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## **N. POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES**

This section identifies and analyzes the potential short- and long-term environmental effects that may occur as a result of the construction and operation of the facilities along the proposed overhead line routes, as well as, alternatively, along the underground route variations that have been identified to these routes. In addition, the section describes the measures that CL&P proposes to implement to avoid and/or minimize adverse effects on such environmental resources.

Section N.1 discusses the potential environmental effects and mitigation measures that would be associated with the construction and operation of the overhead 345-kV facilities along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, as well as the construction and operation of the Manchester to Meekville Junction Circuit Separation Project (MMP) facilities. Section N.1 also identifies and evaluates the potential environmental effects and mitigation measures that would be associated with the proposed modifications to the North Bloomfield Substation, which are required to support the proposed new 345-kV transmission line.

Section N.2 describes the potential environmental effects and mitigation measures that would occur as a result of the construction and operation of portions of the North Bloomfield to Agawam 345-kV line along the four underground variations, each one of which could be used to replace a similar portion of the proposed overhead line route. This section describes the potential effects of the development of an underground cable segment within or adjacent to road ROWs (i.e., the Newgate Road and State Route 168/187 Underground Line Route Variations) or within CL&P's existing overhead transmission line ROW (i.e., the 3.6-Mile and 4.6-Mile In-ROW Underground Line Route Variations.)

Section N.3 discusses the potential effects that would result from the construction and operation of the 5.4-mile Connecticut portion of the overhead 345-kV line alternative between Agawam and Ludlow

substations for the Massachusetts portion of the GSRP. The potential effects of the underground variation that were identified for a portion of this 5.4-mile overhead line route also are evaluated. Possible mitigation measures are discussed for the development of the 345-kV line route along both the overhead line route and the underground variation.

Overall, CL&P has assessed the potential effects of the proposed and alternative project facilities on the following resources:

- Topography, geology, and soils;
- Water resources and water quality (wetlands [including vernal pools], watercourses, floodplains, groundwater, and public water supply areas);
- Biological resources
  - Riparian and upland vegetation;
  - Wildlife (including birds);
  - Amphibians;
  - Fisheries; and
  - Threatened/endangered species;
- Land uses (including scenic and recreational resources; open space and protected areas; local, state, and federal land use plans; existing and future development);
- Transportation and access;
- Archaeological and historic (cultural) resources; and
- Air quality and noise.

## **N.1 CONNECTICUT PORTION OF THE NORTH BLOOMFIELD TO AGAWAM 345-kV AND MMP OVERHEAD LINE ROUTES**

The construction and operation of the proposed transmission facilities in an overhead configuration along both the Connecticut Portion of the North Bloomfield to Agawam 345-kV and the MMP Line Routes

would result in similar effects on certain environmental resources (e.g., topography, geology, soils, air quality, noise). Likewise, some of the measures that CL&P proposes to minimize or avert adverse effects to environmental resources would be common to both overhead line facilities.

To avoid redundancy, the following subsections combine the discussion of the potential effects and mitigation measures that would be common to the development of the two overhead line routes. For the potential environmental effects or mitigation measures that would differ between the two routes (e.g., water resources, certain biological resources), separate route-specific discussions are provided. Sections N.1.1 through N.1.8 describe the potential environmental effects and mitigation measures associated with the construction and operation of the overhead line routes. Section N.1.9 discusses the potential environmental effects and mitigation measures for the modifications to the North Bloomfield Substation.

Overall, the development of the facilities along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and the existing MMP ROW, as well as the associated expansion of the existing North Bloomfield Substation on CL&P-owned property, would minimize adverse environmental effects by collocating the new transmission lines along existing ROWs and on property otherwise devoted to utility use. Further, based on recent experience with the development of other 345-kV transmission line projects, historical experience with the maintenance of the existing transmission lines along the North Bloomfield to Agawam and MMP corridors, and on the results of field investigations and agency consultations for the proposed line routes, CL&P has a clear understanding of the existing environmental conditions along the routes, and the potential issues and effects associated with overhead line construction and operation. CL&P has applied this information to incorporate mitigation measures into the projects' design and proposed construction techniques, and thereby to minimize adverse environmental effects to the extent practical. Examples of such mitigation measures include the location of new structures outside of delineated wetlands where possible and the avoidance of vegetation removal within riparian areas.

In addition to the mitigation measures identified in this section, other measures may be identified during the course of the Council proceedings and/or the process of applying for project-specific permits and approvals from other state and federal agencies, including the CT DEP and the U.S. Army Corps of Engineers (USACE). CL&P would incorporate all relevant environmental mitigation measures and regulatory permit conditions into the D&M Plans or other specifications for the projects.

### **N.1.1 Topography, Geology, and Soils**

The development of the proposed transmission lines along the existing CL&P ROWs would have negligible effects on topography and geology. Soil resources would be affected by the creation or expansion of access roads along the ROW, as well as by the earth-disturbing activities required to install the transmission line structures. Effects on soil resources would be short-term, lasting only for the duration of the construction period, until re-vegetation or other forms of site stabilization are achieved.

In general, the construction of the proposed transmission line projects will result in minor changes in topography, localized at structure locations or along access roads. For example, grading, which would change elevations, would only be performed to create level areas for the installation of structures, and to improve existing access roads or to create new access roads along the ROWs in order to provide safe passage for construction equipment. Changes in the grades adjacent to proposed structure locations may be required for the construction of crane pads, where fill may be imported to provide a safe and level work area around each structure location. Crane pads may be removed in some locations after construction. Grading would not be required along the ROW where the terrain is flat and open, where no access road improvements are needed, or where the conductors span the underlying terrain.

Where grading and earth disturbing activities are required, temporary erosion and sediment control measures would be installed to minimize the potential for soil erosion and sedimentation off the ROW or into watercourses or wetlands. Temporary erosion controls (e.g., silt fence, hay/straw bales, filter socks,

mulching, and temporary reseeded) would be deployed as necessary after clearing or grading, or at other times during construction, in areas of land disturbance. The need for and extent of temporary and permanent erosion and sedimentation controls would be a function of considerations such as:

- Slope (steepness, potential for erosion, and presence of resources such as wetlands or streams at bottom of slope).
- Type of vegetation removal method used and extent of vegetative cover remaining after removal (e.g., presence/absence of understory or herbaceous vegetation that would minimize the potential for erosion and degree of soil disturbance as a result of the movements of clearing equipment).
- Type of soil and erodibility factor (K value).
- Soil moisture regimes.
- Schedule of future construction activities.
- Proximity of cleared areas to water resources, roads, or other sensitive environmental resources.
- Time of year: The types of erosion and sedimentation control methods for a particular area would depend on the time of year. For example, reseeded would not typically be effective during the winter months. In winter, with frozen ground, controls other than re-seeding (such as the use of wood chips, straw and hay, geotextile fabric, waterbars, or crushed stone) would be used to stabilize disturbed areas until seeding can be performed.
- Extreme weather conditions during or immediately following soil disturbance.

The measures selected would be appropriate to minimize the potential for erosion and sedimentation in areas where soils are disturbed. CL&P would adhere to its *2007 Connecticut Best Management Practice Manual*, and would prepare a project-specific Erosion and Sedimentation Control Plan, in compliance

with the 2002 *Connecticut Guidelines for Soil Erosion and Sedimentation Control*, which would be included as part of the project-specific D&M Plans.

Typically, temporary erosion controls would be installed based on the judgment of the CL&P's in-field representatives. Temporary erosion controls may be placed in the following types of areas, in accordance with site-specific field determinations:

- Across or along portions of cleared ROW, at intervals dictated by slope, amount of vegetative cover remaining, and down-slope environmental resources.
- Across or along accessways within the transmission line ROW.
- Across areas of disturbed soils on slopes leading to streams and wetlands.
- Around portions of construction work sites that must unavoidably be located in wetlands.

The temporary erosion controls would be maintained, as necessary, throughout the period of active construction until restoration has been deemed successful, as determined by standard criteria for storm water pollution control/prevention and erosion control. In addition to silt fence or hay/straw bales, temporary erosion controls may include the use of mulch, jute netting (or equivalent), erosion control blankets, reseeding to establish a temporary vegetative cover, temporary or permanent diversion berms (if warranted), and/or other equivalent structural or vegetative measures. After the completion of construction activities in any area, permanent stabilization measures (e.g., seeding, mulching) would be performed.

During the course of periodic post-construction inspections, CL&P would determine the appropriate time frame for removing these temporary erosion controls. This determination would be made based on the effectiveness of restoration measures, such as percent re-vegetative cover achieved, in accordance with applicable permit and certificate requirements.

## Blasting and Rock Removal

For the most part, blasting is not expected to be needed to install structures along the project ROWs. As currently proposed, the proposed transmission line structures are expected to be steel H-frames, wood H-frames, or steel poles; few of these structure types would require foundations with anchor bolts. The preferred techniques for removing rock, if encountered, would be to use either mechanical methods (e.g., mechanical excavators and pneumatic hammers) or mechanical methods supplemented by controlled drilling and blasting.

Potential effects from rock removal may include dust and vibration/noise from rock drilling, blasting (if required), and removal. If blasting is required, CL&P would develop a blasting control plan in compliance with state, industry, and corporate standards; this plan would be provided to the state and local Fire Marshals.

Further, if blasting is necessary, CL&P would employ methods to minimize adverse effects. For example, blasting charges, if required, would be designed to loosen only the material that must be removed to provide a stable foundation for an overhead structure.

Excess rock (if any) generated from construction activities may be stockpiled at approved locations along the ROWs, with the landowner's permission, to create wildlife habitat, or placed across or along the ROWs to provide barriers to unauthorized vehicular traffic along the ROWs. The rock also may be used to re-construct stone walls, if any such walls are affected by the construction activities. Excess rock would not be deposited in wetlands or watercourses. Any excess rock not otherwise used along the ROW would be disposed off-site at an appropriate location, pursuant to regulatory requirements.

### **N.1.2 Water Resources and Water Quality**

The potential surface water resource/water quality effects associated with overhead transmission line construction are expected to be minor, short-term, and highly localized. The operation of the projects would not cause any long-term effects to water quality. Potential effects to water resources typically stem from erosion and sedimentation into watercourses or wetlands as a result of soil disturbance and vegetation removal, or from the installation of transmission line structures or access roads within water resources (wetlands or watercourses).

In designing and planning for constructing the transmission lines, CL&P proposes to avoid direct work in watercourses, minimize work in wetlands, and employ best management practices to limit the potential for effects associated with erosion / sedimentation or spills into water resources from construction activities in nearby upland areas. Construction activities involving earth disturbance would temporarily increase the potential for erosion and sedimentation, which could temporarily affect the quality of watercourses or wetlands along the ROWs.

However, the implementation and maintenance of best management practices can effectively control soil erosion and reduce the risks of potential adverse effects on water quality. Further, a storm water pollution control plan will be prepared, in accordance with CT DEP permit requirements; CL&P will require its construction contractor(s) to adhere to this plan, as well as to any other best management practices and regulatory conditions relevant to water resources, in order to minimize the potential for soil erosion and sedimentation during all phases of construction.

Similarly, CL&P would implement its construction best management practices to minimize effects from soil erosion and limit the potential for spills/leaks from construction equipment. CL&P would clean up and contain any spills/leaks in accordance with its emergency response plan and CT DEP requirements.

The project ROWs will traverse various watercourses and wetlands. Any construction work in these water resources will be in accordance with not only CL&P's best management practices, but also the conditions of the regulatory approvals that will be required from the USACE, New England District, and the CT DEP. Pursuant to Section 404 of the federal Clean Water Act and Section 10 of the Rivers and Harbors Act (as applicable), CL&P will file an Individual Permit application with the USACE-New England District for work in waters of the U.S. The USACE has indicated that the entire GSRP (i.e., in Connecticut and Massachusetts, and including the MMP) is considered, from a federal regulatory perspective, as a single and complete project. Thus, it is anticipated that the USACE will issue a single permit for the GSRP as a whole, and that such a permit will include conditions designed to further assure that potential adverse effects to water resources are minimized or mitigated.

In addition, the CT DEP will review the project jointly with the USACE regarding the issuance of an individual water quality certification pursuant to Section 401 of the Clean Water Act. CL&P will submit to CT DEP a General Permit Registration for the Discharge of Storm Water and Dewatering Wastewaters from Construction Activities, and will prepare an associated project-specific Storm Water Pollution Control Plan, both of which will be developed during and in conjunction with the preparation of the Development and Management (D&M) Plans, as required by the Council. CL&P will incorporate all water resource permits received from the USACE and the CT DEP into the project specifications, to which the construction contractors must adhere during the construction of the GSRP and MMP.

#### **N.1.2.1 Wetlands**

Along both the Connecticut Portion of the North Bloomfield to Agawam 345-kV and the MMP line routes, the proposed transmission lines would be constructed and operated in existing ROWs, where the wetlands have historically been affected by vegetation maintenance programs. Specifically, pursuant to CL&P vegetation management practices, these wetlands are maintained in scrub-shrub and emergent wetland cover types. In addition, approximately 11 existing structures along the Connecticut Portion of

the North Bloomfield to Agawam 345-kV Line Route and 9 existing structures along the MMP Line Route are presently located in wetlands.

The development of the proposed transmission lines in these maintained ROWs will result in incremental, long-term effects on wetlands associated with the following activities:

- **Vegetation clearing and maintenance.** Within the footprint of the new transmission lines, forested wetland vegetation will have to be removed in order to construct and safely operate the new overhead transmission facilities. As a result, forested wetlands along the expanded ROWs will be converted to shrub-scrub or emergent marsh wetland types. This will not create a loss of overall wetland habitat, but rather a long-term change in habitat type, from forested to shrub-scrub or emergent marsh.
- **Improvement or creation of new access roads.** In certain areas where no upland alternatives are available, existing access roads through wetlands along the ROWs will have to be improved or new access roads through wetlands will have to be developed in order to reach structure sites. Access may consist of timber mats, which would be temporarily used only for construction and then removed from the wetlands. In some areas, gravel type roads (approximately 20 feet wide) would be required to provide safe access for construction and for the operation and maintenance of the transmission facilities. Long-term effects will result where such access roads must remain in place in wetlands to provide access for operation and maintenance activities.
- **Structure installation in wetlands.** CL&P has and will continue to make design modifications, if practical, to avoid the installation of structures in wetlands. However, in certain areas, the location of structures in wetlands will be unavoidable. The installation of structures in wetlands will result in short-term effects associated with the creation of

temporary work (crane) pads for equipment, as well as long-term effects associated with the displacement of wetland acreage by the structure footings.

