Connecticut
Light & Power

The Northeast Utilities System

MUNICIPAL CONSULTATION FILING
Connecticut General Statutes Section 16-50*l*(e)

For a Certificate of Environmental Compatibility and Public Need

OXFORD SUBSTATION
Oxford, New Haven County
Connecticut

September 2006

Submitted to:
Town of Oxford Chief Elected Official
Oxford, Connecticut

Submitted by:
The Connecticut Light and Power Company
107 Selden Street
Berlin, CT 06037

TABLE OF CONTENTS

LIST OF FIGURES:

LIST OF APPENDICES:

A.0 SUMMARY DESCRIPTION AND FACILITY LOCATION

The Connecticut Light and Power Company ("CL&P" or the "Company") is proposing to construct the Oxford Substation Project (the "Project"), which includes:

- Construction of a new electric power 115-kV to 13.8-kV substation (the "Substation");
- Construction of an access drive from a new road (“Commerce Park Drive”) associated with the Oxford Commerce Park; and
- Construction of two new transmission poles to connect the new substation to the existing 115- kV transmission line.

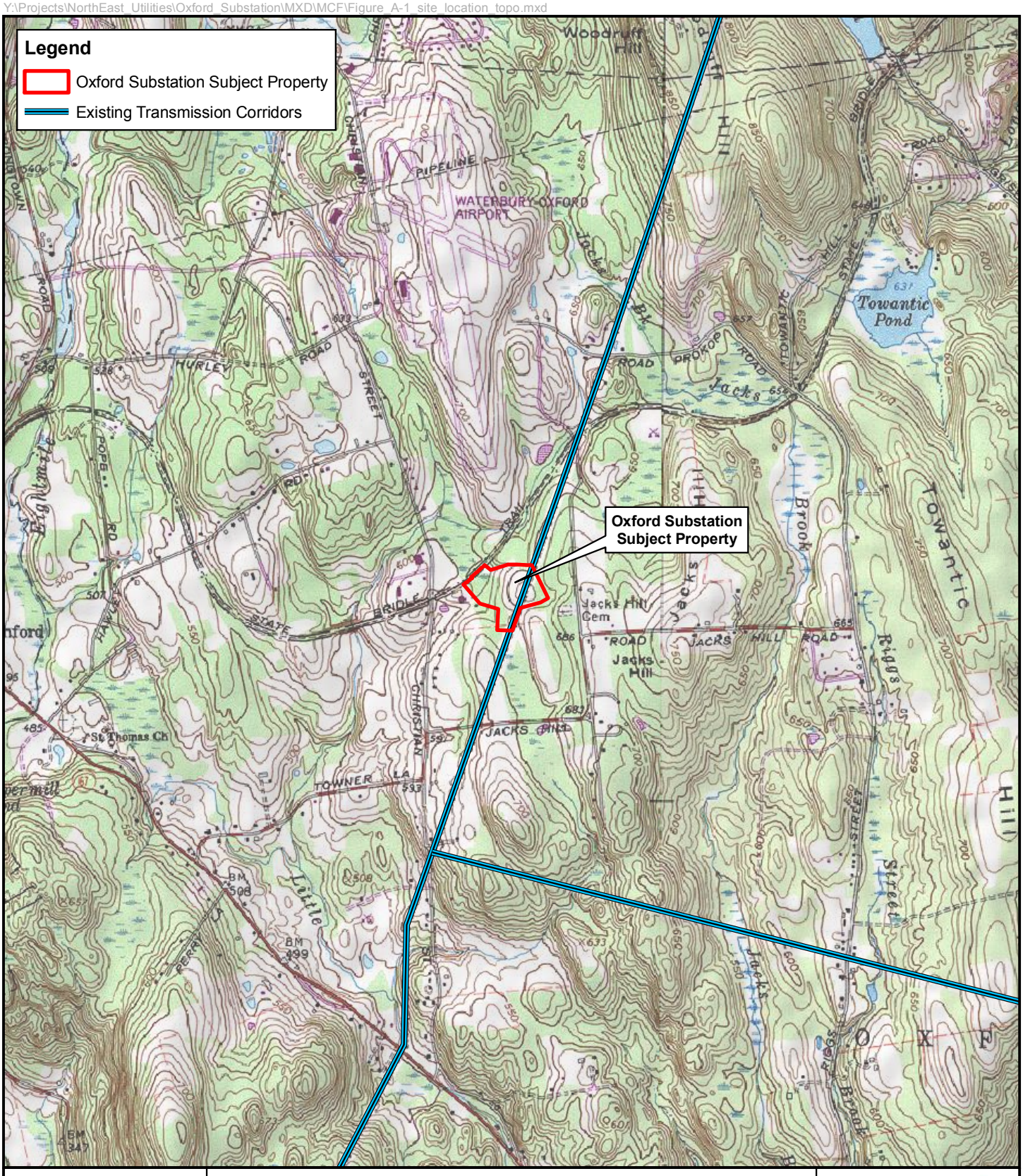
Facility Need

The Project will add capacity in response to the increasing demand for electricity in Oxford and its surrounding area and by so doing, improve electric distribution system reliability in the Town of Oxford. Please refer to Section G for additional information on the need for the proposed Project.

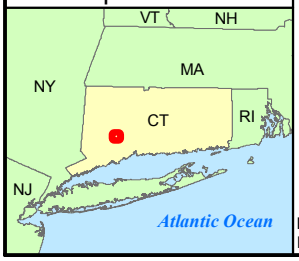
Site Selection

The Project will be constructed at property located to the north of Jacks Hill Road, east of Christian Street, and west of North Larkey Road (Oxford Assessor's Map 25, Block 25, Parcel 1BB3), in Oxford, Connecticut (the "Subject Property"), (Refer to Figure A-1, Site Location Map).

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_A-1_site_location_topo.mxd



Map Location



Site Location Map

Oxford 115- to 13.8-kV Substation

N

0 500 1,000 2,000 3,000 4,000 5,000 6,000 Feet

0 100 200 400 600 800 1,000 1,200 1,400 1,600 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: USGS Topographic Quadrangles: Southbury and Naugatuck, CT.

Scale: 1:24,000
(1 inch = 2,000 ft)

Northeast Utilities System

ENSR | AECOM

Figure A-1

Date: September 2006

Project #: 05022-012

The state-owned Larkin Bridle Trail is located to the northwest of the Subject Property, and the Oxford Science Park is to the south. The Waterbury-Oxford Airport is approximately 1,500 feet to the north. Jacks Hill Road is located on the south side, Christian Street to the west side, and North Larkey Road to the east side of the Subject Property (Refer to Figure A-2, Site Location Map – Aerial View).

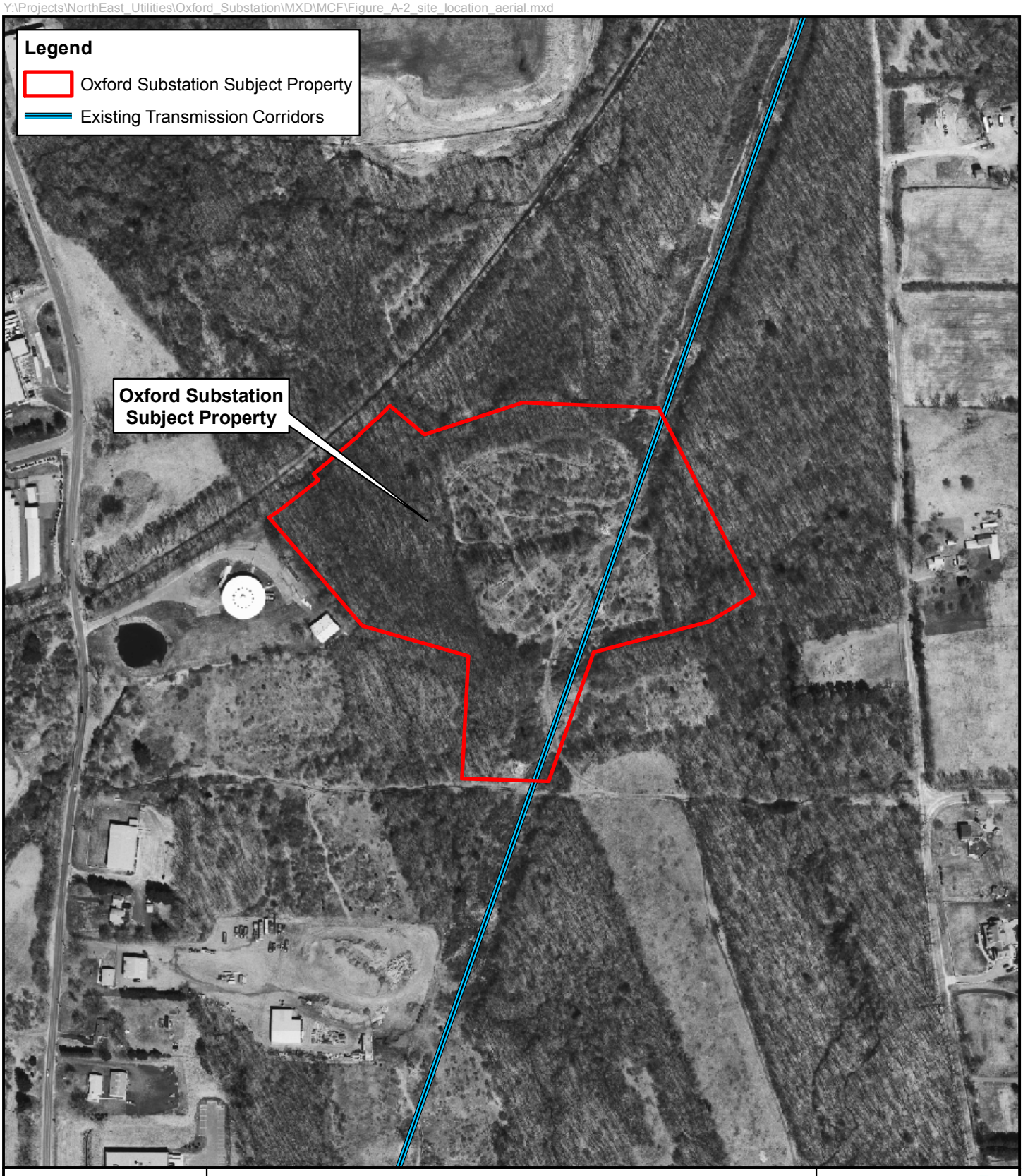
The Subject Property is well-suited for the proposed use because it allows for access to CL&P's existing transmission line currently traversing the Subject Property, and is located in an industrially zoned area lacking significant residential development or concentrated surrounding features (See Appendix A, Site Photographs). Please refer to Section H for additional information on the site selection process, including alternative sites evaluated.

Environmental Effects

CL&P has designed the Substation in a manner that minimizes potential environmental and visual effects to the greatest extent practicable and has incorporated measures to ensure the protection of existing resources during construction and operation of the Substation facilities. Specifically, the Project:

- will be consistent with applicable public health and safety requirements, standards and codes;
- will be consistent with local, State, and Federal land use plans;
- will be compatible and consistent with existing, ongoing and future development plans, including those associated with the Oxford Commerce Park;

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_A-2_site_location_aerial.mxd



Map Location

N

Site Location Map - Aerial View

Oxford 115- to 13.8-kV Substation

0 100 200 400 600 800 1,000 1,200 Feet

0 30 60 120 180 240 300 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: SBC aerials.

Scale: 1:4,200
(1 inch = 350 ft)

Northeast Utilities System

ENSR | AECOM

Figure A-2

Date: September 2006

Project #: 05022-012

- will be designed to minimize impacts to existing wetlands and watercourses traversing the Subject Property;
- will be designed to minimize impacts to existing wildlife, vegetation, and rare, threatened and endangered species habitat;
- will not result in any adverse effects on public water supplies;
- will be designed to minimize visual impacts to surrounding areas, including development of a landscape plan to provide visual screening/buffers that will mitigate for such impacts;
- will be designed, in consultation with the State Historic Preservation Office (SHPO), to minimize impacts to potential historic, cultural and/or archaeological resources;
- will be designed to minimize earthwork and soil disturbance during construction, including development of appropriate plans to stabilize and restore affected areas;
- will result in no adverse effects on floodplains;
- will comply with applicable state lighting and noise requirements; and,
- will result in no significant adverse environmental effect on residential, commercial or industrial properties in the vicinity of the Subject Property.

Please refer to Sections I and K for additional information on existing conditions at the Subject Property and the anticipated environmental effects of the proposed Project.

B.0 Purpose of the Application

CL&P intends to apply to the Connecticut Siting Council (the "Council") for a Certificate of Environmental Compatibility and Public Need ("Certificate") for the siting and construction of the Project, which consists of the following activities in the Town of Oxford:

- Construction of a new electric power 115-kV to 13.8-kV substation (the "Substation");
- Construction of an access drive from a new road associated with the Oxford Commerce Park; and
- Construction of two new transmission poles to connect to the existing 115- kV transmission line.

The purpose of the Project is to provide improved electric distribution service reliability and increased capacity to respond to increasing load growth in the Town of Oxford and surrounding communities.

C.0 Statutory Authority for Application

Pursuant to the Public Utility Environmental Standards Act, Conn. Gen. Stat. § 16-50g et seq., CL&P has an obligation to consult with all municipalities in which the primary or alternative plans for a substation facility are proposed and all municipalities within 2,500 feet of the substation facility. Specifically, Conn. Gen. Stat. § 16-50*l*(e) requires that:

> [A]t least sixty days prior to the filing of an application with the council, the applicant shall consult with the municipality in which the facility may be located and with any other municipality required to be served with a copy of the application under subdivision (1) of subsection (b) of this section [a municipality having a boundary not more than two thousand five hundred feet from such facility] concerning the proposed and alternative site locations of the facility…. Such consultation with the municipality shall include, but not be limited to good faith efforts to meet the chief elected official of the municipality. At the time of the consultation, the applicant shall provide the chief elected official with any technical reports concerning the public need, the site selection process, and the environmental effects of the proposed facility.

This Municipal Consultation Filing ("MCF") provides a municipality with information and technical reports concerning the need, site selection process and potential environmental effects of the Project, as required by Conn. Gen. Stat. § 16-50*l*(e). The MCF process is designed to solicit public participation in the development of the application for the Certificate of Environmental Compatibility and Public Need. The MCF is a key initial step in the Council's comprehensive regulatory process that governs the siting of a substation. The goals of this municipal consultation process are to:

- Provide information about the Project; and

- Obtain feedback from the public and municipal officials concerning the location and scope of the Project.

Note that there are no other municipalities located within 2,500 feet of the Substation.

The public can obtain information regarding the Project at Oxford Town Hall and Oxford Public Library, or from CL&P (Refer to Section E for contact information).

C.1 Municipal Participation During the Consultation Process

On several occasions over the past two years, CL&P has consulted with Town officials, most recently, the First Selectman, August A. Palmer III, regarding the electric service provided by CL&P to the Oxford community and CL&P's desire to increase the capacity and improve the reliability of that service. CL&P determined that a new substation to be located in Oxford would improve service, and through a review of alternative locations and in consultation with the Town, CL&P selected the Subject Property. The Town, represented by Mr. Palmer, supported the purchase of the Subject Property by letter of April 21, 2005 and through testimony in the proceedings conducted by the Council in Docket No. 304, and continues to support the Project (Refer to Appendix B). The Council acknowledged the Town's support in its Findings of Fact in Docket No. 304 (Refer Appendix C, FOF #10) and approved the acquisition of the Subject Property, which CL&P purchased on October 31, 2005.

As part of the State review process, the Connecticut Legislature provides a mechanism for input by certain town land use agencies for some public utility facilities, including electric substations. Specifically, Conn. Gen. Stat. § 16-50x(d) permits zoning commissions and inland wetland commissions to "regulate and restrict the proposed location" of such public utility facilities. CL&P filed "Location Approval" applications with

the Oxford Conservation Commission/Inland Wetlands Agency (the "CC/IWA") on August 7, 2006 and the Planning and Zoning Commission (the "P&Z") on August 10, 2006.

At its regular meeting on August 14, 2006, the CC/IWA granted conceptual approval of CL&P's application for location approval for the Subject Property. At its regular meeting on August 17, 2006, the P&Z granted site location approval for the Subject Property to CL&P. Copies of such approvals are attached as Appendix D.

Conn. Gen. Stat. § 16-50*l*(e) requires a proponent to file certain information about the proposed project, known as a municipal consultation filing ("MCF"), with the affected municipality and outlines the duties and responsibilities of a municipality during the consultation period preceding the filing of an application for a Certificate by the proponent with the Council. Under § 16-50*l*(e), once the applicant submits the MCF:

> [t]he municipality may conduct public hearings and meetings as it deems necessary for it to advise the applicant of its recommendations concerning the proposed facility. Within sixty days of the initial consultation, the municipality shall issue its recommendations to the applicant. No later than fifteen days after submitting an application to the council, the applicant shall provide to the council all materials provided to the municipality and a summary of the consultations with the municipality including all recommendations issued by the municipality.

CL&P is submitting this MCF for review and comment by the Town of Oxford. The filing of the MCF with the Chief Elected Official of the municipality begins the required 60-day review process by the municipality. During the municipal consultation process, CL&P is seeking additional comments from representatives of the municipality and from the

interested public for consideration and incorporation into the application that will be filed for the Project with the Council. This approach provides an opportunity for CL&P to address municipal concerns prior to submitting the formal application to the Council.

