be installed over the open trench. After backfilling, the trench area within the substation will be stabilized with gravel; outside the substation, the area over the trench will either be stabilized with gravel or reseeded as necessary.

After the duct bank is in place, the conduits will be swabbed and tested (proofed), using an internal inspection device (mandrel), to check for defects. Mandrelling is a testing procedure in which a "pig" (a painted aluminum or wood cylindrical object that is slightly smaller in diameter than the conduit) is pulled through the conduit. This is done to ensure that the "pig" can pass easily, verifying that the conduit has not been crushed, damaged, or installed improperly.

After successful proofing, the transmission cables and ground continuity conductors will be installed and terminated. Cable reels will be delivered by special tractor trailers to the site, where the cable will be pulled into the conduit using a truck-mounted winch and special cable handling equipment. A single cable will be pulled into place within each conduit.

To install each transmission cable, ground continuity conductor, communications cable, and temperature-sensing fiber-optic cable within the conduits, the large cable reel will be set up over one terminus point, and a winch will be set up at the other terminus points of the duct bank at the transition structures. The cables and the ground continuity conductors (during a separate mobilization) will then be inserted in the conduits by winching a pull rope attached to the ends of each cable. In addition, a pull box will be installed near the transition structures for the pulling and splicing operations required for the remaining fiber optic cable.

At the transition structures adjacent to the Frost Bridge Substation, terminations will be connected to the ends of the cables. These terminations will link the underground cables to the overhead conductor.

If groundwater is encountered, the trench excavation will be dewatered as necessary. Depending on authorizations from state and local regulatory agencies, dewatering activities could result in groundwater discharge to catch basins, temporary settling basins, sanitary sewer, or watercourses (if the water is sufficiently free of sediments). Alternatively, the water may be pumped into a tank truck for off-site disposal. Any dewatering activity will be in accordance with permit conditions.

3.6 CONSTRUCTION PROCEDURES: DOUBLE-CIRCUIT SEPARATION AND 1191 LINE STRUCTURE REMOVAL

The same general procedures will be used to remove both the existing lattice steel structures that presently support the 1921 and 1191 Lines at the Naugatuck River crossing and the existing lattice steel structure that supports the 1191 Line near Frost Bridge Substation. Construction procedures for vegetation removal, access road improvements, and installation of work pads will be as described for the new 115-kV transmission line in Section 3.4.

In general, the procedures for the double-circuit separation of the 1191/1921 lines will include:

- Install or improve access roads to the structure sites and work pads for the structure removals and replacements.
- Install structure foundations.
- During a scheduled outage on one of the existing 115-kV lines (exact schedule, by line, will be determined), remove the existing conductor, remove the arms on that side of the existing lattice towers, install the two new structures for that 115-kV circuit, and install the new conductor for that circuit.
- During a scheduled outage on the second 115-kV line, remove the existing conductor, remove the two lattice structures, install the new structure, and install the new conductor.

Eversource anticipates that the double-circuit separation work will be planned for either the spring or fall of 2017, during lower load levels. Based on the above sequence there will be a period of time where one of the new structures and the lattice tower will both be in place.

Eversource will recycle all steel demolished and will properly dispose of all other miscellaneous hardware from the lattice steel structures.

4. CONSTRUCTION SCHEDULE, OUTAGES, AND WORK HOURS

4.1 CONSTRUCTION SCHEDULE, INCLUDING OUTAGES

The new 115-kV transmission line and double circuit separation are scheduled for construction between October 2016 and June 2018. Some ROW restoration activities could extend into the fall 2018. Line outages will be required for the double circuit separation and for portions of the transmission line construction. As currently planned, the general schedule for the construction of the new transmission line and double circuit separation is as follows:

General Construction Dates*	Transmission Line and Related Line Modification Construction Activity
Quarter 4, 2016	Construction contracts awarded; establish material laydown yards and field offices, begin receiving materials. Contractor mobilization, commence vegetation clearing, access road and work pad installation.
Quarter 4, 2016 – Quarter 2, 2018	<p>Perform construction (vegetation removal, access road/work pad installation, structure foundations, structure installation, conductor installation, ROW clean-up and restoration**, etc.), as summarized in Section 3. The new 115-kV transmission line also will be connected to the Frost Bridge and Campville substations.</p> <p>The double circuit separation work will be performed in conjunction with the new line construction across the Naugatuck River, and in accordance with approved outages.</p>
Quarter 2, 2018	Line testing, energization, ROW cleanup and restoration. Final ROW revegetation and verification of final stabilization pursuant to regulatory requirements will likely extend into Quarters 3 and 4 of 2018)

* Construction schedule is dependent on the receipt of D&M Plan approval from the Council and the issuance of the CT DEEP Section 401 water quality certification and the USACE Section 404 permit. Schedule may change in accordance with receipt of these approvals, as well as on approved outage schedules.

**Where feasible, restoration may begin on some portions of the ROW when line installation work is completed.

During Project construction, outages will be required on some of Eversource’s existing transmission lines that occupy the Project ROW, including on the 1191/1921 lines for the double circuit separation work. The outages, which must be coordinated with and approved by the Connecticut Valley Electric Exchange (CONVEX), will be required for certain construction activities, including cutovers into the Frost Bridge and Campville substations. These outages are expected to occur in the second or fourth quarters of 2017.

After Eversource retains construction contractors for the Project and identifies and schedules the outages, a more specific construction schedule will be developed. The CONVEX- and Eversource-approved substation work will dictate parts of the planned construction schedule.

4.2 WORK HOURS

Construction work hours will typically be between 7:00 AM and 7:00 PM, six days per week (Monday through Saturday). During these hours, construction will generate noise, which will vary depending on the type of activity performed. Construction workers may arrive for work and leave work outside of these times.

Typical Construction Work Window: Monday-Saturday 7:00 AM-7:00 PM

However, certain activities, such as those that must be performed during CONVEX-approved outages, will involve work during non-typical hours, in some cases on a continuous basis (in excess of 12 hours) and/or on Sundays. The performance of these activities during non-typical work hours can be critical for completing the required tasks within the allowed outage durations and returning equipment to service as expeditiously as possible.

In addition, during winter, snow plowing and de-icing activities (which will be performed pursuant to the plan included in Volume 2, Attachment C) will typically commence, when necessary, prior to 7 AM to assure a safe environment for construction personnel prior to the start of the work day.

Further, at the request of the Town of Harwinton, on Saturdays, noisy Project construction activities that must be performed in the town will not commence until 8:00 AM (rather than 7:00 AM). “Noisy work”, as defined by the town and Eversource, shall be work that requires the use of tri-axle equipment, vehicles with back-up alarms, and drilling activities. Other construction activities, including crew show-up and mobilization at work sites, tailboard discussions, and conductor and wire work, do not constitute “noisy work” and may be performed commencing prior to 8:00 AM on Saturdays in Harwinton.

5. SPECIAL CONSTRUCTION PROTOCOLS AND PROCEDURES

This section provides resource-specific protocols and procedures applicable to the 115-kV transmission line construction; details regarding measures to protect wetlands, watercourses and waterbodies, vernal pools, and threatened, endangered, or special concern species are included in Volume 3 (refer to the Volume 3 maps and Detail Sheets). In addition, appendices to this volume present the Project's *Wetland Invasive Species Control Plan* (Appendix A)⁵, as well as a *Post-Construction Electric and Magnetic Field Monitoring Plan* (Appendix B). Volume 2 includes plans and guidance for the protection of environmental resources that will apply to all Project-wide (i.e., transmission line and substation) construction activities. For example, Volume 2 includes the Project's *Spill Prevention and Control Plan*, Attachment B; *Snow Removal and De-Icing Plan*, Attachment C; BMPs (Attachment D); and *Vegetation Clearing Plan*, Attachment F).

5.1 EROSION AND SEDIMENTATION CONTROL PLAN

Eversource will install erosion and sedimentation control measures during transmission line construction to avoid or minimize the potential for surface water runoff, erosion, and sedimentation to occur outside of work limits. These measures will comply with the *2002 Connecticut Guideline for Erosion and Sediment Control*, as well as with Eversource's BMPs (refer to Volume 2, Attachment D) and CT DEEP and USACE permit conditions. Eversource's BMPs incorporate and are consistent with the *2002 Connecticut Guideline for Erosion and Sediment Control* (refer to Volume 2, Attachment D, p. 1-4 for a list of the guidance documents used in preparing Eversource's BMPs).

Volume 3 includes typical drawings regarding erosion and sedimentation control measures (refer to Detail Sheets). The Volume 3 maps also show areas of high erosion potential. These erosion-prone areas were identified based on soil erodibility factor (K-factor) and slope.