- **Temporary structure supports in wetlands.** As part of the construction of the new transmission lines, temporary poles may have to be installed in wetlands, located along the ROW at road crossings. Such temporary poles are needed during conductor stringing to prevent the wires from sagging into the road travel lanes. These temporary poles would be removed following the completion of the stringing operation.

Tables N-1 and N-2 summarize the potential effects of the Connecticut Portion of the North Bloomfield to Agawam 345-kV and MMP Line Routes, respectively, on wetlands.<sup>1</sup> As summarized in Table N-1, based on preliminary design data, along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, approximately 26 acres of forested wetland vegetation would have to be removed to clear an additional 100 feet on average along the existing ROW. Such forested wetlands will be converted to and maintained as scrub-shrub and emergent wetland cover types. Along the MMP ROW, approximately 1.4 acres of forested wetland vegetation would be cleared and converted to shrub-scrub or emergent wetland cover types (refer to Table N-2).

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<sup>1</sup> Floodplain soils are also accounted for as part of the wetland impact discussion because in Connecticut, state wetlands are defined based solely on soil type, including floodplain soils.

**Table N-1 Summary of Potential Effects on Wetlands, Watercourses and Floodplains  
Along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route**

<b>Impact Type</b>	<b>Palustrine Emergent Wetland (acres)</b>	<b>Forested Wetland (acres)</b>	<b>Palustrine Scrub-Shrub Wetland (acres)</b>	<b>Non-Wetland Floodplain (acres)</b>	<b>Total (acres)</b>
<b>Town of Suffield</b>					
Crane Pads	0.20	0.31	0.42	0.33	1.26
Access Roads	0.08	0.20	0.50	0.17	0.95
Public Roads Adjacency	0.08	0.04	0.06	0.00	0.18
New Structure Foundations	0.01	0.01	0.01	0.01	0.04
Tree Clearing Within Existing ROW	0.00	7.76	0.00	0.00	7.76
Tree Clearing to Widen ROW	0.00	0.00	0.00	0.00	0.00
Total	0.37	8.32	0.99	0.51	10.19
<b>Town of East Granby</b>					
Crane Pads	0.00	1.13	0.18	0.24	1.55
Access Roads	0.04	0.40	1.30	0.10	1.84
Public Roads Adjacency	0.00	0.06	0.12	0.00	0.18
New Structure Foundations	0.00	0.02	0.00	0.01	0.03
Tree Clearing Within Existing ROW	0.00	17.19	0.00	0.00	17.19
Tree Clearing to Widen ROW	0.00	0.00	0.00	0.00	0.00
Total	0.04	18.80	1.60	0.35	20.79
<b>Town of Bloomfield</b>					
Crane Pads	0.00	0.00	0.00	0.01	0.01
Access Roads	0.01	0.02	0.00	0.04	0.07
Public Roads Adjacency	0.00	0.07	0.00	0.02	0.09

<b>Impact Type</b>	<b>Palustrine Emergent Wetland (acres)</b>	<b>Forested Wetland (acres)</b>	<b>Palustrine Scrub-Shrub Wetland (acres)</b>	<b>Non-Wetland Floodplain (acres)</b>	<b>Total (acres)</b>
New Structure Foundations	0.00	0.00	0.00	0.00	0.00
Tree Clearing Within Existing ROW	0.00	1.41	0.00	0.00	1.41
Tree Clearing to Widen ROW	0.00	0.00	0.00	0.00	0.00
Total	0.01	1.5	0.00	0.07	1.58
<b>TOTAL</b>	<b>0.42</b>	<b>28.62</b>	<b>2.59</b>	<b>0.93</b>	<b>32.56</b>

Notes: Potential effects on wetlands were estimated based on the following assumptions:

Forested clearing width along the ROW for the new 345-kV transmission line is estimated at 100 feet.

Crane pad dimensions of 100 feet by 100 feet.

Total access road widths of approximately 20 feet (for existing access roads, this would involve an 8-foot expansion of the present 12-foot-wide wide roads).

Public Roads Adjacency is defined as wetlands within 30 feet of a roadway crossing, where temporary structures may be required to facilitate the stringing of wires, etc. for the new transmission lines. A short-term disturbance area of approximately 10 feet by 10 feet is assumed at each such temporary pole site.

**Table N-2 Summary of Potential Effects to Wetlands, Watercourses and Floodplains  
Town of Manchester, Manchester Substation to Meekville Junction**

<b>Impact Type</b>	<b>Palustrine Emergent Wetland (acres)</b>	<b>Palustrine Forested Wetland (acres)</b>	<b>Palustrine Scrub-Shrub Wetland (acres)</b>	<b>Non-Wetland Floodplain (acres)</b>	<b>Total (acres)</b>
Crane Pads	0.00	0.22	2.08	0.91	3.21
Access Roads	0.04	0.09	1.00	1.35	2.48
Public Roads Adjacency	0.01	0.20	0.31	4.52	5.04
New Structure Foundations	0.00	0.01	0.01	0.01	0.03
Tree Clearing Within Existing ROW	0.00	1.41	0.00	0.00	1.41
Tree Clearing to Widen ROW	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.05</b>	<b>1.93</b>	<b>3.40</b>	<b>6.79</b>	<b>12.17</b>

Notes: Potential effects on wetlands were estimated based on the following assumptions:

Forested clearing width along the ROW for the new 345-kV transmission line is estimated at 100 feet.

Crane pad dimensions of 100 feet by 100 feet.

Total access road widths of approximately 20 feet (for existing access roads, this would involve an 8-foot expansion of the present 12-foot-wide roads).

Public Roads Adjacency is defined as wetlands within 30 feet of a roadway crossing, where temporary structures may be required to facilitate the stringing of wires, etc. for the new transmission lines. A short-term disturbance area of approximately 10 feet by 10 feet is assumed at each such temporary pole site.

To minimize or avoid adverse effects to wetlands, CL&P has attempted to locate new transmission structures in upland areas wherever practical and to limit the access roads required across wetlands if there are practical upland alternative access roads available. Where structures will unavoidably have to be located in wetlands, CL&P will make every effort to limit the impacts to the wetlands, either by reducing the size of the crane pad or by re-configuring the crane pad, if practical, to avoid placement of temporary fill in wetlands. In general, where a new structure must be located in a wetland, a temporary timber pad will be used for construction support. In some wetland areas, however, field conditions (such as thickness of organics, depth of water or steep slopes, etc.) may require the use of a temporary gravel

pad to provide a safe working surface. The temporary fill used for the crane pads in wetlands may be removed after the completion of structure installation.

Best management practices, as detailed in the Northeast Utilities Transmission Group Best Management Practices Manual for the State of Connecticut, *Construction & Maintenance Environmental Requirements* (December 2007), will be employed to minimize disturbances to wetlands during construction of the Connecticut Portion of the North Bloomfield to Agawam 345-kV and the MMP Line Routes. The boundaries of the wetlands along the ROWs would be clearly demarcated (i.e., re-flagged by a registered soil scientist) prior to the commencement of work. When working in or traversing such wetlands, CL&P would:

- Install, inspect, and maintain erosion and sediment controls and other applicable construction best management practices.
- Limit grading for access roads and structure foundations in wetlands to the amount necessary to provide a safe workspace.
- Install temporary timber matting or geotextile and stone pads for access roads across wetlands or to establish safe and stable construction work areas/crane pads within wetlands, where necessary. The type of stabilization measures to be used in wetlands will depend on soil saturation.
- Restore wetlands, after transmission facility construction, to pre-construction configurations and contours to the extent practicable.
- Comply with the conditions of federal and state permit conditions related to wetlands.
- Do not pile cut woody wetland vegetation so as to block surface water flows within or otherwise to adversely affect the integrity of the wetland.

- Cut forested wetland vegetation without removing stumps unless it is determined that intact stumps pose a safety concern for the installation of structures, movement of equipment, or the safety of personnel.
- Avoid or minimize access through wetlands to the extent practical. Where access roads must be improved or developed, the roads would be designed, where practical, so as not to interfere with surface water flow or the functions of the wetland.
- Install temporary erosion controls around work sites in or near wetlands to minimize the potential for erosion and sedimentation.
- Refuel construction equipment (apart from equipment that cannot be practically moved) 100 feet or more from a wetland. If refueling must occur within a wetland, temporary containment will be provided.
- Do not store petroleum products within 100 feet of a wetland.
- Restore structure work sites in and temporary accessways through wetlands following the completion of line installation activities.

To provide new access across wetlands (where no access road currently exists), CL&P would either construct a new gravel access road underlain by geotextile fabric; or install a timber mat (swamp mat) road. In wetlands where there is a deep organic layer or the wetlands are prone to extended inundation, the gravel access roads would remain in place permanently to provide a firm base for future access to the transmission facilities. The surficial fill materials used to construct the access roads would be removed down to the pre-construction elevation so as to not interfere with the surface hydrology of the wetland. The underlying material would serve as either a firm base for equipment access or for the future placement of temporary timber mats to cross these larger wetland systems. CL&P anticipates that this practice of establishing a permanent “access road base” may occur in some wetland systems. All other timber mat or gravel access roads would be removed in their entirety after construction.

Temporary and permanent effects on floodplains will occur at localized areas within the ROW that lie within the 100-year FEMA floodplain boundary of major rivers and streams. Along the MMP Line Route, certain new structures will have to be located within the Hockanum River floodplain and SCEL. The unavoidable location of these structures in the floodplain is expected to have a negligible effect on flood storage potential. CL&P will coordinate with the CT DEP and will apply for a permit, for any proposed structures within the SCEL. Temporary fill placed within the Hockanum River and any other floodplains for temporary access roads or crane pads would be removed following the completion of construction.

Because certain structures will unavoidably have to be located in wetlands, the projects will result in a minor amount of permanent wetland fill associated with the structure foundations. Permanent access roads also will have to remain in certain wetlands. Such fill will displace wetland soils and vegetation and thus will constitute a long-term adverse effect. To compensate for such wetland impacts, CL&P would coordinate with the CT DEP and USACE to assess compensatory mitigation options. The amount of compensatory mitigation required will depend on the final project designs and the amount of permanent wetland effects. Compensatory wetland mitigation options for the projects may include wetlands restoration and/or enhancement along the project ROWs, mitigation banking, wetlands restoration and/or enhancement, wetlands creation (on or off the ROWs), wetlands preservation, and/or conservation restrictions.

### **N.1.2.2 Rivers and Streams**

All of the watercourses located along the Connecticut Portion of the North Bloomfield to Agawam 345-kV and MMP Line Routes are presently spanned by existing transmission lines, and certain of the smaller stream crossings along these existing ROWs also are traversed by existing utility access roads. Because the development of the proposed transmission lines would not create a new corridor across these

watercourses and, for the most part, would not involve in-stream activities, the projects would have limited and short-term overall effects on streams and water quality.

CL&P proposes to avoid direct construction work in watercourses to the extent feasible and to limit the potential for effects associated with erosion, sedimentation, or spills into streams and rivers from nearby upland construction activities. The proposed transmission lines would span all watercourses, although temporary and possibly permanent access will be required (i.e., use of existing access roads or creation of new access roads) across the smaller stream crossings along the ROWs. Thus, no access would be required across the larger watercourses, such as the Farmington and Muddy Rivers along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and the Hockanum River along the MMP Line Route; instead, the ROW would be accessed from either side of these rivers.

Crossings of smaller streams by construction equipment would be minimized to the extent possible. Existing access roads, which already cross these watercourses along the ROWs, would be utilized whenever possible.

Vegetation removal would be minimized along streams. Only the minimum amount of vegetation necessary for the construction and safe operation of the transmission facilities (including the provision of access) would be removed. Vegetation removal near streams would be performed selectively, to preserve desirable streamside vegetation for habitat enhancement, shading, bank stabilization, and erosion/sedimentation control.

Potential effects on watercourses may occur from vegetation removal within riparian zones/buffers (as necessary to allow safe construction or to maintain appropriate clearance from conductors) and the movement of construction equipment across watercourses involving the use of temporary equipment bridges or permanent access roads. Temporary bridges consisting of timber mats (or equivalent) may be

used for equipment to cross streams, where alternative means of access is not available. Use of such materials will allow for the avoidance of effects on banks and stream bottom sediments.

However, in general, culverted access roads have historically been installed across the smaller existing watercourses along the ROWs. Prior to construction, integrity inspections of the culverts will be conducted, and culvert structures deemed to either be in disrepair or unable to support the weights of the anticipated construction vehicles would be replaced at the same location and designed to maintain the stream flows. New culverts may be required where no culvert currently exists. These new culverted crossings would be designed and installed in accordance with the USACE and CT DEP Inland Water Resources Division guidelines.

The MMP Line Route will traverse the SCEL of the Hockanum River. Certain structures will unavoidably have to be located within the SCEL. CL&P will apply for a permit from the CT DEP for the construction and operation of any proposed transmission facilities within the Hockanum River SCEL. The permit application will include a review of the potential effects of the proposed transmission facilities on the floodplain environment, including wildlife and fisheries habitats, and on flooding and flood hazards. Subsequently, work within the SCEL will be performed in accordance with the conditions of the CT DEP permit.

CL&P would implement the following mitigation measures to minimize the potential effects of construction activities in or near watercourses:

- Where existing access roads that cross stream bottoms must be improved, clean materials will be used (e.g., clean riprap or equivalent, rock fords). To the extent possible, the improvement of existing access roads across streams that support fishery resources will be scheduled to avoid conflicts with fish spawning/migration.

- Water flows (if water is present at the time of construction) would not be constrained at any time during construction.
- Concrete (used for structure foundations) would not be mixed or placed so as to enter a watercourse.
- Installation of new culverts at currently day-lighted stream reaches will be avoided to the greatest extent.
- To the extent feasible, a riparian zone of existing vegetation will be maintained from the banks of the watercourse.
- Permit conditions imposed on construction by regulatory agencies would be followed.

### **N.1.2.3 Groundwater Resources and Public & Private Water Supplies**

Neither the construction nor the operation of the projects would result in effects on groundwater resources, public water supplies, or private groundwater wells located near the proposed transmission line routes. The operation of the overhead transmission lines would not adversely affect groundwater resources or potable water supplies.