C.2 Description of Filing Contents

This filing includes information concerning the Applicant (CL&P), existing conditions at the Subject Property, and the proposed conditions for construction of the Substation, including:

- its location and design;
- the various alternatives considered to date and the process by which the Subject Property was identified and selected;
- the need for its construction and operation;
- its potential effects on the environment; and
- mitigation measures proposed by CL&P.

C.3 Connecticut Energy Advisory Board ("CEAB")

Conn. Gen. Stat. § 16-50*l*(e) requires CL&P to file a copy of this MCF for the Substation with the Connecticut Energy Advisory Board ("CEAB"). Conn. Gen. Stat. § 16a-7c(b) requires the CEAB to issue a request for proposal to seek alternative solutions to the need that will be addressed by the Project. Refer also to Section *H.3 System Alternatives* of this MCF.

D.0 LEGAL NAME AND ADDRESS OF APPLICANT

The Connecticut Light and Power Company (a specially chartered Connecticut corporation)

107 Selden Street

Berlin, Connecticut 06037

Mailing Address:

CL&P

P.O. Box 270

Hartford, Connecticut 06141-0270

Telephone: (860) 665-5000

Internet Address:

Northeast Utilities Transmission Website

www.transmission-nu.com

E.0 APPLICANT CONTACTS

Correspondence and other communications with regard to the Oxford Substation should be addressed to, and notices, orders and other documents should be served upon the following:

Mr. Robert E. Carberry, P.E.

Manager, Transmission Siting & Permitting

Northeast Utilities Service Company

P.O. Box 270

Hartford, CT 06141-0270

Telephone: (860) 665-6774

E-mail: carbere@nu.com

Mr. Jeffrey Martin

Project Manager, Transmission Business - Projects

Northeast Utilities Service Company

P.O. Box 270

Hartford, CT 06141-0270

Telephone: (860) 665-5930

E-mail: Martijz@nu.com

Elizabeth A. Maldonado, Esq.

Northeast Utilities Service Company

Legal Department

107 Selden Street

Berlin, CT 06037

Telephone: (860) 665-5513

E-mail address: maldoea@nu.com

Anthony M. Fitzgerald, Esq.,

Robert S. Golden Jr., Esq., and

Marianne Barbino Dubuque, Esq.

Carmody & Torrance LLP

50 Leavenworth Street

P.O. Box 1110

Waterbury, CT 06721-1110

Telephone: (203) 573-1200

E-mail addresses:

afitzgerald@carmodylaw.com

rgolden@carmodylaw.com

mdubuque@carmodylaw.com

F.0 DESCRIPTION OF FACILITY

The Subject Property on which the Oxford Substation would be located is approximately 15.77 acres in area and is owned by CL&P (Refer to Figures A-1 and A-2). In 2005, CL&P acquired the Subject Property for the development of the Project. CL&P's purchase of the Subject Property was supported by the Town and approved by the Council (Docket No. 304) under Conn. Gen. Stat. § 16-50z(a) and Regulations of Connecticut State Agencies § 16-50z-1-4. The Substation would be contained within an approximately 1.1-acre footprint centrally located on the 15.77 parcel. The Subject Property is accessed from a new road associated with the Oxford Commerce Park that is currently being constructed and is referred to as Commerce Park Drive. CL&P proposes to construct a gravel access drive extending from Commerce Park Drive into the Substation. The access drive will extend for a distance of approximately 600 linear feet. The travel lane of the access drive would be approximately 15 feet wide to accommodate CL&P maintenance vehicles. Crossing of an inland wetland and an associated intermittent watercourse would also be required to provide access to the Substation.

The Substation would be supplied from the existing 115-kV 1575 transmission line that traverses the Subject Property (Refer to Appendix E, Project Plans). The new Substation would be constructed alongside CL&P's existing 1575, 1585 and 1990 transmission lines. The 1575 transmission line would be "looped through" the Substation and a new transmission circuit breaker would be installed to separate the existing transmission line into two circuits. A "loop through" design facilitates two transmission line connections to a substation, as opposed to one transmission line connection for a "tapped" design. Two new transmission line poles would be installed to make the connections between the transmission line and the Substation. Each of the 115-kV circuits would be capable of supplying the entire substation load.

The Substation would be an approximately 226- by 229-foot area covered with a trap rock surface and secured by a 7-foot high chain link fence topped with one foot of barbed wire (Refer to Appendix E, Project Plans). The 115-kV line interconnection with the Substation would be made using two, up to 55-foot high, line terminal structures. A lightning rod would extend 20 feet above the top of the substation line terminal structure. All transmission equipment would be rated for 2000 Amperes continuous current.

The Substation would consist of two 47 MVA power transformers, two metal-clad distribution switchgear enclosures, five 115-kV circuit switchers, one 115-kV circuit breaker, nine 115-kV disconnect switches, a relay and control enclosure (approximately 48 feet by 14 feet) and a battery enclosure (approximately 24 feet by 14 feet) all located within the fenced area of the Substation. The relay and control enclosure would contain protective relaying and control equipment associated with the transmission portion of the Substation. Also within the switchgear and control enclosures, equipment for full Supervisory Control and Data Acquisition (SCADA) system functions and digital metering would be installed at the Substation for control and monitoring of the Substation from a remote location. Distribution getaways would exit the Substation underground in conduits. The getaways would be installed under the gravel access drive, below the bottom elevation of the stream channel. The conduit installation will be confined to the footprint of the proposed access drive crossing of the wetland/watercourse. The underground distribution getaways would surface at the terminus of the access drive at the junction with Commerce Park Drive. The distribution lines would then be installed overhead via new wood poles along Commerce Park Drive.

The Substation components would include two transformer disconnect switches and two circuit switchers that would be installed to supply two 47 Megavolt Ampere ("MVA") power transformers, which would transform the voltage from 115 kV to 13.8 kV, the local distribution voltage. Switchgear equipment would be installed in two steel enclosures, each 22 feet long by

14 feet wide and 14 feet in height. The switchgear would contain a total of six feeder positions supplying local load of which three feeders would be activated initially. Feeder cables would exit the Substation underground in duct banks. The transformers would be sized so that they would provide back-up for each other. Electric load would automatically transfer to the transformer in service when one transformer is switched out of service for any reason. The Substation would also contain a circuit switcher and a disconnect switch to facilitate the installation of a mobile transformer in case one of the permanently installed transformers needs to be removed from service for a prolonged time.

A cost estimate for the Project will be included in the Application to the Council.

F.1 Facility Service Life

The service life of the Substation equipment would be in excess of 40 years.

G.0 NEED FOR FACILITY

Responding to increasing peak-load demands, the purpose of the Project is to improve electric distribution system adequacy and reliability in the Town of Oxford and its surrounding areas by increasing the capacity to deliver electric power from the 115-kV transmission system to the local 13.8-kV distribution system.

Currently, electric load in the Town of Oxford is served by three primary 115- to 13.8-kV substations: Beacon Falls Substation in Beacon Falls, Bates Rock Substation in Southbury, and South Naugatuck Substation in Naugatuck. In addition to sharing the load needs of Oxford, these three 115- to 13.8-kV substations also serve the load needs of the towns in which they are located. Reliance on neighboring substations is considered acceptable as long as cumulative load growth does not exceed available capacity.

From 2004 to 2006, Oxford's peak demand grew by more than 5 MVA, reaching 24.3 MVA in the summer of 2006, an increase of nearly 26%. Demand is forecasted to increase at an even faster rate in the years to come as the town experiences additional development. Based on planned development in Oxford, peak demand may reach nearly 60 MVA by the year 2012 (See Tables G-1 and G-2), representing more than a threefold increase in just 8 years.

Capacity must be added to meet this demand, and it must be added in a way that provides an adequate and reliable source of power to the Town of Oxford for many years to come.

Substation Capacity

Currently, very little margin exists to meet area growth as substations in neighboring towns near their rated capacity. Beacon Falls, Bates Rock and South Naugatuck have a combined rated capacity of 184 MVA. These three substations experienced a combined peak load of 180.9

MVA in 2006 (See Table G-3). The expected load growth in Oxford alone, not to mention load growth in the surrounding towns, is forecasted to consume this available margin by 2008.

Table G-1: Forecasted Increase in Demand by 2008

DEVELOPMENTS	INCREASE IN DEMAND (MVA)
Residential Developments	5.0
Phase I, Oxford Commerce Park	1.0
Miscellaneous Industrial Developments	5.0
Miscellaneous Business Developments	1.4
Retail Developments	1.0
New High School	1.0
Oxford Airport Expansion	0.5
Total	**14.9**

Table G-2: Forecasted Increase in Demand after 2008 to year 2012

DEVELOPMENTS	INCREASE IN DEMAND (MVA)
Residential Developments	1.4
Phase II, Oxford Commerce Park	1.3
Miscellaneous Industrial Developments	9.1
Miscellaneous Business Developments	6.0
Retail Developments	1.0
New Middle School	1.0
New Magnet School	1.0
Total	**20.8**

Total Forecasted Demand Growth (2006-2012)	**35.7 MVA**

Table G-3: Main Substations Serving Oxford

Substation	Rating	Forecasted Peak Loads (MVA)		
		2006	2008	2010
Beacon Falls	73	70	83	102
Bates Rock	70	70.2	70	71
S. Naugatuck	41	40.7	41.7	42.4
Total	**184**	**180.9**	**194.7**	**215.4**

New Oxford Substation

To resolve this capacity deficiency, CL&P proposes establishing a new distribution power source for the Town of Oxford, a bulk power substation. This new substation would be similar in size to the Beacon Falls and Bates Rock substations, providing between 70 and 75 MVA of substation capacity to the system. While final estimates are not yet available, similar CL&P substations (e.g., with two transformers) have cost approximately 10 million dollars, including

the costs of associated transmission line connections and distribution system changes. This additional capacity will not only provide enough supply to meet the needs of Oxford for years to come, it will also improve the reliability of the town's distribution system by eliminating reliance on neighboring substations.

H.0 ALTERNATIVES EVALUATED

CL&P has investigated numerous solutions to address the load demands of the Town of Oxford, including an assessment of several alternative sites for the construction of a new electric power substation. Figure H-1 depicts the approximate limits of the search/study area for the siting and construction of the Substation.

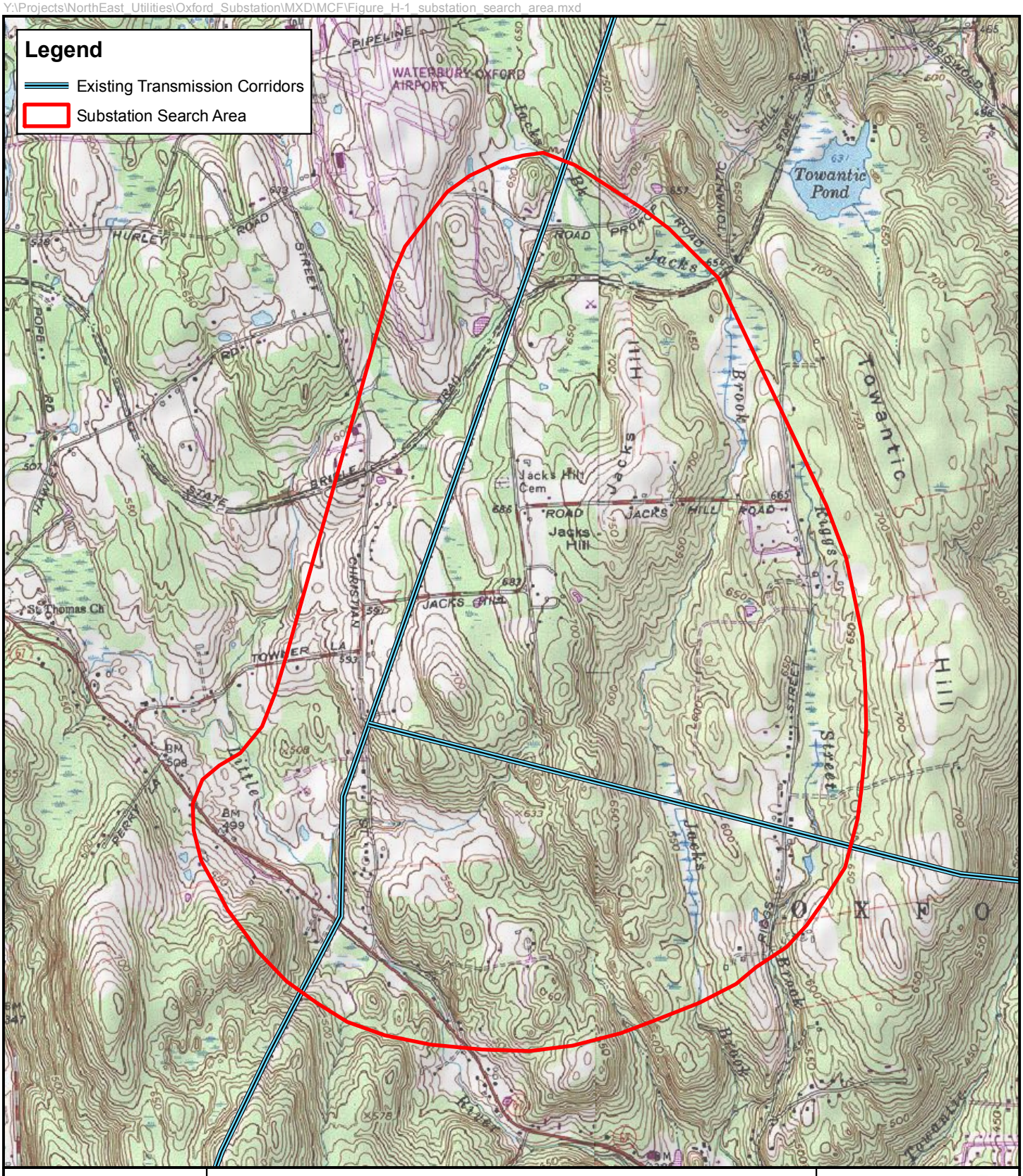
H.1 Analysis of Alternative Site Locations

CL&P administratively notes Council Docket No. 304, dated April 21, 2005 (Refer to Appendix C) in which CL&P filed a *Site Evaluation and Selection Report* documenting their evaluation of alternative sites and reasons for selecting the preferred site north of Jacks Hill Road. The analysis of alternative locations focused on the Town of Oxford, where the need for additional power is the greatest and distribution facilities are already in place to transfer power. The analysis also considered that the Town has slated land north of Jacks Hill Road for industrial/business purposes. Land use south of Jacks Hill Road will be utilized more for residential, commercial, and town purposes. Consistent with the Town of Oxford's land use planning, CL&P focused its analysis on properties zoned for "industrial."

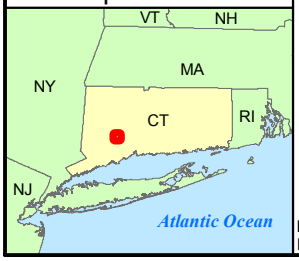
Once CL&P identified a potential location, it evaluated environmental, land-use/planning, physiographic issues, and engineering constraints associated with the site. The following specific elements were key to this analysis:

- Proximity to an existing 115-kV transmission circuit;
- Central location with respect to local distribution (customer) load area;
- Sufficient space for needed facilities;
- Proximity to residential neighbors and other surrounding features;
- Natural resource (i.e. inland wetlands) and cultural resource constraints;

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_H-1_substation_search_area.mxd



Map Location



Substation Search Area

Oxford 115- to 13.8-kV Substation

0 500 1,000 2,000 3,000 4,000 5,000 6,000 Feet

0 100 200 400 600 800 1,000 1,200 1,400 1,600 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: USGS Topographic Quadrangles: Southbury and Naugatuck, CT.

Scale: 1:24,000
(1 inch = 2,000 ft)

Northeast Utilities System

ENSR | AECOM

Figure H-1

Date: September 2006

Project #: 05022-012

- Present land-use;
- Access from a public road;
- Earthwork requirements based on existing topography; and
- Availability of property, if not owned by CL&P, for purchase, or at a minimum, negotiable for purchase.

The alternative site locations (as shown in Figure H-2) are discussed below. A review of the siting criteria for each alternative site is provided in Table H-1.

