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

FOR THE

Stepstone Hill Substation

Stepstone Hill Road
Guilford, Connecticut

October 2006

Submitted to:

Town of Guilford Chief Elected Official
Guilford, Connecticut

Submitted by:

The Connecticut Light & Power Company
107 Selden Street
Berlin, CT 06037

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A. SUMMARY DESCRIPTION AND LOCATION OF THE PROJECT

The Applicant, The Connecticut Light and Power Company ("CL&P"), is proposing to construct the Stepstone 35L Substation (the "Substation") in the Town of Guilford, Connecticut for the purpose of increasing the capacity and the reliability of the electric power distribution system in Guilford and adjacent towns. The proposed Substation will improve the reliability of the electric power distribution system which serves the Town of Guilford, and will add distribution capacity by connecting a new 47-Megavolt-Ampere ("MVA") bulk power transformer to an existing 115-kilovolt ("kV") transmission line and to the local 23- and 13.8-kV distribution line system.

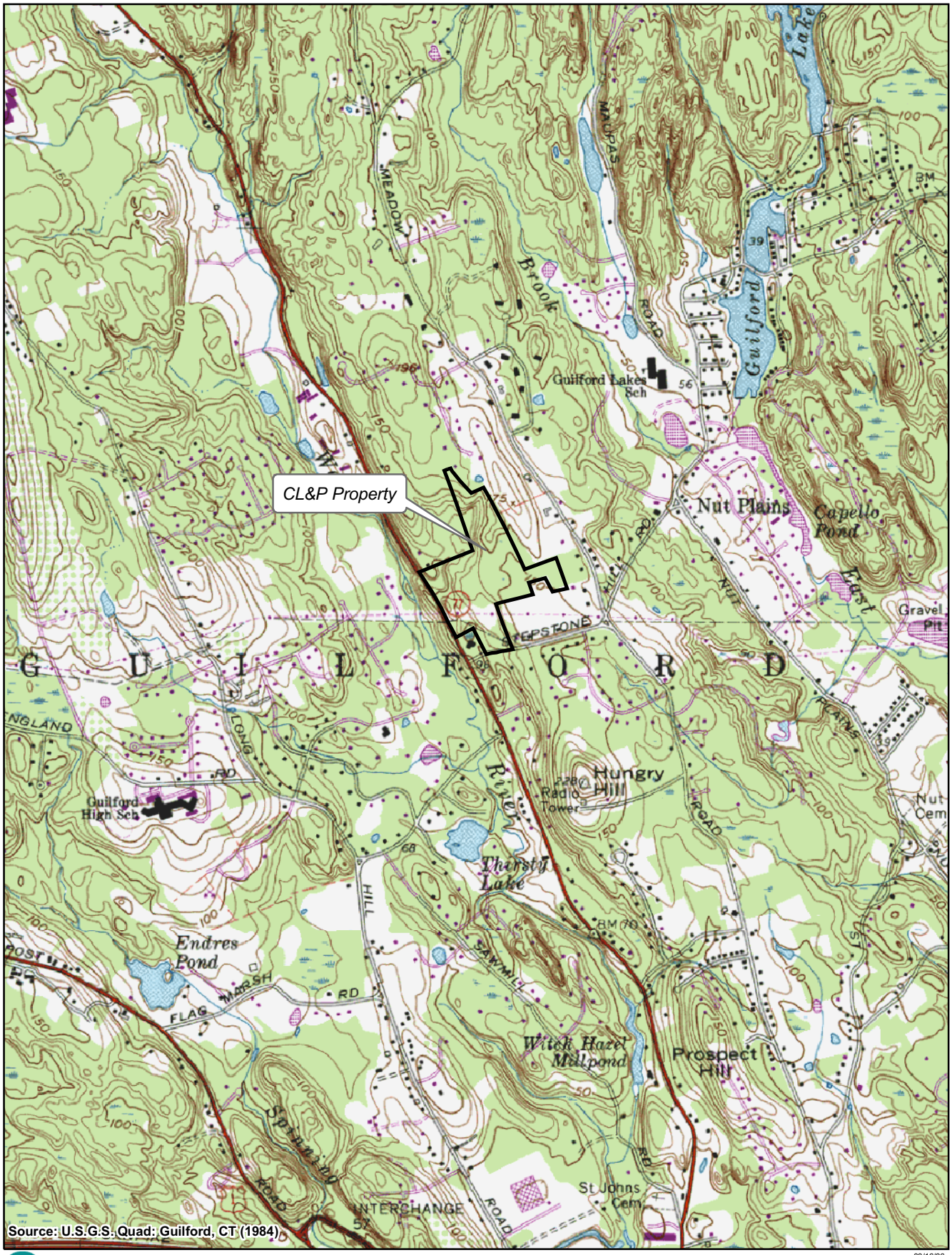
The existing distribution system lacks the capacity and reliability to meet future peak-load demands. Currently, CL&P's electric load in the Town of Guilford is served from a bulk power substation located in Branford or from a bulk power substation located in Madison. These two existing bulk power substations also serve electric load in the Towns of Branford, Madison, Clinton and Killingworth, and growing peak demands are straining the capacity of these two substations. Further, a significant portion of Guilford is vulnerable to extended outages should a severe storm damage distribution feeder lines that stretch east and west along the coast of Long Island Sound. The addition of a new inland bulk power substation in Guilford, centrally located between the two existing bulk sources with a 115-kV looped transmission supply, will create a more robust and reliable system.

The Substation will be strategically placed within the south-central portion of a secluded, 38-acre parcel owned by CL&P, located north of Stepstone Hill Road and east of Route 77. The "Property" is comprised of two lots identified by the Guilford Tax Assessor on Map 91, as Lots

46 and 46A. A S*ite Location Map* is provided as Figure 1. The Property is undeveloped and forested with the exception of an existing 115-kV transmission line corridor, which bisects the southern portion of the Property, and an associated unpaved access route extending northward from Stepstone Hill Road to the transmission line corridor.

Once constructed, the Substation would connect into the existing 115-kV overhead transmission line that interconnects to the existing substations in Branford and Madison. Connecting to the existing 115-kV overhead transmission line strengthens the area's distribution system, improves reliability to withstand various system contingencies, provides capacity to serve additional future load and allows for future system reliability.

Figure 1: Site Location Map



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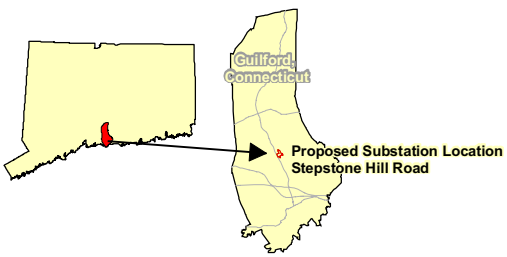

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B. PURPOSE OF THE APPLICATION

CL&P intends to apply to the Connecticut Siting Council ("CSC" or the "Council") for a Certificate of Environmental Compatibility and Public Need ("Certificate") for the Stepstone Substation Project (the "Project"). The purpose of the Project is to address a need for additional distribution system capacity and reliability in the Town of Guilford by establishing a new, strategically positioned bulk power source.

C. 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 proposed Substation facility. Specifically, Conn. Gen. Stat. § 16-50*l*(e) requires that:

> … at 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 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 with 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 information and technical reports concerning the need, site selection process, and potential environmental effects of the Stepstone Substation, as required by Conn. Gen. Stat. § 16-50*l*(e). The MCF process is designed to solicit public input to CL&P's development of the application for the Certificate from the CSC. The MCF is a key initial step in the CSC's comprehensive regulatory process that governs the siting of a substation. The goals of this municipal consultation process are to:

- Provide information about the Stepstone Substation to residents and municipalities; and,
- Obtain input and feedback from the public and municipal officials concerning the Stepstone Substation.

The public can obtain information about the Stepstone Substation at its municipal offices and local public libraries, or from the NU Transmission website (refer to page D-1 of this document).

C.1 Municipal Participation During The Consultation Process

On several occasions over the past two years, CL&P consulted with the municipal Chief Elected Official ("CEO") and town officials regarding the electric service provided by CL&P to the Guilford Community and CL&P's desire to increase the capacity and improve the reliability of that service. After determining that a new substation in central Guilford would improve service, CL&P met with Town personnel to present an overview of the Project, answer questions, and provide them with a point of contact for additional information.

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 commission and inland wetland commissions to "regulate and restrict the proposed location" of such public utilities facilities. CL&P filed "Location Approval" applications with the Guilford Inland Wetlands and Planning and Zoning Commissions in June and July, respectively, of 2006. A Public Hearing was conducted by the Guilford Planning and Zoning Commission in Guilford on September 12, 2006. Location approvals and town comments were obtained from the Guilford Inland Wetlands (August 5, 2006) and Planning and Zoning Commissions (September 20, 2006). CL&P is reviewing the Commissions' comments and is committed to complying with these requests where possible.

Conn. Gen. Stat. § 16-50*l*(e) outlines the duties and roles of a municipality during the consultation process preceding an applicant's filing with the CSC for a Certificate. 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 the 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.

The filing of the MCF with the Chief Elected Official of the municipality begins the sixty-day review process.

CL&P is providing this MCF for review and comment by the municipality of Guilford. During the municipal consultation process, CL&P hopes to receive additional input from representatives of the municipality and from the interested public for consideration in its Application to the CSC. This approach enables CL&P to have a better understanding of municipal concerns prior to submitting its formal Application.

C.2 Connecticut Energy Advisory Board

Conn. Gen. Stat. § 16a-7c(b) requires the Connecticut Energy Advisory Board ("CEAB") to issue a request for proposals to seek alternate solutions to the need that will be addressed by the Project, soon after CL&P files its application with the Council. Under Conn. Gen. Stat. § 16l-50*l*(a)(2), the CEAB process is triggered by the filing of certain applications with the CSC, including the proposed Substation. The CEAB is required to report to the Council on any responses to the request for proposals within 120 days of an application for a Substation facility. CEAB will receive a copy of this MCF to begin its preparations for this process. CL&P's application to the Council will also address system solutions to the need besides the proposed Substation.

The Project is consistent with CEAB's preferential criteria, 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, this Project:

- Enhances distribution system reliability;
- 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 approximately 40 years) and avoids stop-gap measures (the need to serve all of Guilford's load with long distribution lines from substations in other towns will largely be eliminated);
- Capitalizes on existing infrastructure by locating immediately adjacent to an existing transmission line with adequate capacity (i.e., 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) in its Regional System Plan and the CSC (in the Forecasted Loads and Resources).
- Provides local tax revenues; and,
- Supports environmental protection.

C.3 Description of Filing Contents

The contents of this filing present information concerning the Applicant, existing conditions at the Property and the proposed Substation, including:

- its location and design;
- the various alternatives considered to date and the process by which the proposed Site was identified;
- the need for its construction and operation; and,
- its potential effects on the environment.