The excavations required for the installation of the overhead transmission line structures and foundations are expected to be above any aquifers used for potable water supply. Groundwater may be encountered in low areas where excavation for some structure foundations may be necessary. However, it is unlikely that the excavation or limited blasting (if any) associated with the installation of certain structure foundations would affect groundwater used for water supply. In the event that groundwater is encountered during excavation for overhead structures or foundations, dewatering would be performed in accordance with applicable permit conditions and best management practices. Such practices may include pumping the water into temporary settling/dewatering basins, followed by discharge (via filter materials) back onto the ground to allow for infiltration; into catch basins (if permitted by the CT DEP, the municipality and the Council); or into a tank truck and then transported off-site to a suitable disposal location.

During construction activities, CL&P would require its contractors to adhere to its best management practices and any project-specific regulatory requirements regarding the storage and handling of any hazardous materials used during the work. Proper containment and handling of potentially hazardous materials such as diesel fuel, motor oil, grease and other lubricants, will be required. Further, CL&P will require its contractors to adhere to its standard emergency response plan or to a project-specific spill prevention, containment, and response plan, which may be developed to incorporate the standard hazardous materials storage, handling, and response procedures, as applicable to the Connecticut Portion of the North Bloomfield to Agawam 345-kV and MMP line projects.

Construction staging areas and contractor yards, which would be identified during the preparation of the D&M Plan, would typically be located at existing developed areas (parking lots, existing storage yards), where the storage of construction materials and equipment, including fuels and lubricants, would not conflict with aquifer protection areas. CL&P and/or its contractor would perform due diligence on any yard site; CL&P's standards for spill prevention, control, and response, erosion / sediment control, and other best management practices would apply.

### **N.1.3 Biological Resources**

#### **N.1.3.1 Wildlife and Vegetation**

Because both of the proposed transmission line routes would be aligned along existing utility corridors, effects on vegetation communities and wildlife assemblages would occur within and parallel to the existing ROWs, which are maintained in shrub-scrub or other open habitat types. For the most part, the vegetative communities that would be affected by the proposed projects along and adjacent to these existing ROWs are common to the region.

In order to install and operate the proposed facilities, additional vegetation will have to be removed for construction and thereafter maintained in low-growth shrubs or grasses. In the areas where forested

vegetation removal is required, the projects will have long-term, but incremental and localized, effects on vegetation and associated wildlife habitats.

The creation of additional shrub land habitat along the maintained ROWs would represent a long-term positive effect on some species, since shrub land habitat is otherwise declining in New England. This decline is a result of various factors (e.g., development, ecological succession, absence of fire). In this regard, transmission line ROWs are considered a major source of shrub land habitat.<sup>2</sup>

Along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, the construction of the proposed 345-kV line would result in the removal of some vegetation within the existing 115-kV corridor, as well as additional tree clearing and vegetation removal. In order to widen the maintained portion of the existing ROW by approximately 100 feet, approximately 103 acres of upland deciduous and coniferous forest would be cut. In addition, approximately 26 acres of palustrine (mostly deciduous) forested wetland would have to be cleared of woody vegetation. Along the MMP Line Route, approximately 3.7 acres of forested upland vegetation would have to be cleared and maintained in shrub or grass cover types along the existing ROW. In addition, approximately 1.4 acres of palustrine (mostly deciduous) forested wetland would have to be cleared of woody vegetation.

Vegetation removal to widen the ROW and provide equipment access would be performed using mechanized methods. Where removal of woody vegetation is required, vegetation will be cut flush with the ground surface to the extent possible. Where practical, trees will be felled parallel to the ROW to minimize the potential for off-ROW vegetation damage.

The removal of vegetation along the proposed transmission line route would modify, but would not eliminate, vegetative cover types and therefore wildlife habitats. In general, the principal effect would be

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<sup>2</sup> Shrubland habitat information from “Wildlife Habitat in Connecticut: Shrubland”, Laura Saucier, Habitat Management Program, in *Connecticut Wildlife*, July/August 2003.

the removal of existing mature mixed forest areas – moving the current forested edge habitat, and replacing the existing edge with old field and shrub land and open field habitats. In forested wetlands, the removal of the tree canopy would create scrub-shrub swamp wetlands, such as are present along the existing ROW, including areas of open emergent wetland and wet meadow habitat.

Vegetation on the existing CL&P ROW is managed in accordance with CL&P's vegetation management program; accordingly, trees that could interfere with the operation of the existing lines are removed from within the cleared portions of the ROW and trees along the edges are periodically trimmed or removed. The operation of the new transmission facilities would require the maintenance of a wider existing ROW in low-growth shrub land and open field habitats.

However, the management and maintenance of ROWs create early successional habitats dominated by scrub-shrub vegetation and open areas with dense grasses and other herbaceous vegetation. Scrub-shrub habitats within the ROW can provide wildlife habitat such as nesting for birds, browse for deer, and cover for small mammals (Ballard et al., 2004)<sup>3</sup>. These habitat types are increasingly rare in the northeast (due to the conversion of farms to forest and the loss of habitat caused by development) but tend to offer habitats preferred by particular organisms for certain stages of their annual life-cycles.

### **N.1.3.2 Wildlife Resources**

The removal of mature trees within the ROW will affect wildlife species composition by favoring species that prefer shrub land/emergent habitat to those that inhabit forested communities. During construction, temporary displacement of wildlife may occur due to the initial disturbance from vegetation clearing, and the operation of construction equipment. However, the ability of the area to provide wildlife habitat is not expected to be adversely affected post-construction. Conversely, a study conducted by Nickerson and Thibodeau (1984) indicated an increase in wildlife utilization, especially in avian species, following

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<sup>3</sup> Ballard, B.D., H.L. Whittier, and C.A. Nowak. 2004. Northeastern Shrubs and Short Tree Identification, A Guide for Right-of-way Vegetation Management. State University of New York-College of Environmental Science and Forestry.

clearing of ROWs<sup>4</sup>. The study attributed this increase in wildlife usage to the conversion of forested areas into both wetland and upland shrub and emergent plant communities. The maintenance of the ROW provided edge effect feeding, nesting, and cover habitat for various species. The ROW also serves as open corridors connecting non-contiguous natural areas.

Larger, more mobile species, typically large mammals, would be displaced from the ROW vicinity by construction activities. Adverse effects to wildlife will be highly localized to the immediate construction sites; further, adverse effects will be minimized by adhering to mitigation measures, such as seasonal construction timing windows to avoid critical periods in species' life cycles. Following construction, wildlife species will re-colonize the habitats along the ROW.

Overall, the operation and maintenance of the new transmission lines would involve a localized shift in wildlife populations using the ROWs from those favoring forested habitats to those utilizing shrub land or old field habitats. This would have a localized positive effect on wildlife species that utilize shrub land habitat, including mammals (e.g., New England cottontail, white-tailed deer, eastern mole, bats) and various bird species (e.g., American woodcock, prairie warbler, brown thrasher, field sparrow, eastern towhee, red-tailed hawk, indigo bunting, gray catbird). Because shrub land and old field habitat are becoming less prevalent in Connecticut, this increase in shrub land and old field habitat would have a positive effect on habitat diversity and would benefit species that use such habitat.

### **N.1.3.3 Vegetation Management and Preservation Goals and Methods**

The objective of CL&P's well-established vegetation management program is to maintain safe access to its transmission facilities and to promote the growth of vegetative communities along its ROWs that are compatible with transmission line operation and in accordance with federal and state standards.

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<sup>4</sup> Nickerson, N.H. and F.R. Thibodeau. 1984. Wetlands and Rights-of-way. Final Report Submitted to the New England Power Company, 25 Research Drive, Westboro, MA.

To stabilize disturbed sites after the installation of the transmission facilities, CL&P would restore the contours, seed, and mulch disturbed areas with appropriate grass-type mixes and hay/straw mulch.

Vegetative species compatible with the use of the ROW for transmission line purposes are expected to regenerate naturally, over time. CL&P will promote the re-growth of desirable species by implementing vegetative maintenance practices to control tall-growing tree and undesirable invasive species, thereby enabling native plants to dominate.

CL&P will take particular care to maintain vegetation along watercourses and within wetlands to the extent possible. In general, CL&P may alter, to some degree, its vegetation management activities in the following areas:

- Areas of visual sensitivity where vegetation removal may be limited for aesthetic purposes.
- Steep slopes and valleys that are spanned by transmission lines.
- Agricultural lands.
- Near homes where owner-maintained landscapes do not interfere with the construction or operation of the facilities.
- Within wetlands, amphibian breeding habitats, or along streams to preserve some shrub cover.
- To the extent feasible, maintain a vegetated riparian zone adjacent to watercourses and waterbodies.

While CL&P has historically conducted ROW vegetation maintenance as a matter of good utility practice, since April 7, 2006, all public utilities have been required to comply with mandatory standards adopted by the North American Electric Reliability Council (NERC) following the August 14, 2003 Northeast blackout, an event which was found to have been triggered by line outages caused by overgrown vegetation. CL&P's vegetation management practices are designed to allow the safe operation of

transmission lines by preventing the growth of trees or invasive vegetation that would interfere with the transmission facilities or access along the ROW. As a result, the vegetation on the ROW within the maintained portions of CL&P's ROW typically consists of shrubs, herbaceous species, and other low-growing species. Presently, unused or non-maintained portions of CL&P's ROW that are not proximate to the existing line may support taller vegetation, as long as it will not conflict with the construction or operation of the lines.

While undesirable tall-growing woody species, within the ROW and proximate to the existing or new lines will be removed during construction, desirable species will be preserved to the extent practical. In selected locations, certain desirable low-growing trees that, due to their growth characteristics and locations relative to the new line, may be allowed to remain on the ROW and trimmed to assure adequate clearance from wires and structures, pursuant to CL&P's *Right-of-Way Vegetation Initial Clearance Standard for 115-kV and 345-kV Transmission Lines*. However, any vegetation that is preserved during construction activities may be removed in the future in accordance with CL&P's *Specification for Rights-of-Way Vegetation Management*. Generally, all tall growing tree species will be removed from the ROW and low-growing tree species and taller shrub species will be retained in the areas outside of the conductor zones (the area directly under the conductors extending outward a distance of 15 feet from the outermost conductors).

During and following the new transmission line construction, off-ROW "danger" trees, that have been determined to present an imminent hazard to the integrity of the lines, also will be identified and removed. Hazardous danger trees are structurally weak, broken, damaged, decaying or infested trees that could contact the structures or conductors or violate the conductor clearance zones if they were to fail and fall towards the ROW.

#### **N.1.3.4 Fisheries**

Although the proposed transmission line routes traverse several watercourses that contain fisheries (e.g., the Farmington and Muddy Rivers along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and the Hockanum River along the MMP Line Route), the projects will have limited, if any, adverse effect on fisheries resources. No new structures are proposed to be installed in any watercourses, and CL&P plans to avoid or minimize the use of access roads that would involve direct disturbance to stream banks and substrates.

Although the proposed transmission lines would be designed to span watercourses, access roads will be required across certain watercourses that may support fisheries. In addition, riparian vegetation may have to be removed to allow construction or to provide for the safe operation of the lines. Access across major watercourses would be avoided by using alternative access routes to the ROW. Access across other watercourses on the ROW would be accomplished using temporary equipment bridges, which would be designed and installed to span watercourses.

Riparian vegetation along the ROW would be maintained along the banks, in order to provide shade, and vegetation would be cut only if required to maintain safe clearances and access to and from the transmission facilities. Measures also would be taken to minimize the potential for sedimentation into watercourses resulting from construction activities in nearby upland areas. In particular, temporary soil erosion and sedimentation controls would be installed around areas of disturbed soils at work sites up gradient from streams. These temporary erosion controls would remain in place until the disturbed areas are re-vegetated or otherwise stabilized.

#### **N.1.3.5 Amphibians**

Based on the results of field surveys, the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route will traverse or be located near 18 amphibian breeding habitats/vernal pools on the ROW. Two amphibian breeding habitats/vernal pools were identified along the MMP Line Route.

The species identified along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route during the surveys included spotted salamanders, Jefferson salamanders, wood frogs, spring peepers and green frogs. The breeding population of the Jefferson salamander, a state-listed species of special concern, was confirmed in two wetlands. The species identified along the MMP Line Route were the spotted salamander and wood frog.

The majority of the confirmed amphibian breeding habitats occupy areas on the existing ROW where there is shrub-scrub growth, and extend into the forested areas along the proposed ROW for the new transmission line. In this respect, the existing ROW is affording habitat for these species and, after the completion of construction, the expanded areas of maintained vegetation along the new ROW will increase the available habitat.

However, potential effects on amphibians could occur during construction, particularly if work activities are performed during critical amphibian breeding or migration periods. Such impacts could occur from activities such as vegetation removal; access road development; movements of heavy equipment on access roads; sedimentation into amphibian habitats; destruction of structural habitat features; or through the use of equipment staging areas (crane pads) and timber mats in breeding habitats during breeding periods.

Structure locations and construction work areas have been designed to avoid amphibian breeding habitats to the extent feasible. To the extent practicable, new structures would be located outside of wetlands that provide for amphibian breeding. However, several of the breeding areas exist within large wetland systems that contain one or a number of structures. Therefore, it is not feasible to avoid such expansive areas entirely. As a result, some new structures may need to be placed in wetlands that function as amphibian breeding habitat. Additionally, access to these structure sites will be required, which may result in temporary effects to the functions of the amphibian breeding habitat.

The spring migration and breeding period for adult male salamanders (spotted and Jefferson salamanders) extends approximately from March 1<sup>st</sup> through May 1<sup>st</sup>, and for species such as the marbled salamander the migration and breeding season extends approximately from September 1<sup>st</sup> through October 31<sup>st</sup>.

CL&P will continue to consult with the CT DEP to identify appropriate measures to minimize or avoid adverse effects on these species (refer also to Section N.1.3.7). Among the measures currently under consideration are:

- Where feasible, and taking into consideration electrical outage constraints, adhering to the seasonal window for clearing the ROW to avoid effects on amphibian breeding habitats,
- Siting the majority of the proposed structure locations outside of confirmed amphibian breeding pools,
- Evaluating the use of temporary timber mat access roads in lieu of constructing gravel access roads in the vicinity of amphibian breeding habitat;
- Minimizing removal of low-growth vegetation surrounding the breeding pools,
- Incorporating the maintenance of vegetation cover within and around the amphibian breeding pools into CL&P's vegetation maintenance program for the ROW,
- Implementing an effective erosion and sediment control plan to avoid and/or minimize the deposition of sediment into the breeding pools.