Pursuant to CGS Section 22a-430b, construction activities, such as the Project, that will result in the disturbance of 1 or more total acres of land area must comply with the CT DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* ([General Permit]; refer to Volume 2, Attachment E). Pursuant to the requirements of this General Permit, prior to the start of construction, Eversource will submit to CT DEEP a Registration Form and will prepare a *Stormwater Pollution Control Plan* that addresses the 115-kV transmission line work.

⁵ Wetland Invasive Species Control Plan to be provided separately.

5.2 WATER RESOURCES

5.2.1 Surface Water Resource Crossing Summary

As shown on the Volume 3 maps and summarized below, various water resources (wetlands, watercourses, lakes, and ponds) are located along the Project ROW or along or near proposed off-ROW access roads. Potential water resource impacts as a result of Project construction, including off-ROW access roads, are tabulated in Volume 3, Detail Sheets.

Specifically, the new 115-kV transmission line will:

- Extend across 58 waterbodies, including 20 perennial waterbodies and 38 intermittent watercourses.
 - ✓ No new transmission line structures will be located in any watercourses or waterbodies.
 - ✓ No access will be required across the larger watercourses traversed by the ROW (i.e., Branch Brook, Northfield Brook, Naugatuck River).
 - ✓ Temporary construction access, involving the installation of temporary culverts or timber mats (or equivalent bridges), will be required along access roads across smaller streams or wetlands.
 - ✓ One existing, inadequately-sized culvert will be removed and replaced with a properly-sized open bottom structure along the existing permanent on-ROW access road at perennial stream S F-11 (Harwinton).
- Require the following work within wetlands:⁶
 - ✓ Forested vegetation will be removed within the new 115-kV conductor clearance zones and as otherwise required for construction (refer to the limits of vegetation clearing illustrated on the Volume 3 maps). Danger and hazard trees also will be removed as necessary. Access routes, which will not necessarily be the same as temporary or permanent access roads used for other aspects of construction, will be required for clearing crews to access across and within wetlands. Approximately 6.7 acres of forested wetlands will be permanently converted to scrub-shrub wetland habitat.
 - ✓ Temporary access roads and work pads, comprised of timber mats, will be located in wetlands where no upland alternatives are available. Approximately 2.7 acres of wetlands will be temporarily affected by such construction activities.
 - ✓ Approximately 0.034 acre of wetland will be filled as a result of the installation of one new structure (Structure 95 in Harwinton) in a wetland (W F-15) and the fill in wetlands W F-11 and W F-12 for the culvert replacement at stream S F-11 and associated permanent access road improvements.

⁶ Of the 95 wetlands delineated for the Project (91 within the Eversource ROW and four along access roads), only 48 will be affected by transmission line construction activities. Of these 48 wetlands, only 28 will be affected by temporary or permanent fill (refer to the Volume 3 maps).

5.2.2 Water Resource Crossing Techniques

All crossings of water resources and other construction activities in wetlands and watercourses will be performed pursuant to the Council's requirements, the conditions of USACE and CT DEEP regulatory approvals, and Eversource's BMPs. In addition, to avoid or minimize the potential for impacts during Project construction activities involving water resource crossings or work in areas near water resources, Eversource will require construction contractors to follow the Project's *Wetlands and Waterbodies Avoidance and Minimization Protocols*. These Protocols, which are included on Detail Sheet 2 in Volume 3, also provide water resource restoration measures and wetland invasive species control BMPs.

The Volume 3 maps identify the locations of watercourse crossings and indicate where temporary mat spans or equivalent will be installed. The location of the replacement culvert at stream S F-11 is also illustrated; design details regarding the culvert replacement are provided on Detail Sheets 10 and 11 in Volume 3.

The construction techniques to be used at each water crossing will depend on site conditions at the time of construction and will be determined by Eversource or its construction management representative. Any temporary crossings will be placed or sized to maintain water flows and avoid flooding. Appropriate erosion control measures will be employed to avoid and/or minimize impacts at watercourse crossings. All temporary crossing materials will be removed following the completion of construction.

5.2.2.1 Watercourse Crossing Methods

The new transmission line will span all of the watercourses along the Project ROW. However, access roads will have to traverse smaller watercourses in some locations. The following methods will be used when watercourse crossings are necessary.

Access Roads. Where streams must be crossed, temporary culverts or bridges consisting of timber mats or equivalent will be used. Temporary metal bridges will typically be installed where culverts or timber mat spans cannot be effectively used.

Work Pads. At some new transmission line structure locations, construction work pads may extend over small watercourses. At these locations, the work pads cannot be moved to avoid the watercourses due to factors such as the location and type of structure (e.g., angle) or terrain.

Eversource will use work pad construction techniques designed to maintain flow in these drainages. Options for these techniques, which will be determined on a site-specific basis by Eversource or Eversource's Project manager, may include:

- Spanning the watercourse with timber mats used to create the construction work pad.
- Installing a temporary culvert to carry stream flows beneath the work pad, which will then be constructed over the culvert.

5.2.2.2 Wetland Crossing Methods

Project construction activities in wetlands will conform to the protocols listed in Volume 3, Detail Sheet 2 and will include the following methods:

“Access routes” across Wetlands for Vegetation Clearing Equipment Only. Temporary access routes will be created and used only by the vegetation clearing crews and will be removed as clearing activities advance along the ROW. Clearing crews must be able to access areas where vegetation removal is required for construction activities and within the clearance zones of the new 115-kV line conductors, as well as to reach on- or off-ROW danger or hazard trees. (Refer to the *Vegetation Clearing Plan* in Volume 2, Attachment F).

The location and type of access routes within each wetland will be determined at the time of construction (based on site-specific conditions) by Eversource or Burns & McDonnell, in consultation with the Project clearing contractor. However, timber mats or corduroy roads (logs) are typical options. Vegetation clearing also may be performed when the ground is frozen, when less temporary equipment support is typically needed for work in wetlands.

Improvements to Existing Access Roads. One existing on-ROW access road, which traverses wetlands W F-11 and -12, will be improved in conjunction with the culvert replacement at stream S F-11 in Harwinton. This improvement will require a small amount of permanent fill. Other existing access roads in wetlands along the ROW are nominally about 16 feet wide through wetlands, with a 12 feet wide travel surface. No improvements to existing access roads through wetlands are proposed that would expand the existing footprint of wetland fill.

New Temporary Construction Access Roads through Wetlands. New temporary construction access roads across wetlands will be established using timber mats, or equivalent. All temporary timber mat (or equivalent) access roads in wetlands will be removed in their entirety after construction.

Transmission Line Structure/Work Pads in Wetlands. Only one new transmission line structure (Structure 95) must be located in a wetland. To install this structure, timber mats will be used to create a temporary work pad for construction support. In addition, the installation of 17 other new transmission line structures (in upland areas) will require temporary work pads that will extend, in part, into wetlands. Such temporary work pads also will be constructed using timber mats or equivalent.

New Permanent Access Roads or Work Pads in Wetlands. No new permanent access roads will be developed in wetlands. Similarly, no work pads will be left in place in wetlands.

5.2.3 Flood Zones

The new 115-kV transmission line will span 100-year flood zones, as designated by the Federal Emergency Management Agency (FEMA), associated with three watercourses: Branch Brook in Watertown, Northfield Brook in Thomaston, and the Naugatuck River in Litchfield and Harwinton. The Volume 3 maps illustrate the boundaries of the FEMA-designated floodways and 100-year floodplains.

No new transmission line structures, temporary work pads, or temporary access roads will be located within any FEMA floodways or 100-year flood zones. Similarly, except for the culvert replacement activities

discussed below, no permanent access roads will be improved within FEMA-designated 100-year flood zones.

Approximately 50 linear feet of access road improvements and associated culvert replacement are proposed within the 100-year flood zone (A30) of an unnamed perennial tributary (S F-11) of the Naugatuck River north of Valley Road in Harwinton. The existing culvert, an 18-inch corrugated metal pipe, is not adequately sized to convey existing stream flows, resulting in the degradation of the adjacent access road. This culvert will be replaced by a properly sized open-bottom structure, which has been designed in accordance with USACE guidance. After the culvert replacement, the gravel access road will be restored to its original grade.

5.2.4 Aquifer Protection

The Project ROW does not cross any Aquifer Protection Areas. Neither the construction nor operation of the 115-kV transmission line will adversely affect groundwater resources, including public water supplies or private groundwater wells.

During construction, Eversource will require its contractors to adhere to BMPs and any Project-specific regulatory requirements regarding the storage and handling of any hazardous materials used during the work. Proper storage, secondary containment, and handling of potentially hazardous materials such as diesel fuel, motor oil, grease and other lubricants, will be required.