D. LEGAL NAME AND ADDRESS OF APPLICANT

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Berlin, CT 06037

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E. APPLICANT CONTACTS

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

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F. DESCRIPTION OF FACILITY

The CL&P Property on which the Stepstone Substation would be located was acquired in 1973 when a new 115-kV transmission line was constructed. This Property was then identified and set aside by CL&P specifically as a future substation site in anticipation of area load growth and potential long-term limitations of the existing local distribution system. The Substation would be accessible from Stepstone Hill Road, just east of its intersection with Route 77. The Substation would be located north of the existing transmission line corridor, currently occupied by one 115-kV overhead transmission line. The Substation would occupy an area of 240 feet by 270 feet and be covered with a trap rock surface and secured by a seven-foot high chain link fence with one foot of barbed wire (three strands). A gravel driveway will be established generally along the route of the existing unimproved, dirt access. The Property will accommodate the construction and operation of the Substation without need to purchase any additional real estate. The Substation would have a service life of approximately 40 years and would be capable of capacity increases during this time.

Once constructed, the Substation would connect into the existing 115-kV overhead transmission line that interconnects to the Branford Substation on Route 1 in Branford and Green Hill Substation in Madison. The transmission line will be "looped through" the substation and a new transmission circuit breaker will be installed to separate the existing transmission line into two circuits. The 115-kV interconnections between the Substation and the transmission line would be accomplished by installing two line terminal structures within the Substation, each capable of supporting a line disconnect switch. One way to connect the transmission line to the substation is through the use of guyed, three-pole wood structures, as shown in Exhibit 1 and

Figure 7, but other options utilizing steel poles are also under consideration. The chosen design concept for the interconnection will be detailed in the application submitted to the Council.

The Substation would be outfitted with two transformer disconnect switches and two circuit switches. One set will supply one 47-MVA power transformer, used to step down the voltage from 115 kV to 23 kV. The second disconnect switch/circuit switcher will be used to supply a mobile transformer. A mobile transformer is used only when necessary to perform maintenance or to replace a failed piece of equipment. A metal-clad switchgear enclosure, approximately 24-feet long, 14-feet wide and 14-feet high will be installed to provide the switching equipment for three distribution feeders. Two 23- to 13.8-kV autotransformers will be installed to provide 13.8-kV distribution circuits which can tie to circuits from Guilford Substation. Feeder cables will exit the Substation underground in conduits.

In addition to the switchgear enclosure, a 48-foot by 14-foot by 14-foot high protective relay and control equipment enclosure (the "control enclosure") and a 24-foot by 14-foot by 14-foot high battery enclosure will be installed at the east end of the Substation. The battery enclosure will house the substation battery, charger and distribution equipment used to operate the substation. The control enclosure will house protective relaying and control equipment.

Development of the Substation requires protective relay system changes at two other existing bulk substations (Branford and Green Hill). These upgrades require the installation of fiber optic communication systems between Branford and Stepstone Substations.

Technical specifications and related information are presented in Exhibit 1 (*Site Plan Drawings*).

G. NEED FOR FACILITY

The purpose of the Project is to address the need for additional distribution-system capacity and reliability in Guilford by establishing a new bulk substation in the town. Existing substations serving Guilford are heavily loaded and lack the capacity to meet projected future peak-load demands. A central portion of Guilford is also vulnerable to long outages should a severe storm damage 23-kV distribution feeder lines that stretch east and west along the coast of Long Island Sound bringing power from bulk substations in Madison and Branford to a small distribution substation in Guilford. The addition of a new inland bulk power substation in Guilford, centrally located between the two existing bulk sources and with a 115-kV looped transmission supply, will increase capacity and create a stronger and more reliable distribution system.

Guilford and its four surrounding towns (Branford, Madison, Clinton, and Killingworth) have experienced significant growth over the past two decades. The migration of New Yorkers and residents who commute to southwestern Connecticut has accelerated as communities further west along route I-95 become increasingly developed. This has meant a change in the demographics of the communities surrounding Guilford. Not only are more people moving to the area, they are building larger homes that require more electricity. From 1981 to 2004, the kilowatt-hour use in these five towns has increased by more than 67%. The peak power demand at two bulk power substations and smaller downstream distribution substations has also increased significantly with this increased energy usage.

	Branford	Clinton	Guilford	Killingworth	Madison	All Towns
1981	154,699,796	73,133,537	95,485,210	16,259,517	78,712,628	**418,290,688**
2004	246,410,187	126,908,500	160,422,740	34,653,974	133,925,276	**702,320,677**
% Change	59.28%	73.53%	68.01%	113.13%	70.14%	**67.90%**

Usage in Kilowatt hours (kWh) by Town 1981-2004

Peak demand is expected to grow at an annual compound rate of between 2% and 3% and may grow even more as baby boomers retire and move away from cities like New Haven. Commercial development in Guilford and surrounding towns is also experiencing resurgence. This is at least partly attributable to the fact that retail stores and medical services currently operating in New Haven are becoming more difficult to access as a result of the rebuilding of the Q Bridge, which is expected to impact the I-95 corridor until at least 2014. Irrespective of added growth, substations serving the current distribution system are highly loaded and even the slightest increase in demand will exceed their capacity ratings.

A History of Guilford's Distribution System

Guilford Substation located on Meadow Street in Guilford was established as a 27.6- to 13.8-kV distribution substation in the late 1960s, the sole source of 13.8-kV power for an upgraded distribution system serving the Town of Guilford. At that time, a single 27.6- to 4.8-kV, 6.25-MVA power transformer was removed, and the 4.8-kV distribution system in Guilford was converted for 13.8-kV operation (two initial feeders). Following this change, the Guilford Substation contained a single 12.5-MVA power transformer that was supplied by a long 27.6-kV feeder line running close to Long Island Sound from the Branford Substation. Within a few years, rapid load growth in Guilford led to the addition of a second 12.5-MVA transformer at Guildford Substation, two additional 13.8-kV feeders, and an additional 27.6-kV supply circuit from Branford which also picked up growing load at other small substations in Madison,

including the small Race Hill 27.6- to 4.8-kV Substation in North Madison. In the 1970s, the peak-load growth in Guilford, Madison, and the surrounding towns next led CL&P to construct a temporary 27.6- to 23-kV substation in Branford, followed by a new 115-kV transmission line between the Branford Substation and Bokum Substation in Old Saybrook (*Docket 1 - Power Facility Evaluation Council*). In the late 1970s a new 115- to 13.8-kV bulk power substation, Green Hill, was built in Madison along this 115-kV line. The Green Hill Substation was established with two 47-MVA power transformers as a source for 23-kV feeders. Later the Branford Substation and its 27.6-kV feeders were converted to operate at 23 kV. Using feeder sections that once operated at 27.6 kV originating from the Branford Substation, Green Hill Substation took over the supply role to Race Hill Substation, East River Substation and Madison Substation, and in the mid-1990s, the supply responsibility for half of Guilford Substation, all of which were converted for 23-kV supply sources. In order to contain the 13.8-kV peak load on Guilford Substation within station ratings, areas of Guilford were also converted to 23-kV distribution service, with feeder supplies directly from the Branford and Green Hill Substations.

The Present Substation Capacity Situation

Because Guilford Substation has 23-kV feeder supplies from both the Branford and Green Hill Substations, and its load is normally split between each source, CL&P has been able to load each of the Branford and Green Hill Substations well above the typical capacity limits of CL&P's typical two 47-MVA transformer substations, and in turn to long defer the need for another bulk power substation in Guilford. The permissible load ratings on the Branford and Green Hill Substations have been 95 and 89 MVA respectively. Guilford Substation, with its two 12.5-MVA power transformers, its 23-kV supply feeders, and a system of motor-operated disconnect switches, makes possible an automatic forced load transfer ("FLT") scheme. This

FLT scheme can quickly transfer up to 14 MVA of load from one bulk substation (i.e., Branford or Green Hill Substation) to the other, following a major transformer outage at either substation, the contingency which drives the bulk substation permissible load ratings.

The Branford Substation currently has a permissible load rating of 95 MVA, based on an FLT of 14 MVA. Peak loads at that substation reached 87.8 MVA during the summer of 2006. Using a high estimate of 3% for a peak-load growth rate, the Branford Substation would exceed its permissible load rating by 2009 (see Table below showing substation Capacity and Forecasts). There is a narrow and shrinking margin in the next few years if the loss of a Branford Substation transformer occurs (i.e., either a transformer failure or a forced loss due to priority maintenance). Additionally, the two 12.5-MVA transformers at the small Guilford Substation are approaching their permissible load ratings and, based on current projections, will exceed their ratings as early as 2006 and 2009, respectively. Relieving this situation by converting and shifting more of the town's 13.8-kV load to a Branford 23-kV feeder will only exacerbate the Branford Substation capacity problem.

In 2007, a third 115- to 23-kV, 47-MVA transformer will be added to the Green Hill Substation to boost its capacity, which was exceeded in the summer of 2005. This capacity addition enables 23-kV feeder additions and load transfers so that some load that is presently served via the heavily loaded Race Hill 23- to 8.32-kV, 12.5-MVA Substation transformer can be directly supplied, with greater reliability, by 23-kV feeders from Green Hill Substation. However, the bulk of the additional capacity (40-50 MVA) gained by adding the third transformer at Green Hill Substation is required to supply the growing needs of the area immediately surrounding Green Hill, namely Madison and Clinton. Therefore, the increase in capacity at Green Hill Substation does not provide an adequate margin for future growth in

Guilford and Branford, nor does it solve all of the existing distribution system reliability issues. The additional substation capacity and feeder system reconfiguration that will be provided by the proposed Stepstone Substation will enable the Branford Substation to remain below its permissible load rating. The locations of these nearby substations are depicted on Figure 2, *Guilford Area Substation System.*

Available Capacity and Forecasted Load Growth (MVA)[1]