#### **N.1.3.6 Birds**

The primary effects on birds from the proposed projects will result from habitat modification due to vegetation clearing during construction, and ROW vegetation management activities during operation. During construction, existing mature woody vegetation along the ROW will be removed. After the completion of construction, the ROW will be maintained in low-growing shrub land habitat typical of CL&P's existing maintained ROW and consistent with federal and regional safety standards for overhead transmission lines.

Therefore, a net long-term loss of woodland habitat will occur. This effect will be mitigated by aligning the proposed transmission lines along existing ROWs, and limiting vegetation clearing to areas required for the construction and safe operation of the project facilities. As previously stated, the loss of woodland habitat will be offset by a corresponding increase in early successional habitats. These types of habitats are in decline in Connecticut, as agricultural lands are abandoned and revert to their previously forested state or are developed.

In general, the types of habitats found along the project ROWs are common to the region. The principal effect of the Project therefore will be to expand the amount of acreage maintained along the ROW in scrub-shrub habitat type.

Species that utilize forested habitats (mixed deciduous forest/conifers and forested wetlands) could be affected to a greater extent, as mature woody vegetation will be cleared where necessary and replaced permanently with early successional and more open habitats. The projects would have a long-term beneficial impact to bird species that utilize habitats such as old field/shrub and sapling thickets, shrub swamps, emergent marsh, and to a lesser degree open water, as the amount of this habitat type would permanently increase.

Creating a wider ROW than that which currently exists to accommodate the proposed new transmission lines would not be expected to adversely affect bird populations, and may benefit shrub land species that nest on the ROW. Studies of a 100-foot ROW in Massachusetts indicated nest predation was highest along the ROW/forest edge, and a wider ROW may therefore actually benefit shrub land-nesting species by providing more potential nesting sites away from the edge habitat (King and Byers 2002)<sup>5</sup>. Recent declines in populations of shrub land birds in the Northeast are a growing concern among avian

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<sup>5</sup> King, D.I. and B.E. Byers. 2002. An Evaluation of Powerline ROWs as Habitat for Early Successional Shrubland Birds. *Wildlife Society Bulletin*, 30(3), 868-874.

conservationists. Consequently, any adverse impacts to woodland species would be mitigated to a large extent by benefits to shrub land bird species.

The projects are also expected to result in minor, temporary adverse effects to bird species utilizing old field/shrub and sapling thicket habitats resulting from construction of the transmission structures and other facilities (e.g. primarily access roads). These would result from human disturbance during construction activities and temporary loss of habitat in areas cleared for construction. However, construction in any one area would be of short duration and areas disturbed during construction would be allowed to revert back to old field/shrub and sapling thickets following completion of construction activities.

Construction activities, and in particular, vegetation clearing can effect avian populations. Some avifauna will be temporarily displaced, possibly impacting breeding and nesting activities depending on the time of year. In general, the nesting season for a majority of the breeding birds extends from May 1<sup>st</sup> through July 31<sup>st</sup>. Tree clearing and vegetation removal within the ROW during this period could result in a loss of a breeding season for those species that have established nests within the proposed work corridor.

CL&P is still evaluating the sequence of construction activities and if scheduling of line outages and other planning considerations can be made to clear the ROW outside of the breeding bird season, CL&P will make every attempt to accommodate this timing of activities.

### **N.1.3.7 Rare, Threatened, and Endangered Species**

#### **N.1.3.7.1 North Bloomfield – Agawam Line Route**

Based on consultations with the CT NDDB, followed by field surveys, several threatened, endangered, or species of special concern have been confirmed to occur in the vicinity of the transmission line route.

These include one species of turtle, one amphibian species, one plant species, three freshwater mussel species, and one dragonfly. CL&P is aware that potential effects to state-listed species could occur during

the construction of the project and is particularly cognizant of the need to carefully design and implement measures to minimize or avoid the potential for such adverse effects on such listed species.

The following summarizes the potential impacts and mitigation measures that CL&P has identified to date with respect to these species.

Jefferson Salamander (*Ambystoma jeffersonianum*)

Permanent and temporary detrimental effects may occur to this species and its habitat. The primary long-term effect is the clearing of forest cover as a result of widening the cleared limits of the existing ROW. The permanent removal of the forest canopy will affect the structural composition of the perimeter of the amphibian breeding habitat. However, the re-establishment of low-growth scrub-shrub vegetation within and adjacent to this breeding habitat will help to offset the loss of forest canopy, as a relatively large portion of the confirmed breeding habitat for this salamander species occurs within CL&P's existing, maintained ROW. The Jefferson salamander's prime migration and breeding season generally extends from March 1<sup>st</sup> through May 1<sup>st</sup>; as a result, efforts will be made to avoid construction activities in amphibian breeding areas during this period. Similarly, soil erosion controls will be properly deployed around construction sites in nearby upland areas to prevent or minimize the potential for sedimentation (which could adversely affect water quality) into the amphibian breeding pools.

Potential effects on the Jefferson salamander would be minimized by restricting construction activities in the vicinity of the species' known habitats to the extent feasible. The CT DEP has recommended the following measures to minimize or avoid adverse effects on the salamander:

- Perform construction in the vicinity of the species' reported habitats from October – February, during the dormant season to avoid conflicts with the breeding season and migration of young adults.

- Avoid the location of new structures within amphibian breeding pools.
- Limit the removal of canopy covering, which shades the breeding pools and regulates the temperature regime of the breeding pools.

CL&P proposes to adhere to the seasonal window in regard to clearing the ROW to avoid effects on the amphibian breeding habitats. However, precluding the remainder of the construction activities during this seasonal window is not feasible due to outage constraints and other engineering and construction limitations.

CL&P has sited the majority of the proposed structure locations outside of confirmed amphibian breeding pools, however, avoidance of all breeding habitats within wetland systems is not feasible without introducing other incremental effects, such as additional tree clearing and widening of the ROW to avoid specific habitat types.

Tree clearing and vegetation removal is unavoidable. To mitigate the potential effects, CL&P would schedule the clearing during the species' dormant season, minimize removal of low-growth vegetation surrounding the breeding pools, and incorporating the maintenance of vegetation cover to these pools into CL&P's vegetation maintenance program for the ROW. Potential construction related effects would be minimized by implementing an effective erosion and sediment control plan to avoid and/or minimize transport of sediments to the breeding pools.

#### Eastern Box Turtle (*Terrapene carolina*)

Eastern box turtles could potentially occur along the ROW during construction and thus could be directly affected by the movement of construction equipment. In addition to direct mortality of individual turtles, Eastern box turtles could be temporarily displaced from habitat on the ROW. For example, construction activities occurring in old field habitats during June through October could result in disruption and/or

displacement of box turtles during this active season. Tree clearing during the dormant stages box turtle activity (generally November through April) could result in disruption or killing of individual species during the hibernation period.

Potential effects on the state-listed species of turtle would be minimized or avoided by restricting construction activities to the extent possible in the vicinity of the known turtle habitats. To avoid critical periods in these species' lifecycles, the CT DEP has recommended that clearing activities be conducted during the active period for the box turtle (late spring, summer and early fall) to avoid disturbing the turtles when they are dormant. CL&P is currently evaluating the feasibility of performing the clearing within potential turtle habitat during the CT DEP's recommended timeframe. For work activities proposed outside of this time period in Eastern box turtle habitat, the CT DEP Wildlife Division recommends the following mitigation measures:

1. Installing turtle exclusion fencing around the work area prior to construction;
2. Conducting a sweep of the work area prior to construction;
3. Workers are apprised of the possible presence of this species;
4. Any turtles that are discovered be moved, unharmed to an area immediately outside the fenced or construction area and pointed in the same direction it was headed;
5. All equipment used for the Project be staged on the roadways. No vehicles or heavy machinery should be parked in any Eastern box turtle habitat;
6. Work conducted in early morning or evening hours be conducted with special care so as not to harm basking or foraging individuals; and
7. That construction not be done in old field habitat from June through October.

CL&P would comply with condition numbers 1-4 during construction. CL&P would comply with condition number 6 by providing an environmental inspector to monitor construction activities within

potential box turtle habitat. CL&P would comply with condition number 5 to the extent practicable. It may not be feasible to mobilize certain pieces of equipment, such as cranes supporting new structures, multiple times a day to locate it outside potential habitat. In regard to condition number 7, CL&P is continuing to evaluate the feasibility of working within this timeframe and will continue to coordinate with the CT DEP NDDB.

Freshwater Mussels – Eastern Pearlshell Mussel (*Margaritifera margaritifera*), Dwarf Wedge Mussel (*Alasmidonta heterodon*) and Eastern Pond Mussel (*Ligumia nasuta*)

Although these freshwater mussels are purported to inhabit certain of the watercourses traversed by the ROW, the project will not directly affect any of these watercourses and therefore will not affect these species. Potential short-term, indirect effects could result from sedimentation into these watercourses as a result of construction activities in nearby upland areas. However, the preservation of vegetated riparian buffer zones and the proper installation and maintenance of erosion and sediment controls would avoid and/or minimize effects on these watercourses.

The CT DEP has recommended the proper installation and maintenance of erosion and sediment controls as well as maintaining an undisturbed riparian zone to the identified watercourses. The CT DEP has also recommended that no vegetation be removed from the stream banks adjacent to the mussel habitat as land clearing activities may affect the mussels. In response, CL&P would implement an effective soil erosion and sediment control plan to avoid and/or minimize sedimentation and siltation effects on the watercourses. CL&P would also maintain an undisturbed riparian zone along these watercourses to minimize construction-related disturbances.

Arrow Clubtail Dragonfly (*Stylurus spiniceps*)

Potential effects to the arrow clubtail dragonfly, which has been reported to inhabit one of the perennial watercourses along the ROW, could occur if construction activities cause a reduction in water quality (either by direct in-water disturbance or indirect effects associated with sedimentation/runoff into the watercourse as a result of earth-disturbing activities in adjacent areas). However, CL&P does not propose any in-water activities in the vicinity of the dragonfly habitat. Maintaining a vegetated riparian zone during construction and implementing an effective soil erosion and sediment control plan to avoid sedimentation of the watercourse will avoid the potential for adverse effects on the dragonfly, and in particular, its aquatic life cycle. It is anticipated that a riparian buffer would be maintained adjacent to the watercourse.

#### Bush's Sedge (*Carex bushii*)

A small population of *Carex bushii* has been confirmed to occur on the ROW. This species is adapted to disturbed areas and prefers open field/scrub land habitats such as those on the maintained ROW.

Potential effects on this species include damaging and/or destroying the plants communities through the expansion of existing access roads or by equipment travel over the ROW. However, periodic disturbances associated with management and maintenance of the ROW can create early successional habitats that could promote the further establishment of *Carex bushii* on the ROW.

As requested by the CT DEP, CL&P proposes to conduct pre-construction reconnaissance sweeps/surveys to locate any plants within the ROW. Any identified plant locations will be marked for avoidance during construction. If avoidance is not possible, CL&P would, in consultation with the CT DEP NDDB, transplant the affected plants to a location outside of the construction area.

#### **N.1.3.7.2 Manchester to Meekville Junction Circuit Separation Project**

In response to the CT NDDB April 24, 2008 correspondence to CL&P regarding the potential for the state endangered barn owl (*Tyto alba*) to occur in the vicinity of the MMP Line Route, surveys of the ROW

were performed to assess the potential for barn owl utilization of the project area. Although one potential foraging area was identified, no barn owls were observed.

No significant effects to the barn owl would occur as a result of the MMP. Construction activities may temporarily disturb this potential foraging habitat; however, re--establishment of vegetation on the ROW after the completion of construction would provide continued foraging habitat for the barn owl. Overall, the maintenance of the ROW in low growth vegetation and open field habitat could potentially benefit the barn owl by providing additional potential foraging habitat.

#### **N.1.4 Land Use, Recreational/Scenic Resources, and Land Use Plans**

Municipal consultations and evaluations of land use documents indicate that the development of the transmission line facilities would not conflict with local land use plans, because the proposed transmission facilities would be developed predominantly within existing, long-established ROWs that are already dedicated to energy use. Along the transmission line routes, CL&P's existing easements already preclude permanent non-utility structures. All of the MMP Line Route and all but approximately 3 acres of the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route will be developed within existing CL&P easements or within CL&P fee properties. Along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, two easements for the additional 3 acres in the Town of Suffield would be required for the installation of the new 345-kV transmission line. CL&P would need to obtain these easements from private landowners.

CL&P has solicited input from the various affected municipalities along the transmission line routes and will continue to coordinate with such municipalities as planning for the GSRP and MMP progress. CL&P has also reviewed the *Conservation and Development Policies Plans for Connecticut 2005-2010* (C&D Plan) prepared by the Connecticut Office of Policy and Management for information relating to the State's growth in general, and the municipalities of Bloomfield, East Granby, and Suffield. The objective

of the C&D Plan is to guide and balance response to human, environmental, and economic needs in a manner that best suits Connecticut's future.

Based upon the general planning information provided in the C&D Plan, the GSRP and MMP are consistent with the overall goals and objectives of the C&D Plan and serve a public need for reliable transmission of electricity for the State of Connecticut. As stated in the C&D Plan, "The ability to redevelop Connecticut's Regional Centers requires that existing infrastructure be maintained and updated to support compact urban development. This holds true and is particularly relevant regarding electric capacity and delivery systems" (p. 22).

CL&P has reviewed the *Capital Region Council Plan of Conservation and Development*. The primary goals of the Capital Region Council's Plan of Conservation and Development (Council Plan) are growth, development, and conservation. The Capital Region has experienced an increase in population growth, which is expected to continue to increase in the future. The Council Plan identifies the need to continue growth and development, to conserve existing open space, and to accommodate the needs of the growing population of the capital region.

The objective of the Project is to maintain the reliability of the transmission system, consistent with the ISO-NE requirements. The reliability attributes of the Project are also consistent with regional policies, as outlined by the Northeast Power Coordinating Council (NPCC), which establishes and maintains reliability standards for the six New England states, New York, and several Canadian provinces. The NPCC is one of ten regional reliability councils that encompass the NERC, which provides uniform design and operating standards for electricity generation and delivery systems. The NPCC requires transmission systems to be designed and operated so that the loss of a major portion of the system will not result from reasonably foreseeable contingencies. The Project is designed to be consistent with regional reliability policies.

The Project is also consistent with state and local policies on several levels. The Project is designed to be consistent with the mandates of the CSC, which has jurisdiction to approve the Project based on a showing that the Project provides a reliable energy supply for the State of Connecticut with a minimum impact on the environment at the lowest possible cost. Accordingly, the Project will be consistent with state energy policy as it relates to the siting of terrestrial electric transmission line facilities.