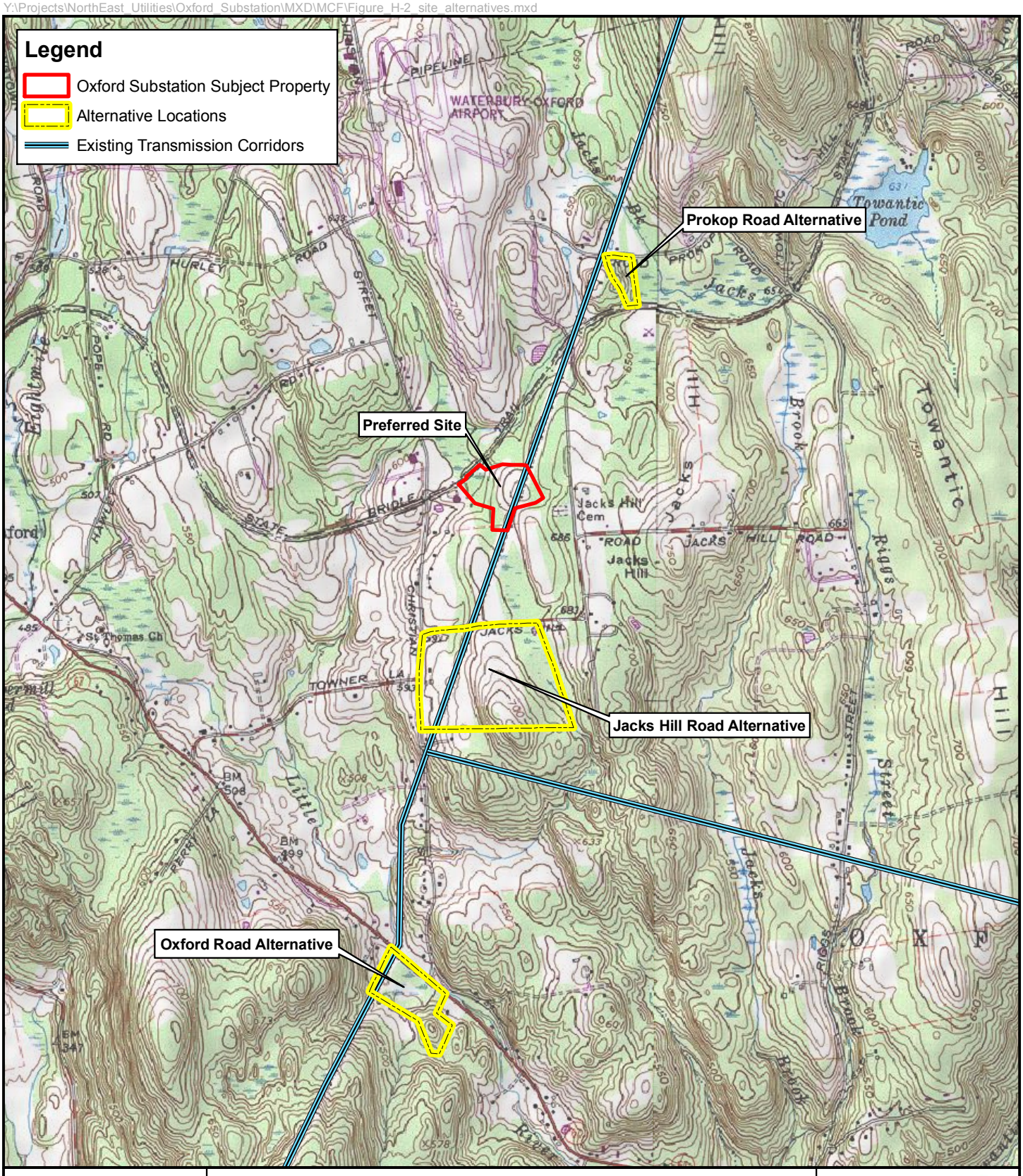
H.1.1 Preferred Site – Jacks Hill Road and Christian Street - Oxford Commerce Park

This location is CL&P's preferred site for the new Oxford Substation. Following a detailed review of many sites, this parcel was selected as the most viable option for the new Substation. The parcel is located in the industrially-zoned area north of Jacks Hill Road, east of Christian Street, and west of North Larkey Road. (Refer to Figure H-1) Application for approval to purchase the land was submitted to the Council and approved in the summer of 2005.[1] The Town of Oxford also supported the land purchase and use of the parcel for development of a substation.[2] Purchase of the land was completed on October 30, 2005. (Refer to Appendix C for documents).

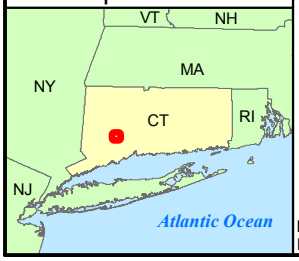
[1] The Council ruled in Docket 304 regarding site 1 (the Preferred Site) that after having "given due consideration to the effects of such an acquisition, including the probable hardship for the owner of the property or owners of adjacent properties; development and potential development on and nearby the property to be acquired; environmental impact; public need; convenience of the owner, and the location of the property proposed to be acquired for the transmission of electric power within the state as required under Section 16-50-z1-4 of the Regulations of Connecticut State Agencies, and therefore [the Council] grants approval to CL&P to acquire the proposed 15.77-acre property between Jacks Hill Road and Christian Road in Oxford, Connecticut.'"

[2] On April 21, 2005, the First Selectman of Oxford provided comments to the Council regarding the proposed land acquisition. In these comments and at the public hearing the First Selectman stated his support of this land acquisition, and that the acquisition is consistent with proper planning for the Town of Oxford. (Town of Oxford letter, dated 4/19/05; Tr., pp.5-8)

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_H-2_site_alternatives.mxd



Map Location



Site Alternatives Map

Oxford 115- to 13.8-kV Substation

0 500 1,000 2,000 3,000 4,000 5,000 6,000 Feet

0 100 200 400 600 800 1,000 1,200 1,400 1,600 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: USGS Topographic Quadrangles: Southbury and Naugatuck, CT.

Scale: 1:24,000
(1 inch = 2,000 ft)

Northeast Utilities System

ENSR | AECOM

Figure H-2

Date: September 2006

Project #: 05022-012

Table H-1 Oxford Substation Site Alternative Analysis Matrix

Review Criteria	Preferred Site	Jacks Hill Road Alternative	Prokop Road Alternative	Oxford Road Alternative
Proximity to Existing Transmission Line	√	√	√	√
Consistency with Zoning and Present Land Use	√		√	
Moderate Earthwork Requirements Based on Existing Topography	√	√		
Availability of Space	√			√
Ease of Access	√	√	√	
Central Location with Respect to Customer Load	√	√	√	√
Limited Wetland & Floodplain Disturbance	√	√	√	
Moderate Cultural Resource Sensitivity	√	√	√	√
Minimal Upland Habitat Disturbance & Tree Removal	√	√		
Distance From Private Residences	√			
CL&P-Owned Property	√			

The Subject Property is an ideal location for a substation given its central location relative to the load needs of the Town, and its easy interconnection to 115-kV transmission circuits that already traverse the property along a CL&P right-of-way.

The Soil Survey for New Haven County, Connecticut provided the following general characteristics and limitations about the soil series projected to be encountered on the Subject Property. These soil limitations will be addressed by CL&P through the Development and Management ("D&M) Plan that will be prepared for the Project. The Subject Property consists of three soil series: Woodbridge, Paxton, and Ridgebury (two general upland soil series, and one general wetland soil series). The Paxton soil series is characterized with a moderate erosion hazard. Both the Woodbridge and Ridgebury series have a seasonal high water table. Because of this, excavations are inundated. The steep slopes of excavations are unstable when the soil is saturated and tend to slump.

The Subject Property also allows the Substation facility itself to be located outside any inland wetlands or locally regulated 100-foot upland review area. Site preparation and grading activities will create a disturbance to upland review areas, but these impacts will be minimized by implementation of (1) construction best management practices, (2) Connecticut Guidelines for Soil Erosion and Sediment Control, and (3) development and implementation of a landscape and site restoration plan.

The Subject Property allows CL&P to design a substation that meets the needs of the Town, is in an area already zoned for industrial use, minimizes adverse environmental effects and does not create a visual effect on residential neighbors.

H.1.2 Site Alternative – Jacks Hill Road – South Side of Road

A potential alternative site was identified to the south of Jacks Hill Road, east of Christian Street. The soils present at this site consist of Paxton and Woodbridge fine sandy loam. The

Paxton series is gently sloping (3-8% slopes) well drained soils on the top of drumlins, hills and ridges of glacial uplands. The hazard of erosion is moderate for this soil series. The Woodbridge series is gently sloping (3-8% slopes), moderately well drained soil found on the top of drumlins, in slight depressions, and at the base of drumlins on glacial uplands. Because of the seasonal high water table associated with this series, excavations are often inundated. Steep slopes of excavations are unstable when the soil is saturated and tend to slump. The erosion hazard for this soil series is also moderate.

Unfortunately, the zoning for the site was recently changed from Industrial to Residential as part of an approval from the Oxford Planning and Zoning Commission for development of senior housing (the Glendale residential development), and the site is not considered available for purchase. The residential development is currently under construction adjacent to this potential alternative location. Additionally, according to the State and Federal Species and Significant Natural Communities Map for Oxford, CT, published by the Connecticut Natural Diversity Database, this location is located in proximity to a Natural Diversity Database Area of Concern.

H.1.3 Site Alternative – Prokop Road Alternative

A potential alternative site was identified to the east of the transmission line and south of Prokop Road. The soils present at this site include Ninigret fine sandy loam and Hollis-Charlton fine sandy loam. Ninigret fine sandy loam is a nearly level (0-3% slopes), moderately well drained soil in slightly depressional areas of broad outwash terraces and narrow stream valleys. Soils in this series are easy to excavate however the steep slopes of excavations are unstable due to a seasonal high water table. The Hollis-Charlton series is moderately steep to steep, somewhat excessively drained to well drained soils on uplands where the relief is affected by the underlying bedrock. Limitations of the Hollis-Charlton series include steep slopes, shallowness to bedrock, rock outcrops and stoniness.

Zoning for the site is industrial, however, uses west of the potential site consist of mixed use commercial / residential and residential development and the area north of the potential site contains residential uses. The potential alternative site, and the area south of Prokop Road in general, contains steep grades and adjacent inland wetlands. A new easement (resulting in additional tree clearing and upland disturbance) would also be required for this alternative as the site is not directly traversed by the existing transmission line and a new corridor would be needed to tie-in the transmission lines to the Substation.

H.1.4 Site Alternative – Oxford Road Alternative

This location is at the southerly edge of the search area. The potential alternative site was identified to the east of the transmission line and south of Oxford Road (Route 67). The parcel contains standing water and inland wetlands. The Little River flows across a portion of this site, and an additional portion of the site is located in the floodplain of the river. The soils present at this site include Walpole sandy loam, a wetland soil. This soil series is characterized by nearly level (0-3% slopes), poorly drained soil in depressions on broad outwash terraces and narrow stream valleys. These soils have a high water table. Because of this, excavations are often inundated and the steep slopes of excavations are not stable if the soil is saturated. In places, this soil is subject to ponding for several weeks during the winter.

Access to the site would be a potential issue as the parcel fronts Oxford Road, a secondary state highway. Additionally, a significant amount of earthwork and tree clearing would be required to obtain access and to make the site suitable for construction of the Substation. These activities would result in wetland and floodplain impacts along a segment of the Little River. The transmission line tie-ins would also result in wetland impacts as the wetland area would need to be traversed in order to gain access to the existing transmission line which crosses the western portion of the site. Zoning for the site is commercial; public utility stations are not a permitted use in this zone. Adjacent parcels to the northwest and to the north of Oxford Road contain residential uses.

H.2 System Alternatives

CL&P's evaluation of system alternatives included construction of new distribution feeders (i.e., new distribution lines from existing substation facilities to serve the Oxford area), and adding transformer capacity at the following 115-kV bulk substations: Bates Rock, Beacon Falls, South Naugatuck, and Stevenson. Establishing a new substation in Oxford, however, was found to be the best solution. This determination was based on the following:

- Capacity – a new substation in Oxford results in a net increase in the available capacity of each substation (i.e., Bates Rock, Beacon Falls, South Naugatuck) to serve the customers in its core service area;
- Reliability and Operability – a new substation in Oxford reduces exposure to system outages and provides greater ability to transfer load in the event of outages; and,
- Cost – the cost of a new substation in Oxford is less than the system upgrades (i.e., addition of transformer capacity and construction distribution infrastructure from other substations) that would be required to meet the growing customer load.

Expansion of Existing Substations

An alternative solution to address the capacity shortfall is to expand neighboring substations. The closest, Beacon Falls, already has two feeders serving a portion of the load in Oxford. Since both of these feeders are relatively long and near their rated capacity, expanding this substation would require the installation of additional distribution feeders.

- Capacity - Placing a third 47-MVA power transformer at the Beacon Falls Substation, an emergency mobile position, and new switchgear for four or more new 13.8-kV feeders would add, at most, a total of 57 MVA of rated capacity to the system. Other existing substations (i.e., Bates Rock or South Naugatuck) would also need to be upgraded to

match the 70-75 MVA capacity that will be gained by construction of a new substation in Oxford.

- Reliability and Operability – construction of new and relatively long distribution feeders from existing substations increases system exposure and, therefore, the potential for system outages. Furthermore, this alternative would not provide the desired system flexibility to transfer load to meet the needs of customers during system outages.

- Cost - Adding new capacity at either the Bates Rock or South Naugatuck substations would require the addition of new and relatively long distribution feeders from these sources into Oxford. These new feeders would need to traverse steep terrain, which would be costly to construct and difficult to maintain. The feeders would need to extend an average of more than 7 miles to reach the load center in Oxford, and would cost roughly $500,000 per mile. At least two such feeders would be needed from each expanded substation. Based on estimates for four feeders, each 7 miles in length, the feeder costs alone would exceed 14 million dollars. Also, the additional equipment required to add capacity at each substation would cost at least 3 million dollars. The total estimate for upgrading two substations under this alternative exceeds 20 million dollars.

Based on the foregoing, this system alternative was considered impractical in comparison to the proposed Project.

Other System Alternatives

1) CL&P evaluated the addition of a new transformer at only one existing substation. This alternative is not considered feasible because it would not provide the needed capacity, and would still require additional distribution feeders to supply the necessary load to Oxford.

This is also a less reliable alternative because it would not spread the load among multiple substations. The costs associated with the new transformer and additional feeders (4 each), are estimated at roughly 17 million dollars, well in excess of the costs estimated for construction of the proposed Project.

2) CL&P also evaluated installation of additional feeders to more distant substations. Theoretically, an express feeder serving Oxford could be added beginning at the Bunker Hill Substation in Waterbury, which is one town removed from Oxford. One 13.8-kV feeder from the Bunker Hill Substation currently makes its way from Waterbury to the northern end of Oxford, but it can only be counted on to supply emergency power to a small northern part of the Town during non-peak load periods. Adding a feeder to this substation would be even more costly, based on the longer distances, and even less reliable.

Likewise, an 8.32-kV feeder originating from the Stevenson Substation, across the Housatonic River in Monroe, could theoretically supply Oxford, but this source is also only available to supply emergency power to a small area in the southwest part of the Town during non-peak load periods. The availability of this substation to routinely serve Oxford load is constrained by its devotion to backup the Sandy Hook Substation in Newtown.

Conclusion

Based on the alternatives analysis provided above, construction of a new bulk substation in Oxford is the most reliable and cost-effective solution to serve the growing load in Oxford. The proposed Project will include new distribution feeders at reasonable lengths and dedicated to serving the Oxford load, and will enhance distribution system reliability in Oxford. Furthermore, most of the Oxford load that is currently consuming substation capacity in adjacent towns will be transferred to the new Substation, freeing up capacity at those Substations to serve load growth in their host towns.

Connecticut Energy Advisory Board

Conn. Gen. Stat. 16a-7c(b) requires the Connecticut Energy Advisory Board ("CEAB"), upon receipt of an Application, to issue a request for proposals to seek alternate solutions to the need that will be addressed by this Project. Under Conn. Gen. Stat. 16-50*l*(a)(2), the CEAB process is triggered by the filing of certain applications with the Council, including a proposed Substation. The Project is consistent with CEAB's preferential criteria, which was developed for the purpose of evaluating responses to requests for proposals issued under the statute with a view toward balancing energy reliability, environmental and natural resource protection, cost effectiveness, and quality of life goals. To that end, the Oxford Substation Project:

- Enhances distribution system reliability, operability and capacity;
- Protects energy resources from physical risk through CL&P's substation security designs and practices:
- Provides long-term benefit (the Project will be designed to last for more than 40 years) and avoids stop-gap measures (the need for additional, long distribution feeders from substations in other towns over difficult terrain will be eliminated);
- Capitalizes on existing infrastructure by locating immediately adjacent to an existing transmission line with adequate capacity (no transmission expansion is needed);
- Meets an identified energy need and is consistent with forecasted resource needs as identified by the Regional System Operator (ISO-NE) and the Council.
- Provides local tax revenues; and
- Supports environmental protection, as discussed in Section K and L of this MCF.

I.0 EXISTING CONDITIONS

As part of the plan set for the Project, CL&P has developed an existing conditions plan that depicts various conditions within the Subject Property including but not limited to access to the Subject Property off of Christian Street via the newly constructed Commerce Park Drive, abutting properties, surface elevation contours, ancillary facilities (utility poles, transmission lines, trails, roads), parcel boundaries and wetland resources. The following section provides a detailed description of the existing conditions within the Subject Property (Refer to Appendix E, Project Plans).