5.2.5 Drainage

Areas where existing surface drainage patterns could pose concerns during construction were noted during field constructability reviews of the Project ROW. To avoid or minimize erosion and sedimentation and to maintain hydrology and drainage patterns, Eversource will require its construction contractors to assess such areas and implement the BMPs as appropriate to site-specific situations. Eversource also will require its contractors to work in accordance with Eversource's BMPs and the conditions in the CT DEEP regulatory requirements that pertain to stormwater management and drainage (refer to Volume 2, Attachment E).

5.3 VERNAL POOLS

As shown on the Volume 3 maps, 21 vernal pools are located within the Project ROW or adjacent to off-ROW access roads planned for use during construction. Of these, three are "decoy" vernal pools⁷ that consist of small ponded areas located within on-ROW access roads and that lack sufficient hydroperiod to support the successful breeding and development of vernal pool species. Pursuant to Condition 2(f) of the Council's Decision and Order, these "decoy" vernal pools will not be protected during construction; access roads that are currently impounding surface water will be improved to facilitate proper drainage through the road base. These efforts, which will be initiated outside of the active vernal pool season, are intended to eliminate these features as requested by CSC.

⁷ Decoy vernal pools are within wetland W-C4 (DVP C4-1), Watertown; and wetland W-E2 (DVPs E2-1, E2-2), Litchfield.

No new transmission line structures will be located in vernal pools. For the work pad for Structure 39 (Watertown), temporary fill (timber mats) will be required in one vernal pool (VP C20-1). Vegetation removal also will be required in or near vernal pools, as illustrated on the Volume 3 maps.

The measures that Eversource will implement to avoid or minimize impacts to vernal pools are described in the *Project Avoidance and Minimization Protocol for Vernal Pools*, which are included on Detail Sheet 3 in Volume 3.

5.4 PROTECTION MEASURES FOR STATE-LISTED SPECIES⁸

Based on a review of CT DEEP Natural Diversity Database (NDDDB) information and Project field studies, five state-listed species potentially occur within the Project area:

Species Name	State Status
Wood turtle (<i>Glyptemys insculpta</i>)	Species of Concern
Spotted turtle (<i>Clemmys guttata</i>)	Species of Concern
Smooth green snake (<i>Liochlorophis vernalis</i>)	Species of Concern
Northern spring salamander (<i>Gyrinophilus porphyriticus</i>)	Threatened
Frosted elfin (butterfly) (<i>Callophyrus irus</i>)	Threatened

During construction, Eversource will implement protection strategies for these five species as described on Detail Sheet 4, Volume 3. These protection strategies, which were approved by CT DEEP, include a construction contractor awareness program and species-specific protection measures, which will depend on the season in which construction occurs in a particular species' habitat. Exact location information regarding state-listed species habitat along the Project ROW is not provided for public review, in compliance with confidentiality requirements with Eversource's Data Sharing Agreement with CT DEEP NDDDB.

5.5 AIR QUALITY PROTECTION (MINIMIZATION OF DUST AND VEHICLE IDLING PROTOCOL)

Dust Suppression and Anti-Tracking Pads

To minimize short-term adverse effects to air quality during construction, access roads and staging areas will typically be graveled⁹ and may be watered, as necessary, to suppress fugitive dust emissions. Additionally, crushed stone aprons will be installed at all gravel or dirt access road entrances to public roadways, with the objective of minimizing tracking of soil onto the roadway. Paved roads at the

⁸ The Project ROW is not in the vicinity of any federally-designated threatened or endangered species that require protection.

⁹ Except where timber mats are used (e.g., at wetland crossings).

intersection with Project access roads will be periodically swept, as necessary to remove excess dirt tracked onto the pavement from the ROW.

Construction Equipment: Idling vs. Warm-up during Cold Weather

Vehicle emissions will be limited by requiring contractors to properly maintain construction equipment and vehicles, and by minimizing the idling time of equipment and vehicles, including diesel construction equipment in accordance with regulatory standards. Idling requirements are as follows:

Unnecessary construction equipment and vehicle idling expends fuel, increases costs, and causes air pollution. For the Project, pursuant to Connecticut requirements (RCSA 22a-174-18), the allowable idling time for vehicles of all kinds, including diesel construction equipment, is 3 minutes.

However, under winter work conditions (when the ambient temperature is below 20 degrees Fahrenheit) the following apply:

- Construction equipment may require longer periods to warm up after overnight shut down or other extended periods of inactivity. Such “warm up” periods, as required to bring the equipment up to a safe operating temperature (as defined by the equipment manufacturer), are exempt from the idling time limit. However, most diesel engines take 3 minutes or less to warm up (contractors should consult the engine manufacturer’s recommendations).
- Construction equipment may have to idle for longer periods to operate defrosting or heating equipment to ensure the safety or health of the driver.

Note: “Idling” is defined as the period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function. Thus, “idling” does not apply to the use of certain types of mobile construction equipment (e.g., cranes, cement mixers) that may be stationary, but is actively operating, at a work site.

5.6 PROCEDURES FOR CROSSING PUBLIC TRAILS, PROTECTED OPEN SPACE, AND RECREATIONAL AREAS

Within Eversource’s existing ROW, the new 115-kV transmission line will cross various public trails and recreational areas as listed in Table 5-1 and illustrated on the Volume 3 maps. Eversource will consult with the owners or managers of each of the recreational and open space properties to discuss the Project, review the types of construction activities that will be performed on each property, and solicit input regarding the appropriate methods (if any) to be used during construction to minimize disruptions to the public while maintaining public safety. These consultations generally will address the following topics, as may be applicable to each property:

- Use and placement of construction warning signs.
- Bike and pedestrian offset gates.

- Public safety (flagmen).
- Temporary trail re-routing or closure during certain construction activities.
- Trail and/or pavement protection from heavy construction equipment.
- Construction schedule.
- Schedule constraints, if any, for construction activities due to peak recreational use periods or site-specific activities (e.g., hunting season in the state forest).
- Regular correspondence and updates, including the use of the Project website to provide construction status and schedule information.
- Restoration of areas affected by construction.

Based on the consultations, Eversource will implement site-specific mitigation measures, as appropriate, for use during construction across the publicly-accessible recreational areas. Such measures will typically consist of signs identifying construction work zones, flagmen, and/or temporary trail closures during periods of active construction.

**Table 5-1
 Public Trails, Recreational Areas, and Designated Open Space Crossed by the 115-kV Transmission Line***

Town	Volume 3 (Map No.)	Parcel No. (Line List)	Description (Owner)
Watertown			
	2	40007	Mattatuck State Forest (CT DEEP) Jericho-Whitestone Connector Trail (Connecticut Forest and Park Association [CFPA])
	3, 3A, 3B, 4, 5	40009	Mattatuck State Forest (CT DEEP) Jericho Trail
	7, 8	40025	Veterans Memorial Park (Town of Watertown)
	11-17	41013 41017	Black Rock State Park (CT DEEP) Mattatuck Trail (CFPA Trail)
Thomaston			
	17-19	41025	Black Rock State Park (CT DEEP)
	18-20	41026	Thomaston Fish and Game Club
	24-25	42006 42008	Northfield Brook Lake Recreation Area (USACE) Includes "yellow trail" crossing within recreational area
Litchfield			
	31	42058	Thomaston Dam Recreational Area Trails (ConnDOT)
Harwinton			
	31-32	42060 42063	Thomaston Dam Recreation Area / Trails (USACE)

5.7 SOILS AND MATERIALS HANDLING AND DISPOSITION

Eversource's construction contractors will be responsible for the proper handling and disposal of all excess soils, groundwater, recyclable materials, and other wastes generated during the construction process. The contractors also will be responsible for reporting and properly handling and disposing of contaminated soils and groundwater, if any is encountered or generated¹⁰ during construction activities.

Excess excavated soil and groundwater (if encountered in structure foundation excavations) will be handled and disposed of in accordance with regulatory requirements (depending on the type of material) and Eversource's BMP procedures. Excess soil will be reused on-site. Excess excavated soils will typically be spread along the ROW in upland locations, away from water resources, state-listed species habitats, agricultural areas, and residential or commercial land uses.

If groundwater is encountered in excavations, the water will be pumped from the excavated area and discharged to an upland area in a location that does not result in a discharge to wetlands or watercourses. The water may be discharged on-site into an appropriate sediment control basin, filter bag, pumped into a temporary fractionation (frac) tank and then discharged into an appropriate upland area, or pumped into a tanker truck for disposal at appropriate upland sites or wastewater treatment facilities.

If obvious polluted or contaminated soil or groundwater is encountered, it must be reported to Eversource and handled in accordance with the applicable regulatory requirements. If encountered, contaminated soils will be stockpiled on and covered by polyethylene sheeting. Sheeting used to cover the stockpile will be weighted to prevent the wind migration of contaminated dust. The materials will be tested to determine appropriate handling and disposition. Potentially contaminated groundwater, if encountered, will be addressed on a case-by-case basis and may involve pumping to a frac tank prior to off-site disposal or the use of other measures.