Moreover, the Project will be constructed and operated to comply fully with the State of Connecticut's environmental policies. CL&P will obtain all the necessary permits and approvals, including CT DEP review. Accordingly, by meeting the requirements for securing state, regional and local permits, as applicable, the Project will be in compliance with applicable state and local environmental policies.

#### **N.1.4.1 Existing and Future Development**

The proposed projects will result in both short-term and long-term effects on land uses. Because the majority of the ROWs along which the projects will be located have been dedicated to utility use for approximately 80 years, the addition of the proposed transmission lines to these ROWs will have a limited and localized effect on land uses.

In the two portions of the Town of Suffield where the development of the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route will require expansion beyond the existing ROW, approximately 3 acres of private lands will have to be acquired for utility easement purposes. In these two areas (i.e., north of Ratley Road and between Phelps Road and Mountain Road), the property is currently undeveloped forest land. As a result of the development of the project, these forested areas will have to be cleared of vegetation and only uses consistent with the safe operation of the transmission line will be allowed.

Constructing the new transmission lines within the existing ROWs will result in tree clearing and vegetation removal outside of the existing "cut-line", as currently viewed along the ROW. However,

because the proposed lines will be collocated within the same ROWs as the existing lines, the GSRP and MMP are expected to be compatible with existing and future land uses and developments. The easements held by CL&P currently preclude the development of non-utility structures on the ROWs, and this restriction will continue, but is not expected to affect adjacent land uses that parallel and/or cross the ROW. Table N-3 summarizes the potential effects to land uses, by land use category, along the Connecticut Portion of the North Bloomfield to Agawam 345-kV and the MMP Line Routes.

**Table N-3 Summary of Potential Land Use Effects<sup>6</sup>**

<b>Impact Type</b>	<b>OFS (acres)</b>	<b>ROW (acres)</b>	<b>UF (acres)</b>	<b>AG (acres)</b>	<b>HY (acres)</b>	<b>CI (acres)</b>	<b>OW (acres)</b>	<b>Total (acres)</b>
<b>Town of Suffield</b>								
Crane Pads	2.64	0.01	5.66	0.22	0.27	0.00	0.00	8.80
Access Roads	3.36	0.06	0.60	0.53	0.41	0.00	0.00	4.96
New Structure Foundations	0.02	0.00	0.12	0.00	0.01	0.00	0.00	0.15
Tree Clearing Within Existing ROW	0.00	0.00	39.46	0.00	0.00	0.00	0.00	39.46
Tree Clearing to Expand ROW	0.00	0.00	2.34	0.00	0.00	0.00	0.00	2.34
<b>Total</b>	<b>6.02</b>	<b>0.07</b>	<b>48.18</b>	<b>0.75</b>	<b>0.69</b>	<b>0.00</b>	<b>0.00</b>	<b>55.71</b>
<b>Town of East Granby</b>								
Crane Pads	3.71	0.11	8.41	0.85	0.00	0.00	0.00	13.08
Access Roads	5.10	0.09	2.31	0.41	0.01	0.00	0.00	7.92
New Structure Foundations	0.03	0.00	0.16	0.01	0.00	0.00	0.00	0.20
Tree	0.00	0.00	52.53	0.00	0.00	0.00	0.00	52.53

<sup>6</sup> Land use designators correspond to the categories identified on the aerial map segments.

Clearing Within Existing ROW								
Tree Clearing to Expand ROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	8.84	0.20	63.41	1.27	0.01	0.00	0.00	73.73
<b>Town of Bloomfield</b>								
Crane Pads	0.32	0.00	1.44	0.00	0.00	0.00	0.00	1.76
Access Roads	0.94	0.04	0.86	0.00	0.00	0.18	0.00	2.02
New Structure Foundations	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.05
Tree Clearing Within Existing ROW	0.00	0.00	11.65	0.00	0.00	0.00	0.00	11.65
Tree Clearing to Expand ROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.27	0.04	13.99	0.00	0.00	0.18	0.00	15.48
<b>Town of Manchester</b>								
Crane Pads	2.40	0.00	0.47	0.00	0.00	0.00	0.00	2.87
Access Roads	2.00	0.10	0.20	0.00	0.00	0.03	0.00	2.33
New Structure Foundations	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.02
Tree Clearing to Widen ROW	0.00	0.00	3.68	0.00	0.00	0.00	0.00	3.68
Tree Clearing to Expand ROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	4.41	0.10	4.36	0.00	0.00	0.03	0.00	8.90

Notes: Crane Pad dimension of 100 feet by 100 feet. Access Road width of 20 feet. New Structure Foundation disturbance of 10 feet by 10 feet. Tree Clearing width of 100 feet.

### **N.1.4.2 Open Space and Protected Areas**

The Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route follows the existing transmission line ROW across various recreational areas, the use of which will be temporarily affected during construction. The MMP Line Route also traverses near recreational areas, as well as across the Hockanum River, which is utilized for fishing. In general, the effects of the GSRP and MMP on recreational uses will be short-term, lasting only for the duration of construction. The operation of the new transmission lines will not significantly alter the use of the recreational areas along the ROWs.

The recreational facilities traversed by the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route include the Farmington Valley Greenway/Farmington Canal Heritage Trail, Newgate Wildlife Management Area, Metacomet Trail (which is managed by the Connecticut Forest and Park Association), Suffield Land Conservancy, and Suffield Sportsman's Association. As part of the pre-construction planning process, CL&P will consult with representatives of these affected recreational areas to identify site-specific mitigation measures, including possible construction scheduling and ROW restoration. CL&P would develop and submit an anticipated construction schedule to these entities, outlining CL&P's intentions, proposed closures, detours/re-routes, and other mitigation measures to minimize disruptions to these recreational elements along the ROW.

### **N.1.4.3 Methods to Prevent and Discourage Unauthorized Use of ROW**

CL&P's existing transmission line easements restrict the types of activities that can be conducted within the ROWs. Easements typically prohibit the construction of buildings, pools, and other structures within the ROWs. Locked gates are installed along the ROW at public access points to prevent unauthorized off-road vehicular use of the ROWs. In addition, CL&P has policies that address requests from property owners and other parties external to CL&P. These policies outline an evaluation process and provide guidelines for allowing certain uses (such as driveways or parking lots), where appropriate. Requests for uses that are prohibited by the easement agreements, or that would otherwise pose safety, engineering, environmental or other concerns, are rejected.

Where CL&P holds an easement versus land ownership in fee, CL&P must receive landowner approval prior to installing fences, gates, etc. along the ROW. CL&P seeks to work with landowners and agencies to discourage unwarranted access onto and the use of its ROWs. CL&P does install signs warning the general public of the overhead hazards posed by contact with the high voltage transmission line. CL&P regularly installs fences, gates, barricades and access control berms to discourage access onto the ROW.

### **N.1.5 Transportation and Access**

The proposed North Bloomfield to Agawam and MMP Line Routes would traverse various local and state roads. In addition, the MMP Line Route will span Interstate 84. The transmission line conductors would span these roads and would not affect the long-term use of the transportation facilities.

The well-established public road network in the project areas also would afford ready access to the ROWs for construction vehicles and equipment. Further, the ROWs would be used to provide access to construction sites; where possible, access roads that exist within the existing transmission ROWs would be improved for this purpose. New access roads will be developed along the ROWs as needed.

During construction, personnel traveling to and from work sites, as well as the movement of construction equipment, may cause temporary and localized increases in traffic volumes, and may require temporary detours. However, any such traffic volume increases would be short-term. Further, CL&P would employ local police to direct traffic at construction work sites along roads, as needed, and would erect appropriate traffic signs to indicate the presence of construction work zones. In addition, CL&P would develop an access and traffic control plan for the construction contractor(s); the objective of this plan would be to define requirements for traffic controls and to provide for the safe ingress and egress to the ROWs for construction equipment and other vehicles.

### **N.1.6 Cultural (Archaeological and Historic) Resources**

The Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project (Volume 3) identifies the cultural resources that could potentially be affected by the GSRP and MMP. This report defines the known or potential archaeological resources within the project area and also evaluates the potential visual effects of the GSRP and MMP on historic properties listed or eligible for listing on the State and National registers of historic places.

The archaeological portion of the assessment was conducted in accordance with the standards of the Connecticut State Historic Preservation Office (SHPO) *Environmental Primer for Connecticut's Archaeological Resources*. The assessment of potential visual effects on historic structures was performed in accordance with C.G.S. Section 16-50p(a)(4)(C) and in the regulations of the federal Advisory Council on Historic Preservation (36 CFR 800.5).

For the archaeological evaluations, a resource assessment was performed involving the analysis of background data, as a prerequisite to a reconnaissance survey, which includes surface inspection and subsurface testing. The assessment included visual inspection of the existing transmission line structure locations, and analysis of the ROWs to assess the presence of characteristics that affect the potential for archaeological site location (i.e., slope, drainage, ledge, ground disturbance, land fill). The study also involved an extensive review of documentary sources, as well as personal consultations with SHPO and the Connecticut State Archaeologist. The resulting assessment provides the basis for recommendations for future reconnaissance investigations, which would be conducted when the final project configuration is determined. (Note that such archaeological investigations involving subsurface testing would be performed in areas that the GSRP and MMP would directly affect due to activities such as earth moving, excavation, access road improvements or developments, etc.)

The Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project (Raber Associates, Volume 3) determined that approximately 6.7 miles of the North Bloomfield to Agawam Line Route appears sensitive for undocumented Native American archaeological resources. CL&P will consult with the Connecticut SHPO upon completion of the Phase 1B reconnaissance survey to develop appropriate testing measures to be implemented during Phase 2 activities. Any sites found and determined to be eligible for the National Register of Historic Places, and therefore deemed significant, will be avoided if possible. If avoidance is not possible, Phase 3 mitigation strategy will be developed for review and approval by the SHPO. These strategies will then be implemented to minimize or alleviate significant adverse impacts to the site(s).

The assessment identified three protected historic cemeteries within 0.25 miles of proposed route facilities. Visual analysis indicated there would be no known or likely adverse visual effects on these resources.

### **N.1.7 Air Quality**

The development of the transmission line projects would result in short-term (lasting only for the duration of the construction period), highly localized effects on air quality during construction, primarily from fugitive dust from land disturbance and vehicular emissions associated with the operation of the construction equipment. As necessary, fugitive dust emissions will be suppressed by the use of watering on access roads. Crushed stone aprons would be installed at all access road entrances to public roadways to minimize tracking of soil onto the pavement. Vehicular emissions will be limited by requiring contractors to properly maintain construction equipment and vehicles.

There are no anticipated long-term effects on air quality associated with the operation of the existing transmission lines.

### **N.1.8 Noise**

Construction-related noise would be short-term (lasting only for the duration of the construction period) and would generally stem from the operation of construction equipment, truck traffic, earth moving, vehicles and equipment, jackhammers and structure erection equipment (cranes) etc. Overall, the development of the transmission facilities would result in sound levels that are typical of construction projects.

Noise generated disturbances could affect certain receptors including residences, schools, and designated recreational areas. The extent of a noise impact to humans at a sensitive receptor is dependent upon a number of factors, including the change in noise level from the ambient; the duration and character of the noise; the presence of other, non-project sources of noise; people's attitudes concerning the Project; the number of people exposed to the noise; and the type of activity affected by the noise (e.g., sleep, recreation, conversation).

The impact of construction-generated noise also would depend on the location of the noise source, because sound attenuates with distance and with the presence of vegetative buffers or other barriers. Transmission line (345-kV) noise can vary from inaudible levels during fair weather through barely audible levels in relatively dry snow or light fog to distinctly audible levels in rain or wet snow. The noise level is relatively low to begin with, as it attenuates quickly with distance from the line, and may be most noticeable during foul weather, however, during these conditions few receptors would typically be near the lines to hear the increase in sound levels.

### **N.1.9 North Bloomfield Substation Modifications**

The modifications proposed at the existing North Bloomfield Substation to accommodate the 345-kV North Bloomfield – Agawam project facilities would be generally minor, but long-term, and would be accomplished within the existing CL&P property line, but outside of the existing substation fence line.

Approximately 2.7 acres of the 34.2-acre CL&P property would be developed to accommodate the new 345-kV interconnections (approximately 6.8 acres of this property are currently developed for the existing substation facilities).

The specific modifications proposed to the substation are described in Section I. As discussed below, these modifications would have generally minor and highly localized but long-term environmental effects.

#### **N.1.9.1 Geology, Topography, and Soils**

The addition of new facilities to the North Bloomfield Substation would require site preparation work, including clearing, grading and other soil disturbance (e.g., excavations) to install the foundations and erect the new 345-kV transmission line facilities. Mechanical methods would be used to install foundations into bedrock, if encountered.

#### **N.1.9.2 Water Resources and Wetlands**

The expansion of the North Bloomfield Substation would result in unavoidable direct effects to inland wetlands, as well as activities within the Town of Bloomfield locally regulated 100-foot wetland and 200-foot watercourse upland review areas, and encroachment into the 100-year floodplain of Griffin Brook. Four inland wetlands have been identified and flagged in the vicinity of the substation, two of which will be affected by the substation expansion. Appropriate temporary erosion and sedimentation controls would be installed around disturbed areas within the station in order to minimize the potential for sedimentation into these water resources.

Approximately 0.78 acre of wetland would be permanently affected by the substation expansion, including 0.76 acre of forested/scrub-shrub wetland and 0.02 acre of isolated forested wetland. The majority of direct wetland effects are proposed within an area that has undergone historic disturbance activities. These activities were associated with an approved expansion of the original substation (circa

1978) to its current configuration, including filling, grading activities and re-routing of an existing intermittent watercourse around the perimeter of the substation. The substation expansion will also result in the permanent effect/displacement of approximately 400 cubic yards of flood storage capacity within the 100-year floodplain associated with Griffin Brook.

The loss of flood storage volume will be mitigated through the creation of compensatory flood storage volume along Griffin Brook, which is also intended to mitigate for the loss of functions and values of the affected wetlands. Additional mitigation activities to compensate for the loss of inland wetlands at the substation site will be incorporated into the overall wetland mitigation plan for the GSRP. The overall wetland mitigation plan will be developed based on consultations with the involved regulatory agencies and in compliance with applicable regulations.