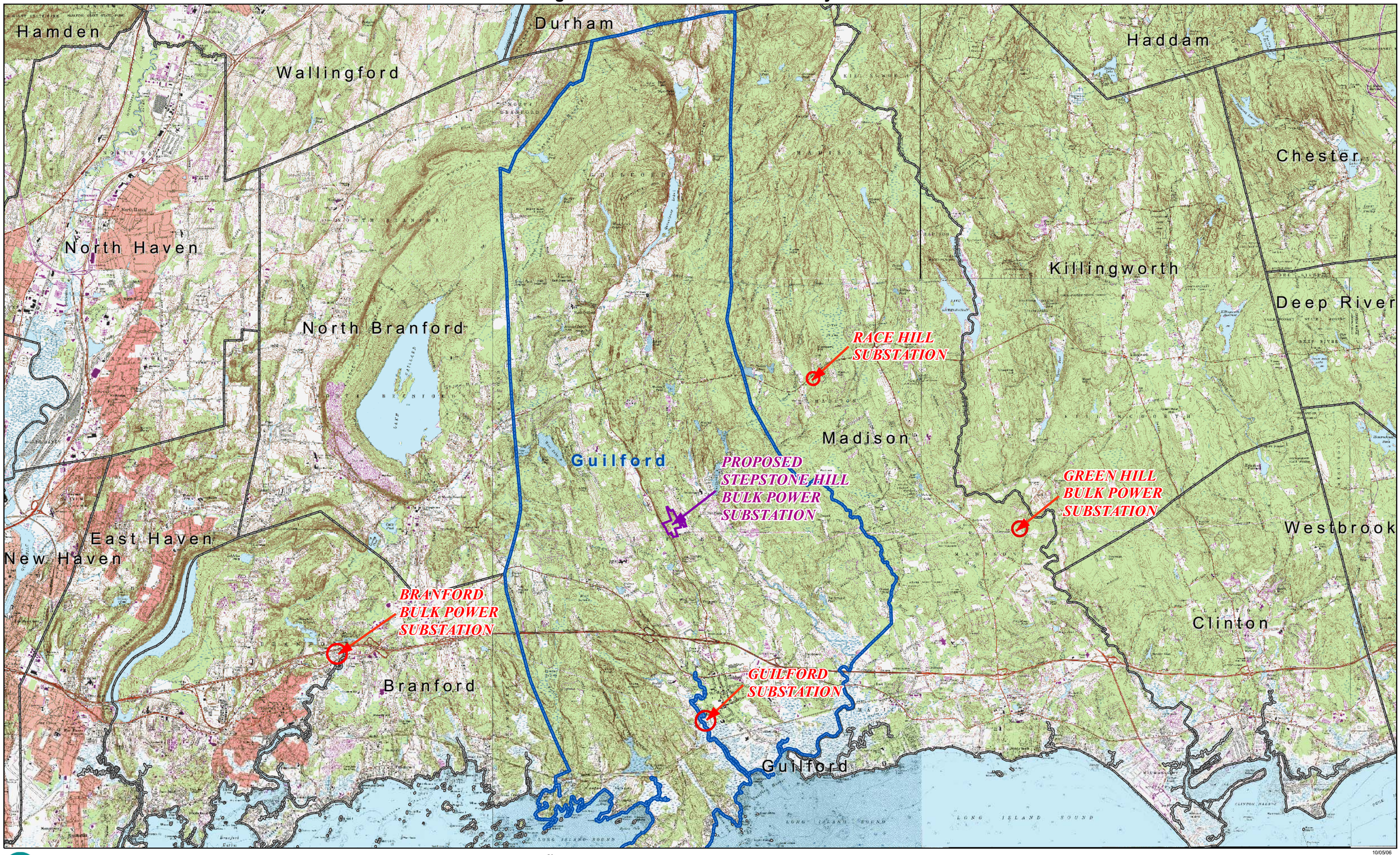
	Permissible Load Rating (MVA)	2006	2007	2008	2009	2010	2011	2012
Branford	**95**	87.8	90.4	93.1	95.9	98.8	101.8	104.8
Green Hill[2]	**130**	100.5	103.5	106.6	109.8	113.1	116.5	120.0
Total (MVA)	**225.0**	**188.3**	**193.9**	**199.8**	**205.8**	**211.9**	**218.3**	**224.8**

1 Forecasts based on a projected 3% annual load growth and no new substation.
2 The rating prior to the third transformer being placed into service is 89 MVA. The majority of the new capacity (41 MVA) from the addition of a third transformer is dedicated to serving the growing needs of Madison and Clinton. Also, as evidenced by the 2006 peak load data, a very rapid spurt of load growth occurred in 2006 at Green Hill Substation.

Distribution System Reliability in Guilford

Currently, the small Guilford Substation serves the town center area with 13.8-kV service. A portion of the 23-kV supply line from Green Hill Substation also feeds Guilford Substation following the "swamp" route through tidal flow marsh land areas bordering Long Island Sound. This lengthy and older supply line, initially built in the 1930s, is susceptible to interruption from significant storm events and could be severely damaged by a strong hurricane. Severe damage to portions of the line occurred during hurricane Gloria in 1985. Similarly, the 23-kV supply feeders from Branford Substation to the Guilford Substation extend in the opposite direction along the coast, and share common structures. If these lines experience another catastrophic incident similar to hurricane Gloria, a large area of Guilford supplied by the Guilford Substation.

Figure 2: Guilford Area Substation Systems



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could be without power for an extended period of time. Similarly, using additional capacity at Green Hill, which is located on the far eastern side of Madison (see Figure 2) to meet load demands in Guilford, would require the construction of two to three new, lengthy 23-kV feeders. Since new circuit routes from Green Hill to Guilford are all but exhausted, this would require the construction of multiple circuits on the same poles, an alternative that generally results in a less reliable and less efficient distribution system. Establishing an inland bulk substation in north-central Guilford to supply load in Guilford and provide a 23-kV source to the Guilford Substation, would provide not only much needed capacity, but also increased reliability. Establishing an additional bulk source north of the existing Guilford Substation will increase reliability by providing an additional, shorter feeder line for the Guilford Substation that is away from the coastline and less susceptible to major storm events.

Adding a new bulk power-supply substation source to the area will also improve reliability by enabling the deployment of more recloser loop schemes on the distribution feeders. Reclosers are devices installed along a feeder which, working together can separate a section of a feeder and temporarily reconnect it to another feeder. So-called recloser loop schemes can be deployed to minimize the number of customers that lose power during an outage when power is available from more than one direction or source. CL&P currently utilizes recloser loop schemes, where possible, to minimize outages mostly associated with longer repair time events. Currently, the potential for utilizing these schemes is all but exhausted in the Guilford area. The addition of a new bulk Substation in Guilford will bring capacity and additional feeders, allowing for the creation of more recloser loop schemes between feeders, and thus enabling enhanced customer reliability. Planning for such a contingency not only satisfies the Connecticut Department of Public Utility Control's goal of a more reliable distribution system, it also represents prudent

preparation for the possibility that the coastline of Connecticut could experience another major hurricane similar to Gloria.

H. EXISTING CONDITIONS

An *Existing Conditions Map*, depicting current conditions on the Property, its access, abutting properties, and several key features discussed herein, is provided as Figure 3. The purpose of this section is to describe conditions on the Property as they exist today. A detailed discussion of the Stepstone Substation's effects on the environment is provided in Section K of this document.

H.1. Existing Development

CL&P's site for the Stepstone Substation is located in a Residential R-5 zone of Guilford. The Property is primarily wooded and undeveloped. Overhead transmission lines traverse the southern portion of the Property and extend generally east to west off the Property in either direction. Five utility structures, supporting the overhead transmission lines, are currently located on the Property. The Property is bounded by a total of thirty abutting parcels. All of the abutting properties are residentially developed with the exception of three undeveloped Town-owned parcels. Two of the undeveloped Town-owned parcels are situated east of the Property and the third abuts the northeastern corner of the Property.

Residences in the vicinity of the Property exist along Durham Road (Route 77), Stepstone Hill Road, Little Meadow Road, Meadow Ridge Lane, Talcott Road, Winthrop Road, and Bunker Hill Road. The nearest residence (#840 Durham Road) is located approximately 645 feet to the southeast of the approximate Substation location. Figure 4 (*Nearest Residences*) depicts the locations and distances of surrounding residences to the proposed Substation.

Figure 3: Existing Conditions Map

Charles Monte Jr
Walter J Sauer Jr & Jill T OCallaghan
Town of Guilford
Guy A & Lisa A Cattaruzza
James P & Christina R Leese
Frederick W & Andrea C Herget
Timothy E & Jessica P Hansen
Michael I & Janet R Deangelo
Nicole E Nicoletti
Meadow Ridge Lane
Little Meadow Road
Marc W & Krysten L Guarino
Robert M & Deborah A Pantera
Sean W & Illana Lazarus
Keith B & Deborah G Bishop
Kyle R & Jane M Kramer
Frederjick P & Mary Lou Bonito
Dennis & Annette Amato
Molly F Free
Lawrence & Dana Torre
Evelyn M Palermo
Robert A Solari
Yongmei Jin & Zhang Xuechun
Jeffrey & Patricia Brand
Raymond & Rose Marie Iglesias
Ronald & Margaret Berube
Conn Light & Power
Lidio & Alicia Afonso
SNET
Mark A Millett
Warren & Helen Gohsler
Stepstone Hill Road
Kimberly A Caldwell
Town of Guilford
Route 77
Laurel K Griso & Dennis Sandacata
West River
Christopher & Judith A Tsou
Richard P & Elizabeth A Canning
Russi T & Ava R Suntoke
James D McCann & Maureen McCann-OReilly
Harlan G Case
Douglas F & Susan B Danaher
Alan K & Susan M Frishman
David W & Mary C Vitola
Wetland 1
Wetland 2
Wetland 3
Wetland 4
Wetland 5
Wetland 6
Wetland 7
VP 1
VP 2
VP 3
VP 4
VP 5
VP 6
VP 7
Conn Light & Power

Legend

- Utility Structures
- Transmission Lines
- Intermittent Watercourse
- Contours (5-foot)
- Existing Path
- Approximate Parcel Boundaries
- Scenic Road (Rt 77)
- Aquifer Protection Wells
- Aquifer Protection Well Field
- Water Bodies
- Vernal Pool (VP) Habitat
- Palustrine Forested Wetland
- Deciduous Upland Forest
- Buildings

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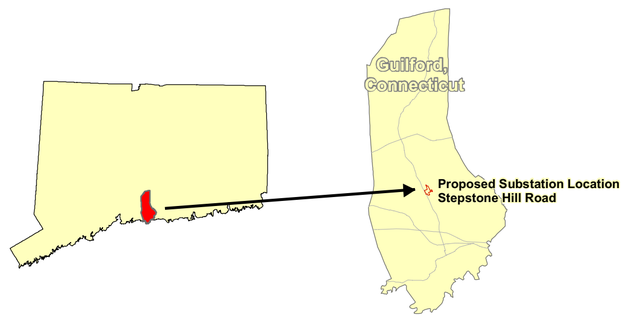