Recyclable materials will be removed from the ROW and transported off-site for appropriate re-use or salvage, pursuant to Eversource policies. General waste materials and debris other than soil and groundwater will be collected in receptacles at the work sites or in secured containers, either at designated locations along the ROW or at contractor staging areas or yards. Containers that are not removed or emptied at the end of the work day will be inspected regularly until removed for off-site disposal at approved, regulated waste disposal sites.

In no case will solid or liquid wastes (except for excess soil or groundwater, if appropriate) be buried or otherwise disposed of on the ROW or at contractor staging areas or yards.

¹⁰ Soil or groundwater contamination caused by construction activities (e.g., a spill) will be addressed pursuant to the procedures defined in the Spill Prevention and Control Plan (refer to Volume 2, Attachment B).

5.8 LIGHTING AND NOISE MITIGATION

The 115-kV transmission line construction activities will result in localized and short-term increases in ambient noise levels in the vicinity of work sites. Construction-related noise will occur as a result of the operation of equipment and vehicles, including vegetation removal equipment, jackhammers, drilling rigs and cranes. Helicopters will also be used to install transmission line components.

Other potential noise-generating activities may include blasting and the use of implosive connectors (for conductor installation). At this time, Eversource does not anticipate that blasting will be required or that implosive connectors will be used on the Project. Should one or both of these techniques be needed, the procedures presented in Section 5.16 will apply to the preparation of appropriate site-specific plans.

Because noise attenuates with distance, the effects of construction-generated noise will depend on the noise source location in relation to noise receptors.

Temporary noise impacts associated with construction will be minimized because the ROW extends across relatively remote areas and because noise from construction will be relatively short-term and limited primarily to daylight hours (i.e., between 7 AM¹¹ and 7 PM) when human sensitivity to sound is lower. In addition, Eversource will require its contractors to properly maintain and muffle equipment and vehicles to minimize noise emissions.

Because the 115-kV transmission line construction work will be performed principally during daylight hours, temporary lighting is not expected to be required on a routine basis. If needed to accomplish specific tasks that cannot otherwise be suspended at nightfall, construction lighting will be focused on the targeted work areas and will have only a short-term and localized effect.

5.9 SITE ACCESS, TRAFFIC CONTROL, AND CONSTRUCTION SIGNS

During construction, the access to the Project ROW will be via the public road network. On- and off-ROW access roads will provide direct ingress/egress to construction work sites, as illustrated on the Volume 3 maps.

To minimize the potential for traffic issues during construction, Eversource (or Eversource's construction contractors) will implement access and traffic control measures, working with representatives of the affected municipalities as necessary. Such measures will be implemented by Eversource's construction contractors and will include procedures for safe ingress and egress to the ROW for construction equipment and other vehicles and for informing the public of construction work zones. For example, at construction

¹¹ In the Town of Harwinton, on Saturdays, "noisy" construction work will not commence until 8:00 AM pursuant to an agreement between Eversource and the town (refer to Section 4.2).

work sites along public roads, signs will be erected to indicate the presence of construction work zones and flaggers or police personnel will be used to direct traffic, as needed.

The construction contractors will be responsible for posting and maintaining construction warning signs, in accordance with state and local requirements, along public roads in the vicinity of the work areas along the ROW. Signs will be consistent with the federal *Manual of Uniform Traffic Control Devices* ([MUTCD], 2009 edition, as revised May 2012, or the latest version)¹². Flagmen and other traffic control measures may also be used as necessary.

5.10 CULTURAL RESOURCES

5.10.1 Survey Results

Eversource and its cultural resource consultant (Heritage Consultants, LLC [Heritage]) coordinated with the SHPO and involved Native American Tribes regarding the Project. Further, Heritage surveyed the transmission line ROW. No sites potentially eligible for listing on the National or State Registers of Historic Places (NRHP/SRHP) or deemed to be of Tribal significance were identified within the limits of the proposed transmission line construction activities detailed in this D&M Plan.

5.10.2 Unanticipated Cultural Resources Discovery Procedures

The Project training for construction contractor managers (refer to Section 6.2) will review the procedures to be followed should unanticipated potential cultural materials be discovered during construction. Specifically, construction personnel will be instructed to stop the task that resulted in the potential discovery and inform Eversource or Burns & McDonnell.

Eversource will have a professional archaeological consulting firm available to respond to potential unanticipated cultural resource discoveries. Construction work at the potential cultural resource discovery site will not resume until authorized by the professional archaeologist and Eversource.

5.11 CONSTRUCTION EQUIPMENT / VEHICLE WASHING AND CLEANING

With the exception of concrete trucks, no construction equipment or vehicle washing will be allowed on the ROW. Concrete truck wash-out will be allowed only in designated locations, which will be selected to minimize the potential for off-site environmental impacts. All wash-out areas will include measures to control and contain wash-water and to collect the cement wash-off for off-site disposal.

Erosion and sedimentation controls deployed at wash-out areas will conform to the relevant provisions of the *2002 Connecticut Guideline for Soil Erosion and Sediment Control* (as amended), Eversource's *BMP Manual*, and the CT DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* (refer to Volume 2, Attachments D and E).

¹² Connecticut has adopted the federal MUTCDs.

As required pursuant to the wetland invasive species control BMPs (refer to Volume 3, Detail Sheet 2), construction vehicles, equipment, and mats also must be cleaned to prevent the transport of invasive wetland species. The cleaning protocol will typically involve the use of shovels, brooms, and/or compressed air to remove visible dirt from construction equipment, vehicles, and timber mats.

5.12 UTILITY CROSSINGS

Above-ground utilities and marked underground utilities are identified on the Volume 3 maps. Eversource's contractors will use "Call Before You Dig" to identify the locations of buried utilities in relation to any sub-surface work. The known buried utilities traversed by the ROW are located within public roads; Project construction will not involve any excavation in the vicinity of underground utilities.

5.13 METHODS TO PREVENT OR DISCOURAGE UNAUTHORIZED USE OF THE ROW, INCLUDING ATVs

Eversource's existing transmission line easements restrict the types of activities that can be conducted within the ROW, and typically prohibit the on-ROW construction of buildings, pools, and other structures. Eversource also has policies for addressing requests from property owners and other parties external to Eversource. These policies outline an evaluation process and provide guideline for allowing certain uses (e.g., driveways or parking lots) where appropriate. Requests prohibited by the easement agreements, or otherwise posing safety, engineering, environmental, or other concerns are rejected.

Connecticut law prohibits the operation of ATVs on private land without the written permission of the landowner (CGS Section 14-387). Eversource does not grant permission to use ATVs on its properties or properties subject to its easements.¹³

- **Prior to the start of construction, Eversource will send a letter to the police department in each of the four Project towns, reaffirming its policy on ATV use of its transmission line ROWs and requesting that the police give particular consideration to enforcing the prohibition on ATV use of the ROW.**

Where Eversource holds an easement as opposed to land ownership in fee, Eversource must receive landowner approval prior to installing fences, gates, etc. along the ROW unless the easement provides for such installation. Eversource will coordinate with landowners and agencies, as appropriate, to discourage unwarranted access onto and use of its ROW. Accordingly, Eversource will:

¹³ Eversource contractors and employees may use ATVs for construction and maintenance activities.

- Install signs warning the general public of the hazards posed by contact with the high voltage transmission line and indicating that it is unlawful to operate ATVs on private land without the written permission of the landowner; and
- Consider, based on consultation with and approval of the landowner, the installation of fences, gates, barricades, berms, or vegetative screens to discourage access onto the ROW. The type of measure considered for a particular area will depend on site-specific conditions and landowner preferences.

Eversource will report unlawful ATV use on the Project ROW to the local police.

5.14 WINTER WORK, ROW STABILIZATION, AND ROW MONITORING PROTOCOL

Because the 115-kV transmission line construction will require approximately 18 months to complete, work activities will be conducted during the winter months. Winter work activities will be conducted to minimize or avoid adverse environmental impacts. Snow removal and the use of de-icing procedures at construction sites will be in accordance with the *Snow Removal and De-Icing Plan* (Volume 2, Attachment C).

If, after the installation of the new transmission line, some ROW clean-up or restoration work is completed too late in the season to initiate or complete permanent stabilization of disturbed areas (e.g., temporary staging areas that may require reseeding), temporary erosion and sedimentation controls will be left in place and augmented if necessary. These measures will be periodically inspected and maintained until permanent site stabilization can be completed, likely during the following spring.