### **N.1.9.3 Water Quality**

The existing North Bloomfield Substation is equipped with secondary containment structures to contain transformer oil in the event of a spill or inadvertent release of oil. Modifications to the North Bloomfield Substation would include maintaining the existing secondary containment structures, as well as the construction of new secondary containment systems for the two new autotransformers, in accordance with Northeast Utilities Substation Standards, *Secondary Oil Containment for Electrical Equipment*. The new autotransformers will have an insulating fluid that will require a secondary containment system. The containment will be sized to accommodate 110 percent of the volume of fluid contained in the autotransformer. Appropriate spill prevention, control and countermeasure procedures would be implemented during construction to minimize the potential for inadvertent spills or leaks from construction equipment and during operation of the facility to avoid or minimize the potential for spills or leaks from fuel stored on site to power an emergency generator.

**N.1.9.4 Vegetation and Wildlife**

The expansion of the substation would involve the removal of approximately 2 acres of mostly deciduous upland forest and approximately 0.7 acres of deciduous forested wetland. The existing mixed hardwood vegetative community that currently characterizes the site would be replaced by additional fenced substation yard and the wildlife species that utilize this area would be displaced. Other large mixed hardwood communities are present adjacent to the area proposed to be cleared and can be expected to provide habitat for the displaced wildlife species. The expansion of the substation would represent a long-term, and localized, change in vegetation and wildlife.

**N.1.9.5 Threatened, Endangered, and Special Concern Species**

There are no known records of threatened, endangered or species of special concern reported by the CT NDDDB in the vicinity of the Substation. However, as a result of field investigations for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, both a wood turtle and a box turtle were observed in the vicinity of the substation. As a result, CL&P is submitting information on these sightings to the CT DEP NDDDB, and will coordinate with the CT DEP regarding the identification and implementation of measures to mitigate potential effects on these species during the construction and operation of the substation modifications.

**N.1.9.6 Land Use Plans and Existing/Future Development**

The proposed modifications to the substation would be consistent with the existing and planned use of the property for utility purposes. CL&P owns the existing substation site, as well as various other parcels in the vicinity. No additional land would have to be acquired for the proposed station modifications.

**N.1.9.7 Visual Resources**

The modifications proposed to the North Bloomfield Substation would have a minor, incremental effect on visual resources. The substation has been in existence since 1950's, and the new 345-kV facilities would not appreciably alter the existing appearance of the station. The new 345-kV line structure would

be approximately 90 feet tall, which is similar in height to the existing structures at the station. Moreover, the station is in a remote, wooded area, where it is not visible from private residences or public areas.

#### **N.1.9.8      Transportation**

Existing access to the North Bloomfield Substation is made via Hoskins Road/Tariffville Road. The construction of the proposed substation modifications would have a minor and short-term effect on vehicular traffic on the local roads leading to the site. At times, localized traffic congestion may occur when heavy construction equipment or electric components are transported to the site. The movement of construction workers and equipment in general also would temporarily cause increased traffic on local roads leading to the site. Construction is expected to occur during normal work hours, but is also dependent on the scheduling of allowable line outages.

However, such impacts would be minor and localized. Post-construction site conditions would not significantly affect existing traffic patterns.

#### **N.1.9.9      Cultural Resources**

The Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project (Raber Associates, Volume 3) did not identify any known archaeological or historic sites in the immediate vicinity of the substation. The St. Andres cemetery, a protected historic cemetery, is located across the road from the North Bloomfield Substation. Visual analysis of the area indicated there would be no significant adverse effects to associated visual resources.

#### **N.1.9.10     Noise**

Noise is generated primarily from three sources within a substation: the transformers; the transformer cooling fans; and the control house air conditioning units. It is not expected that these sources would be operating simultaneously for any duration of time because this would represent an extreme overload

condition on the system. The modifications to the existing North Bloomfield Substation would result in minor changes to the noise environment in the immediate vicinity. CL&P has incorporated measures to minimize noise into the initial design of the modified substation facilities.

## **N.2 UNDERGROUND VARIATIONS FOR THE NORTH BLOOMFIELD TO AGAWAM 345-kV LINE ROUTE**

The construction and operation of portions of the North Bloomfield to Agawam 345-kV Line Route underground, either within or adjacent to road ROWs or along sections of the existing CL&P transmission line corridor, will have effects on environmental resources that differ from overhead transmission line construction and operation. Further, the effects of constructing and operating an underground cable system within road ROWs will differ in some respects from the development of the same type of system “overland”, within the transmission line ROW.

The following sections first describe the potential effects of underground cable system construction and operation on environmental resources (Sections N.2.1 through N.2.8) and then provide a description of the effects of the development of the two transition stations that would be required for the development of any of the underground variations (Section N.2.9).

### **N.2.1 Topography, Geology and Soils**

Underground cable system construction – either within or adjacent to road ROWs or along the transmission line ROW -- would result in effects to topography, geology, and soils as a result of grading, excavation (possibly requiring blasting or other rock removal activities), and soil disturbance. Unlike the development of an overhead transmission line along which such activities are only required along access roads at a structure locations, the installation of an underground cable system will require continuous and linear grading, excavation (of a trench for the cable conduit and splice vaults), and soil disturbance along the entire length of the underground cable route.

In addition, subsurface conditions along the underground cable routes would have to be characterized prior to construction in order to develop a subsurface profile (to assess locations where bedrock and groundwater would be encountered) and also to test the quality of soils and groundwater. Based on the results of these analyses, a materials-handling plan would be prepared that would define how excavated soils and groundwater encountered during the trenching process are to be managed.

The installation of the underground cables and splice vaults along road ROWs (i.e., the Newgate Road and State Route 168/187 Underground Line Route Variations) would not require extensive grading and thus would have minimal adverse effects on topography and geology in most areas. In general, a construction ROW of approximately 40 feet is needed to install the cable system along roads. However, in areas where the cables or splice vaults must be located off-road, such as at watercourse crossings, clearing and grading would be necessary to cut stream banks, excavate the trench through the stream bed, and otherwise level the terrain so that the cable system or vaults could be installed safely and at an appropriate elevation below grade. Extra work space also would be required in such areas to stage the watercourse crossings. In addition, extra work space for other staging areas, such as at any jack and bore sites or in areas where construction equipment and materials would have to be temporarily stored, also may involve localized earth-disturbing activities such as clearing and grading.

In contrast, the installation of a cable system along the transmission line ROW would involve extensive clearing and grading along the entire length of the underground variation ROWs; such grading would be required to create permanent access roads<sup>7</sup>, provide a level work space for construction equipment, and achieve appropriate subsurface elevations for the installation of the entire cable system (cables and splice vaults). A ROW width of approximately 60 feet would be required to install the cable system within the existing transmission line ROWs. This wider construction ROW would be needed to accommodate an access road, as well as the excavated trench/splice vault areas. Tree clearing would be required beyond

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<sup>7</sup> Access roads would be developed and used during construction, but would have to remain in place permanently because access to the entire underground cable systems is required for operation and maintenance purposes.

the limits of the existing maintained ROW corridor. A minimum 30 foot off-set from the centerline of the existing overhead lines is required for the underground cable, and thus additional tree clearing and vegetation removal would be required to provide a construction corridor for the underground facilities. Within this construction area, it is anticipated that all vegetation would have to be removed and the area would have to be graded to create a level work space.

Whether along a road ROW or within the transmission line ROW, XLPE cable installation would involve the excavation of a continuous trench (approximately 7 - 10 feet deep and 5 feet wide at the bottom, and typically with a 10-foot-wide opening at the surface), as well as concrete splice vaults (each of which would require an excavation area approximately 13 feet wide by 13 feet high and 35 feet long) at approximately 1,600-foot intervals along the route. The required excavations may be deeper or wider, depending on soil conditions and, when trenching along roads in particular, depending on whether the cable system must be installed below other buried utilities (e.g., water lines, sanitary sewers, storm sewers). Trench boxes and other types of shoring will be required to support the trenches while the conduit is being installed. Shoring also is typically required at splice vault installations.

To excavate the trench and splice vaults for the underground cables through areas of rock, special rock removal methods would be required. The preferred techniques for removing rock would be mechanical methods (e.g., mechanical excavators and pneumatic hammers) or mechanical methods supplemented by controlled blasting. Such rock removal activities would result in dust and vibration/noise in the immediate vicinity of the excavation work. Controlled blasting would only be used if other methods of rock removal are not practical. If blasting is required, the same mitigation measures described for the overhead line in Section N.1.1 would be followed.

Because underground cable installation is time-consuming, the length of time that soils or excavations are exposed in any one location (and therefore subject to the potential for erosion or sedimentation into water

resources) can be significant and may range up to several months. The amount of construction time required at any one location depends on subsurface conditions, particularly whether bedrock or groundwater are encountered in the excavations.

During cable system excavation, measures would have to be implemented to contain temporary soil/material storage piles and to avoid sedimentation into watercourses or wetlands, either from erosion of disturbed soils or from sedimentation caused by excavation dewatering. Temporary erosion and sedimentation control measures would have to be installed, consistent with CL&P's established plans and with the *2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control*. For work within and adjacent-to-road ROWs, typical erosion and sediment control measures may include catch basin protection, the use of fractionization tanks, or the use of dewatering structures or filter bags. Such temporary controls would typically be maintained until the restoration of disturbed work sites is deemed successful, as determined by standard criteria for storm water pollution prevention and erosion control.

After the completion of conduit and splice vault installation, the excavated trench and splice vault areas would be backfilled with special "flowable fill", a concrete mix that is designed to dissipate heat from the cables. For the most part, the material originally excavated from the trench would not be used as backfill. Instead, soils would be trucked off-site and disposed of at approved sites, in accordance with applicable regulations and as defined in the materials handling plan.

After the completion of cable system installation, disturbed ROW areas would be restored to grade to the extent practical. Along the Newgate Road and State Route 186/187 Underground Line Route Variations, disturbed pavement would be resurfaced and affected road shoulders/curbing/sidewalks would be repaired. Along the in-ROW underground variations, the ROW would be reseeded and allowed to revegetate, except for the 20-foot-wide permanent access road, which would be maintained for operation and maintenance purposes.

## **N.2.2 Water Resources and Water Quality**

The construction and operation of the underground variations would involve both direct and, potentially, indirect effects to water resources. All of the underground variation line routes traverse both wetlands and watercourses. While the Newgate Road and State Route 168/187 Underground Line Route Variations may be constructed within road ROWs, above or below certain of these water resources, avoidance of effects to all water resources is unlikely since in some areas along these routes, it is anticipated that it would not be feasible to install the cable system on bridges or culverts. As a result, some in-water construction would be required. Further, while subsurface techniques, such as jack and bore or horizontal directional drill (HDD) may be considered for some larger watercourse crossings, even these techniques, which are both costly and time-consuming would involve some effects to water resources. For example, jack and bores near watercourses typically encounter groundwater, which must be pumped continuously from the excavated pits and which typically requires ultimate discharge to a surface water. HDDs require withdrawal of water for the drilling fluid mix, and also may result in inadvertent returns of the drilling fluid/drill cutting mix to the surface water.

The in-ROW underground variations would involve work along a continuous ROW through, and direct effects to, all water resources within the construction footprint. To allow for ongoing construction and maintenance, it would be necessary to construct a much more extensive and permanent access road along the ROW for an in-ROW underground line. The construction of such an access road would affect wetlands and watercourses on the ROW.

Potential effects to water resources associated with underground cable system construction include sedimentation and turbidity that may be caused by clearing and grading of stream banks, excavation in wetlands and streams, trench/vault dewatering, and backfilling. In addition, the soils disturbed along the cleared ROW could erode, resulting in effects to water quality. In general, along the in-ROW

underground variation routes, the clearing and grading of the ROW would expose large areas of soil to erosional forces and would eliminate areas of riparian vegetation along stream banks.

The operation of construction equipment and vehicles along the ROWs, as well as the refueling of construction machinery and the storage of fuel, oil, or other fluids near water resources could create a potential for contamination due to accidental releases to the environment. Spills to water resources could migrate downstream and could affect aquatic organisms and water quality.

The use of flowable fill, rather than native backfill in the trench and splice vaults, also could have a long-term, localized adverse effect on water resources. It is possible that the flowable fill could disrupt natural subsurface water flows or could affect infiltration rates. This could be a potential concern along the in-ROW underground variations, rather than for the construction of the Newgate Road and State Route 168/187 Underground Line Route Variations, which would be aligned mostly within paved road ROWs.

Neither the construction nor the operation of the underground variations would result in significant adverse effects to groundwater resources or public water supplies. However, groundwater is likely to be encountered along all of the underground variations and would have to be carefully managed throughout the excavation phases of construction. Trench dewatering, whether along roads or along the CL&P transmission line ROW, has the potential to cause the discharge of turbid or sediment-laden water to streams and wetlands.

In general, if groundwater is encountered during trench or splice vault construction, the water would be pumped from the excavated areas and discharged in accordance with the requirements of applicable regulations. Depending on regulatory authorizations and on the alignment of the underground variation, the water may be pumped into municipal storm water catch basins, to the sanitary sewer system, into temporary settling basins and sediment filter bags, or watercourses (if the water is sufficiently free of sediment). Alternatively, water may be pumped into a tank truck for off-site disposal.

Further, along the Newgate Road and State Route 168/187 Underground Line Route Variations and where the in-ROW variations traverse roads, the cable system would have to be carefully aligned so as to avoid impacts to municipal water lines, as well as storm and sanitary sewers. Excavations for trenches or splice vaults would have to be performed carefully to avoid conflicts with these existing utilities.

To minimize adverse effects to water resources during the construction of the underground variations, CL&P would implement the same types of mitigation measures as discussed for the overhead line routes in Section N.1.2.

### **N.2.3 Biological Resources**

The effects of underground cable system installation and operation on biological resources would differ substantially, depending upon whether the underground alignment is aligned within or adjacent to existing road ROWs or within the more sensitive CL&P transmission line ROW.

#### **N.2.3.1 Wildlife and Vegetation**

The construction and operation of underground transmission cables along the Newgate Road and State Route 168/187 Underground Line Route Variations would result in minimal effects on vegetation and wildlife resources because both of these variations would be aligned primarily within or adjacent to existing paved road ROWs in rural/suburban areas. Along a majority of these route variations, vegetation would not likely be affected, with the exception of vegetation within or near road shoulders, the removal of trees or tree branches that overhang the roadways, or riparian or wetland vegetation that may be affected if the cable system must be aligned across water resources outside of the road ROWs.

Along the Newgate Road Underground Line Route Variation, near the intersection of Turkey Hills Road and Old Road, the specimen red oak tree (as discussion in Section M.1.3.1) may be affected by construction. This tree is located very close to the road and, as a result, cable system excavation work could affect the tree's root system.