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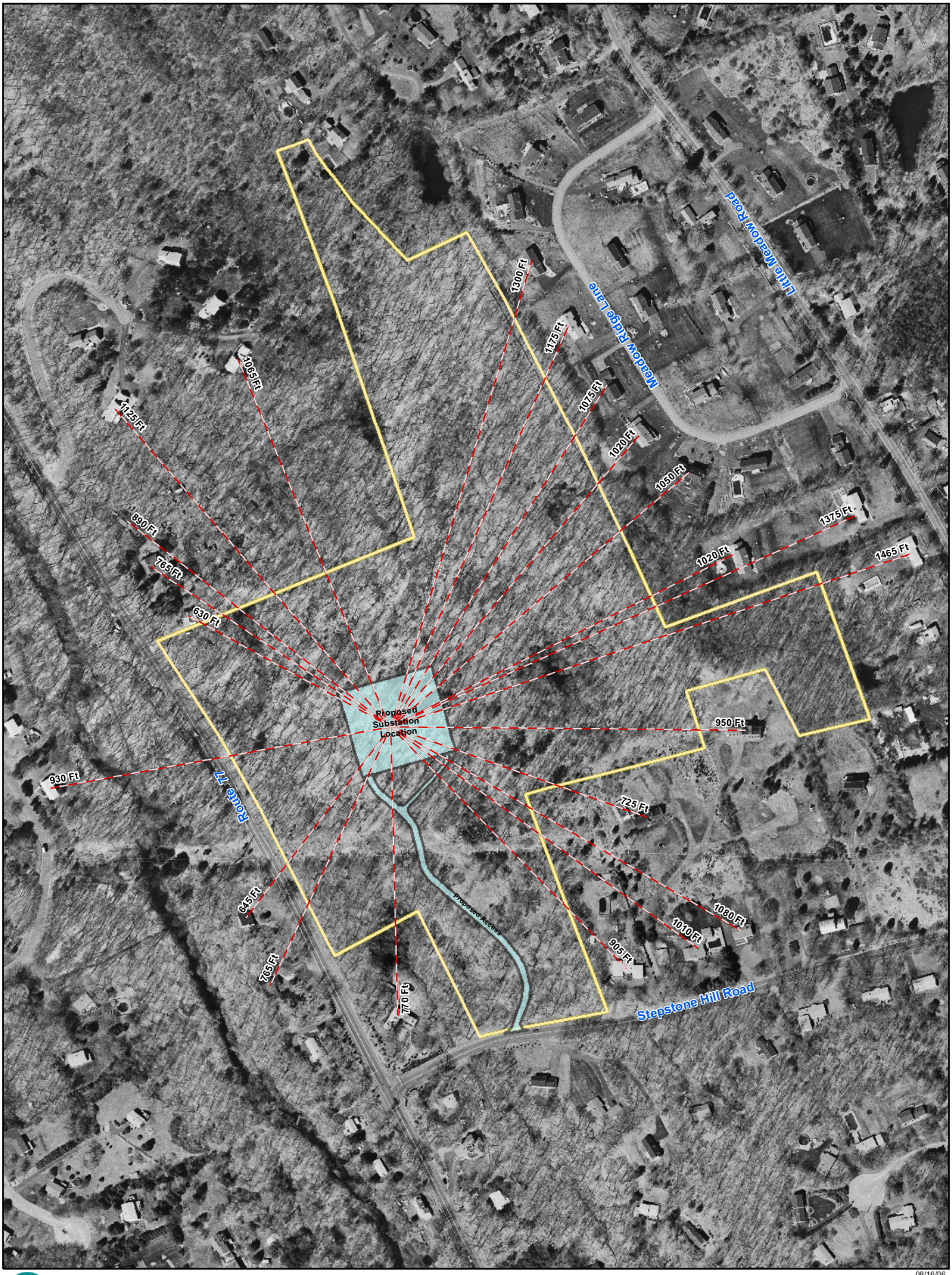
The Northeast Utilities System

Figure 4: Nearest Residences



08/16/06

Vanasse Hangen Brustlin, Inc.
Transportation Land Development Environmental Services

Legend

- Approximate Property Boundary
- Footprint of Proposed Substation
- Nearest Residences

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Connecticut Light & Power
The Northeast Utilities System

H.2. Site Access

A dirt access drive is situated off of Stepstone Hill Road in the southern-most portion of the Property, allowing authorized vehicular access to the existing 115-kV transmission line corridor. The western end of the corridor, as it exits the Property, intersects Route 77; due to the steep grade at this end of the corridor, no vehicular access is available from Route 77.

H.3. Wetlands and Watercourses

Wetlands located on the Property were delineated in the field by a professional soil scientist, flagged, and subsequently surveyed and mapped. The limits of the wetlands and their respective identifiers are illustrated in Figure 3 (*Existing Conditions Map*). Details of the investigation can be found in Exhibit 2 (*Wildlife Habitat Survey*).

Wetland 1 (flags #1 through #12) is a small isolated palustrine forested groundwater-controlled wetland located near the western Property boundary adjacent to Route 77. The northern portion of the wetland extends into the transmission line corridor. The wetland contains seasonal shallow inundation for a short period during the growing season.

Wetland 2 (flags #13 through #22) is a groundwater-controlled depressional wetland located in the southwest corner of the Property. The majority of this wetland is located off-site, on the adjacent residential property, and consists of a seasonally inundated pond and palustrine forested wetland that drains south under Stepstone Hill Road. The portion of the wetland on the Property is palustrine forested with areas of seasonal saturation and shallow seasonal inundation.

Wetland 3 (flags #118 through #137) consists of a small wetland located in the southeastern portion of the Property. The majority of the wetland is located within the transmission line corridor with a small portion extending north into a wooded area. This wetland is groundwater-controlled and experiences seasonally shallow inundation.

Wetland 4 (flags #138 through #156) is a large seasonally inundated pond and surrounding palustrine forested wetland. The groundwater-controlled depressional wetland is isolated in a central portion of the Property

Wetland 5 (flags #92 through #117) is located along the eastern Property boundary. The majority of this groundwater-controlled depressional wetland is located off-site, on adjacent residential parcels to the east of the Property. Portions of this wetland located on the Property consist of palustrine forest with areas of seasonally saturation and shallow ponding.

The northern-most wetland, Wetland 6 (flags #60 through #91), consists of a large wetland system that extends southwest through an adjacent residential property to Wetland 7 located in the northwest corner of the Property. The northern portion of Wetland 6 is characterized by an intermittent watercourse that discharges to a palustrine forested wetland containing areas of seasonal saturation and a shallow seasonally-inundated pond. The intermittent watercourse receives water from a wetland located on an adjacent municipally-owned property to the north.

Wetland 7 (flags #23 through #59) is a large palustrine forested wetland system adjacent to Route 77 in the northwest corner of the Property. The wetland system extends northeast through an adjacent residential property to Wetland 6, located in the northern end of the Property. The western portion of Wetland 7 is seasonally saturated and includes several braided intermittent watercourses and a shallow seasonally-inundated pool. This wetland system drains southwest under Route 77.

H.3.1. Vernal Pool Habitat

The methods employed to conclusively identify potential vernal pool habitat included a variety of recognized field exploration techniques. Potential vernal pools were conclusively

identified based on both physical characteristics (i.e., occurs within a confined depression or basin that lacks a permanent outlet stream, standing water for approximately two months during the growing season, lacks any fish population, and dries out most years) and the occurrence of one or more obligate wildlife species (i.e., spotted, Jefferson, and marbled salamanders, wood frogs, and fairy shrimp). This methodology generally follows the guidelines noted in the University of Connecticut Cooperative Extension System, *A Guide to the Identification and Protection of Vernal Pool Wetlands of Connecticut*. The identification of vernal pool species utilized methods described in the *Guidelines for Certification of Vernal Pool Habitat* (Massachusetts Division of Fisheries and Wildlife, 1998) along with various amphibian and vernal pool species field guides.

Vernal pool inspections were conducted periodically during the months of May, June and July 2005 as well as during the months of March, April, May and June 2006. Potential vernal pools were inspected for any indirect (i.e., chorusing) or direct evidence of amphibian breeding (such as the presence of two or more egg masses or sightings of adults). In addition, cover searches were performed (i.e., downed tree limbs, logs, large rocks) in the immediate vicinity of the vernal pool, including the proposed development and access/utility easement areas, for adult salamanders and frogs.

An analysis of this data over these two seasons is generally consistent and reveals that although each of the seven wetland areas provides potential amphibian breeding habitat, only three of those aquatic habitats (Vernal Pools 2, 5 and 6) have been found to meet the definition of *vernal pool* as defined in the UCONN Cooperative Extension Service System's *A Guide to the Identification and Protection of Vernal Pool Wetlands of Connecticut*. Please note that the most productive vernal pool habitat for Vernal Pools 2 and 5 are located on adjoining properties with

only some of the more seasonal habitat extending onto the CL&P Property. The four remaining pools do not sustain sufficient inundation to allow for the full development of juvenile amphibians into adults and as a result are generally considered to provide less significant vernal pool habitat than those that do sustain proper inundation. The locations of these vernal pools are illustrated in Figure 3 (*Existing Conditions Map*). Details of the investigation can be found in Exhibit 2 (*Wildlife Habitat Survey*).

During the 2005 season three of the seven vernal pool habitats (Vernal Pools 1, 3 and 4) were observed to have dried out before obligate vernal pool species could develop to a point where they could survive outside of the pool. The four remaining pools (Vernal Pools 2, 5, 6 and 7) retained water for a duration long enough to produce viable obligate vernal pool species. Precipitation and hydraulic conditions appeared to be within relatively normal ranges during the spring 2005 season.

During the 2006 season inundation within four of the pools (Vernal Pools 1, 3, 4 and 7) did not occur until after the spring migration and breeding period due to a dry February and exceptionally dry March. Three of the pools (Vernal Pools 2, 5 and 6) held and maintained water at levels significant enough to produce viable obligate vernal pool species. Precipitation and hydraulic conditions were not considered to be within normal ranges during the spring 2006 season as only 0.26 inch of precipitation was reported in the area during the month of March (reported by the National Weather Service), when many pools typically fill with water.

H.4. Vegetation and Wildlife

The majority of the vegetation on the Property is common to post agricultural mid-successional growth with some areas controlled for maintenance of the existing electrical transmission lines. The Property contains three main habitat types: upland forest, wetland forest and maintained transmission line corridor. Various stages of succession growth can be observed within the upland forest as a result of selective timber harvesting activities. Many abandoned wood roads that traverse the Property are being reclaimed by the forest. Detailed descriptions of these vegetative habitats are provided in Exhibit 2 (*Wildlife Habitat Survey*).

Wildlife habitats associated with the Property were assessed by conducting field inventories to identify herpetofauna, avian, and mammal species present, taking into account the habitat conditions present within each resource area. Habitat variables considered in the wildlife evaluation included the size of the vegetative communities, the plant cover types present, the degree of habitat disturbance, interspersion of cover types, the abundance and diversity of fruit and seed-bearing plants, the size (average diameter) and abundance of tree snags and ground debris, and surrounding land uses. These vegetative communities were evaluated for their capacities to provide cover, forage, and breeding habitat. The results of the field inventories and assessment of the wildlife conditions indicate that most of the Property contributes moderate to high value wildlife habitat, particularly the wetland and immediate upland habitat of the more significant vernal pools 2, 5 and 6 located in the northern, eastern and southern extents of the Property respectively.

H.5. Rare, Threatened, and Endangered Species

The Property is within a listed area as shown on the Connecticut Department of Environmental Protection ("CTDEP") Natural Diversity Data Base ("NDDB") map. Information obtain from the CTDEP indicates that the Connecticut Species of Special Concern *Aristolochia serpentaria* has been identified and documented on the Property. *Aristolochia serpentaria* is an herbaceous plant commonly called Virginia Snakeroot. According to the Connecticut Botanical Society, Virginia Snakeroot typically occurs in dry rocky woods and flowers during the months of May through July. CTDEP NDDB information indicates that a limited population of this species was found in the transmission line corridor adjacent to Route 77 between 1988 and 2002 and that the population has been steadily declining through these years. A field investigation for Virginia Snakeroot was conducted by a qualified botanist on June 21, 2005 in historically documented locations and potential locations according to this species habitat preference. The field survey did not locate any *Aristolochia serpentaria* individuals. Although this suggests that the small population has been extirpated, the negative result is not conclusive, and the population (or single plant) may still persist.