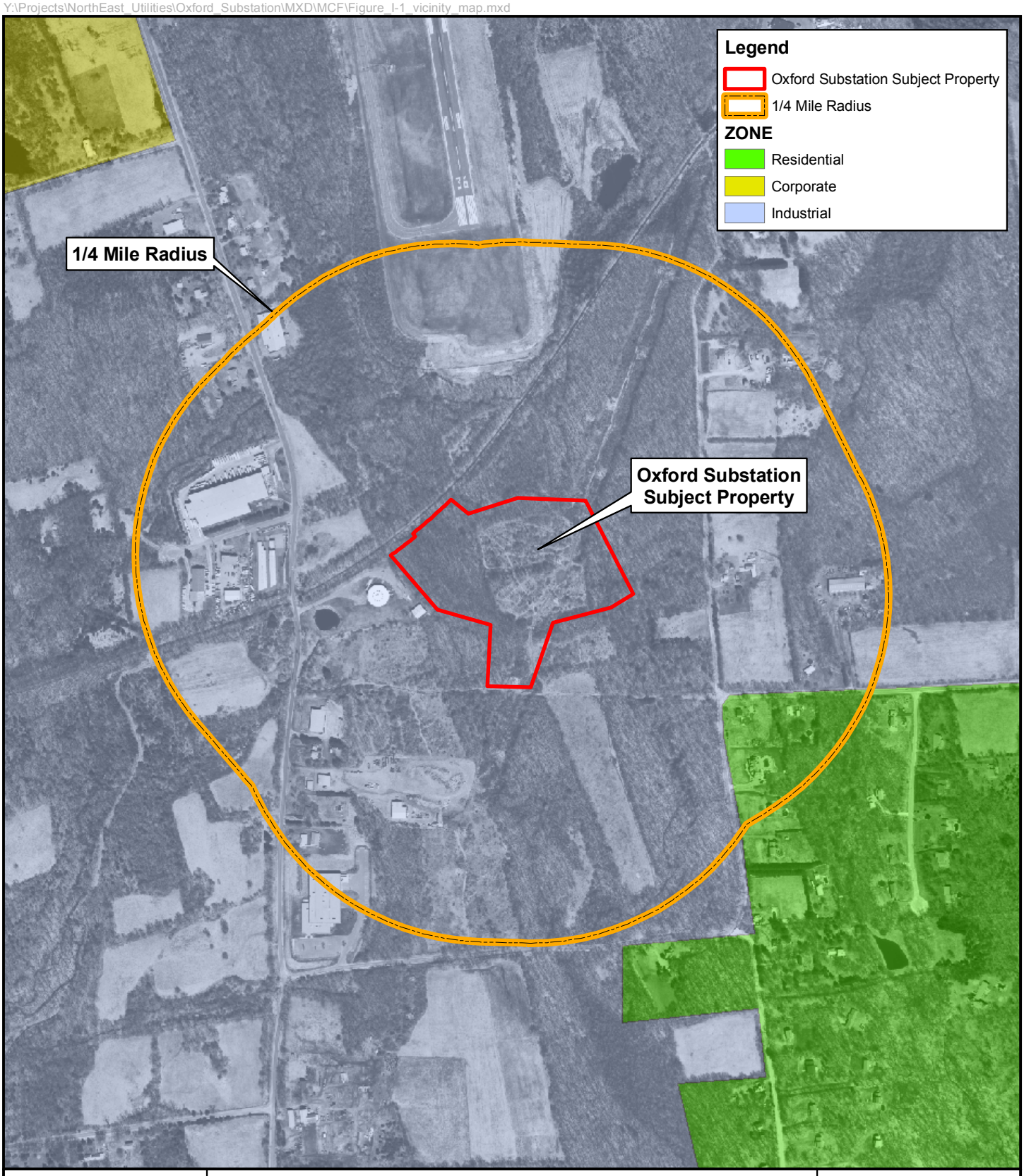
I.1 Existing Land Use

The Subject Property is located within the Oxford Commerce Park located north of Jacks Hill Road, west of Christian Street and east of North Larkey Road. The property has been zoned for I-industrial use per the Town of Oxford Zoning Regulations (Refer to Figure I-1, Vicinity Map). The state-owned Larkin Bridle Trail is located northwest of the Subject Property, and the Oxford Science Park is to the south. The Waterbury-Oxford Airport is approximately 1,500 feet to the north. There are no existing homes in the area adjacent to the Subject Property. Existing forested uplands and wetlands provide visual screening of the Subject Property. An existing 110-foot wide CL&P right-of-way traverses the Subject Property and is occupied by three 115-kV transmission circuits on two rows of steel lattice towers.

I.2 Wetlands and Watercourses

On April 3 and 10, 2006, Soil Science and Environmental Services, Inc. (SSES), confirmed the boundaries of the wetlands and watercourses on and immediately adjacent to the Subject Property. The assessment was conducted to identify the presence and extent of inland wetlands and watercourses, and to confirm the boundary of wetland soils on and adjacent to the Subject Property. On June 7, 2006 ENSR Corporation (ENSR) performed field

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_I-1_vicinity_map.mxd



Map Location

Vicinity Map

Oxford 115- to 13.8-kV Substation

0 350 700 1,400 2,100 Feet

0 50 100 200 300 400 500 600 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: SBC aerials.

Scale: 1:8,400
(1 inch = 700 ft)

Northeast Utilities System

ENSR | AECOM

Figure I-1

Date: September 2006

Project #: 05022-012

reconnaissance to evaluate wildlife habitats and vegetative cover types (See Appendix F, Environmental Assessment Report).

The boundaries of the inland wetlands and watercourses were determined based upon the definitions and methodology pursuant to the Connecticut Inland Wetlands and Watercourses Act, Sections 22a-36 through 22a-45. The wetlands boundary determination performed for the Subject Property also included a review of the Town of Oxford Wetland Soils Map prepared by the CTDEP Environmental and Geographic Information Center (1995 Soils Digital Data), and a previous wetland delineation conducted by Environmental Planning Services, Inc. in 2004 for the re-subdivision of land owned by David B. Sippin. A Wetlands / Watercourses and Soil Report prepared by SSES is provided in Appendix G documenting the wetland soil types found on the Subject Property.

The identified wetlands were classified according to the U.S. Fish and Wildlife Service classification system (Cowardin et al, 1979), and assessed based on the U.S. Fish and Wildlife Service Wetland Definition and Classification System utilizing Keys to Landscape Position of Landform Descriptors for U.S. Wetlands (Operational Draft).

The Subject Property wetlands consist of palustrine scrub/shrub broad-leaved deciduous wetlands located within the existing 110-foot wide electric transmission line easement, and palustrine forested broad-leaved deciduous wetland (forested swamp) located along the fringes of the Subject Property. The scrub/shrub wetland system includes some inclusions of palustrine emergent persistent wetland (wet meadow). There are two main intermittent watercourses that bisect the Subject Property. One intermittent watercourse flows across the southern portion of the Subject Property and the second watercourse flows along the northerly portion of the Subject Property. These two watercourse systems converge at the western border of the Subject Property and flow to the north, under the Bridle Trail. The

watercourse/stream system is ultimately tributary to the Little River located approximately 0.8 mile to the southwest of the Subject Property. Wetlands occurring on the Subject Property receive surface and ground water, which passes through the wetland and is discharged to the streams and wetlands that occur at a lower elevation. The wetlands on and abutting the Subject Property are located along the fringe and lower elevations of the till ridge that forms the central portion of the Subject Property, and seasonal high groundwater and intermittent stream flows contribute to the hydrological characteristics of the wetland system.

The scrub/shrub wetlands are dominated by moderate to tall growing shrubs including southern arrowwood (*Viburnum dentatum*), silky dogwood (*Cornus amomum*), black willow (*Salix nigra*), pussy willow (*Salix discolor*), winterberry (*Ilex verticillata*), spicebush (*Lindera benzoin*) and multiflora rose (*Rosa multiflora*). The emergent wetlands interspersed within the scrub/shrub wetland are dominated by a plant community of spotted jewelweed (*Impatiens capensis*), sedge (*Carex spp*.), soft rush (*Juncus effusus*), knotweed (*Polygonum spp*.), rough-stemmed goldenrod (*Solidago rugosa*) and hydrophillic grasses (*Graminaea spp*.). The forested wetlands are dominated by a canopy of deciduous species including red maple (*Acer rubrum*), American elm (*Ulmus americana*), yellow birch (*Betula alleghaniensis*), sweet birch (*Betula lenta*) and to a lesser extent, eastern hemlock (*Tsuga canadensis*).

I.3 Vegetation and Wildlife

Upland areas of the Subject Property consist of old field habitats, shrub/sapling thickets and mature deciduous forest. The old field habitat is comprised of orchard grass (*Dactylis glomerata*), common milkweed (*Asclepias syriaca*), galium/cleavers (*Galium aparine*), cow vetch (*Vicia cracca*) and common plantain (*Plantago major*). The plant species comprising the shrub thickets include an assemblage of autumn olive (*Elaeagnus umbellata*), grey-stemmed dogwood (*Cornus racemosa*), muliflora rose (*Rosa multiflora*), red cedar (*Juniperus virginiana*) and black cherry (*Prunus serotina*). Mature upland forest abuts the Subject

Property and the existing electric transmission line. The predominantly deciduous forest consists of large diameter trees including yellow birch (*Betula alleghaniensis*), white oak (*Quercus alba*), sweet birch (*Betula lenta*), red maple (*Acer rubrum*) and pignut hickory (*Carya glabra*). (See Appendix A, Site Photographs).

When taken collectively, the plant communities occurring in the upland and wetland cover types described above potentially provide habitats for a diverse wildlife assemblage. The described interspersed cover types combine to produce an area of high structural diversity thereby benefiting a wide range of wildlife species. These wildlife habitats collectively function to provide escape cover, nesting sites, browsing and other feeding style opportunities, seasonal water, and migration corridors. This assemblage of plant species and habitat cover types provide significant structural diversity and benefit a diverse group of wildlife.

I.4 Rare, Threatened, and Endangered Species

According to the State and Federal Listed Species and Significant Natural Communities Map for the Town of Oxford (June 2006) prepared by the Connecticut Department of Environmental Protection ("CTDEP") Natural Diversity Data Base (NDDB), the Subject Property is not located within mapped NDDB area of concern. The southern most portion of the Subject Property is located within ½ mile (upstream) of a mapped area of concern located south of Jack's Hill Road. Projects located within or less then ½ mile away from an area of concern must consult with the NDDB program.

In response to CL&P's August 9th inquiry on the presence of rare, threatened and endangered species, the CT NDDB indicated in their August 31st correspondence that their records show that a state-listed species of special concern, American kestrel (*Falco sparverius*) occurred historically in the vicinity of the Subject Property (Refer to Appendix H,

Agency Correspondence). The NDDB recommended that a species-specific field survey be completed to document any observations of American kestrel and the habitat characteristics of the site.

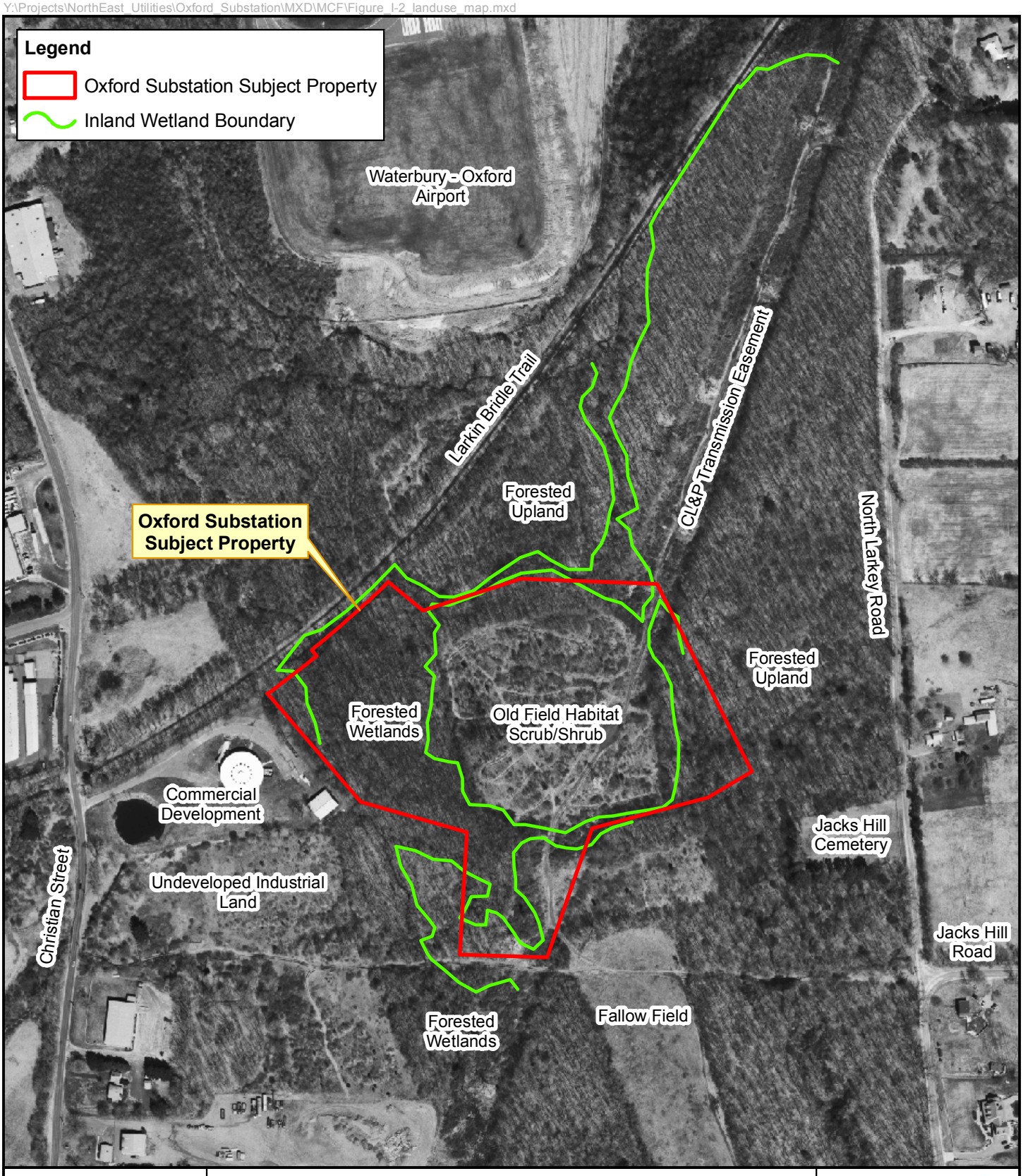
On behalf of CL&P, an ENSR biologist performed a habitat assessment on the Subject Property on September 11th. The purpose of the habitat assessment was to determine if the site contained habitat which could potentially be utilized by the American kestrel. Various cover types were documented, with plant lists generated by cover type. Existing plant communities/cover types were photographically documented. The existing cover types currently exist in varying degrees of interspersion and collectively form a mosaic. An aerial photograph of the site as well as the immediate surroundings and general vegetation cover types are presented on Figure I-2. The entire site, including offsite areas which are visible from and/or immediately adjacent to the Subject Property, were evaluated relative to American Kestrel habitat.

In Connecticut, the American Kestrel is listed as a Species of Special Concern. The Atlas of Breeding Birds of Connecticut cites the two primary requirements of American Kestrels as being open terrain, which is utilized as hunting grounds, and tree cavities, which are used for nesting. The Atlas states that in Connecticut, American Kestrels are usually seen around agricultural areas, airports, large parks and power line rights-of-way. Preferred habitat is grassland and/or shrubland at the edge of forest or open country with scattered trees. Kestrels feed on a wide array of food items including but not limited to large invertebrates, small vertebrates such mammals, herpetofauna and small birds.

I.5 Water Supply Areas

According to the Water Quality Classification Map of the State of Connecticut as classified by the CTDEP, groundwater within the Subject Property has been designated as GA. The

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_I-2_landuse_map.mxd



Map Location

N

General Land Use Map

Oxford 115- to 13.8-kV Substation

0 100 200 400 600 800 1,000 1,200 Feet

0 30 60 120 180 240 300 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: SBC aerials.