Further, if splice vaults must be located outside of road ROWs (as may be requested by ConnDOT along state roads), existing lawns, trees, and ornamental vegetation may have to be removed in some locations. The amount and type of vegetation affected would depend on the actual locations of the splice vaults. In such areas, after the completion of the cable system installation, some lawn and ornamental vegetation would be restored where it would not affect future access for inspections and repairs.

The construction of the cable system along the Newgate Road and State Route 168/187 Underground Line Route Variations also would have a minimal effect on wildlife because limited vegetation resources would be impacted. The species common to roadside areas would be expected to avoid work sites while construction activities are ongoing.

In contrast, the construction and operation of an underground cable system along the route variations within the CL&P transmission line corridor would result in both temporary and permanent effects on vegetation and wildlife resources within and adjacent to the ROW. Along the entire underground cable ROW, vegetation would have to be cleared, stumps removed, and the ROW then would be graded. After the completion of the cable system installation, temporary work areas would be reseeded and then allowed to revegetate naturally, except that the areas over the cable trench and splice vaults would be maintained in low-growth vegetation. However, along the permanent graveled access road that would have to be created and maintained along the entire underground cable system, vegetation would be precluded for the life of the project.

As a result of the construction and operation of the underground cable variations within the CL&P ROW, wildlife habitat would be altered both temporarily and permanently due to the vegetation changes described above. Construction activities would have direct effects on wildlife within the ROW in terms of displacement, disturbance, and (for less mobile species), mortality.

In addition, clearing the ROW of vegetation would reduce cover, nesting, and foraging habitats for some wildlife. In forested areas, the principal effect of the vegetation clearing and the long-term maintenance of the ROW in low growth vegetation would be a change in the species using areas from those favoring wooded habitats to those that prefer edge habitats or shrub-scrub or open habitats. As described in Section N.1.3 for the overhead transmission line route, the conversion of forested habitat to shrub-scrub would be advantageous to some species.

### **N.2.3.2 Fisheries**

All of the underground route variations traverse watercourses, some of which can be expected to support fisheries. Where the installation of the underground cable system can be accomplished without disturbing stream banks or stream beds (e.g., along the Newgate Road and State Route 168/187 Underground Line Route Variations where the cable system can be installed above or below streams), no adverse effects would occur to water quality, fisheries, or other aquatic organisms. CL&P would minimize the potential for indirect effects (e.g., sedimentation into watercourses) by installing temporary soil erosion and sedimentation controls around areas of disturbed soils at work sites located near streams. These temporary erosion controls would remain in place until the disturbed areas are restabilized.

Along the underground variations located within CL&P's existing transmission line corridor, the cable system would have to be installed across watercourses, causing direct effects to water quality and fishery resources. These direct effects will be unavoidable, since subsurface methods such as horizontal directional drilling or jack and bore would not be practical for all of the numerous small watercourse crossings along the ROW. To mitigate effects to fishery resources, CL&P would consult with CT DEP to identify appropriate timing windows for in-water construction to avoid fish spawning periods. In addition, construction methods, such as dam and pump or dam and flume, can be selected to minimize adverse effects to water quality and thus to fish habitat.

### **N.2.3.3 Amphibians**

Minimal effects to amphibians would occur as a result of the development of the Newgate Road and State Route 168/187 Underground Line Route Variations, assuming that all or most of the cable system along these routes would be aligned within or adjacent to road ROWs.

In contrast, the 3.6-Mile and the 4.6-Mile In-ROW Underground Line Route Variations would result in direct and unavoidable disturbance to all wetlands along the cable system routes, including to amphibian breeding habitat. Impacts would be both short-term (during construction and until the affected wetlands revegetate) and long-term (as a result of the conversion of forested wetlands to emergent marsh or shrub-scrub). The wetlands containing amphibian breeding habitat along the in-ROW underground variations are the same as those identified for the corresponding sections of the overhead route in Section N.1.3.

Measures to mitigate adverse effects to amphibians may include options such as adherence to construction timing windows (to avoid breeding periods), and the employment of herpetologists to monitor the ROW prior to and during construction and to remove amphibians from the construction work space.

### **N.2.3.4 Birds**

In general, the underground variations along the road ROWs (i.e., Newgate Road and State Route 168/187 Underground Line Route Variations) would have minor effects on bird species because limited vegetative habitats would be affected. The 3.6-Mile and the 4.6-Mile In-ROW Underground Line Route Variations, in contrast, would require vegetation clearing and the long-term alteration of vegetative community types; as a result, the overall effects on birds from the construction and operation of these variations would be similar to those described for the overhead line routes in Section N.1.3.

### **N.2.3.5 Rare, Threatened and Endangered Species**

The development of the Newgate Road and State Route 168/187 Underground Line Variations will have minimal effects on rare, threatened, endangered or species of special concern. CL&P has consulted with

NDDB regarding these variations. The NDDB is not concerned about construction occurring in established roadway ROW and so mitigation measures were deemed unnecessary.

Along the in ROW underground variations are two state-listed species, the Eastern box turtle and the Eastern pearlshell mussel. As described in Section N.1.3.5, CL&P is considering several mitigation measures concerning these two species. The Eastern box turtles could potentially occur along the ROW during construction and thus could be directly affected by the movement of construction equipment, as well as by excavations for the trench or for the splice vaults. In general, CL&P would apply the same types of mitigation measures as described for the overhead transmission lines to avoid or minimize adverse effects to turtle individuals and habitat.

While the Eastern pearlshell mussels would not be directly affected by construction of overhead transmission lines designed to span watercourses in which they may occur, installation of underground transmission lines would require excavation across watercourses and therefore, could unavoidably impact mussel habitat, if such habitat exists at or in the vicinity of the proposed cable crossings. Because the cable system must be installed beneath the watercourses that may contain mussel habitat, CL&P could not employ the same mitigation measures (described in Section N.2.2) for the overhead line configuration. Mitigation measures that may be applicable to the avoidance or minimization of impacts to mussels along the underground routes include the installation and maintenance of erosion and sediment controls to minimize sedimentation and runoff from upland construction sites, as well as the consideration of subsurface trenchless installation techniques (e.g., jack and bore, HDDs) to avoid direct disturbance to mussel habitat. However, such trenchless techniques may not be feasible (due to subsurface conditions) and, even if applied, may nonetheless result in impacts to the mussel habitat (i.e., inadvertent returns of drilling fluid to the surface when performing HDDs). Other options include the use of dry ditch type cable installation techniques involving dam and pump or dam and flume techniques. For any cable installation technique, some disturbance to the riparian zones adjacent to watercourses is likely to be

required, despite the fact that the CT DEP has recommended that no vegetation be removed from the stream banks adjacent to the mussel habitat as land clearing activities may affect the mussels.

#### **N.2.4 Land Use, Land-Use Plans, and Recreational/Scenic Resources**

The underground variations would not conflict with local, regional, state, or federal land use plans, because the proposed transmission cables would be located along or adjacent to existing road ROWs or within the existing CL&P transmission line corridor.

The construction and operation of the underground cable variations would not result in long-term effects on either recreational or scenic resources. Construction work within road ROWs or within the transmission line ROW would not result in long-term adverse effects on recreational resources, but could cause temporary, highly localized nuisance effects (e.g., noise, dust, and traffic congestion) to recreational activities in areas such as the Newgate WMA, the East Granby Farms Recreational Area, Sunrise Park Cub Scout Day Camp, Spencer Wood Wildlife Management Preserve, and Suffield Land Conservancy. However, these effects would be limited in duration to the period of active construction in the immediate vicinity of each recreational area, and would depend on the type of construction work at each location, as well as the schedule for such activities. Construction work could be designed and scheduled to avoid or limit the potential for interference with recreational activities. However, it should be noted that underground trenching, duct bank installation, and backfilling work, as well as the excavations for and installation of splice vaults can require substantial time at any one location, depending on the subsurface conditions encountered (e.g., presence of rock, groundwater). As a result, construction work could extend over multiple months.

Except for views of work areas during the construction period and views of transition stations described in Section N.2.9, the underground cable system would not affect visual resources.

## N.2.5 Transportation and Access

The development of the underground variations along the CL&P transmission line ROW would have minor effects on transportation and access, which would be similar to those described for the overhead line routes in Section N.1.5. The operation of the underground cables along the CL&P ROW would not affect transportation patterns.

In comparison, the construction and operation of the Newgate Road or State Route 168/187 Underground Line Route Variations would have temporary, but potentially locally significant, effects on traffic patterns. Because these underground variations would be located primarily within road ROWs, construction activities would require temporary lane closures and would result in traffic disruption, delays, detours, and/or congestion. Construction workers traveling to work sites, as well as the movement of construction equipment, also could temporarily cause localized increases in traffic volumes, further aggravating traffic congestion.

To mitigate potential interference with traffic flow along public roads, construction within road ROWs could be performed during non-peak travel times, or at night. However, while night work would potentially minimize traffic disruption, the noise effects on nearby residents would have to be balanced. Measures would be taken to maintain vehicular access to adjacent businesses and nearby residential areas during the construction period. In addition, CL&P would:

- Coordinate with municipal officials and involved highway authorities (including ConnDOT) to schedule construction activities in order to minimize traffic-related effects, such as detours, peak travel time disruptions, and congestion, as well as to assure that access is maintained for emergency vehicles.
- Develop a *Traffic Control Plan*, for inclusion in the D&M Plan, which would address the specific concerns of each affected municipality.

- Coordinate construction activities with state and municipal officials so that construction activities do not interfere with special events such as parades and fairs.
- Employ police personnel, where required, to direct traffic at construction work sites along roads.
- Erect appropriate traffic signs and work area protection measures to indicate the presence of construction work zones.

Specific construction management measures would be finalized with the representatives of each affected municipality and, for state roads, with ConnDOT, and would be included in the D&M Plan.

The operation of the underground cables along the underground route variations would not affect transportation patterns, except when cable system maintenance or repair, requiring access to the splice vaults or other portions of the buried cable, is necessary.

### **N.2.6 Cultural (Archaeological and Historic) Resources**

The Cultural Resources Assessment Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project Report (prepared by Raber Associates; refer to Volume 3) identifies the cultural resources that could potentially be affected by the underground variations, including the identification of known or potential archaeological resources in the vicinity of each route and the evaluation of the potential visual effects of the project on historic properties listed or eligible for listing on the State and National registers of historic places.

The construction and operation of the underground variations along the CL&P transmission line ROW would have the same types of effects as described for the overhead line route in Section N.1.6. Along the underground route variations, additional archaeological testing would be required to determine the potential for unrecorded buried sites. No adverse effects on standing historic structures would result from the construction or operation of the underground variations along the CL&P ROW.

The Newgate Road Underground Line Route Variation traverses directly in front of the NRHP-listed Old Newgate Prison, as well as one other NRHP-listed structure and a protected historic cemetery. The excavations required to install the cable system in this area could potentially affect the integrity of these structures, particularly if rock is encountered in the excavations and rock hammering or controlled blasting were required. There is potential for significant adverse effects on these structures, one of which is also a National Historic Landmark.

In addition, along the Newgate Road and State Route 168/187 Underground Line Route Variations, in areas where off-road ROW work would be required, an additional assessment of Native American archaeological sensitivity may be needed to make a final determination as to whether reconnaissance (field) testing would be necessary to confirm the presence or absence of archaeological sites.

### **N.2.7 Air Quality**

The development of a cable system along any of the underground route variations would result in short-term, highly localized effects on air quality during construction, primarily from fugitive dust and vehicular emissions associated with cable trench and splice vault excavations. For in-road cable system installation, saw cutting of pavement also would generate dust and silt-laden water. During dry periods, to minimize the amount of fugitive dust generated by construction activities, water would be used as needed to wet down excavated spoil piles and dirt/gravel access roads.

There would be no adverse effects on air quality associated with the operation of the facilities.

### **N.2.8 Noise**

During construction of the underground cable system along any of the route variations, activities such as vegetation clearing, grading, access road development, trench excavation (particularly involving rock drilling, jack-hammering or blasting), the installation of splice vaults, and the general operation of construction equipment would increase ambient sound levels. Along the Newgate Road and State Route

168/187 Underground Line Route Variations, saw-cutting of pavement, pavement removal, and re-paving also would cause noise emissions. The operation of the underground cables would not result in any adverse noise impacts.

Construction-related noise would be short-term and highly localized in the vicinity of work sites. However, there are noise sensitive sites (receptors) in the vicinity of the underground variations. These include residences, schools, and public recreational areas. Because of the slow pace of underground construction work, noise-emitting activities could be localized in the vicinity of these receptors for several months or more.

In addition, it is possible that some of the underground cable construction work along the Newgate Road and State Route 168/187 Underground Line Route Variations may occur at night, to minimize the potential for traffic congestion associated with lane closures or detours. Humans are more sensitive to increases in ambient sound levels at night; as a result, such night construction work could result in greater perceived adverse noise impacts, particularly on sensitive noise receptors.

### **N.2.9 Transition Stations**

The development of any of the underground variations would require the associated construction and operation of two transition stations - one located at either end of the underground system. For all of the underground variations, with the exception of the 3.6-mile In-ROW Underground Variation, the southern transition station would be located adjacent to Granby Junction, on CL&P-owned property. The southern transition station for the 3.6-Mile In-ROW Underground Line Route Variation would be located north of Turkey Hills Road, adjacent to the existing ROW and within the Newgate WMA. The northern transition station would be the same for the Newgate Road Underground Line Route Variation, 3.6-Mile and 4.6-Mile In-ROW Underground Line Route Variations. The State Route 168/187 Underground Line Route Variation would require a different transition station site.

The following subsections describe the potential effects of the Granby Junction Transition Station (which is common to all of the underground variations except the 3.6-Mile In-ROW Underground Line Route Variation; refer to Section N.2.9.1); the transition station that would be located within the Newgate WMA for the 3.6-Mile In-ROW Underground Line Route Variation (refer to Section N.2.9.2); and the potential environmental effects for the northern transition station site (refer to Section N.2.9.3).

### **N.2.9.1 Granby Junction Transition Station Site**

The potential transition station site would be situated on about four acres of undeveloped, forest land owned by CL&P and located on and adjacent to CL&P's existing transmission line ROW in East Granby. The development of this site for a transition station would result in a permanent change in land use, as well as impacts to topography, vegetation, wildlife, and visual resources.

The development of the site would require the removal of approximately four acres of forested vegetation, permanently displacing the existing wildlife habitat that this woodland community provides.