Although not identified by the CTDEP, Featherfoil (*Hottonia inflata)*, another Connecticut Species of Special Concern, was observed on the Property during the Virginia Snakeroot field investigation. The population occurs in a shallow pool within Wetland 6 located in the northern portion of the Property. According to the Connecticut Botanical Society, Featherfoil is an aquatic plant typically occurring in shallow water in ponds and slow streams.

Evidence of Eastern Box Turtle (*Terrapene c. carolina*), a Connecticut Species of Special Concern, was observed on the Property. During various inspections of the Property, no live evidence of Eastern Box Turtle was observed, however a deceased specimen was recovered from

the forest immediately south of Wetland 7 near Route 77. Box turtles favor old field habitat and deciduous forest areas, including maintained power line corridors and logged woodland. No previous identification of this species on the Property has been documented nor listed in CTDEP NDDB.

H.6. Water Supply Areas

Groundwater below and near the Property is classified by the CTDEP as a GA groundwater area. The GA classification indicates groundwater within the area of existing private water supply wells or an area with the potential to provide water to public or private water supply wells. CTDEP presumes that groundwater in such an area is, at a minimum, suitable for drinking or other domestic uses without treatment.

The closest public water supply wells are part of the Pinewood Wellfield, located approximately 900 feet southwest of the proposed Substation. The western portion of the Property is situated within a state designated Final Aquifer Protection Zone. 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 locations of these APA are determined through preliminary mapping (Level B) and later final mapping (Level A). The mapping is performed by the water companies who own the wells and is approved by the CTDEP. Land Use Regulations to be implemented in these areas have been adopted at the state level. However, the Land Use Regulations that would protect these areas cannot go into effect at the local level until the final mapping is completed and approved by CTDEP and the municipal program is implemented. In this case, final mapping has been completed and the municipal program has been developed. As a result, the land use activities within the Pinewood Wellfield APA are regulated by both the CTDEP and the Town of

Guilford to protect the quality of the groundwater. However, substations and other utility electrical equipment are not included in the definition of regulated facilities under CTDEP regulations (Regulations of Connecticut State Agencies ["RCSA"], §§22a-354i-1 to 22a-354i-10, effective 2/2/04). In addition, under § 273-92 Groundwater Protection District of the Town of Guilford's Zoning Regulations, substations and other utility electrical equipment are not identified as a prohibited land use or special permit land use within a Groundwater Protection District.

H.7. Scenic Areas

Several State and locally designated scenic roads are located within the immediate vicinity of the Property. Route 77, a two lane, State-numbered roadway, abuts the western portion of the Property and carries the scenic designation for approximately 11.5 miles through Guilford from the Durham town line southward to Water Street. North Madison Road, a locally designated scenic roadway located approximately 0.32 mile east of the Property, spans roughly 1.6 miles in a northeasterly direction from Nut Plain Road to Twin Bridge Road. Segments of the roadway feature views of Guilford Lakes. Located approximately 1.9 miles to the southwest of the Property, Moose Hill Road is the next nearest scenic roadway. This locally-designated scenic road generally follows a north-south alignment and provides one lane of travel in each direction.

The Town of Guilford has also identified a number of Natural Scenic Resources contained within the Town. These include designated scenic areas, scenic estuaries and other water resources, panoramic vistas, scenic geological features and several additional categories. The nearest such resource is the West River located approximately 800 feet west of the proposed Substation, across Route 77. The East River, another Natural Scenic Resource, is located

approximately 0.6 mile to the northeast. Timberlands, located roughly 1.4 miles to the northeast of the Property, consist of approximately 600-acres of wooded land with an established system of hiking trails.

H.8. Historic and Archaeological Resources

Analysis of the history of the Property was conducted by synthesizing background data related to prehistoric use of the area, historic occupation of the region, and the natural setting of the area encompassing the proposed Project items. Preliminary results did not reveal the existence of any historic or archaeological resources listed on or eligible to the National Register of Historic Places or Indian religious sites at the Property. A historic site identified as the Pitkin Elisha house is situated approximately 0.43 mile to the southwest of the Property and an archaeological site is situated approximately 0.65 mile to the northeast, along the East River.

H.9. Natural Resources

Site bedrock and surficial geology was determined by reviewing the Environmental GIS Data for Connecticut 2003 Edition compiled by the CTDEP. Bedrock geology underlying the Property is identified as the Middletown Formation, which is described as dark to light-gray gneiss and granofels; hornblende gneiss and amphibolite. Soils in the vicinity of the Property are classified as till, which is described as predominantly nonsorted, nonstratified sediment deposited directly by glaciers. Till consists of boulders, gravel, sand, silt, and clay mixed in various proportions. This information was confirmed by geologic information in the Town of Guilford Natural Resource Inventory and Assessment, dated January 2005.

A soil survey conducted by Soil Science and Environmental Services Inc. confirmed the presence of glacial till on the Property.

H.10. Floodplain Areas

According to Flood Insurance Rate Map, Community-Panel Number 090077 0010 B, August 19, 1986, there are no flood hazard areas on the Property. The nearest floodplain is associated with the West River, located approximately 800 feet west of the proposed Substation. The 100-year base flood elevation in the general area is approximately 80 feet above mean sea level ("AMSL"). The lowest elevation on the Property exceeds 100 feet AMSL.

H.11. Recreational Areas

There are no recreational areas directly abutting or within 0.5 mile of the Property. Recreational areas located within the general vicinity include the Guilford Lakes Golf Course, a public golf course located approximately 0.6 mile to the northeast of the Property; Nut Plains Park, an approximate 25-acre parcel located roughly 0.9 mile north of the Property (which features a lacrosse field and several smaller multi-use fields); and Bittner Park, an approximate 57-acre parcel located roughly one mile to the northwest of the Property that includes a lighted softball field, three little league fields, a lighted soccer field, a roller sports complex, an ice rink, and fishing access as well as several established trails utilized for jogging, hiking, horseback riding and cross country skiing. Other recreational facilities located further from the Property include Timberlands (located 1.4 miles to the northeast), Hubbard Park (located approximately 1 mile south), Peddlers Park (1.75 miles southwest), and Mill Pond Park (located approximately 1.8 miles south of the Property).

H.12. 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 period 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 a review of USGS-National Earthquake Reduction Program maps and information obtained by the Weston Observatory (a geophysical research laboratory), there are no seismic areas located at the Property or within its immediate area.

H.13. Noise

Because the Property is undeveloped, existing noise levels are below those established for residential areas by the CTDEP's noise control regulations (RCSA Title 22a, §22a-69-1 to 22a-69-7.4) and the Town of Guilford's Noise Control Ordinance. Contributing factors for noise generation in the area are traffic noises generated from Route 77 and Stepstone Hill Road.

H.14. Lighting

Currently, there are no lighting facilities present on the Property.

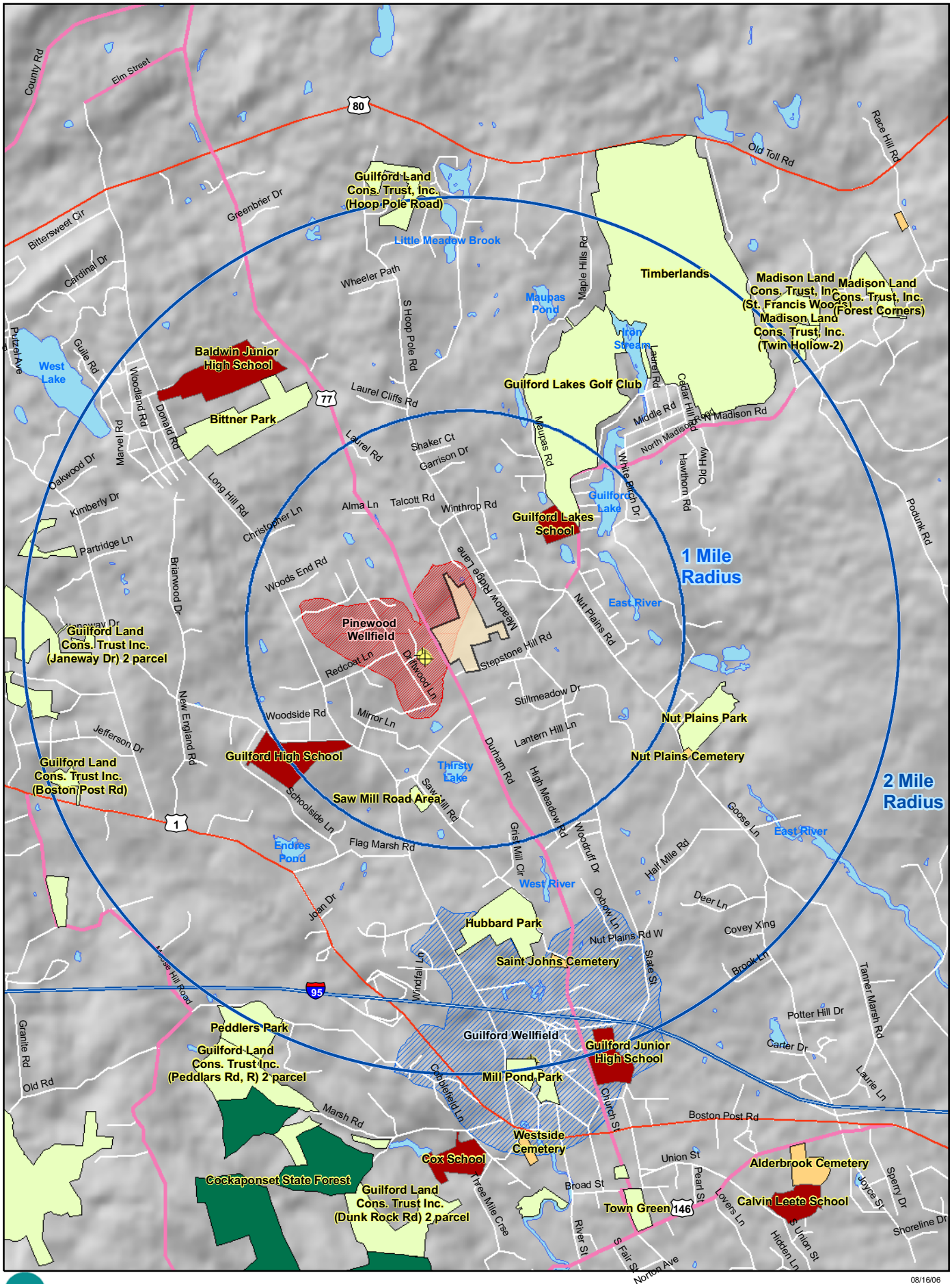
H.15. Other Surrounding Features

Figure 5 (*Surrounding Features*) depicts the nearest locations of non-residential development, including:

- Schools and daycare centers
    - Guilford Lakes School located 0.6 mile northeast
    - Guilford High School located 0.7 mile southwest
    - Baldwin High School located 1.5 mile northwest
    - Guilford Junior High School located 1.9 mile south
    - Cox School located 2.3 miles southwest
    - No daycare centers identified within two miles
- Playgrounds (only those associated with schools)
- Hospitals (none identified within two miles)
- Group homes (none identified within two miles)
- Licensed Youth Camps (none identified within two miles)
- Hunting or wildlife management areas (none within two miles)
- Settled and Residential areas - see Figure 4 (*Nearest Residences*)

There are no tidal wetlands or coastal zone management areas involved with this Project.