Scale: 1:4,200
(1 inch = 350 ft)

Northeast Utilities System

ENSR | AECOM

Figure I-2

Date: September 2006

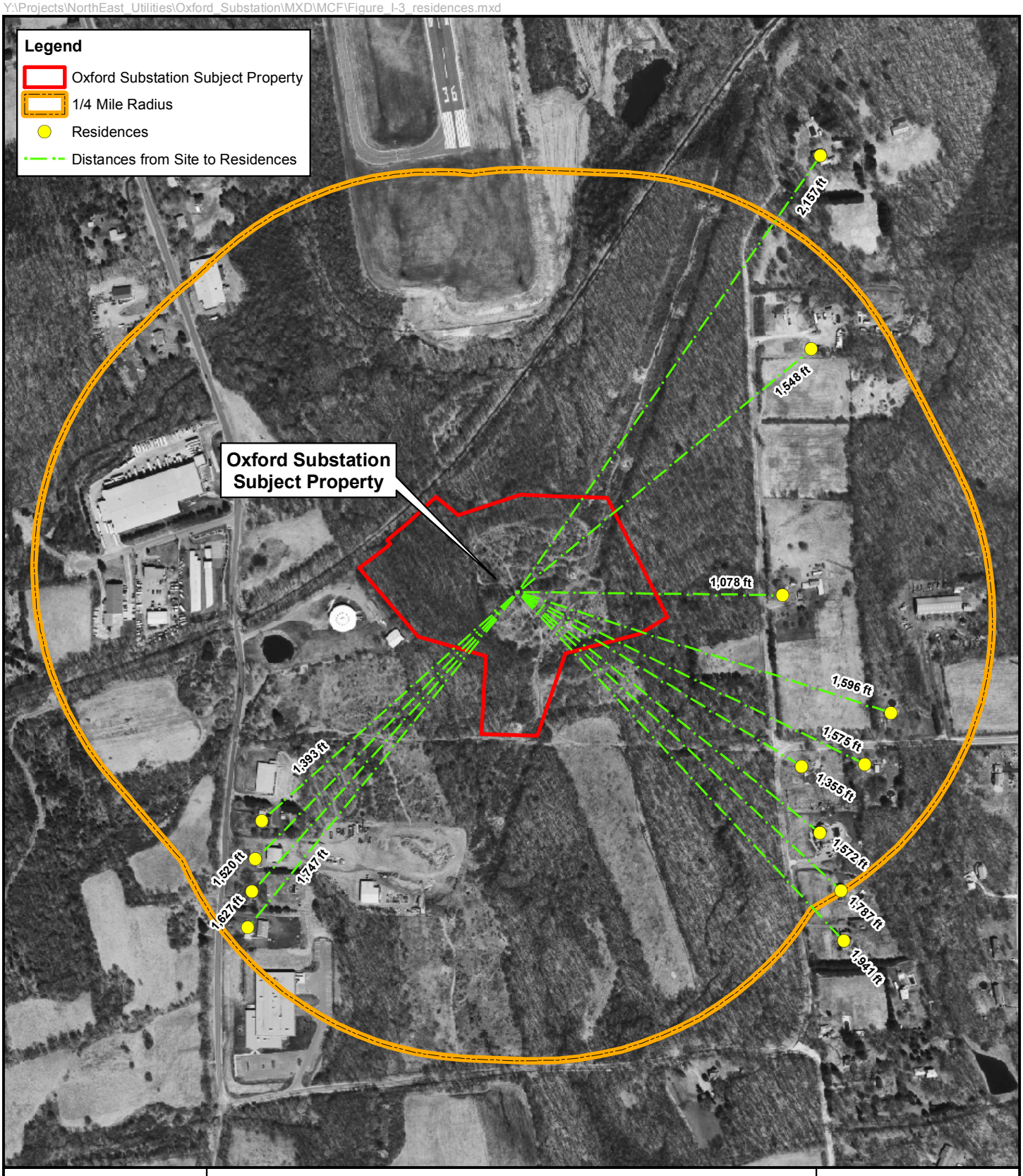
Project #: 05022-012

designated use for groundwater within the GA classification is for existing private and potential public drinking water supplies. Specifically, this classification includes ground waters within the area of influence of private and potential public water supply wells that are presumed to be suitable for direct human consumption without need for treatment.

According to the Town of Oxford, there are no public water supply wells located within ¼-mile of the Subject Property. Residences located within ¼ mile of the Subject Property are shown on Figure I-3. The area is presently partially served by the Heritage Village Water Company, which relies on a system of five wells to meet the Town's water supply. Additionally, Aquarion Water Company serves one customer at 154 Christian Street. The wells utilized by Heritage Village Water Company are located close to the Pomperaug River in the Town of Southbury. The wells pump water from the Pomperaug Aquifer which extends from the Housatonic River northward into Woodbury, along the Pomperaug River. Some of the homes and businesses on Christian Street and Jacks Hill Road and all businesses and homes on North Larkey Road rely on private wells as a water source. Figure I-4 identifies those locations within ¼ mile of the Subject Property which rely on private wells as drinking water sources.

The Subject Property is not located within a State designated Aquifer Protection Area according to data obtained from the CTDEP Geographic Information Systems ("GIS") database. Connecticut's Aquifer Protection Program has been developed to protect the water quality of the State's highest yielding public water supply wells by establishing Aquifer Protection Areas ("APA") around those wells. The location of these APAs is determined through preliminary mapping and later final mapping. The mapping is performed by the water companies who own the wells and is approved by the CTDEP. No high yield public water supply wells are located within ¼-mile of the Subject Property.

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_I-3_residences.mxd



Map Location

Residences Within 1/4 Mile of Subject Property

Oxford 115- to 13.8-kV Substation

0 275 550 1,100 1,650 Feet

0 75 150 300 450 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: SBC aerials.

Scale: 1:6,600
(1 inch = 550 ft)

Northeast Utilities System

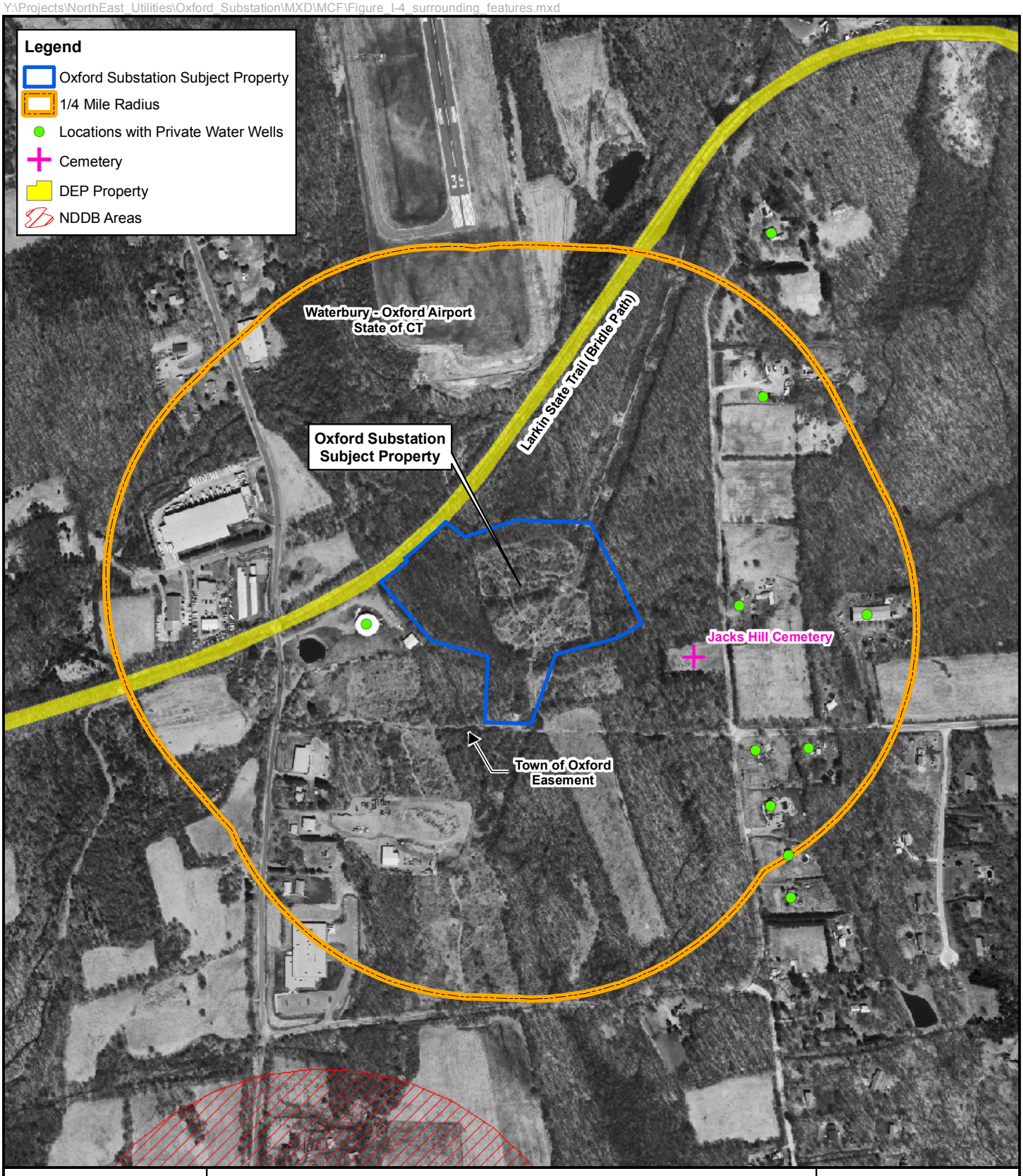
ENSR | AECOM

Figure I-3

Date: September 2006

Project #: 05022-012

Y:\Projects\NorthEast_Utilities\Oxford_Substation\MXD\MCF\Figure_I-4_surrounding_features.mxd



Map Location

Surrounding Features

Oxford 115- to 13.8-kV Substation

0 325 650 1,300 1,950 Feet

0 50 100 200 300 400 500 Meters

Map Projection: CT State Plane , NAD 83, US Feet.
Image Source: SBC aerials. Data Source: CT DEP and ESRI GIS data.

Scale: 1:7,800
(1 inch = 650 ft)

Northeast Utilities System

ENSR | AECOM

Figure I-4

Date: September 2006

Project #: 05022-012

I.6 Scenic Areas

There are no documented scenic areas or scenic view-sheds designated within ¼ mile of the Subject Property. According to the Oxford Public Works Department, there are no scenic roadways officially designated within ¼ mile of the Subject Property. A segment of the state-owned Larkin Bridle Trail is located to the northwest of the Subject Property. Information on the Larkin Bridle Trail is provided in Section I.10 below.

I.7 Historic and Archaeological Resources

CL&P received correspondence from the Connecticut State Historic Preservation Officer ("CT SHPO") dated August 16, 2006 indicating that the preferred project area, as well as the alternate sites, possess moderate to high sensitivity for prehistoric and historic archaeological resources (Refer to Appendix H, Agency Correspondence). The CT SHPO recommended that a professional reconnaissance survey be undertaken to identify and evaluate archaeological resources which may exist within the proposed project limits.

The cultural resource assessment found no reported cultural resources within any project areas, and noted that any unreported resources in the Prokop Road alternative site would have been removed by the sand and gravel extraction operation which encompasses this entire property. The Subject Property appears highly sensitive for Native American archaeological resources. The Jacks Hill Road alternative, and limited areas of the Oxford Road alternative away from wetlands, also appear sensitive for similar resources.

There are no historic resources adjacent or close to the Subject Property which have been determined eligible for the National or State Registers of Historic Places. The former railbed to the northwest, now the Larkin Bridle Trail, appears potentially eligible. The Jacks Hill Cemetery is a protected historic resource under state statute.

I.8 Geology and Soils

According to the Bedrock Geology Map of Connecticut (Connecticut Geology and Natural History Survey, 1985), the bedrock underlying the Subject Property consists of well layered gray granofels. Granofels are medium to coarse grained metamorphic rock composed primarily of quartz and feldspar.

A review of the Surficial Materials Map of Connecticut, DEP, 1992, indicates that most of the Subject Property is underlain by thin till. Thin till is generally less than 10-15 feet thick.

The Subject Property consists of the following upland and wetland soil types. The Soil Report and sketch map of soil type locations mapped by SSES are included in Appendix G.

There are approximately 9.43 acres of uplands that occur within the 15.77 acre Subject Property. The upland soil types consist of the following:

Woodbridge fine sandy loam (Aquic Dystrudepts)

The Woodbridge series consists of moderately well drained loamy soils formed in subglacial till. They are very deep to bedrock and moderately deep to a densic contact. They are nearly level to moderately steep soils on till plains, hills, and drumlins. Slope ranges from 0 to 25 percent. Saturated hydraulic conductivity ranges from moderately low or moderately high in the surface layer and subsoil and low or moderately low in the dense substratum.

Paxton fine sandy loams (Oxyaquic Dystrudepts)

The Paxton series consists of well drained loamy soils formed in lodgement till. The soils are very deep to bedrock and moderately deep to a densic contact. They are nearly level to steep soils on till plains, hills, and drumlins. Slope ranges from 0 to 45 percent. Saturated

hydraulic conductivity is moderately high or high in the surface layer and subsoil and low to moderately high in the substratum.

Montauk fine sandy loams (Oxyaquic Dystrudepts)

The Montauk series consists of very deep, well drained soils formed in till derived primarily from granitic materials. These soils are on upland till plains and moraines. Slope ranges from 0 to 35 percent. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum.

There is a continuous wetland system and two intermittent watercourses present on the Subject Property. The wetland area comprises approximately 6.34 acres. The wetland soils types consist of the following:

Ridgebury sandy loam (Aeric Endoaquepts)

The Ridgebury series consists of very deep, somewhat poorly and poorly drained soils formed in till derived mainly from granite, gneiss and schist. They are commonly shallow to a densic contact. They are nearly level to gently sloping soils in low areas in uplands. Slope ranges from 0 to 15 percent. Saturated hydraulic conductivity ranges from moderately low to high in the solum and very low to moderately low in the substratum.

Leicester fine sandy loam (Aeric Endoaquepts)

The Leicester series consists of very deep, poorly drained loamy soils formed in friable till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Slope ranges from 0 to 8 percent. Permeability is moderate or moderately rapid in the surface layer and subsoil and moderate to rapid in the substratum.

Whitman loam (Typic Humaquepts)

The Whitman series consists of very deep, very poorly drained soils formed in glacial till derived mainly from granite, gneiss, and schist. They are shallow to a densic contact. These soils are nearly level or gently sloping soils in depressions and drainageways on uplands. Permeability is moderate or moderately rapid in the solum and slow or very slow in the substratum.

I.9 Floodplain Areas

According to Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map (Community Panel Number 090150 0003B and 090150 0001B), dated December 4, 1979), there are no flood hazard areas located within the Subject Property. The Subject Property is located in Zone B. FEMA defines Zone B as areas with less than a 1% chance of flooding each year; areas that have less than a 1% chance of sheet flow flooding with an average depth of less than 1 foot; areas that have less than a 1% chance of stream flooding where the contributing drainage area is less than 1 square mile; or areas protected from floods by levees. No base flood elevations or depths are shown within these zones on the Flood Insurance Rate Maps for the Subject Property.

I.10 Recreational Areas

The state-owned Larkin Bridle Park Trail (Bridle Trail) is located to the northwest of the Subject Property (refer to Figure I-4). The Bridle Trail is a component of the Connecticut Rails-To-Trails System, and is an officially designed Connecticut Greenway (CTDEP). The trail is an abandoned rail line running between Waterbury and Brewster, NY. An approximate 10.3 mile section of the railway was dedicated to the State of Connecticut in 1943 for use as a park and bridle trail. The trail begins in Southbury and ends in Naugatuck,

and consists of the original surface of ballast and cinder. The trail is used primarily by equestrians and hikers.

I.11 Seismic Areas

The USGS-National Earthquake Reduction Program has developed a series of maps that depict the estimated probability that certain levels of ground shaking from an earthquake will occur within a given area over a period of time. USGS takes into account the seismic history of an area and the expected decrease in intensity with distance from the epicenter. Based on review of USGS-National Earthquake Hazard Program maps, the seismic risk in the Project area is indicated as a peak acceleration (percent of gravity [%g]) value of 5 with 10 percent probability of exceedance in 50 years. The Subject Property is located in a lower (probability range) seismic hazard area according to the USGS Earthquake Hazards Program.

I.12 Noise

The existing land use of the Subject Property produces noise levels well below the CTDEP standard regulated level of 70 dBA for a Class C receptor (Industrial use) as the land is currently unoccupied except for the eastern portion of the Subject Property which contains existing CL&P transmission circuits. Some of the adjacent properties are currently under development as the initial components of the Oxford Commerce Park are constructed, including the main roadway Commerce Park Drive, all of which will eventually contribute to noise generation in the Project area. Other contributing factors for noise generation from the area of the Subject Property are traffic noises generated from nearby roadways, and regular operation of the Waterbury-Oxford Airport to the north of the Subject Property.

I.13 Lighting

The only lighting currently existing within the Subject Property is associated with the Waterbury-Oxford Airport safety lighting that has been affixed to multiple CL&P transmission line towers traversing the eastern portion of the site.

I.14 Other Surrounding Features

Figure I-4 (Surrounding Features) depicts the locations of other surrounding features within ¼-mile of the Subject Property. The figure shows the location of municipal, state, and federal property, statutory facilities [as defined under Conn. Gen. Stat. 16-50*l*(a)(1)(A)(iii)], and CTDEP NDDB areas. As shown on the figure, the Larkin Bridle Trail is located to the northwest, and the Waterbury-Oxford Airport to the north of the Subject Property. No known statutory facilities [private or public schools [K-12], licensed child day care facilities, licensed youth camps, and public playgrounds] were identified within a ¼-mile radius of the Subject Property. There are however 11 residences located within ¼-mile of the Subject Property. None of these residences are located immediately adjacent to the Subject Property. The closest residence (14 North Larkey Road) is located approximately 1,078 feet to the east of the center point of Substation Subject Property (refer to Figure I-3).

The locations and approximate distances of these residences to the center point of the Substation Property are depicted on Figure I-3. The Jacks Hill Cemetery is an active cemetery in use since the late 18th century, located approximately 200 feet to the east of the Subject Property and approximately 650 feet to the east of the Substation footprint. The Jacks Hill Cemetery qualifies as an “ancient burial place” pursuant to Conn. Gen. Stat. 19a-315, which defines “ancient burial places” as any tract of land within any municipality which has been used or has been in existence as a burial ground for more than one hundred years. The recent re-subdivision of the Oxford Commerce Park resulted in the creation of

approximately 4.30 acres of open space surrounding the Jacks Hill Cemetery, which is located on the east side of the Subject Property. Other land uses in proximity to the Subject Property include industrial, commercial, and mixed industrial-residential uses. The Subject Property is located entirely within an industrial zoned area of the Town of Oxford. The Subject Property is one of five industrial-zoned lots incorporating the Oxford Commerce Park. Some of the adjacent lots are currently under development for the stormwater management system for Commerce Park Drive.