All erosion and sedimentation control practices and over-winter monitoring will be in accordance with Eversource's BMP Manual, the CT DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities*, the Project's 401 Water Quality Certification (refer to Volume 2), and any relevant conditions of the USACE Section 404 permit.

5.15 POST-CONSTRUCTION EMF MONITORING PLAN

Pursuant to Condition 2(q) of the Council's Decision and Order, Eversource has prepared a post-construction electric and magnetic field monitoring plan for the 115-kV transmission line. This plan is included in Appendix B.

5.16 BLASTING PROCEDURES

Eversource does not anticipate that blasting or implosive connections will be used to install the transmission line facilities. However, if blasting is subsequently determined to be required to facilitate line construction, Eversource will retain a certified blasting specialist (blasting contractor licensed by the Connecticut

Department of Emergency Services and Public Protection) to develop a site-specific blasting plan, in compliance with state and local regulations and Eversource guidelines. The plan will take into consideration local geologic conditions and the locations of nearby transmission line structures and other developments, as well as the performance of pre- and post-blast surveys of nearby properties, as necessary. The blasting plan will typically address the following:

- Location(s) along the ROW where blasting would be performed and general summary of work to be performed.
- List of permits required (e.g., from local Fire Marshals).
- Blasting schedule (days and hours per day).
- Safety meetings to be held prior to the performance of the blasting.
- Noise monitoring.
- Traffic control measures, as warranted.
- The blasting plan would be provided to the local Fire Marshals and to the Council for review and approval.

Prior to either blasting or implosive connector work, Eversource would conduct community outreach to inform local officials and the public about the planned work and about any pre- and post-work inspections, as necessary, of properties abutting the work sites. Typically, the construction contractor would arrange for pre- and post-work inspections of abutters' properties. Eversource would coordinate directly with town officials, including notifications to the local police and fire departments regarding the schedule for the work.

Eversource will submit any site-specific blasting plan(s) to the Council pursuant to the "Project Change Approval Process" included in Volume 1, Section 7 of this D&M Plan.

6. ENVIRONMENTAL INSPECTION

6.1 INDEPENDENT ENVIRONMENTAL CONSULTANT

Pursuant to Council's Decision and Order (Condition 4) for the Project, Eversource will retain an independent environmental inspector, subject to approval by the Council. The independent environmental inspector will perform the following functions:

- Monitor the construction of the new 115-kV transmission line and double circuit separation, including restoration, for consistency with the Council-approved D&M Plan for the Project.
- Provide a bi-weekly monitoring report to the Council.
- Coordinate with Eversource's environmental compliance monitor (refer to Section 6.2).

The independent environmental inspector can notify the Eversource environmental compliance monitor to stop construction practices that are inconsistent with the Decision and Order or the approved D&M Plan or that may cause significant damage to the environment that is not otherwise approved in the Decision and Order or Project environmental permits.

6.2 EVERSOURCE'S ENVIRONMENTAL COMPLIANCE PROGRAM

The Project construction contractors will be required to comply with all applicable environmental regulatory requirements, as well as with the Council-approved D&M Plan. Eversource will require construction contractors' management personnel to attend training regarding Project-specific requirements, including the specifications of this D&M Plan.

To verify the contractors' compliance with the applicable siting and permitting requirements, Eversource will assign to the Project an environmental compliance monitor, who will routinely monitor Project construction activities for conformance to the D&M Plan and to other Project-specific permits and approvals. The environmental compliance monitor also may coordinate with the independent environmental inspector, assist in preparing required notices and reports to the Council as appropriate, and support other aspects of the Project development.

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7. NOTICES AND REPORTS

7.1 NOTICES TO THE COUNCIL: START AND COMPLETION OF CONSTRUCTION (INCLUDING ACCESS AND VEGETATION CLEARING)

Pursuant to RCSA Section 16-50j-62(b)(1) and Condition 11 of the Council’s Decision and Order, Eversource will provide written notification to the Council **a minimum of two weeks in advance** of the work commencement of:

- a. Vegetation clearing or access work; and
- b. Transmission line construction.

Pursuant to RCSA Section 16-50j-62(b)(4) and Condition 11 of this Docket, Eversource also will provide written notification to the Council of the completion of construction (including site restoration / rehabilitation) and the commencement of site operation.

Pursuant to RCSA Section 16-50j-62(a)(1), Eversource also will provide written notification to and seek approval (as necessary) from the Council regarding the location and size of all areas to be accessed or used for site testing or staging and not otherwise included in this D&M Plan.

7.2 NOTICE OF CHANGES TO D&M PLAN

Pursuant to RCSA Section 16-50j-61(d), notice of a filing of changes to the D&M Plan that require Council approval will be provided to the service list and the property owner of record, if applicable, at the time that the filing is made with the Council.

7.2.1 D&M Plan Changes Requiring Notice to the Council

Pursuant to RCSA Section 16-50j-62(b)(2), the Council must pre-approve any significant changes to this D&M Plan. Eversource (or its agent) will identify, track, and approve all changes, whether significant or insignificant. *No changes to the D&M Plan will be implemented without such documented approvals.*

Eversource will provide the Council with advance written notice whenever a significant change of the approved D&M Plan is necessary. If advance written notice is impractical, Eversource will provide immediate verbal notice to the Council, followed by written notice no later than 48 hours after the verbal notice.

RCSA Section 16-50j-62(b)(2) defines a “significant” change to the approved D&M Plan as including, but not limited to, Project modifications that entail a change in:

- The location of a wetland or watercourse crossing.
- The location of an accessway or structure in a regulated wetland or watercourse area.
- The construction or placement of any temporary structures or equipment.
- Transmission line structure type or location including, but not limited to, towers, guy wires, associated equipment, or other structures.
- Use of additional mitigation measures or elimination of mitigation measures.

In addition to the above criteria, Eversource proposes to define a “significant” Project change as one that would substantially reduce the amount of protection to the environment, substantially increase potential public concern, or would otherwise potentially result in a meaningful effect on the environment, the public, or other Project permits and approvals.

7.2.2 D&M Plan Change Approval Process

A request for a change to the D&M Plan may originate from the Project team, construction contractors, or others, or be driven by regulatory agency approvals issued after the Council’s approval of the D&M Plan, with which the D&M Plan must be consistent. The following procedures will be used to identify, track, and obtain the approval of the Council, if required, for changes to this D&M Plan.

1. **Identify Proposed Project Change.** A proposed change is identified and described by the change originator and provided to Eversource. Data to be provided to Eversource by the change originator may include, for example:
 - Description of the change (location, type);
 - Reason/need for the change;
 - Date by which the change is required (timing);
 - Project schedule and cost implications (if applicable); and
 - Identification of effects (if any) on the environment, cultural resources, and the public.

The Project change request will be supported by maps and drawings, as appropriate.

2. **Assess Significance of Proposed Change.** Eversource will evaluate each proposed change to determine whether it either:
 - Qualifies as a significant change to the approved D&M Plan and thus requires advance notification to and approval by the Council; or
 - Constitutes a minor change requiring only Eversource approval.

3. **Significant Changes Requiring Notice to and Prior Approval by the Council.** After Eversource determines that a proposed change represents a significant change to the D&M Plan requiring notification to the Council and the Council's pre-approval, Eversource will categorize each proposed change as either "urgent" or "non-urgent", based on the following:
 - **Urgent.** A Project change will be considered "urgent" if waiting until the next regularly-scheduled Council meeting to obtain approval of the change would have a negative impact on Project construction costs or scheduling, or if the provision of written notice is impractical for other reasons. For "urgent" changes, Eversource will provide verbal notification of the change to Council staff and will request that the Council approve the change expeditiously. Eversource will promptly implement the D&M Plan change in accordance with the Council's expedited approval (verbal or written). Not later than 48 hours after the provision of verbal notice of the D&M Plan change request to the Council, Eversource will submit written notice to the Council. If the Council elects not to act on the proposed D&M Plan change request pursuant to the urgent (verbal) notice, Eversource will provide the Council with written notice of the proposed Project Change within 48 hours and will defer any construction activities related to the change request pending the Council's determination.
 - **Non-Urgent.** If Eversource determines that a D&M Plan change request is "non-urgent", Eversource will provide written notice to the Council, seeking the Council's consideration of the proposed D&M Plan change at the next regularly-scheduled Council meeting.
4. **Non-Significant D&M Plan Change: No Council Pre-Approval Required.** Minor changes to the approved D&M Plan will require Eversource approval prior to implementation, as well as Project documentation. Documentation of minor changes will be provided in the monthly construction progress reports that will be submitted to the Council.

Figure 7-1 provides a flow chart illustrating this change approval process.