Figure 5: Surrounding Features



08/16/06

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1,500 750 0 1,500 Feet

Legend

- Property of Interest
- State Forest/Park
- Scenic Road
- Cemetery
- Existing Preserved Open Space
- School
- Aquifer Protection Well
- Final Aquifer Protection Zone
- Preliminary Aquifer Protection Zone
- Water Bodies

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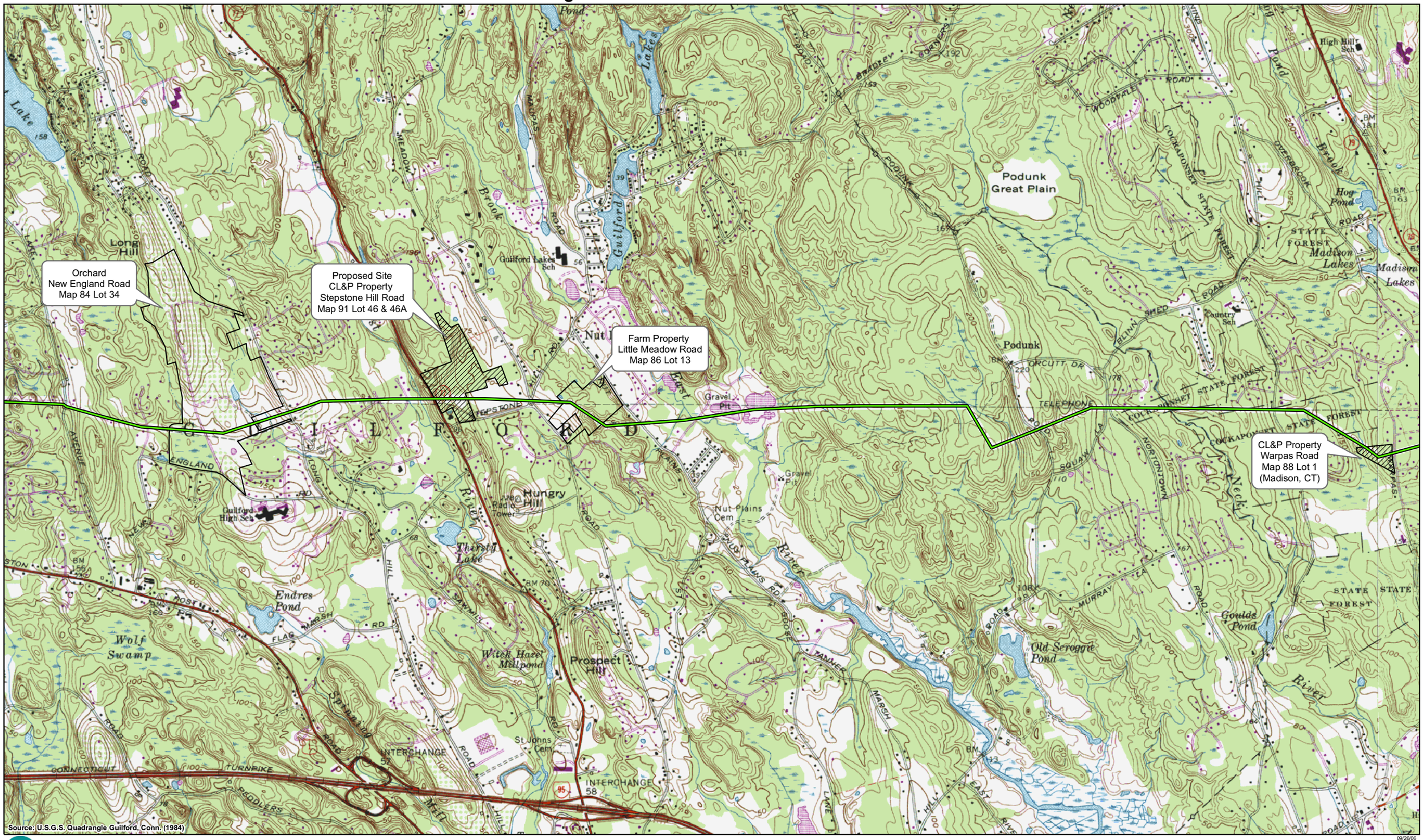
I. ALTERNATIVES EVALUATED

CL&P has evaluated several alternate sites to determine the most suitable location for construction of its new bulk power Substation. The technical approach to conducting the site selection evaluation was to identify environmental, land use/planning, physiography, and engineering constraints that represented potential impediments to Project development. The following major siting criteria were considered:

- Central location with respect local distribution (customer) load area
- Proximity to the existing overhead 115-kV transmission line
- Proximity to neighbors and other surrounding features
- Natural resource and cultural resource constraints
- Zoning and present land use
- Access from a public road
- Consistency with Town and State Plans of Conservation and Development
- Earthwork requirements based on existing topography

Initially, a total of ten properties (including seven CL&P-owned parcels) were assessed; however, six sites were eliminated from consideration due to physical limitations and resultant significant adverse environmental effects. In addition to the Property on Stepstone Hill Road three other locations were identified for further consideration. All of the properties evaluated are situated along the existing 115-kV transmission line right-of-way ("ROW") and possess some frontage or existing access to a nearby public road. The alternative site locations are discussed below and depicted on Figure 6 (*Alternative Sites*).

Figure 6: Alternative Sites



09/26/06

VHB Vanasse Hangen Brustlin, Inc.
Transportation Land Development Environmental Services

N W E S

1,500 750 0 1,500 Feet

Legend

- CL&P Owned Properties
- Non- CL&P Owned Properties
- Transmission Line

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I.1. Site 1 Alternative – Stepstone Hill Road

CL&P's Stepstone Hill Road Property is well suited for the proposed Substation for several reasons, including:

- It is centrally located with respect to the Guilford customer load.
- An existing 115-kV transmission line traverses the southern portion of the Property.
- It has existing access from Stepstone Hill Road, which abuts the Property.
- Its large size (38 acres) allows the Substation to be located nearly 800 feet off Stepstone Hill Road and over 600 feet from the nearest residence. Interior Property views are well screened by existing woodlands.
- Development would be consistent with local zoning regulations (Substations are an allowed use in a Residential Zone by special permit).
- Minor earthwork is required to construct the Substation.

CL&P's Property off Stepstone Hill Road was identified and purchased as a viable future substation site in 1973 in anticipation of area load growth and transmission system needs. The Property is situated in the general geographic center of Guilford, the primary recipient of the Project. Further, the Property is also located equidistant between the Branford Substation (approximately 5.5 miles to the west) and Green Hill Substation (approximately 5.5 miles east in Madison). The Substation footprint would be located within 100± feet of the existing 115-kV overhead transmission line, facilitating a simple loop through design that requires only a short span of new interconnecting lines. The connections to these lines would be made without any changes to the line profile beyond the Property limits and without any modifications to the existing utility transmission corridor limits. Development on the 38-acre Property allows for concealment of the Substation and no disturbances to existing conditions near abutting properties, maintaining the natural vegetative screening. Direct access into the Property exists

from Stepstone Hill Road. Development of the Substation's driveway would follow the general route of the current access and require minimal grading and tree cutting. Some tree clearing would be necessary to accommodate the Substation footprint however substantial vegetative screening would remain between the facility and residential neighbors, thereby minimizing visibility. The Substation would be constructed without any effects to existing inland wetland resources. Although not required, activities at this location would be consistent with local zoning regulations. CL&P obtained location approval for siting the Stepstone Substation at the Property from the Guilford Inland Wetlands Commission (August 5, 2006) and Planning and Zoning Commission (September 20, 2006).

I.2. Site 2 Alternative - Farm property located east of Little Meadow Road in Guilford

- Close proximity to the customer load.
- The existing ROW crosses the west-central portion of this property.
- Little Meadow Road abuts this property to the west.
- Potentially substantial adverse environmental effects.
- Moderate to heavy earthwork could be required.

Although the existing ROW crosses the central portion of this 27.41-acre parcel, constructing the Project would require extensive grading to accommodate the Substation. No direct vehicular access currently exists; a new road would be required to reach interior portions of this property. Inland wetlands are located in the southwestern and northern portions of this property, limiting development to the central, and highest, area on the site. Perhaps of most significance, construction of the Substation at this location would likely result in an adverse environmental effect because several recognized historic resources, eligible for listing on the

National Register of Historic Places, are located within a few hundred feet; the nearest historic structure is situated approximately 35 feet to the southeast. This location would be highly visible to these historic structures, as well as the existing residential neighbors and to those traveling along the local road. Removal of mature trees would be necessary for siting the Substation, which would only increase visibility to these receptors. CL&P would also have to purchase this property to install the Substation.

I.3. Site 3 Alternative - CL&P-owned property located west of Warpas Road in Madison

- The existing utility corridor crosses the central portion of this property.
- Frontage along Warpas Road (abuts the eastern property line).
- Potential adverse environmental effects.
- Moderate to heavy earthwork would be required.

This 6.8-acre undeveloped parcel of land is located in Madison, approximately 1.75 mile west of Green Hill Substation. The parcel's location is approximately 3.75 miles east of the Stepstone Property and not ideally situated proximate to the load center. The land is currently owned by CL&P and consists mainly of mature upland forest. Construction at this location would allow the Substation to connect into the existing 115-kV overhead transmission lines, which transect the central portion of the property. However, extensive cutting of the mature forest would be necessary, as would cut and fill activities to adequately grade the site to accommodate the Substation. Access to the property would have to be gained from Warpas Road, a residential area with several homes close to the site. Site preparation work (vegetation removal and grading) would result in visual exposure directly to neighboring residences. In addition, grades for the

access road could be excessive. There is an approximate 15% grade from the center of the eastern portion of the property, off of Warpas Road, to the central portion of the property.

I. 4. Site 4 Alternative - Orchard property north of New England Road in Guilford

- Close proximity to the customer load.
- The existing ROW crosses the southern portion of this property.
- New England Road abuts the southern property line.
- Potential adverse environmental effects.
- Moderate earthwork would be required.

This 174-acre property's agricultural history would suggest that site soils may have elevated levels of pesticides and related constituents, potentially jeopardizing re-use of the material and creating significant off-site treatment/disposal costs. Portions of the property that are feasible for development consideration are topographically higher than the surrounding area and lack sufficient vegetative buffer for screening. The Substation would be highly visible in all directions from several nearby residences and to those traveling the local road network. In addition, a land purchase would be required for CL&P to construct at this property.

I.5. Summary of Alternatives Analysis

A comparative analysis of the sites considered for the Project is provided in the table below.