Subsequently, the site would be graded to create a level area for the transition station facilities, and thereafter developed for utility purposes. Potential short-term impacts to soil resources, associated with earth-moving activities and the increased potential for erosion, would occur during the construction of the station.

The development of the transition station site, which is within an upland area, would not affect water resources (i.e., watercourses, wetlands, or floodplains). Although construction activities involving refueling and the storage of fuels and lubricants, etc. would increase the probability of accidental spills, standard spill prevention and response procedures would be applied to mitigate the potential for adverse effects.

The eastern boundary of the transition station site would be located approximately 150 feet southwest from a residential subdivision located off Granger Circle in East Granby. A buffer of mature trees would

be maintained between the transition station and the Granger Circle cul-de-sac. However, the transition station would permanently change the visual landscape as a result of views of the above-ground station facilities.

### **N.2.9.2 3.6-Mile In-ROW Underground Line Route Variation Transition Station Site**

The potential transition station site would be situated on approximately four acres of undeveloped, forest land located on and adjacent to CL&P's existing transmission line ROW in East Granby as well as within the Newgate WMA. The development of this site for a transition station would result in a permanent change in land use, as well as impacts to topography, vegetation, wildlife, and visual resources.

The development of the site would require the removal of approximately four acres of forested vegetation, permanently displacing the existing wildlife habitat that this woodland community provides. All 4 acres encompass private land that would have to be purchased for the development of the station.

Subsequently, the site would be graded to create a level area for the transition station facilities, and thereafter developed for utility purposes. Potential short-term impacts to soil resources, associated with earth-moving activities and the increased potential for erosion, would occur during the construction of the station.

The development of the site would not affect any wetlands, watercourses, or floodplains, but would involve the removal of all existing vegetation within the site. The existing forested community that currently characterizes the site would be replaced by the fenced transition station yard, and the wildlife species that utilize this site would be displaced. The CT DEP NDDB has not identified any threatened, endangered or species of special concern in the vicinity of the proposed transition station.

The development of the transition station would create permanent visual changes to the character of the Newgate WMA. Although the site would be located adjacent to the existing CL&P overhead

transmission line corridor, the transition station facilities would constitute a visual contrast with the other undeveloped lands within the WMA.

### **N.2.9.3 Newgate Road Transition Station Site**

The Newgate Road Transition Station would be located on about four acres of undeveloped land in Suffield. The transition station would be located to the northwest of Phelps Road and would be accessed via the construction of a permanent access road from Phelps Road.

Approximately two acres of the transition station site is owned by CL&P, while two acres encompass private land that would have to be purchased for the development of the station. A portion of the transition station site, which is within the existing CL&P ROW, includes land owned by the Suffield Sportsman's Association.

The transition station site is undeveloped, except for the overhead CL&P transmission line ROW, which traverses the property. Vegetation on the site is upland forest, along with the shrub-scrub vegetation that characterizes the transmission line ROW.

Land uses along this portion of Phelps Road in the vicinity of the site consist of open, vacant land, and residential areas. Single-family homes are located to the east and west of the transition station site. A buffer of mature trees would be maintained between the transition station and these homes.

The development of the site would not affect any wetlands, watercourses, or floodplains, but would involve the removal of all existing vegetation within the site. The existing forested community that currently characterizes the majority of the site would be replaced by the fenced transition station yard, and the wildlife species that utilize this site would be displaced. The CT DEP NDDB has not identified any threatened, endangered or species of special concern in the vicinity of the proposed transition station.

**N.2.9.4 State Route 168/187 Underground Variation Transition Station Site**

The State Route 168/187 Transition Station would be located west of Mountain Road (Route 168) in Suffield. The site would be accessed via the construction of a permanent access road from Mountain Road.

The potential transition station site consists of undeveloped forest land and is traversed by the CL&P overhead transmission line ROW, along which shrub-scrub vegetation predominates. Approximately one acre of the four acre site are owned by CL&P. The remaining three acres are privately owned and would have to be acquired for the development of the station.

Land uses along Mountain Road in the vicinity of the transition station site consist of open, vacant land, single-family homes, and a municipal facility operated by the Town of Suffield. This site would be located adjacent to a municipal waste facility, which may require CL&P to obtain additional easements from the Town of Suffield. The potential transition station would extend across the ROW and would occupy land on both sides of the ROW. A buffer of mature trees would be maintained between the transition station and Mountain Road, with the exception of the maintained ROW corridor.

The development of the site would not affect wetlands, watercourses, or floodplains. However, the existing forested and shrub-scrub vegetative communities that currently characterize the site would be replaced by the fenced transition station yard, and the wildlife species that utilize this site would be displaced.

**N.3 CONNECTICUT PORTION OF THE MASSACHUSETTS SOUTHERN ROUTE ALTERNATIVE FROM AGAWAM TO LUDLOW 345-kV LINE ROUTE**

This section reviews the environmental effects that would be associated with the development of the 5.4 mile Connecticut portion of the alternative Agawam to Ludlow 345-kV line route for the Massachusetts portion of the GSRP. Potential effects and mitigation measures are described for both the potential

overhead transmission line configuration and the underground route variation that has been identified to a portion of this overhead alignment.

In general, the types of effects associated with the construction and operation of the potential overhead 345-kV transmission line along this route would be similar to those described in Section N.1 for the proposed North Bloomfield to Agawam line. Accordingly, Section N.3.1 focuses on the effects and mitigation measures unique to this line route (e.g., the required crossing of the Connecticut River) and references Section N.1 for the other effects that would be similar to those discussed for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Section N.3.2 identifies and evaluates the potential environmental effects and mitigation measures for the development of the underground variation to a portion of the Massachusetts Southern Route Alternative.

### **N.3.1 Overhead Line Route**

#### **N.3.1.1 Topography, Geology, and Soils**

The effects on topography, geology, and soils that would be associated with the construction and operation of the new 345-kV line along the Massachusetts Southern Route Alternative would be generally the same as those described for the overhead line route in Section N.1.1. The construction of the new transmission line would alter topography only where grading is necessary to improve or create new access roads or to install work areas around structure sites.

Depth to bedrock along most of the route is greater than six feet; as a result, installation of structure foundations is not expected to encounter extensive rock areas. Erosion and sedimentation control measures would be deployed and maintained where soils are disturbed during construction.

In addition, the Connecticut Portion of the Massachusetts Southern Route Alternative traverse agricultural lands, where special soil preservation methods may be required during construction. Typically, construction activities in agricultural lands would be performed so as to minimize crop damage and the

mixing of topsoil and subsoil layers. As part of ROW restoration, decompaction may be performed in agricultural areas to assist in achieving pre-construction soil texture.

### **N.3.1.2 Water Resources**

The Connecticut Portion of the Massachusetts Southern Route Alternative would traverse the Connecticut River, as well as four smaller watercourses. Although riparian vegetation along these watercourses would be preserved to the extent practical, potential effects associated with the construction of the overhead line route could include tree clearing and vegetation removal within the riparian zone, the increased potential for sedimentation due to earth-moving activities in adjacent upland areas, as well as the increased potential for accidental spills of fuels and lubricants due to the operation of construction equipment and vehicles. The CT DEP also has established SCELs along the Connecticut River; as a result, if the Massachusetts Southern Route Alternative is selected by the Massachusetts EFSB, and structures will be proposed within the SCEL, CL&P would have to apply to the CT DEP for a SCEL permit for the crossing of the river.

There are 27 wetlands along the 5.4-mile overhead ROW, three of which have been identified as vernal pools. While CL&P would attempt to locate new structures in upland areas and to avoid the permanent alignment of access roads through wetlands, it is likely that some structures and permanent access roads would have to be situated in wetlands. In such cases, both the structure footings and some access roads would represent permanent fill. Mitigation or compensation for these permanent effects, as described in Section N.1 would be required.

### **N.3.1.3 Groundwater and Public Water Supplies**

The Connecticut Portion of the Massachusetts Southern Route Alternative that traverses the Town of Enfield is within a Connecticut Aquifer Protection District. The excavations required for the installation of the overhead transmission line structure foundations are expected to be above any aquifers used for potable water supply. In the event that groundwater is encountered during excavation for overhead

structure foundations, dewatering would be performed in accordance with applicable permit conditions and best management practices.

### **N.3.1.4 Biological Resources**

The construction and operation of the Connecticut Portion of the Massachusetts Southern Route Alternative would result in effects on vegetation, wildlife, fisheries, and birds that would be similar to those described for the overhead line route in Section N.1. The CT NDDDB has indicated that there are four listed species associated with the Connecticut River described in M.5.1.4.4. These species are the Shortnose sturgeon, Bald Eagle, Riverine clubtail dragonfly, and Arrow clubtail dragonfly. Because CL&P is not proposing any in-river construction activities, the CT DEP has not identified specific concerns with respect to potential effects to these species as a result of project construction activities. However, if construction activities would involve tree clearing within 300 feet of the Connecticut River, pre-construction field surveys would be required to determine if potential bald eagle roost trees and nest sites are present within the potential impact area and, if so, to determine appropriate mitigation measures. CL&P would employ erosion and sediment controls, and preservation of an undisturbed vegetated riparian zone to avoid adverse effects on riverine habitats.

In general, the western part of the Connecticut Portion of the Massachusetts Southern Route Alternative would be aligned through agricultural areas, where limited vegetation removal would be required and no long-term effects on vegetative communities would occur. The eastern portion of the route traverses more forested areas, where trees would have to be cleared from the ROW, resulting in a long-term conversion to shrub-scrub or open field type habitats. The effects to wildlife would be similar to those described for the overhead lines in Section N.1.

The Massachusetts Southern Route Alternative would cross three vernal pool wetlands identified as supporting amphibian breeding habitat. The measures that would be implemented to minimize or avoid

adverse effects on these habitats would be the same as described for the overhead line routes in Section N.1.

### **N.3.1.5 Land Use, Statutory Facilities, Recreational Resources, and Scenic Resources**

The proposed 345-kV line would be located within CL&P's existing ROW and thus would not require any additional land acquisition. In addition, with the exception of the Connecticut River crossing, the overhead 345-kV line would not be in the vicinity of any designated scenic resources. At the Connecticut River, the new 345-kV line would be located adjacent to an existing 115-kV transmission line that presently spans the river. Land on either side of the river crossing is predominantly forest; a large tract of this forest land on the eastern side of the river (in Enfield) is owned by CL&P.

The existing ROW traverses near various residential areas in the Town of Enfield, and is located in the vicinity of several day care facilities and a school, which would constitute statutory facilities as defined by the CSC. In accordance with the CSC requirements, CL&P has identified an alternative underground route variation that would avoid an overhead 345-kV line route near these facilities; the potential effects of the construction and operation of this underground variation are described in Section N.3.2.

### **N.3.1.6 Transportation and Access**

The Connecticut Portion of the Massachusetts Southern Route Alternative would not result in long-term adverse effects on transportation or traffic patterns. The conductors would span Interstate 91 and 11 other state and local roads. Installation of the wires across the interstate and other roads would be coordinated with the appropriate highway authorities. The existing road network, along with access roads along the existing CL&P ROW, will be used to reach structure sites and other construction support areas.

### **N.3.1.7 Cultural (Archaeological and Historic) Resources**

The Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project (Raber Associates, Volume 3) determined that approximately 3 miles of the Connecticut Portion of the Massachusetts Southern Route alternative appears sensitive for undocumented Native American archaeological resources, which would require reconnaissance studies to determine if the construction of the new 345-kV line would have the potential to affect as yet unrecorded sites within the ROW. There are no significant historic resources within 0.25 mile of the ROW, and thus the development of the new 345-kV line would have no visual effect (from a visual perspective) on any standing historic structures.

### **N.3.1.8 Air Quality**

The construction of the line will result in localized effects on air quality associated with the operation of construction equipment and the generation of fugitive dust, as described in Section N.1. The operation of the new 345-kV line will not result in adverse effects on air quality.

### **N.3.1.9 Noise**

Noise effects will be similar to those described for the overhead lines in Section N.1. However, the eastern portion of the 5.4-mile route traverses near certain subdivisions in the Town of Enfield, where increased noise levels resulting from construction activities may be noticeable to residents.

### **N.3.2 Massachusetts State Route 220/Enfield Underground Line Route Variation**

The 4.3-mile underground variation, which would replace a 3.7-mile section of the overhead 345-kV line route, was identified to avoid the location of the overhead line adjacent to residential areas in Enfield. Approximately 3.9 miles of the underground variation would be aligned within or adjacent to state and local road ROWs that traverse predominantly residential areas of Enfield. Approximately 0.4 miles of the

underground route would be located within a forested portion of CL&P's ROW between Brainard Road and Maple Street.

The effects associated with the development of the underground variation would be similar to those described in Section N.2 for the underground variations located in road ROWs and in cross-country ROWs. Because this underground variation traverses along roads primarily within residential neighborhoods, the principal effects associated with construction will be traffic disruptions, noise, dust, and disturbance to lawns, sidewalks, and ornamental vegetation. These nuisance type effects could be locally significant, but would be short-term, lasting only for the construction period. Effects associated with the portion of the underground alternative that traverses forested ROW may include extensive grading, sedimentation in water resources, and vegetation clearing.

The entire underground route is within a Connecticut Aquifer Protection District. Excavation dewatering, if groundwater is encountered, could temporarily affect water quality if proper procedures are not developed and implemented. In the event that groundwater is encountered during excavation for overhead structure foundations, dewatering would be performed in accordance with applicable permit conditions and best management practices.

### **N.3.2.1 Transition Stations**

Transition stations consisting of approximately 2 to 4 acres of fenced area would have to be developed on either end of the underground variation. The western transition station site would be located on CL&P-owned property; this property, which is predominantly forested, encompasses the existing overhead line ROW. A forested wetland borders the site to the north, and a residential subdivision abuts the site to the southeast. The eastern transition station site, which would be located in a forested area near the Massachusetts border, would be located on privately-owned property, which also encompasses a portion of the existing CL&P overhead ROW. This privately-owned land would have to be acquired for the development of the transition station. Wetlands border the site to the northwest and east.

The development of these transition stations would require vegetation removal, tree clearing, and grading, as well as the conversion of each site from predominantly forested land to utility purposes for the life of the transmission facilities. The western transition station could potentially be visible to residents of the subdivision along Campania Road and Kalish Avenue. In addition, soil erosion and sedimentation control measures would have to be implemented to protect nearby wetlands from indirect effects associated with the development of the transition stations.