7.2.3 D&M Plan Change Documentation and Reporting

Although only significant D&M Plan changes will require the Council's pre-approval, Eversource will document all D&M Plan changes and provide such documentation to the Council in its monthly construction progress reports.

7.3 REPORTS

Table 7-1 identifies the written reports that will be provided to the Council regarding the Project. Eversource will provide general updates regarding the status of the Project in the Monthly Construction Progress Reports.

Figure 7-1
D&M Plan Change Process

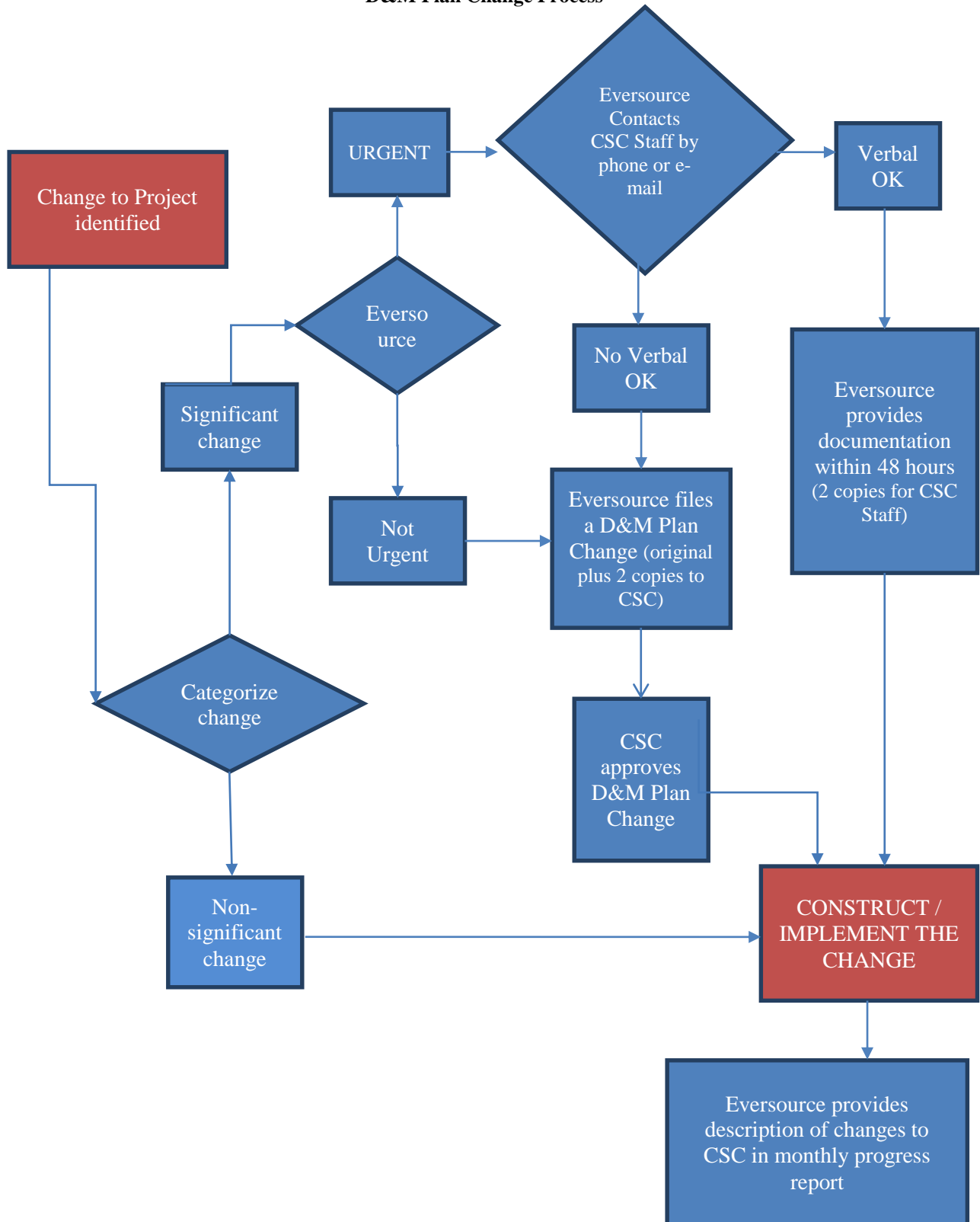


Table 7-1
Reports to be Provided to the Council

Report Type (Regulatory Requirement)	Content
Monthly Construction Progress Report (RCSA Section 16-50j-62(b)(3))	Monthly construction progress report will summarize the status of the Project construction (by location, percent complete) and will identify modifications to the approved D&M Plan, including both significant changes involving Council pre-approval and minor changes that did not require Council action.
Bi-Weekly Independent Environmental Inspector Report (Docket No. 466, Decision and Order, Condition 4)	The Independent Environmental Inspector will submit to the Council a written report regarding the status of construction activities and environmental protection pursuant to the Council’s Decision and Order, Certificate, and the D&M Plan.
Final Report (RCSA Section 16-50j-62(c))	Eversource will provide to the Council a final report no later than 180 days after the completion of all site construction and rehabilitation. The report will identify the following: <ul style="list-style-type: none"> 1 All agreements with abutters or other property owners regarding special maintenance precautions 2 Significant changes to the D&M Plan that were required because of property rights or underlying and adjoining owners or for other reasons 3 The location of construction materials that have been left in place, including but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands 4 The location of areas where special plantings and reseeding have been performed 5 The actual construction cost of the facility, including but not limited to the following costs: <ul style="list-style-type: none"> a. Clearing and access; b. Construction of the facility and associated equipment; c. Rehabilitation; and d. Property acquisition for the site or access to the site.
Operating Report (Docket No. 466, Decision and Order, Condition 8)	Within three months after the conclusion of the first year of the operation of all Project facilities, and annually thereafter for three years, Eversource will provide to the Council a report that describes the overall condition, safety, reliability, and operation of the transmission systems.

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8. PUBLIC REVIEW AND OUTREACH

8.1 PROJECT PLANNING AND D&M PLAN

As part of the overall Project planning process, including the development of the Application to the Council and this D&M Plan, Eversource consulted with officials of the four towns traversed by the Project and provided opportunities for town representatives, other agencies, and the public to comment on the Project. Prior to the submission of this D&M Plan to the Council, Eversource also provided draft copies of the Plan to the four towns along the Project transmission line route, as well as to the City of Waterbury and the Town of Plymouth, and all parties and intervenors on the service list for the Project (Council Docket No. 466).

Along with the provision of the draft D&M Plan, Eversource extended an invitation for municipal officials to provide comments regarding the Plan and offered to meet with municipal officials to review the Plan. Accordingly, Eversource met with municipal officials from the Town of Harwinton on June 6, 2016 and with representatives of the towns of Watertown and Litchfield on June 13, 2016.¹⁴

During these meetings with the municipal officials, Eversource provided information regarding the general construction process, addressing topics such as construction sequence; vegetation clearing; the size of work pads; permanent vs. temporary access roads and work pads; work hours; use of anti-tracking pads at intersections of the ROW and construction access roads with public roads; structure design and spacing along the ROW; planned work hours; and schedule for construction in each town. Town of Litchfield officials also inquired about the construction process for the installation of the Project facilities at and across the Naugatuck River and the type of USACE permit required for the Project.

In addition, representatives of the Town of Watertown asked that Eversource:

1. Provide a link to the Company website on which the D&M Plan will be posted so that the town can post the link on their website or otherwise notify residents; and
2. Provide the town with copies of the Council's bi-weekly independent environmental inspector's reports and Eversource's monthly construction progress report to the Council.

Eversource indicated that the bi-weekly independent environmental inspector reports and the monthly construction progress report regarding the Project will be provided to the involved municipalities.

Officials from the Town of Harwinton requested that noisy construction work on Saturdays commence at 8:00 AM, rather than 7:00 AM; this request has been incorporated into the D&M Plan (refer to Section 4.2). In addition, Harwinton representatives asked for, and Eversource agreed to, the following:

¹⁴ Representatives of the Town of Thomaston elected not to meet with Eversource to discuss the draft D&M Plan.

1. Install a locking gate and place a barrier across the ROW north of and adjacent to Valley Road.
2. Access to Campville Substation (for truck traffic only) should be to the southeast along Wildcat Hill Road.
3. Roads and pads should be removed from the ROW at the end of construction; Eversource agreed to evaluate this on a property-by-property basis and to consider spreading topsoil and seeding over the roads and pads that must remain permanently to facility transmission line operations and maintenance activities.