STEPSTONE SUBSTATION SITE ALTERNATIVE ANALYSIS MATRIX				
Review Criteria	**Stepstone Hill Road Preferred Site**	**Farm Little Meadow Road Alternative**	**Warpas Road, Madison Alternative**	**Orchard New England Road Alternative**
Proximity to Existing Transmission Line	√	√	√	√
Consistency with Zoning and Present Land Use	√	√	√	√
Minimal Earthwork Requirements Based on Existing Topography	√			
Availability of Space	√	√	√	√
Ease of Access	√			√
Central Location with Respect to Customer Load	√	√		√
No Wetland Disturbances	√		√	
No Cultural Resource Sensitivity	√			
Minimal Upland Habitat Disturbance & Tree Removal	√			
Minimal Visibility From Nearby Residences	√			
CL&P – Owned Property	√		√	

I.6. System Alternatives

CL&P considered adding distribution feeders and transformer capacity at the existing Guilford Substation, as well as at the Branford Substation and Green Hill Substation. However, these alternatives are not feasible particularly because these facilities are either approaching maximum build-out capabilities or the result would be, at best, a temporary solution to address the needs of the area. In addition, the potential for utilizing more recloser loop schemes along the area's distribution system is all but exhausted in the Guilford area.

J. SAFETY AND RELIABILITY INFORMATION

The Project would be constructed in full compliance with the standards of the National Electrical Safety Code, the Connecticut Department of Public Utility Control, and good utility practice. Should equipment experience failure, protective relaying equipment would immediately remove the equipment from service, thereby protecting the public and the equipment within the Substation.

The Stepstone Substation, in conjunction with other area substations and distribution lines, has been designed to continue to serve the customer load even during a transmission line failure. This will be achieved by incorporating a "loop through" design configuration for the existing 115-kV overhead transmission line and redundant automatic protective relaying equipment.

Protective relaying equipment would be provided to automatically detect abnormal system conditions (e.g., a faulted overhead transmission line) and would send a protective trip signal to the circuit breaker to isolate the faulted section of the transmission system. The protective relaying schemes would include fully redundant primary and backup equipment so that a failure of one scheme does not require the portion of the system being monitored by the protective relaying equipment to be removed from service. The protective relaying and associated equipment, along with a Supervisory Control and Data Acquisition (SCADA) system for remote control and equipment monitoring by the Connecticut Valley Electric Exchange ("CONVEX") System Operator, would be housed in a weatherproof, environmentally-controlled electrical enclosure.

CL&P incorporates IEEE/ANSI and NFPA standards for fire protection in its substation design and operates these facilities to minimize the impact of fire, in the unlikely event it occurs.

The company also trains its employees and the local fire department on the safe methods to deal with a substation fire. The control enclosure would be locked and equipped with fire extinguishers installed along with smoke and heat detectors that would be monitored from a remote location. Fire/smoke detection would automatically activate an alarm at CONVEX and the system operators would then take appropriate action. Additional devices would constantly monitor the Substation to alert CL&P of any abnormal or emergency situations. The perimeter of the Substation would be enclosed by a seven-foot high chain link fence topped with an additional foot of three strands of barbed wire to discourage unauthorized entry and/or vandalism. Gated entrances to the Substation would be locked. Lighting would be available within the Substation yard to facilitate work at night or during inclement weather.

K. EFFECTS ON THE ENVIRONMENT

The development of the Stepstone Substation in the south-central portion of the Property would not have any significant, long-term adverse effects on the existing environment and ecology, nor would it affect the scenic, historic and recreational values of the vicinity. A *Proposed Conditions Map* is included as Figure 7.

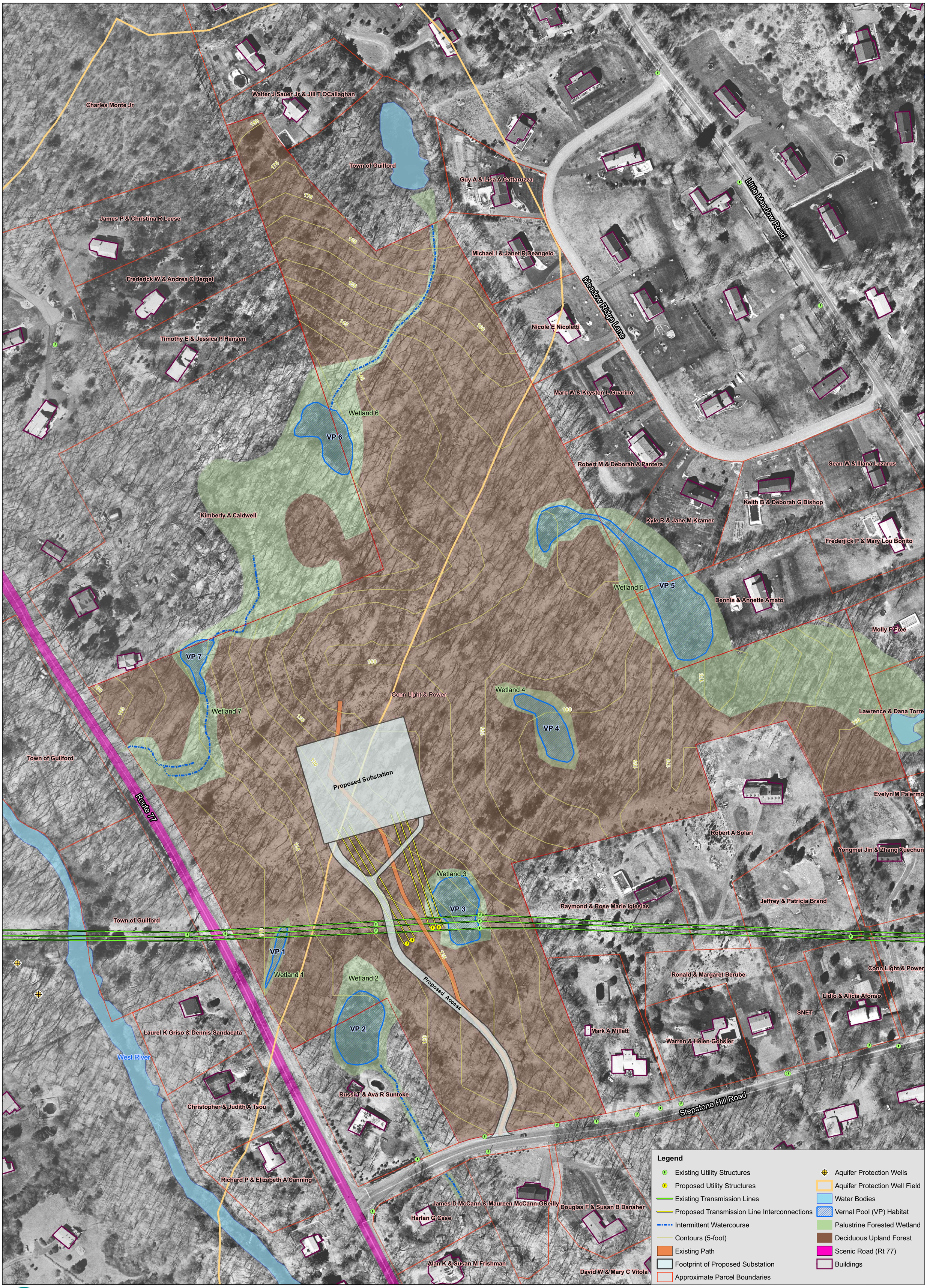
K.1. Public Health and Safety

The Stepstone Substation would be designed to applicable CL&P, industry, State, and local codes and standards and would not pose a safety concern or create undue hazard to the general public. The Substation would not consume any raw materials, would not produce any by-products and would be unmanned during normal operating conditions.

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

The proposed Project is consistent with local, State, and Federal land use plans. Local land use application processes do not specifically apply to this project. However, the project has been designed to meet the intent of local land use regulations. CL&P has met with Town officials and submitted a Location Approval Application to Guilford's Inland Wetlands Commission, which unanimously approved the activity on August 5, 2006. A Location Approval Application and Special Permit Application were submitted to the Planning and Zoning Commission. A public hearing was held on September 12, 2006 at the Fire Department Headquarters Center in Guilford. The Planning and Zoning Commission unanimously approved the Project on September 20, 2006.

Figure 7: Proposed Conditions Map



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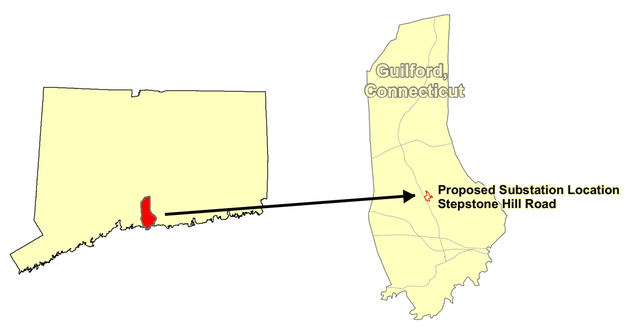

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K.3. Existing and Future Development

The Stepstone Substation would have the effect of supporting existing and future development in Guilford by providing improved electrical service and encouraging additional development through enhanced reliability and the capacity to serve additional future load.

K.4. Roads

An existing dirt entrance along Stepstone Hill Road would be upgraded and incorporated into a new, approximately 1070-foot long gravel driveway that would extend generally northward to the footprint of the Substation. The proposed new driveway would follow the existing dirt access for approximately 350 feet before veering slightly to the northwest through sparsely forested and cleared areas (including the transmission line corridor). This portion of the driveway will be 20 feet wide and extend a total of approximately 740 feet from Stepstone Hill Road to a point where it will split into two forks just north of the utility corridor. The west fork of the driveway will maintain a 20-foot width and continue northward approximately 130 feet into the Substation. The east fork will utilize an existing woods road and be reduced in width to 12 feet for a length of approximately 200 feet. As a result, the driveway improvements would not require substantial tree clearing. During construction, the driveway would be stabilized with stone, and anti-tracking mats installed at the intersection of Stepstone Hill Road, to prevent tracking of soil onto local streets. Upon completion of the Substation, the driveway would be finished with a gravel base and gated. After construction is completed, approximately three to four vehicular trips per month to the Property would be anticipated for maintenance and inspection activities.

K.5. Wetlands

Seven wetlands were identified on the Property. Development of the Stepstone Substation would not directly affect any wetlands and therefore would not have an adverse effect on the resources. The Town of Guilford Inland Wetlands Commission regulates a 100-foot upland review area for wetlands and watercourses. Limited site work associated with the proposed gravel driveway would occur within the 100-foot upland review area. Minor disturbances within these regulated areas are necessary to establish the new driveway and install a culvert to avoid future surface water ponding along the driveway and washout of the gravel. Areas disturbed for construction activities would be restored by dressing with topsoil and seeding with a New England conservation/wildlife mix, supplying a cover of grasses, forbs, wildflowers and legumes to provide both erosion control and enhanced wildlife habitat value.

K.5.1. Vernal Pool Habitat

Since the proposed development will not directly impact the identified vernal pools and a sufficient buffer of undisturbed uplands to these special aquatic habitats will be maintained, the proposed facility will not adversely impact vernal pool habitat.