J.0 SAFETY AND RELIABILITY INFORMATION

The Project would be constructed in full compliance with the standards of the National Electrical Safety Code, Association of Edison Illuminating Companies, and good utility practice. Should equipment experience a failure, protective relaying would immediately remove the equipment from service, thereby protecting the public and the equipment within the Substation.

Fire/smoke detection would automatically activate an alarm at Connecticut Valley Electric Exchange ("CONVEX"), and the system operators then would take the appropriate action. The control enclosure would be equipped with fire extinguishers.

The Substation has been equipped with measures to ensure continued service in the event of outages or faults on transmission or substation equipment. Continued reliability would be achieved by incorporating "loop through" design configurations for the existing 115-kV overhead transmission lines, transformer protection, and redundant automatic protective relaying equipment.

The 115-kV portion of the Substation would include a circuit breaker to facilitate a "loop through" design configuration. In the event of a 115-kV line fault, the circuit breaker would open to help isolate the faulted line. Protective relaying equipment is incorporated into the Project design to automatically detect abnormal system conditions and send a protective trip signal to the respective circuit breaker(s) at each end of a line to isolate the faulted section of the transmission system. The protective relaying schemes include fully redundant primary and backup equipment so that an outage of one scheme does not require the portion of the transmission system being monitored by the protective relaying equipment to be removed from service.

The protective relaying and associated equipment, along with a SCADA system for remote control and equipment monitoring, would be housed in the switchgear enclosures as well as in the control enclosure as depicted on the attached Project Plans (Refer to Appendix E). These enclosures would have smoke detectors installed which would be monitored from a remote location.

Other devices would constantly monitor the Substation equipment to alert CL&P of any abnormal or emergency situations. The access drive to the Substation would be gated and the perimeter of the Substation would be enclosed with a 7-foot high chain link fence topped with an additional foot of 3 strands of barbed wire to discourage unauthorized entry and vandalism. Lighting would be provided within the Substation yard to facilitate work at nighttime or during inclement weather.

CL&P would install an oil sump to serve as a containment chamber around the two proposed transformers. The sumps would be sized with sufficient capacity to contain a spill in the event of an inadvertent release of oil. CL&P would propose to install an Imbiber Beads Drain Protection System® similar to containment systems installed at other CL&P Substations, such as the Shunock Substation in North Stonington, and as proposed at the Wilton Substation in Wilton.

K.0 EFFECTS ON THE ENVIRONMENT

The development of the Substation is not expected to have significant, long-term adverse effects on the existing environment or ecological characteristics of the Subject Property, or on the scenic, historic or recreational values of the surrounding area. Please refer to the Project Plans located in Appendix E that depict the proposed conditions associated with the Substation.

K.1 Public Health and Safety

The Project would be constructed in full compliance with the standards of the National Electrical Safety Code, Association of Edison Illuminating Companies, and good utility practice. Applicable signage would be installed alerting the general public of the dangers of high voltage with the Substation.

K.2 Local, State, and Federal Land Use Plans

The Project is consistent with local, State, and Federal land use plans. According to the Oxford Zoning Regulations, the Subject Property lies within an area zoned for Industrial use (I) and is not within an Aquifer Protection Zone. Pursuant to Schedule A of the Oxford Zoning Regulations, *public utility stations* are a permitted use in the Town of Oxford's Industrial District. The general area of the Subject Property is identified in the *Town of Oxford 1999 Draft Plan of Conservation and Development Economic Base Analysis North Area Industrial Plan* (April, 1999) to be land for industrial development which will enable the Town to lessen the tax burden on individual homeowners, as well as provide jobs for residents.

CL&P has also reviewed the *Conservation and Development Policies Plan for Connecticut 1998 - 2003* ("C&D Plan") for information relating to the State's growth in general, and the

Town of Oxford and neighboring communities specifically. 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 C&D Plan, the Project is consistent with the overall goals and objectives of the Plan and serves a public need for a reliable source of electricity for a developing town such as the Town of Oxford. As stated in the C&D Plan, "the growth of firms involved in the production of energy-related products and the provision of energy related services helps retain capital and preserve and expand job opportunities within Connecticut" (p. 16).

There are no Federal properties or Federally-designated areas located on or within ¼-mile of the Subject Property, therefore, the Project is not affected by any applicable Federal land use plan.

K.3 Existing and Future Development

The Substation would benefit the community by improving the electric reliability of existing service to the Town and provide the ability to meet increased energy demands. The Substation would effectively eliminate reliance on the other area substations.

The Substation would be contained within an approximately 1.1-acre fenced area. The fenced area would be approximately 226- by 229-feet, with a trap-rock surface and secured by a 7-foot high chain link fence topped with one foot of barbed wire. The 115-kV line interconnection with the Substation would be made using two up to 55-foot high line terminal structures. The Substation would consist of typical components including power transformers, metal-clad distribution switchgear, circuit switchers, circuit breakers, a relay and control enclosure (approximately 48 feet by 14 feet) and a battery enclosure (approximately 24 feet by 14 feet) within the fenced area of the Substation. The enclosures

would contain protective relaying and control equipment associated with the transmission portion of the Substation. Also within the switchgear and control enclosures, equipment for full Supervisory Control and Data Acquisition (SCADA) system functions and digital metering would be installed at the Substation for control and monitoring of the Substation from a remote location.

K.4 Site Access / Roads

Access to the Substation will be from Commerce Park Drive, which is currently under construction by others to provide access to the Oxford Commerce Park. CL&P would construct an access drive near the terminus of the Commerce Park Drive in a northerly direction into the Subject Property (approximately 600 linear feet) (Refer to Appendix E, Project Plans). The travel lane of the access drive will be approximately 15 feet wide to accommodate CL&P maintenance vehicles, with the remaining width of approximately 10 feet comprising the driveway embankments. A bituminous concrete apron would be installed at the entrance of the access drive at the junction with Commerce Park Drive. At the northern terminus of the driveway, a level, crushed stone parking area would be created for CL&P maintenance vehicles. Distribution getaways would exit the Substation underground in conduits beneath the access drive.

Once operational, CL&P does not plan to permanently staff the Substation; periodic trips (two trips per month) to the Substation would be anticipated for monitoring and maintenance purposes.

K.5 Wetlands and Watercourses

The Substation facility is sited outside of inland wetlands and the locally regulated 100-foot upland review area. Site preparation and grading activities for the construction of the Substation will extend into portions of the upland review area. Approximately 21,450 square

feet of upland review area will be disturbed during the construction phase of the Project. The proposed work within the 100-foot upland review area will be predominantly grading activities to construct the embankments around the Substation and to construct the gravel access drive to the Substation. Access to the Substation will be via a new gravel access constructed on the north side of Commerce Park Drive. Access to the Substation would require crossing an inland wetland and intermittent watercourse. There is a scrub-shrub/emergent wetland located at the southern portion of the site with two "finger-like" projections of wetland that extend easterly across the site. The first crossing will be approximately 50 linear feet across and the second wetland/watercourse crossing will be approximately 40 linear feet across. There is no other feasible means of upland access from a public road to the Subject Property. CL&P has evaluated multiple crossing locations to reduce the overall inland wetland and watercourse effects from the construction of a new access drive. CL&P would construct the minimum width driveway required to safely access and egress the Substation. Constructing a new access drive for the Substation would temporarily affect approximately 1,200 square feet of inland wetlands and permanently affect approximately 3,600 square feet of inland wetlands.

The northern finger-like projection of wetland to be crossed by the access drive borders an intermittent watercourse. Construction of the access drive would require crossing of this approximately six foot wide intermittent watercourse. The area of the watercourse to be affected is located within the existing electric transmission line right-of-way. The watercourse at this location consists of shallow, gradually sloping banks with a gravel / cobble substrate. Approximately 50 linear feet and approximately 300 square feet of this intermittent watercourse would be permanently affected by the construction of the access drive. The watercourse crossing would be accomplished while maintaining ambient base flows of the stream. CL&P would design a culvert crossing with the capacity to maintain ambient stream

flow and to handle anticipated storm flows. CL&P is currently evaluating the size and structure type of the culvert(s) to be installed, including performing watershed and drainage calculations to properly design and size the culvert(s). A second culvert would be installed just north of Commerce Park Drive to maintain the local watershed characteristics of the wetland crossed by the proposed access drive.

CL&P would implement its Construction Best Management Practices to minimize or eliminate potential adverse environmental effects during the construction phase of the Project. CL&P's Development and Management ("D&M") Plan for the Substation would also incorporate the mitigation measures outlined in the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

K.6 Wildlife and Vegetation

The upland on the Subject Property consists predominantly of shrub/saplings thickets and old field habitats with some fringes of upland deciduous forest. Portions of these upland habitat types will be displaced by the construction of the Substation and associated access drive. In an effort to reduce vegetative impacts and impacts to wildlife habitats, forest cutting and vegetation clearing have been minimized to the extent possible for the Project. However, portions of the Project will result in converting upland forested cover types to scrub/shrub cover types in the immediate vicinity of the Substation footprint.

A Landscape Plan will be prepared by CL&P to mitigate the following effects: 1] provide visual screening of the Substation; 2] revegetate and restore disturbed uplands habitats; and 3] enhance available wildlife habitat.

The inland wetlands on the Subject Property are composed predominantly of scrub-shrub and emergent wetland habitats. A mixed deciduous-coniferous forested wetland is located along the perimeter of the Subject Property outside the limits of the Substation footprint and

alignment of the access drive. As discussed in Section K.5 above, the proposed access drive will permanently displace some of the scrub-shrub and emergent wetland located within the transmission line right-of-way. To mitigate for these adverse effects, CL&P is proposing to restore wetland areas temporarily disturbed during construction of the access drive, and to incorporate into the Landscape Plan plantings that would enhance wetland habitat characteristics on the Subject Property adjacent to the proposed wetland disturbances.

The affected wetland area is anticipated to retain the same hydrologic regime and will continue to function the same in terms of flood storage/desynchronization, groundwater recharge/discharge, and water quality maintenance/improvement.

Wildlife habitat utilization of both upland and wetlands which have had their cover types altered will change due to the change in canopy coverage and denser shrub and herbaceous growth. This will tend to attract a different association (similar to those wildlife species utilizing the existing right-of-way) of wildlife than the existing wooded habitat, with more edge and patchy profile diversity than under current conditions. However, the site's wetlands will continue to offer excellent wildlife habitat.

Upon completion of construction, CL&P would re-vegetate disturbed areas with seed mixtures specified by the County Natural Resources Conservation Service ("NRCS"), including any applicable wetland seed mixture applications. In the absence of other specific requirements, disturbed areas will be re-vegetated in compliance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. Timely restoration of the disturbed areas on the construction access drive and the Substation area and reseeding with an appropriate seed mix will minimize the time of vegetative disturbance and the potential for erosion.

K.7 Rare, Threatened and Endangered Species

ENSR, on behalf of CL&P, performed an American kestrel habitat assessment on September 11, 2006, of the Substation Property and surrounding areas. ENSR's findings will be presented in an American Kestrel Habitat Assessment Survey Report to be field with the CT NDDB. CL&P will be consulting with the CTDEP Wildlife Division on the design and implementation of appropriate mitigation measures to mitigate potential effects on habitat utilized by the American kestrel. Mitigation will likely involve the installation of artificial nesting boxes for the American kestrel, in accordance with plans to be provided by the CT NDDB. CL&P's final recommendations, in consultation with the CTDEP Wildlife Division, will be provided in the application to be field with the Council.

K.8 Water Supply Areas

The Project will not result in any adverse effects on public water supplies. According to the Town of Oxford, there are no public water supply wells within ¼-mile of the Subject Property. Private wells that have been identified within ¼-mile of the Subject Property are shown on Figure I-4. In the event that blasting is required for the construction phase of the Project, CL&P would evaluate the need to conduct pre-blast surveys and well inspections of nearby residences and businesses.

K.9 Scenic Areas and Visual Effects

Although much of the Subject Property is surrounded by an existing vegetative buffer of forested uplands and wetlands, CL&P is in the process of developing a Landscape Plan to further mitigate for any potential views of the Substation by providing vegetative screening. The Larkin Bridle Trail which is located just to the northwest of the Subject Property may be affected by seasonal (winter months) views of some of the Substation facilities and transmission structures. CL&P's Landscape Plan will incorporate measures to minimize

visual effects on the trail to the extent feasible taking into account the need to avoid creating hazards with overhead lines and the Substation electrical components within the Substation yard.

CL&P does not anticipate any adverse visual effects on the Jacks Hill Cemetery located to the east of the Subject Property, as the Substation is to be constructed to the west side of the existing transmission line corridor away from the cemetery.

K.10 Historic and Archaeological Resources

In response to the CT SHPO's recommendation for a professional reconnaissance survey, Raber Associates ("Raber"), on behalf of CL&P, performed a cultural resources assessment to evaluate the sensitivity of the Subject Property and probability of encountering historic or archaeological resources on the site. Raber's findings are summarized in the attached report. The cultural resources assessment notes the sensitivity of the Subject Property for Native American archaeological resources, and the potential eligibility of the Larkin Bridle Trail to the State or National Registers of Historic Places. The cultural resources assessment was in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources*. Comments from the CT SHPO on Raber's report are pending. CL&P anticipates filing a *Supplemental Archaeological Reconnaissance and Intensive Report* as a supporting document to its application to be filed with the Council. This supplemental report will identify and address the presence and significance of any archaeological sites at the Subject Property.

Development at the Subject Property will have no direct effects on the Larkin Bridle Trail, and no further cultural resource investigations appear necessary for that resource.

K.11 Geology and Soils

Moderate earthwork would be required for construction of the Substation and access drive into the Substation. The upland till ridge located in the central portion of the Subject Property would have to be slightly regraded to provide a relatively level surface on which to construct the Substation. In the event that blasting is required, CL&P would develop a blasting control plan in compliance with industry and CL&P standards. All disturbed areas outside of the Substation footprint and along the new access drive would be stabilized, restored and re-vegetated.

K.12 Floodplains

The Subject Property is not located within any mapped flood hazard area. Therefore no adverse effects on floodplains are expected.

K.13 Recreational Areas

The Larkin Bridle Trail is the only known recreational area located within ¼ mile of the Subject Property. Mature forested land exists at the northwestern portion of the Subject Property between the Substation footprint and the trail itself. The Larkin Bridle Trail may be affected by seasonal (winter months) views of some of the Substation facilities and transmission structures. As mentioned previously, CL&P's Landscape Plan will incorporate measures to minimize visual effects on the trail to the extent feasible.

K.14 Noise

The levels of noise that would be generated by the Substation are projected to be below those levels allowed by Regulations of Connecticut State Agencies 22a § 22a-69-3.5 for a Class C Emitter (Substation) to a Class C Receptor (Industrial Uses) of 70 dBA levels. Impulse noise, though rare, would be generated from switching and circuit breaker opening

and closing. The impulse noise levels would not exceed the levels permitted at the property line by Regulations of Connecticut State Agencies 22a § 22a-69-3.2.

K.15 Lighting

The Substation yard would contain manually-operated lights affixed to the Substation terminal structures. The floodlights would be used to facilitate work at nighttime or during inclement weather. Additional lighting would be installed on the building structures within the Substation yard for safety and security purposes; however, these lights would be recessed or activated manually to minimize visual effects at night. Lighting would not affect existing residences in the vicinity of the Subject Property.

CL&P's design will accommodate the continued use of its transmission towers to support airport safety lighting for the Waterbury-Oxford Airport. New structures will also be designed to accommodate the installation of additional airport safety lighting. The Waterbury-Oxford Airport has provided CL&P with a conceptual plan for their airport lighting approach. CL&P has designed the layout of the Substation to accommodate the airport lighting approach scheme to the extent feasible with consideration to minimizing environmental impact from the construction of the Substation.

K.16 Other Surrounding Features

No significant environmental effect is anticipated on the facilities (i.e., residences, commercial and industrial properties) depicted on the attached Figures I-3 and I-4. The only potential effect on these surrounding features would be visual effects during construction and to a lesser degree during the operation of the Substation. No other effects on these areas are anticipated because all other facilities are located a sufficient distance from the Subject Property and are currently well-screened by forested land.

L.0 MITIGATION MEASURES

Based on the existing conditions of the Subject Property and the proposed design, the construction and operation of the Substation is not expected to have significant permanent adverse effects on the environment. CL&P has incorporated measures into all phases of Project development and implementation to ensure that the environment is protected in accordance with Federal, State and local requirements.

L.1 Pre-Construction Considerations

Prior to the commencement of any construction activities, CL&P would prepare a Development and Management Plan ("D&M Plan"). The D&M Plan would include CL&P's *2005 Construction Best Management Practices*, which are designed to minimize or eliminate potential adverse environmental effects which may result from construction activities. The content of the plan would include specific procedures and information on erosion control, spill prevention and control, construction staffing and hours, traffic control if necessary and restoration and landscaping after construction. The D&M Plan would also provide contact information should questions or concerns arise during the construction or operation of the Substation.

Prior to the commencement of any construction activities, CL&P would install erosion controls at the limits of work in accordance with the approved Project Plans, the D&M Plan and the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control,* and in accordance with the Erosion and Sediment Control Details provided in Appendix I. The erosion controls would be inspected and maintained throughout the course of the Project until final site stabilization has been achieved.