In addition to the meetings with the town officials regarding the draft D&M Plan, in conjunction with the submission of the D&M Plan to the Council, Eversource will post the filed D&M Plan on the Project web site and will provide the D&M Plan to the four towns traversed by the Project, the Town of Plymouth, the City of Waterbury, and the service list for the Project (Council Docket No. 466). This website is accessible from the Eversource homepage (www.Eversource.com). From this homepage, Project information can be accessed by clicking the “About” tab and then the “Major Projects and Infrastructure” tab to view a list of the Company’s ongoing and proposed projects, including this Project. Included on the website is an e-mail address (transmissioninfo@eversource.com) and a telephone number (800-793-2202) to contact Eversource for more Project information or to provide comments about the Project.

8.2 PUBLIC OUTREACH DURING CONSTRUCTION

Throughout the Project planning and the Council’s siting processes, Eversource conducted extensive community outreach, including direct coordination with landowners, abutters, and municipal officials, as well as two public open houses during the Municipal Consultation phase of the siting process. Eversource will continue its outreach efforts through the Project’s construction phase and will notify affected stakeholders of upcoming construction activities.

Eversource’s Project information and email address are currently available, via the website noted in Section 8.1, and the website will continue as the primary means for residents, businesses, and other stakeholders to contact Project representatives throughout Project construction. As referenced in Section 8.1, the public can also access the Project website, which provides an overview of the Project, a map of the Project facilities, and Eversource contact information.

In addition, Eversource representatives will be available to brief residents and businesses affected by Project construction activities and other interested stakeholders regarding the construction process, key construction stages, and expected construction timeline. Project representatives will also contact adjacent and nearby residents and businesses to notify them of upcoming construction activities and will be available throughout the construction process to address any specific questions or concerns.

9. GLOSSARY OF TERMS

- Access Road:** A road that provides access into and out of the stations, staging areas, or ROW.
- BMP:** Best Management Practice
- Certificate:** Certificate of Environmental Compatibility and Public Need (from the Connecticut Siting Council)
- CFPA:** Connecticut Forest and Park Association
- CGS:** Connecticut General Statutes
- Conductor:** A metallic wire, busbar, rod, tube or cable which serves as a path for electric current flow.
- ConnDOT:** Connecticut Department of Transportation
- Conduit:** Pipes, usually PVC plastic, typically encased in concrete, for housing underground power and control cables.
- Council or CSC:** Connecticut Siting Council
- CWA:** Clean Water Act
- CT DEEP:** Connecticut Department of Energy and Environmental Protection
- Counterpoise:** Part of grounding system.
- D&M Plan:** Development and Management Plan (required by the Connecticut Siting Council)
- dBa:** Decibel, on the A-weighted scale.
- Deadend Structure:** A line structure that is designed to have the capacity to hold the lateral strain of the conductor in one direction.
- DECD:** Connecticut Department of Economic and Community Development
- D&O, Decision and Order:** Council approval of the Project
- Direct Embed:** Structure installation type in which the bottom section of each pole is placed in an excavated hole. Does not require the use of foundations or concrete. H-frame and guyed pole structures are typically direct embedded.
- Docket 466:** Council Docket number for the Project.
- Drilled Shaft Foundation:** Structure foundation type involving the use of drilling rigs and pneumatic hammers to excavate an area for the structure foundation. Concrete is used for the foundation.
- During Construction:** Construction refers to Project activities commencing with work site / staging area preparation through final restoration and site stabilization.

Electric Field: Produced by voltage applied to conductors and equipment. The electric field is expressed in measurement units of volts per meter (V/m) or kilovolts per meter (kV/m); 1 kV/m is equal to 1,000 V/m.

Electric Transmission: The facilities (69 kV+) that transport electrical energy from generating plants to distribution substations.

EMF: Electric and magnetic fields.

Environmental Inspector: Environmental scientist employed by Eversource to monitor the conformance of Project construction to the environmental requirements

EPA: United States Environmental Protection Agency

Eversource: Also “the **Company**”: The Connecticut Light and Power Company doing business as Eversource Energy.

Fault: A failure (short circuit) or interruption in an electrical circuit.

FEMA: Federal Emergency Management Agency

Frac Tank: Fractionization tank, used to temporarily hold water pumped from Project excavations or otherwise used during Project construction activities

Grounding System: Consists of ground rings, placed around transmission line poles and counterpoise as required.

Ground Wire: Cable/wire used to connect wires and metallic structure parts to the earth. Sometimes used to describe the lightning shield wire.

H-Frame Structure: A wood or steel structure constructed of two upright poles with a horizontal cross-arm and bracings.

Idling: The period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function.

kV: Kilovolt, equals 1,000 volts

kW: Kilowatt, equals 1,000 watts

Lightning Shield Wire: Electric cable located to prevent lightning from striking transmission circuit conductors.

Line: A series of overhead transmission structures which support one or more circuits; or in the case of underground construction, a duct bank housing one or more cable circuits.

Magnetic Field: Produced by the flow of electric currents; however, unlike electric fields, most materials do not readily block magnetic fields. The level of a magnetic field is commonly expressed as magnetic flux density in units called gauss (G), or in milligauss (mG), where 1 G = 1,000 mG.

MF: Magnetic Field

MUTCD: Manual of Uniform Traffic Control Devices

NAAQS:	National Ambient Air Quality Standards
NDDB:	Connecticut Natural Diversity Data Base (CT DEEP)
NRCS:	National Resources Conservation Service (U.S. Department of Agriculture)
NRHP:	National Register of Historic Places
NWI:	National Wetlands Inventory
OPGW:	Optical groundwire (a shield wire containing optical glass fibers for communication purposes)
PEM:	Palustrine emergent marsh (wetlands)
PFO:	Palustrine forested (wetlands)
Phases:	Transmission (and some distribution) AC circuits are comprised of three phases that have a voltage differential between them.
Project:	Frost Bridge to Campville 115-kV Project
PSS:	Palustrine scrub-shrub (wetlands)
PUB:	Palustrine unconsolidated bottom (wetlands)
PURA:	Public Utilities Regulatory Authority (part of CT DEEP)
RCSA:	Regulations of Connecticut State Agencies
Rebuild:	Replacement of an existing overhead transmission line with new structures and conductors generally along the same route as the replaced line.
Reconductor:	Replacement of existing conductors with new conductors, but with little if any replacement or modification of existing structures.
ROW:	Right-of-Way
Shield Wire:	See Lightning Shield Wire
SHPO:	State Historic Preservation Office (Connecticut)
SPCP:	Spill Prevention and Control Plan
SRHP:	State Register of Historic Places
Stormwater Pollution Control Plan:	A sediment and erosion control plan that also describes all the construction site operator's activities to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act.
Substation:	Part of the electric transmission system, a high-voltage electrical facility with a fenced-in yard containing switches, transformers, line-terminal structures, and other equipment enclosures and structures to regulate and distribute electrical energy, such as receiving power from a generating facility, changing voltage levels, limiting power surges, etc.

Adjustments of voltage, monitoring of circuits and other service functions take place in this installation.

Terminal Structure: Structure typically within a substation that ends a section of transmission line.

Transmission Line: Any line operating at 69,000 or more volts.

USACE: United States Army Corps of Engineers

USDA: United States Department of Agriculture

USFWS: United States Fish and Wildlife Service

USGS: United States Geological Survey (U.S. Department of the Interior).

Vegetation Clearing: Removal of forest vegetation. May also refer to mowing or cutting of scrub-shrub vegetation.

Watercourse: Rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, public or private.

Wetland: Is an area of land consisting of soil that is saturated with moisture, such as a swamp, marsh, or bog. CT DEEP and the USACE have formal definitions of state and federal jurisdictional wetlands, respectively.

XS: Cross section (drawing)

XLPE: Cross-linked polyethylene (solid dielectric) insulation for transmission

APPENDIX A

Wetland Invasive Species Control Plan

(To be provided separately)

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APPENDIX B

Post-Construction Electric & Magnetic Field Monitoring Plan

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I. INTRODUCTION AND PURPOSE

In accordance with the Connecticut Siting Council’s (Council’s) April 14, 2016 Decision and Order in Docket No. 466 (Condition 2(q), Eversource Energy d/b/a The Connecticut Light and Power Company (Eversource or the Company) will implement the following post-construction electric and magnetic field (EMF) Monitoring Plan (Plan) for the Frost Bridge to Campville 115-kV Line Project (the Project).

A primary purpose for EMF measurements near transmission lines is to make comparisons to levels predicted by calculations. This purpose is best served for an overhead transmission line by selecting post-construction measurement locations where conductor configurations and heights are typical and representative, and where few if any confounding field sources and objects exist.

A secondary purpose for such measurements can be to make comparisons between levels measured at points of interest before and after new line construction. However, those points of interest may not be at locations that best serve the primary purpose. Also, measurements of magnetic fields should not be so compared to predicted levels because power-flow circumstances can be significantly different at the times of these before and after measurements.

II. MONITORING LOCATIONS

The Company’s proposed monitoring locations for electric and magnetic fields along the Project right-of-way (ROW) are listed in Table 1. Three representative monitoring locations along the ROW in the towns of Watertown, Thomaston, and Litchfield were selected. Attachment C.1 includes aerial photograph views of each of the three monitoring locations in relation to the ROW.

Table 1
E&MF Monitoring Locations for the Frost Bridge to Campville 115-kV Line Project

Site	Municipality	Location Type	Location
1	Watertown	Spot	Veteran's Memorial Park
2	Thomaston	Line	Walnut Hill Rd
3	Litchfield	Line	Campville Rd

The selected monitoring locations capture unique ROW configurations along the ROW. Additional considerations in location selection are as follows:

1. Measurement Location Characteristics

The Company chose one readily accessible monitoring location on either side of the existing overhead transmission lines along the line route.

At each of the three monitoring locations listed in Table 1, measurements will be made on Eversource's existing ROW, and not on nearby private property outside of the ROW, absent landowner approval, with the exception of in Veteran's Memorial Park (in the Town of Watertown). In this park, a measurement will be taken at the closest portion of the baseball field area to the ROW.

The measurement locations will include the Focus Areas as identified by the Company in Section 7 of its Application to the Council for a *Certificate of Environmental Compatibility and Public Need*. (Docket 466).

To the extent possible, the Company chose measurement locations where: (1) line configurations and conductor heights are typical and representative; and (2) where possible, few if any confounding sources, such as local distribution lines, and objects are present other than the existing overhead 115-kV line(s) (and along portions of the ROW in the Town of Watertown – the 345-kV line).

III. MEASUREMENTS FOR SPOT LOCATION

The Company will take a post-construction measurement of electric and magnetic fields at the listed spot location (i.e., within Veteran's Memorial Park, refer to Table 1) within 10 months of commencement of the operation of the new 115-kV line. At this location, the Company will measure electric and magnetic fields at a single spot. The measurement will be taken at an open space in the baseball field area where people congregate most proximate to the transmission line ROW.

IV. MEASUREMENTS FOR LINE SEGMENTS

Within 10 months of commencement of new 115-kV line operation, the Company will take a post-construction measurement of electric and magnetic fields at each of the two line segment locations identified in Table 1.

For the locations selected to meet the criteria identified in Section II.1 that cross the ROW, the Company will measure electric and magnetic fields along a transect (i.e., profile) passing perpendicularly below sections of the new overhead 115-kV line, at the listed locations. The measurement path will extend to 25 feet from either side of the new transmission line.

V. MEASUREMENT INSTRUMENTATION AND RECORDING

The Company will record all electric and magnetic field measurements at a height of one meter (3.28 feet) above ground in accordance with the industry standard protocol for taking measurements near power lines (IEEE Std. 644-1994 [R2008], “*IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields From AC Power Lines*”).

The resultant magnetic field will be measured with a 3-axis, recording digital meter (EMDEX II). Electric fields will be measured with an E-Probe attachment accessory to the EMDEX II meter. This accessory enables the EMDEX II to make single-axis measurements of the electric field. Both the EMDEX II magnetic field meter and the E-probe accessory meet the IEEE instrumentation standard for obtaining valid and accurate field measurements at power line frequencies (IEEE Std. 1308-1994, “*IEEE Recommended Practice for Instrumentation: Specifications for Magnetic Flux Density and Electric Field Strength — 10 Hz to 3 kHz.*”) With this instrumentation, magnetic fields can be recorded continuously while walking and then plotted, whereas electric fields can be measured at spots and then recorded by hand in a data table and then plotted.

VI. REPORTING

Within 12 months of the in-service date of the new 115-kV line, the Company will provide to the Council a report on these measurements with “true-up” comparisons to predicted values. “True-ups” are electric and magnetic field calculations that are based on site-specific conditions, including the actual conductor heights at a location at the time the measurement is made, current flows on the lines at the time the measurement is made, and the terrain. These calculations are then compared with the measurements taken at the location. True-up comparisons of measurements with calculations will be performed and reported for “Line” locations to demonstrate model accuracy

The report will also include aerial photographs from GoogleEarth™ to mark each measurement location. For each magnetic field measurement, the coincident transmission line currents, as recorded by the CONVEX SCADA system, will be noted and reported. Additionally for each measurement location, the size of transmission line conductor types will be reported.

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ATTACHMENT B.1

AERIAL VIEWS OF E&MF MONITORING LOCATIONS FOR THE FROST BRIDGE TO CAMPVILE 115-kV LINE PROJECT

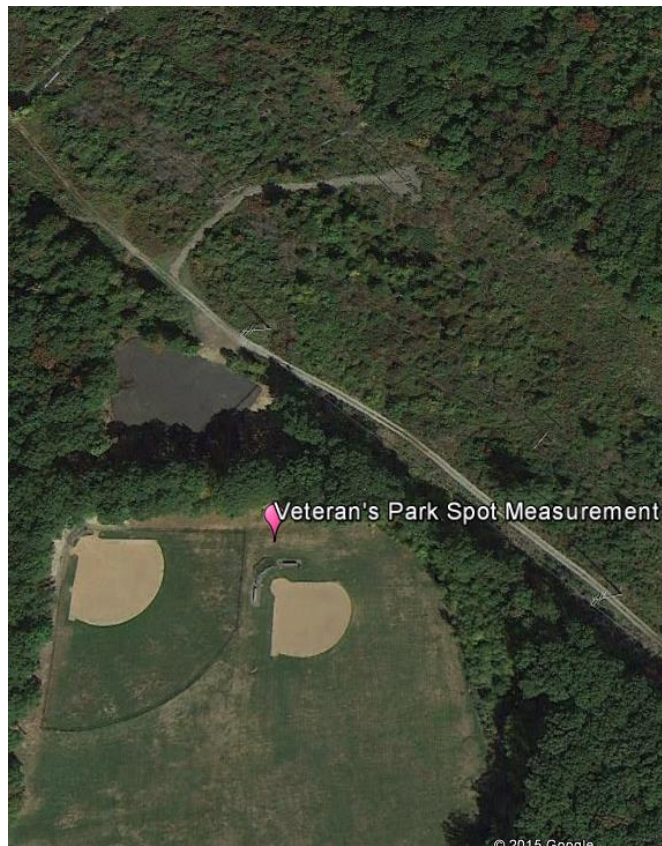


Figure 1 – E&MF Spot Measurement Location at Veteran’s Memorial Park, Town of Watertown

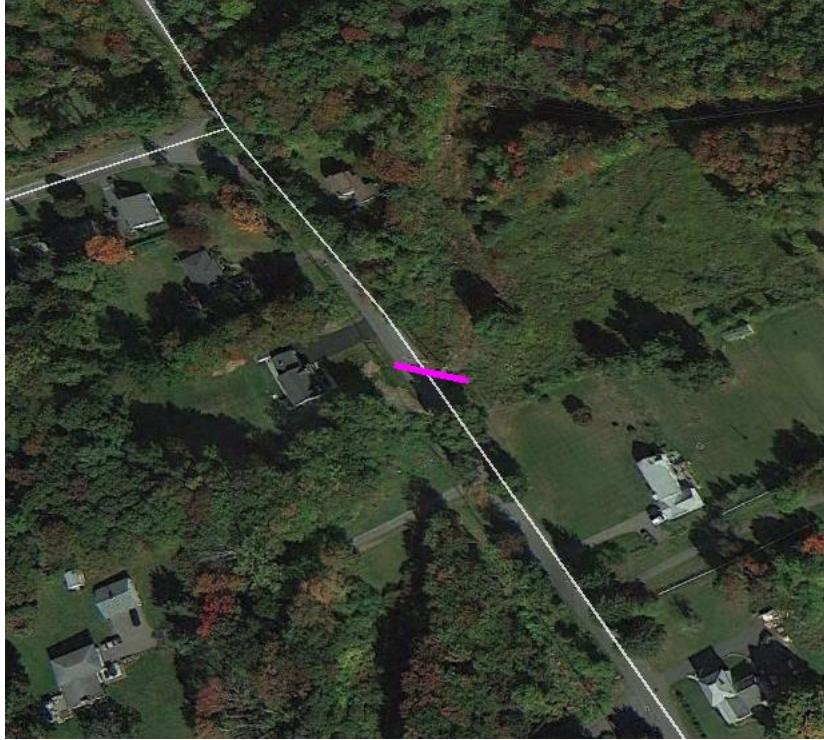


Figure 2 – E&MF Line Segment Measurement Location at Walnut Hill Road, Town of Thomaston



Figure 3 – E&MF Line Segment Measurement Location at Campville Road, Town of Litchfield