L.2 Construction Phase Activities

All construction activities would be conducted in accordance with the D&M Plan as approved by the Council. In the event that bedrock is encountered, excavation, drilling, or pneumatic hammer would be the preferred methods to remove rock. Although not anticipated, if extensive bedrock is encountered during construction, provisions for blasting would be considered and developed by CL&P, in accordance with controlled blasting techniques.

CL&P has sited and designed the Substation to minimize the extent of grading and earth work associated with construction of the Substation. However, during site preparation and installation of the Substation components, it would be necessary to temporarily stockpile soils within the Subject Property. These stockpiles would be located greater than 50 feet from the delineated wetland boundaries and would be covered and protected against runoff during storm events with erosion controls. Should soils be stockpiled for a period of 21 days or more, CL&P may temporarily seed or mulch the piles to ensure stability depending on weather and season.

The siting and design of the Substation provides for a significant setback from the Commerce Park Drive. Prior to earth work activities on the Subject Property, CL&P would install a temporary crushed stone apron, placed on geotextile fabric, at the junction of Commerce Park Drive. This stone apron would serve as an anti-tracking pad to minimize tracking of mud onto the public street. The driveway and Substation would be graded to direct stormwater runoff into the Subject Property. Stormwater generated on the gravel access drive would be directed to the vegetated slopes and vegetated swales along the edges of the driveway. The remainder of the stormwater would infiltrate through the gravel base of the Substation or would be allowed to run off through vegetated uplands. No untreated stormwater would be discharged directly to wetlands or into the watercourse.

L.3 Post-Construction Features

Upon completion of construction activities, all exposed areas would be stabilized and revegetated. Upland areas would be restored with topsoil and seeded with a New England conservation/wildlife seed mixture that would provide for a permanent cover of grasses, forbs and wildflowers that provide soil stability as well as food and escape cover for wildlife. Areas temporarily disturbed within the wetland would be re-graded to establish the pre-construction contours and seeded with a New England "Wetmix" or equivalent. Erosion controls would remain in place until final site stabilization is achieved.

Although much of the Subject Property provides vegetative buffers from surrounding features, CL&P will develop a Landscape Plan to further mitigate for any potential views of the Substation.

The effects on the existing habitats would be predominantly temporary in nature and would be mitigated through the restoration of disturbed areas and supplemental plantings. Additional details on these restoration activities and supplemental plantings will be provided in a Landscape Plan.

L.4 Construction Sequencing

The general sequence of events that takes place during the construction of a substation includes:

- Placement of erosion and sedimentation control barriers;
- Removal of vegetation from the proposed fenced area and access drive;
- Construction of the access drive;
- Preparation of the Substation Site (cut, fill, grading);

- Stabilizing all slopes by loaming and seeding exposed soils with a conservation meadow seed mixture;
- Installing fence, substation foundations, buried conduits and the ground grid;
- Spreading trap rock;
- Installing electrical components and hardware;
- Installing tie-ins to transmission lines and distribution lines;
- Energizing substation;
- Completing site stabilization, landscaping and site restoration;
- Removing erosion control barriers upon completion of site stabilization.

M.0 HEALTH AND SAFETY

M.1 Electric and Magnetic Fields

Electric fields ("EF") are produced within the surrounding area of a conducting object (e.g., a wire) when a voltage is applied to it. Electric fields are measured in units of kilovolts per meter ("kV/m"). The level of an electric field near to an energized power line depends on the applied voltage, the distance between the conductors, and the distance to the measurement location.

Magnetic fields ("MF") are produced within the surrounding area of a conductor or device which is carrying an electric current. Magnetic fields are measured in units of milliGauss ("mG"). The level of a magnetic field near to line conductors carrying current depends on the magnitude of the current, the distance between conductors, and the distance from the conductors to the measurement location.

Both electric and magnetic fields decrease rapidly as the distance from the source increases, and even more rapidly from electric equipment in comparison to line conductors. Electric fields are further weakened by obstructions such as trees and building walls, while magnetic fields pass through most obstructions. In the case of parallel lines of circuit conductors, the levels of EF and MF are also dependent on the phasing of the circuits.

The highest levels of electric and magnetic fields around the perimeter fence of a substation occur where transmission and distribution lines cross over or under the substation boundary. The levels of fields from substation equipment decrease rapidly with distance, reaching very low levels at relatively short distances beyond the fenced-in equipment. Substation-caused magnetic fields off the property of a substation will commonly be in the same range as the background magnetic field levels in homes, which commonly range up to 4 mG.

Pre-Project Electric and Magnetic Fields at the Boundaries of Subject Property

At and beyond the boundaries of the Subject Property, the predominant existing sources of power-frequency electric and magnetic fields ("EMF") are the transmission lines (circuits 1575, 1585 and 1990). Two existing lines of CL&P transmission towers supporting these three circuits (1990 is a bundled circuit on the easterly line of towers, and the 1575 and 1585 circuits occupy the westerly line of towers) run side-by-side across the Subject Property from north to south. The highest levels of EMF will be found on the northerly and southerly property lines beneath where these transmission circuits cross over these property lines. Field levels drop off rapidly with distance from a source, so the levels of EMF at all points east and west of these transmission circuits will be much lower than the levels found beneath the circuits. Many locations along the property line of the Subject Property, particularly on its west side, are at relatively long distances from the transmission circuits where EMF levels from these circuits drop to negligible levels.

Post-Project Electric and Magnetic Fields on Boundaries of Subject Property

The fence of the proposed Substation is more than 100 feet at its closest point from any property line. At such a distance, the Substation equipment within the fenced area will not cause any noticeable change in either the electric or magnetic fields along the property lines. However, there will be changes to the existing electric and magnetic field levels at points on a property line of the Subject Property due to the following three factors: 1) physical changes to the 1575 transmission line circuit to interconnect it with the Substation; 2) changes the Substation and associated distribution load shifts will cause to currents flowing on the transmission circuits; and 3) new underground distribution circuit getaway cables from the Substation which cross under property lines.

New 115-kV line spans (i.e., “substation entry spans”) will be constructed to loop the existing 1575 transmission circuit in and out of the Substation. This change will alter the configuration and spacing of the 115-kV line conductors in the vicinity of the north property line where it meets the existing CL&P right-of-way. This will lead to changes in the electric and magnetic fields along the north property line for a short distance on either side of the transmission lines. This change will be in addition to changes in magnetic field levels caused by changes in currents on the transmission circuits.

Underground 13.8-kV distribution cables will exit the Substation southerly to Commerce Park Drive, under the Substation access drive. Current flows over these distribution cables will produce magnetic fields along this property line, perhaps extending to a distance of 50 feet to either side of the cable crossing of the property line. However, this is also an area beneath the 115-kV transmission circuits, so the presence of the distribution cables here will simply alter the transmission line’s magnetic field profile.

For an upcoming application to the Council, and as required by the Council’s draft document “2006 Electric and Magnetic Field Best Management Practices for Electric Transmission Lines,” CL&P will make projections of EMF levels on the property lines of the Subject Property using projected peak-day line currents for a period of 5 years after the Substation’s in-service-date, which in this case is 2013. These calculations will be made both for the pre-project condition, assuming the proposed project was not built, and the proposed post-project condition.

All calculations of electric and magnetic fields will be made for points on the Subject Property, assuming that these circuits are the only source of such fields on the Subject Property. Per standard practice, all such calculations will assume balanced three-phase line currents in the transmission circuits, level terrain, and a bottom 115-kV line conductor height

above grade which is typical for the location where the conductors cross over the property line. For electric fields, bare terrain is also assumed. As is typical for these calculations, contributions to EF and MF from distribution circuits crossing the property line will be ignored. Electric fields will be lower at ground level if the terrain holds vegetation or other objects which will partially shield electric fields from the line.

Measurements of Electric and Magnetic Fields

Measurements of electric and magnetic fields were taken on the Subject Property on September 21, 2006. The measurement results are plotted on the two attached graphs one for magnetic fields and the other for electric fields. Per an industry standard, these measurements were made at 1 meter above grade over a path on the Subject Property that is perpendicular to the existing transmission lines. The result is called a lateral profile. This profile extends to a distance of 150 easterly of the centerline of the easterly row of line towers, and to a distance of 160 feet westerly of the centerline of the westerly row of line towers. The locations of the centerlines of each row of towers are marked on the graphs. The highest magnetic field level recorded was 9.3 mG, and the highest electric field recorded was 1.19 kV/m.

The specific lateral profile path on the Subject Property was one where the terrain was open and reasonably level and where the conductor heights above grade were typical for this area. Other lateral profile locations would pass under the transmission lines where the conductor heights above ground are different, and this difference would cause the measurement results to be different, particularly at distances beneath and closer to these lines.

The magnetic field measurement results represent magnetic field levels recorded for a specific point in time, produced by the set of transmission line currents that existed at that point in time. During peak load periods of a year, the line currents would likely be higher

than they were during the measurement period on September 21, 2006, and so magnetic field levels would also be somewhat higher. On the other hand, the electric field measurement results would be about the same no matter what the line currents are.

For the aforementioned reasons, these measurement results should be considered as a reasonable example of the existing condition on the Subject Property. As previously described, EMF calculations will subsequently be prepared to model peak-day conditions in a future year.

Summary

Consistent with the Council's Electric and Magnetic Field Best Management Practices, the design of the Substation will incorporate field management practices as follows:

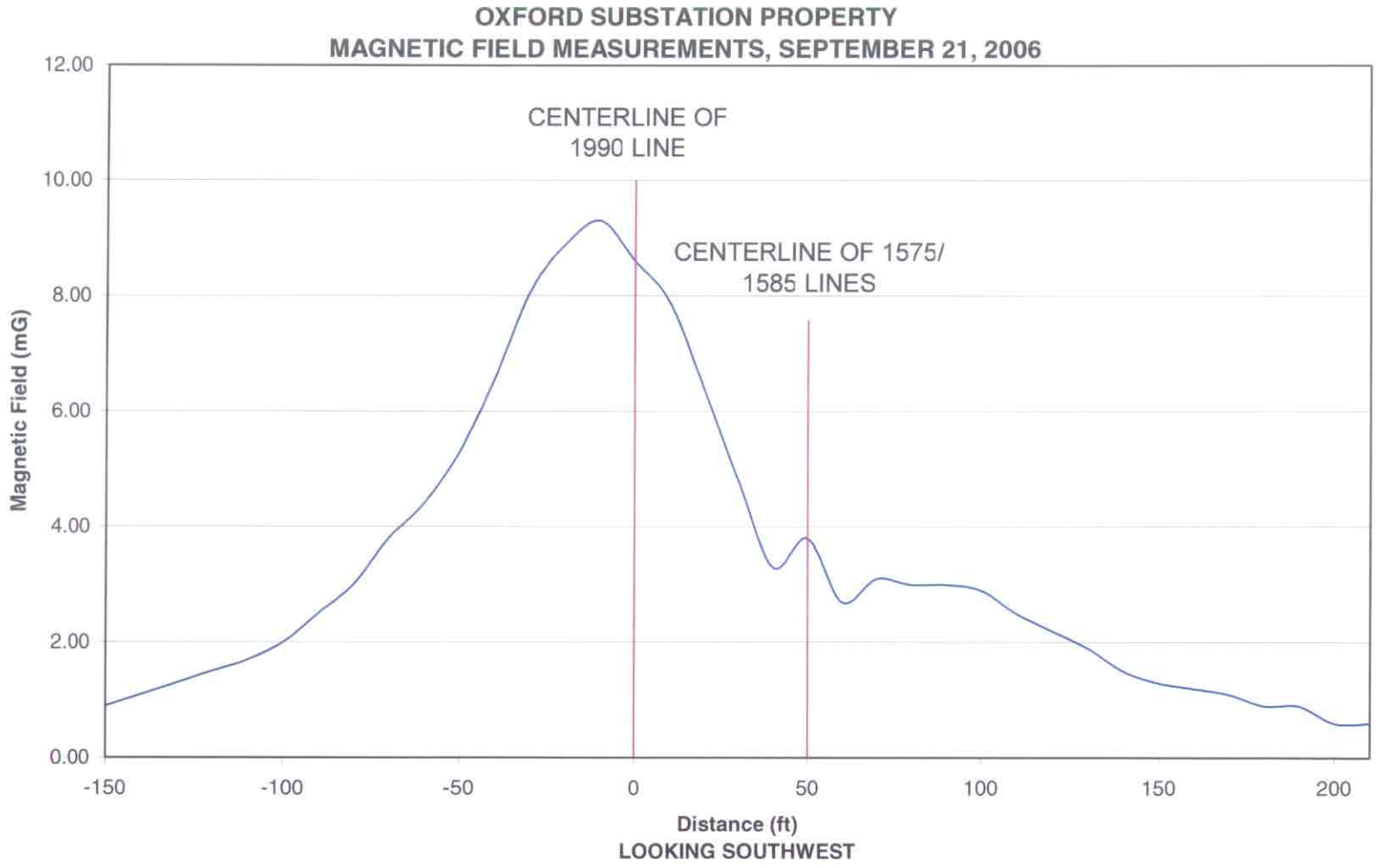
- the Substation has been located very close to an existing transmission line so that the length of Substation entry spans is very short
- the Substation equipment has been located at a sufficient distance from property lines so that this equipment makes no noticeable contribution to EMF levels along these property lines
- new 13.8-kV distribution lines will exit the Substation underground with close circuit spacings and conductor-phase spacings
- vegetation will effectively screen electric fields

There are no state or federal limits for electric or magnetic field levels at the property line of a substation. However, the Institute of Electrical and Electronic Engineers ("IEEE") and the

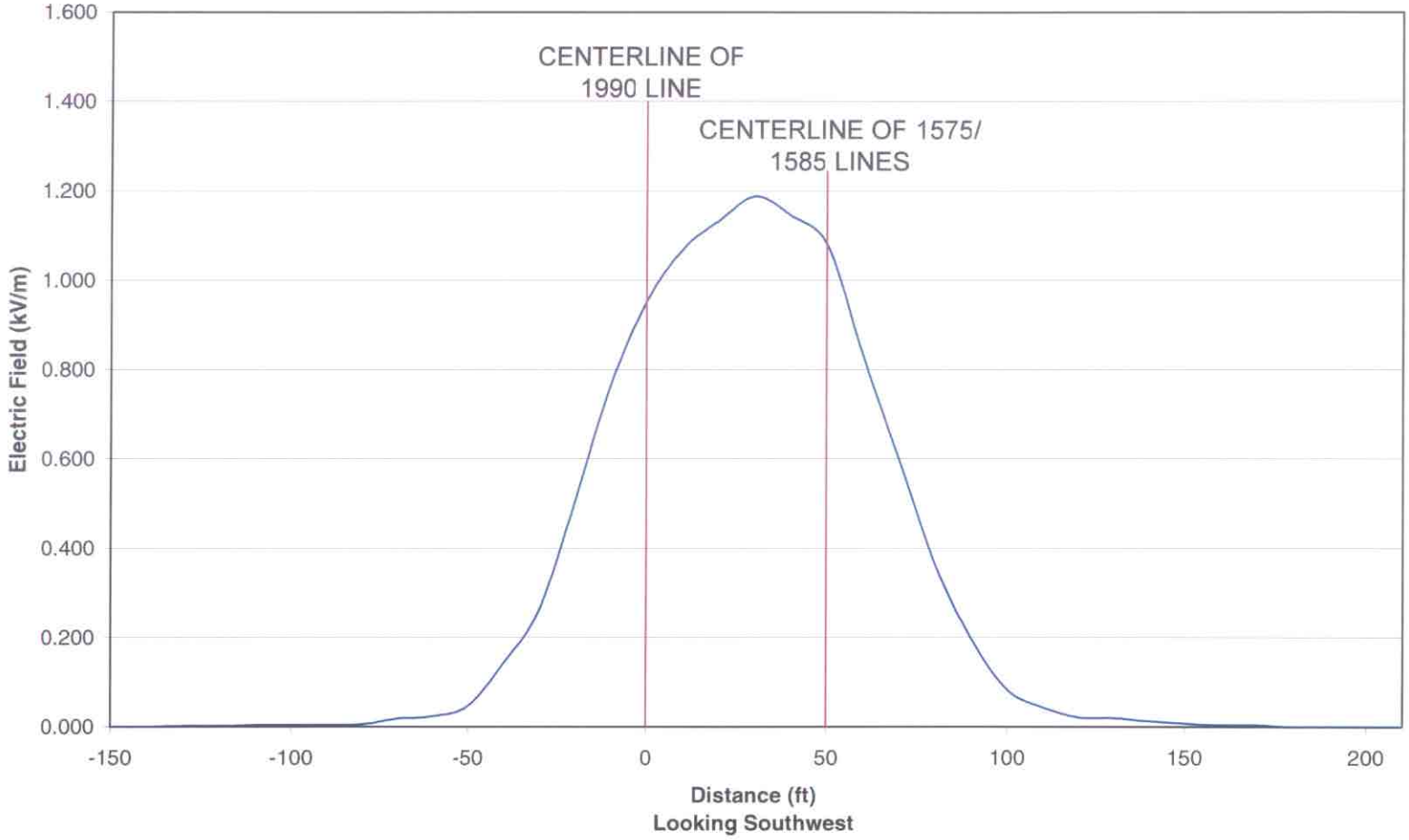
International Commission on Non-ionizing Radiation Protection ("ICNIRP") have issued guideline limits for long-term public exposures to these fields. These limits are:

	EF (kV/m)	MF (mG)
IEEE	5.0	9,040
ICNIRP	4.2	833

The existing and proposed levels of electric and magnetic fields at and beyond the property lines of the proposed Substation are typical for all similar Substations and will be well below these IEEE and ICNIRP limits. Based on these aforementioned guidelines and science peer group reviews of epidemiological and laboratory studies, these electric and magnetic field exposure levels will not pose an undue safety or health hazard to persons or property at or adjacent to the Substation property.


OXFORD SUBSTATION PROPERTY
MAGNETIC FIELD MEASUREMENTS, SEPTEMBER 21, 2006
CENTERLINE OF
1990 LINE
CENTERLINE OF 1575/
1585 LINES
Magnetic Field (mG)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-150
-100
-50
0
50
100
150
200
Distance (ft)
LOOKING SOUTHWEST

OXFORD SUBSTATION PROPERTY
ELECTRIC FIELD MEASUREMENTS, SEPTEMBER 21, 2006



M.2 Site Security

A 7-foot high chain-link fence topped by three strands of barbed wire would enclose the Substation yard to prevent unauthorized access to the site. A locked gate would be installed at the entrance to the access drive off of Commerce Park Drive. The Substation yard would also be gated and locked. All gates would be padlocked at the end of the workday during the construction phase and at all times after the Substation is in-service. Appropriate signage would be posted at the Substation alerting the general public of the high voltage facilities within the Substation. Should equipment experience a failure, protective relaying would immediately remove the equipment from service, thereby protecting the public and the equipment within the Substation. Other devices installed within the Substation would constantly monitor the Substation equipment to alert CL&P of any abnormal or emergency situations.

M.3 Traffic Considerations and Hours of Operation

Construction traffic would be localized and short term and is not expected to affect local traffic. Access to the site will be made via Route 67, Christian Street and Commerce Park Drive. Post-construction site conditions would not significantly affect existing traffic patterns. Once construction of the Substation is complete, the Substation would be remotely operated, with personnel on site only for periodic inspections, maintenance and emergency work.

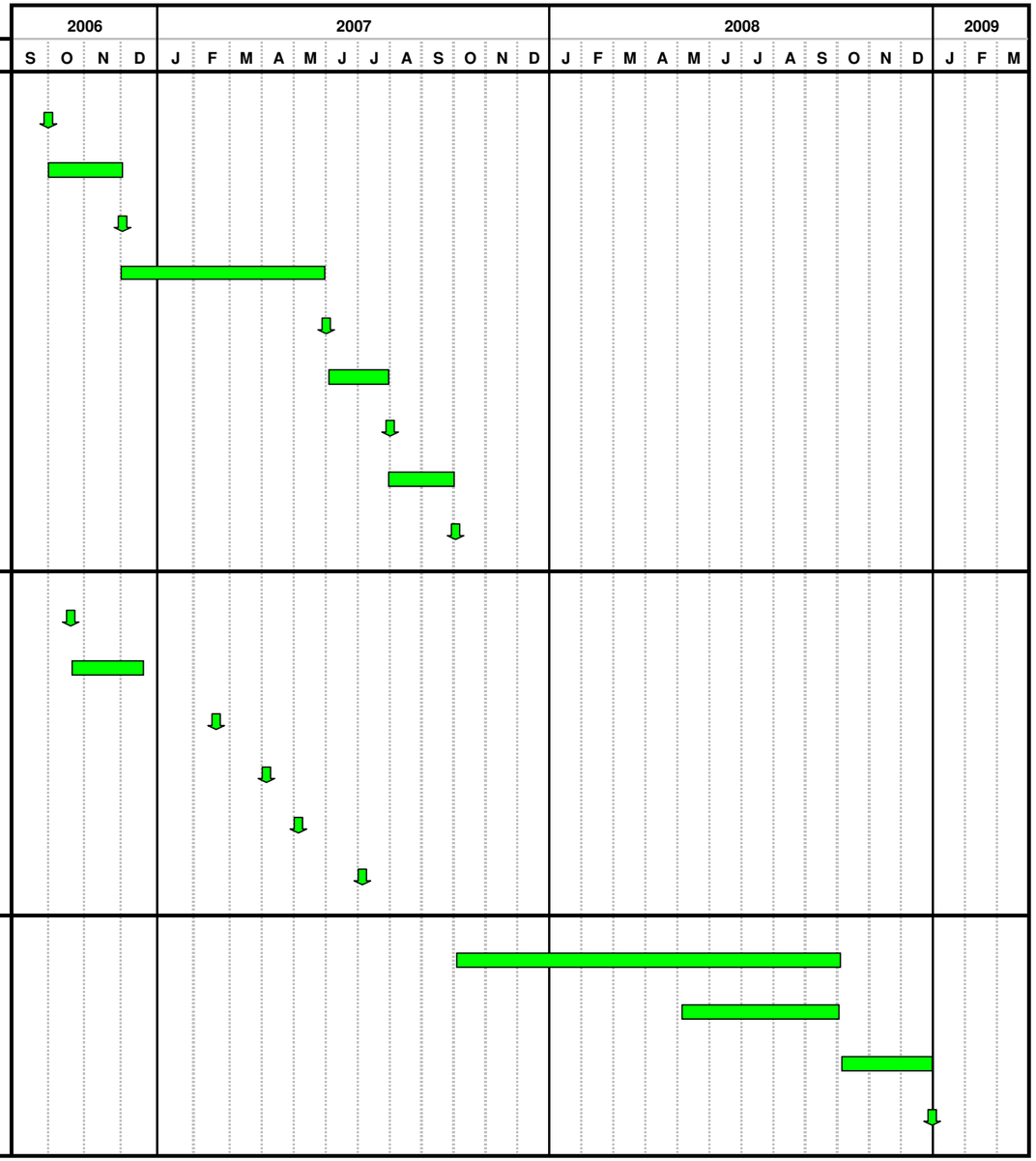
N.0 GENERAL PROJECT SCHEDULE

The following bar chart provides a generalized overall Project schedule for the construction of the Substation, installation of the transmission poles, and Substation testing and commissioning. The construction of the Substation is anticipated to begin in November 2007 with a completion date and in-service date of December 2008.

Proposed Project Schedule for Oxford Substation

2-Oct-06

Activity	Start	Finish
Connecticut Siting Council Process [1]	2-Oct-06	3-Oct-07
Submit Municipal Consultation Filing (MCF)		2-Oct-06
Municipal Consultation Period	2-Oct-06	4-Dec-06
Submit Application to CT Siting Council		4-Dec-06
CSC Review Process	4-Dec-06	4-Jun-07
CSC Decision Issued		4-Jun-07
Prepare D&M Plan	5-Jun-07	31-Jul-07
Submit D&M Plan to CSC		1-Aug-07
CSC D&M Plan Review Process	2-Aug-07	2-Oct-07
CSC Approval of D&M Plan		3-Oct-07
CT Energy Advisory Board (CEAB) Process [2]	2-Oct-06	5-Jul-07
CEAB Provide Public Notice		17-Oct-06
CEAB Prepares and Issues RFP	17-Oct-06	19-Dec-06
RFP Deadline		19-Feb-07
CEAB Issues Report to CSC (if RFP response received)		5-Apr-07
Third Party CSC Application (if any)		5-May-07
CSC Schedules Hearing		5-Jul-07
Construction Period [3]	4-Oct-07	30-Dec-08
Substation Site Work & General Construction	4-Oct-07	3-Oct-08
Substation Electrical Construction	5-May-08	3-Oct-08
Substation Testing & Commissioning	6-Oct-08	30-Dec-08
Substation In-Service Date		30-Dec-08



Notes:

1. CSC schedule and dates shown are tentative, and may be affected by the CEAB process (i.e., if RFP responses and/or a 3rd Party CSC Application is submitted, the schedule illustrated here will require revisions).
2. CEAB schedule and dates are provided for reference only.

Legend:

Proposed Milestone

Proposed Activity

GENERAL GLOSSARY OF TERMS

(not all terms are used in this document)

115-kV: 115 kilovolts or 115,000 volts

345-kV: 345 kilovolts or 345,000 volts

AC: Alternating Current. An electric current which reverses its direction of flow periodically. (In the United States this occurs 60 times a second -60 cycles or 60 Hertz). This is the type of current supplied to homes and businesses.

A-frame Structure: A steel structure construction of two A-shaped uprights with horizontal cross-members and bracings.

Autotransformer: A transformer with a single winding per phase in which the lower voltage is obtained by a tap on the winding. (see transformer).

Ampere (Amp): A unit of measure for the flow of electric current. A typical home service capability (i.e., size) is 100 amps; 200 amps or more is required for homes with electric heat.

Arrester: Protects lines, transformers and equipment from transient overvoltages due to lightning and switching surges by carrying the charge to ground. Arresters serve the same purpose on a line as a safety valve on a steam boiler.

Bundle: (circuit). Two or more parallel 3-conductor circuits joined together to operate as one single circuit.

Bundle: (conductor). Two or more phase conductors or cables joined together to operate as a single phase.

Bus: A conductor capable of carrying large amounts of current in a substation.

Cable: A fully insulated conductor usually installed underground but in some circumstances can be installed overhead.

CTDEP: Connecticut Department of Environmental Protection.

CELT: NEPOOL, Annual Capacity, Energy, Load and Transmission Report.

CGS: Connecticut General Statutes.

Circuit: A system of conductors (three conductors or three bundles of conductors) through which an electric current is intended to flow and which may be supported above ground by transmission structures or placed underground.

Circuit Breaker: A switch that automatically disconnects power to the circuit in the event of a fault condition. Located in substations. Performs the same function as a circuit breaker in a home.

CL&P: The Connecticut Light and Power Company.

CMEEC: Connecticut Municipal Electric Energy Cooperative, Inc.

Conductor: A metallic wire, busbar, rod, tube or cable which serves as a path for electric current to flow.

Conduit: Pipes, usually PVC plastic, typically encased in concrete, for underground power cables.

Conversion: Change made to an existing power line for use at a higher voltage, sometimes requiring the installation of more insulators. (Lines are sometimes pre-built for future operation at the higher voltage).

CSC: Connecticut Siting Council.

CONVEX: Connecticut Valley Electric Exchange.

dBA: Decibel, on the A-weighted scale.

DC: Direct current. Electricity that flows continuously in one direction. A battery produces DC power.

Demand: The total amount of electric power required at any given time by an electric supplier's customers.

Distribution: Line, system. The facilities that transport electrical energy from the transmission system to the customer.

D&M Plan: Development and Management Plan.

DPUC: (Connecticut) Department of Public Utility Control.

Duct: Pipe or tubular runway for underground power cables (see also Conduit).

Duct Bank: A group of ducts or conduit usually encased in concrete in a trench.

Electric Field (EF): Result of voltages applied to electrical conductors and equipment.

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

EMF: Electric and magnetic fields.

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

FEMA: Federal Emergency Management Agency.

Fiber Optic Shield Wire (FOSW): See Lightning Shield Wire.

G: Gauss; 1G = 1000 mG (milligauss); the unit of measure for magnetic fields.

GIS: Gas-insulated substation using sulfur hexafluoride (SF_6).

Glacial till: These deposits are predominantly nonsorted, nonstratified sediment and are deposited directly by glaciers. These deposits consist of boulders, gravel, sand silt, and clay mixed in various proportions.

Gneiss: Light and dark, medium– to coarse-grained metamorphic rock characterized by compositional banding of light and dark minerals, typically composed of quartz, feldspar and various amount of dark minerals.

Granofels: Light to dark, medium- to coarse-grained, massively to poorly layered metamorphic rock composed primarily of quartz and feldspar; lacking the compositional banding of gneiss.

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

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

Hz: Hertz, a measure of the frequency of alternating current; one cycle/second.

ICNIRP: International Commission on Non-ionizing Radiation Protection.

IEEE: Institute of Electrical and Electronic Engineers.

ISO: Independent System Operator.

ISO-NE: ISO New England, Inc.; referred to as New England's Independent System Operator.

kcmil: 1000 circular mils, approximately 0.0008 sq. in.

kV: kilovolt, equals 1000 volts.

kV/m: Electric field strength measurement (kilovolts/meter).

Lattice-type Structure: Transmission or substation structure constructed of lightweight steel members.

Lightning Shield Wire: Electric cable intended to prevent lightning from striking transmission circuit conductors. May contain glass fibers for communication use, "Fiber Optic Shield Wire", or "FOSW".

Line: A series of overhead transmission structures which support one of more circuits; or in the case of underground construction, a single electric circuit.

Load: Amount of power delivered as required at any point or points in the system. Load is created by the power demands of customers' equipment (residential, commercial, and industrial).

LOLE: Loss of Load Expectation; a measure of bulk power system reliability.

Magnetic Field (MF): Produced by the flow of electric current; usually measured as magnetic flux density in units called gauss (G) or milliGauss (mG) – 1/1000 Gauss.

Magnetic Flux Density: Level of magnetic field.

mG: milliGauss (see Magnetic Field) – 1/1000 Gauss.

MOD: Motor-Operated Disconnect switch.

MVA: Megavolt Ampere. Measure of electrical capacity equal to the product of the voltage, the current and the square root of 3 for three-phase systems. Electrical equipment capacities are sometimes stated in MVA.

MW: Megawatt. Megawatt equals 1 million watts, measure of the work electricity can do.

NDDB: Natural Diversity Data Base (CTDEP).

NEPOOL: New England Power Pool.

NERC: North American Electric Reliability Council.

NESC: National Electrical Safety Code.

NPCC: Northeast Power Coordinating Council.

NU: Northeast Utilities.

OH (Overhead): Electrical facilities installed above the surface of the earth.

Palustrine: Marshy, wetland areas described as palustrine include marches, swamps and bogs.

Peaking Facility: A generating station that runs when demand on the grid exceeds base load generation capacity in the region.

Phases: Transmission (and some distribution) AC circuits are comprised of three phases that have a voltage differential between them.

PUESA: Public Utility Environmental Standards Act.

Reinforcement: Any of a number of approaches to improve the capacity of the transmission system, including rebuild, reconductor, conversion and conductor bundling methods.

Rebuild: Replacement of an existing overhead transmission line with new structures and conductors generally along the same route as the replaced line.

Reconductor: Replacement of existing conductors with new conductors, but with little if any replacement of existing structures.

Right-of-way: ROW; corridor of land within which a utility company holds legal rights necessary to build, operate and maintain power lines.

Riprap: A permanent erosion-resistant ground cover of large, loose, angular stone with filter fabric or granular underlining used to protect soil from the erosion fences of concentrated runoff.

RTEP: Regional Transmission Expansion Plan prepared by ISO-NE.

SCADA: System Control and Data Acquisition system – A system installed at the substation which allows control and monitoring from a remote location.

Schist: Light, silvery to dark, coarse- to very coarse-grained, strongly to very strongly layered metamorphic rock whose layering is typically defined by parallel alignment of micas. Primarily composed of mica, quartz and feldspar; occasionally spotted with conspicuous garnets.

SF_6: Sulfur hexafluoride, an insulating gas used in GIS substations and circuit breakers.

Shield Wire: See Lightning Shield Wire.

SHPO: State Historic Preservation Office (State of Connecticut Commission on Culture and Tourism, Historic Preservation and Museum Division).

Statutory Facilities: Environmental, ecological, scenic, historic, recreational or other resources identified by the Connecticut Siting Council in its *Electric Substation Facility Application Guidelines, section VII, items H and K (CGS Section 16-50l (a)(1).*

Substation: A fenced-in yard containing switches, power transformers, line terminal structures, and other equipment enclosures and structures. Voltage change, adjustments of voltage, monitoring of circuits and other service functions take place in this installation.

Switching Station: Same as Substation except with no power transformers. Switching of circuits and other service functions take place in this installation.

Steel Lattice Tower: See Lattice-Type Structure.

Steel Monopole Structure: Transmission structure consisting of a single tubular steel column with horizontal arms to support insulators and conductors.

Step-down Transformer: See Transformer.

Step-up Transformer: See Transformer.

Switchgear: General term covering electrical switching and interrupting devices, used particularly for distribution voltages where several such devices may be contained in a common metalclad enclosure. Device used to close or open, or both, one or more electric circuits.

Terminal Points: The substation or switching station at which a transmission line terminates.

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

Terminator: An insulated fitting used to connect underground cables to overhead lines.

Power Transformer: A device used to transform voltage levels to facilitate the efficient transfer of power from the generating plant to the customer. A step-up transformer increases the voltage while a step-down transformer decreases it. Power transformers have a high voltage and a low voltage winding for each phase.

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

Upgrade: See Reinforcement.

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

V/m: Volts per meter; kilovolt per meter; 1000 V/m = 1 kVm.

Voltage: A measure of the push or force which transmits electricity. Usually given as the line-to-line root-mean square magnitude for three-phase systems.

Voltage Collapse: A condition where voltage drops to unacceptable levels and cascading interruptions of transmission system elements occur..

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

Wetland: Land, including submerged land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial or flood plain by the U.S. Department of Agriculture, Natural Resources Conservation Service. Connecticut jurisdiction wetlands are based solely on soil type; federal jurisdictional wetlands are classified based on a combination of soil type, wetland plants, and hydrologic regime.

Wire: See Conductor.