K.6. Wildlife and Vegetation

The Stepstone Substation site would occupy what is currently upland forest habitat. The driveway would generally follow the route of the existing dirt access road accessible from Stepstone Hill Road and extending north primarily through upland forest habitat, but crossing the maintained transmission line corridor. The Substation and driveway development areas are located within and in close proximity to existing and similar habitats that extend off the Property. Therefore, the Project is not anticipated to have an adverse effect on wildlife due to existing

development and the site's immediate proximity to similar habitats that would allow for natural relocation of potential wildlife from the construction zone.

K.6.1. Rare, Threatened, and Endangered Species

A small population of the Connecticut Species of Special Concern, Virginia snakeroot (*Aristolochia serpentaria*), had been previously documented on the Property, however, a recent field survey did not locate any individuals of this species. If any plants remain, none appear to be located within the proposed construction areas and, therefore, no adverse effects are anticipated. Similarly, featherfoil (*Hottonia inflata)*, another Connecticut Species of Special Concern that was observed on the Property during the field survey would not be adversely affected due to its location within a wetland located approximately 500 feet from the proposed development. A deceased eastern box turtle specimen was identified on the property near Route 77 during the field study. The proposed development is not anticipated to adversely affect any potential eastern box turtle population utilizing the Property as the Substation would occupy a relatively small portion of the Property and habitat types similar to that proposed for disturbance exist both on and off the Property.

The CTDEP Wildlife Division staff has been provided a copy of the field survey data and report. CL&P is coordinating with the agency to obtain a letter indicating no adverse effects on Species of Special Concern associated with the project.

K.7. Water Supply Areas

The closest public water supply wells are part of the Pinewood Wellfield, located west of the Property across Route 77 and the West River. A portion of the Property is situated within a state-designated Final Aquifer Protection Zone, which has likely been established to protect those wells. Land use activities within the Pinewood Wellfield APA are regulated by both the

CTDEP and the Town of Guilford to protect the quality of the groundwater. However, substations and other utility electrical equipment are not included in the definition of regulated facilities under CTDEP regulations (Regulations of Connecticut State Agencies ["RCSA"], §§22a-354i-1 to 22a-354i-10, effective 2/2/04). In addition, under § 273-92 Groundwater Protection District of the Town of Guilford's Zoning Regulations, substations and other utility electrical equipment are not identified as a prohibited land use or special permit land use within a Groundwater Protection District. Transformers at the Stepstone Substation would contain insulating oil; however, the equipment would have secondary containment and accidental spill prevention provisions in place. Based on these design considerations and the physical distance of the water supply wells to the Stepstone Substation, the Project would have no adverse environmental effect on the aquifer.

K.8. Historic and Archaeological Resources

Coordination with the State Historic Preservation Office ("SHPO") resulted in the issuance of a letter of "no effect" on historic, architectural or archaeological resources on or eligible for the National Register of Historic Places. A copy of the *SHPO Determination Letter* is included in Exhibit 3.

K.9. Noise

Under CTDEP regulations and the Town's Noise Control Ordinance, the Substation is constrained to a noise level at the Property boundary of up to 45 decibel on the A-Weighted scale ("dBA") during night operation and 55 dBA during the day. The projected noise levels generated by the Substation at the Property boundaries would be well below these levels and therefore comply with applicable noise regulations. Details are provided in Exhibit 4 (*Noise Analysis*).

The construction and testing of the Substation facilities is expected to occur over a 12 to 18 month period. In general, construction hours would be from 7 am to 5 pm, Monday through Friday. Site preparation, including grading and installation of foundations, would take place during the initial 6 months of construction and involve the use of earth-moving equipment and construction vehicles.

The installation and testing of equipment would take approximately 5 months and would involve the use of cranes to unload and install structural elements and large equipment. The installation of the replacement pole and terminal structures, interconnection of the supply lines to the Substation, and connections to the distribution system may occur outside of normal work hours because these activities necessitate taking critical transmission and/or distribution equipment out of service. As a result, this work could be scheduled for off-peak electrical demand hours and coordinated with the Town.

K.10. Floodplains

No construction activities would occur at elevations at or below the West River's 100-year base flood elevation of 80 feet AMSL. Elevations within the proposed construction zone range from approximately 120 to 155 feet AMSL.

K.11. Seismic Areas

As with all substations constructed by CL&P, this Substation will meet or exceed the State building code, which includes seismic loading, wind loading, and snow and ice loadings, among others.

K.12. Lighting

The Stepstone Substation would have low-level lighting 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 Property. Additional lighting capability would exist in the Substation to allow for work at night under abnormal or emergency conditions.

K.13. Natural Resources

No adverse effects are anticipated on natural resources occurring at and/or nearby the Property. Minor earthwork is required to accommodate the Substation at the Site. No importation or exportation of soil is anticipated for this Project.

K.14. Other Surrounding Features

No adverse effects are anticipated to other developments in the vicinity. Nearby State and locally designated scenic roads would not be affected visually due to the Substation's central location on the large Property, existing topography and dense forest cover.

L. MITIGATION MEASURES

Based on the existing conditions at the Property and the proposed design, the construction and operation of the Substation would not have any significant permanent adverse effects on the environment. CL&P has incorporated measures into all phases of Project development and implementation to promote protection of the environment in accordance with Federal, State and local requirements.

L.1 Pre-Construction Considerations

Before any construction activities occur, CL&P would prepare a Development and Management Plan ("D&M Plan"), which must be approved by the CSC. 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 and sedimentation control, spill prevention and control, construction staffing and hours, traffic control, and provisions for restoration and landscaping after construction of the Substation. The D&M Plan would also provide contact information should questions or concerns arise during construction or operation of the facility.

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

L.2 Construction-Related Activities

All construction activities would be conducted in accordance with the D&M Plan as approved by the CSC. Geotechnical borings are planned to determine the extent and method

of rock removal, where necessary. Preliminary evaluations suggest that shallow depths to bedrock occur at various locations on the Property. If bedrock is encountered within construction areas, excavation, drilling or pneumatic hammer would be the preferred methods to remove the material. Although not anticipated, if extensive bedrock is encountered during construction, provisions for blasting would be considered 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 required to construct the facility. Grading for the Substation yard would provide surface runoff. A minimum slope of 2% within the Substation's footprint would control storm water runoff and convey the runoff away from the pad site. Hay bales and/or geotextile silt fence ("GSF") would be installed and maintained to the limits of the grading contours to temporarily control sedimentation runoff until permanent and effective erosion controls are established after construction is completed. All disturbed areas and stockpiled materials would be provided with a GSF or equivalent erosion control measures.

The Substation yard would be graded away from its east side, ultimately discharging overland south of the pad site. The pad would be graded not to create any discharge points. By spreading runoff from the pad site, storm water will eventually flow to the south over undisturbed woodlands with heavy forest litter. Also, because the yard would be covered with a pervious surface of six inches of crushed trap rock, concentrated flows are not expected. All disturbed areas would be covered with either topsoil (and seeded) or temporary erosion control matting, if warranted.

Construction activities associated with the proposed access would have no impact to the existing wetlands. A 20-foot wide access drive would be constructed with a gravel base.

Construction of the access drive includes minor work within the 100-foot upland review area; however, no work within wetlands would occur. Temporary disturbances near the wetland are necessary to improve the existing access drive and would include minor grade adjustments and realignment. CL&P would establish and maintain effective erosion and sediment controls, in conformance with the D&M Plan and *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*, during construction to avoid the potential for impacts. A culvert would be installed under the gravel driveway to facilitate the movement of seasonal surface water flows under the drive, thereby avoiding potential surface water ponding along the driveway and washout of the gravel. Note that there is no defined channel in the vicinity of the current access drive and none would be created to direct surface water under the driveway.

During site preparation and installation of Substation components, it may be necessary to temporarily stockpile soils at the Property. Any stockpiles of soil would be located beyond 100 feet from the delineated wetland boundaries and covered for protection against runoff during storm events with appropriate erosion controls. If soils are to 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.

L.3 Post-Construction Features

Upon completion of construction activities, all disturbed/exposed areas would be stabilized and revegetated. These areas would be dressed with topsoil and seeded with a New England conservation/wildlife mix, to establish a cover of grasses, forbs, wildflowers and legumes that would provide both soil stability and wildlife habitat value. Erosion controls would remain in place until final site stabilization is achieved.

After construction is complete, the Stepstone Substation would have no permanent adverse effects on the environment. The power transformers within the Substation would contain insulating oil. All transformers would have secondary containment consisting of an underlying and surrounding polyvinyl-lined sump, designed to hold 110% of the transformers' capacities.

The proposed Site location and configuration provides sufficient setback from the road to allow a natural tree buffer to be maintained. Existing wooded buffers on the eastern, western and northern portions of the Property would be retained for screening. The nearest residence to the Substation would be located approximately 645 feet to the west, across Route 77; this home and others along Route 77 would not have direct views of the Substation because of topography and a well-established vegetative buffer. Homes to the north, south and east are also well screened from the Substation location by existing vegetation and topography that are to remain unchanged. Although the Property provides vegetative buffers from neighbors, CL&P would develop and incorporate a landscape plan into its D&M Plan to further mitigate for any potential views of the Substation. Plantings will be strategically clustered around the Substation and along the driveway to provide an additional visual buffer as well as habitat for resident and migratory wildlife.

Effects on wildlife and wildlife habitat would be temporary disturbance during construction and would be mitigated though restoration of disturbed areas and supplemental plantings. The Property is currently used by wildlife species that are commonly found and are adaptable to minor habitat modifications. Based on the species identified and habitat types found on the Property, the Property should maintain its species diversity and abundance after the Substation is completed and operational.

L.4 Construction Sequencing

The general construction sequence for the Substation would include:

- Installation of erosion and sedimentation control barriers
- Construction of the driveway
- Removal of trees and shrubs within the areas to be graded
- Site preparation (cut, fill, grading)
- Slope stabilization where necessary
- Installation of Substation foundations, components and hardware
- Spreading of trap rock
- Advancement of borings for new line structures foundations
- Construct and cure foundations
- Erect support structures, make interconnection and re-energize line
- Energizing the Substation
- Completion of landscaping and site restoration
- Removal of erosion and sedimentation control barriers

M. 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 the Stepstone Property

At and beyond the boundaries of the Property, the predominant existing source of power-frequency electric and magnetic fields ("EMF") is the 115-kV transmission line (circuit #1508). Local distribution power lines along Route 77 are another field source close to the westerly Property line.

One existing line of transmission poles supports the 1508 circuit, which crosses over the Property from west to east. The existing circuit span of conductors crossing the westerly Property line is in transition from a vertical configuration to a horizontal configuration, whereas the existing circuit span crossing the easterly Property line is in transition from a horizontal to a delta configuration of conductors.

The highest levels of EMF will be found on the westerly and easterly Property lines directly beneath where this 115-kV transmission circuit crosses over these Property lines. The conductors crossing the westerly boundary are higher above ground than those crossing the easterly boundary, so fields below the conductors on the westerly boundary will be lower. Even so, field levels drop off rapidly with distance from a line source, so the levels of EMF at all points along a Property boundary to the north and south of the transmission circuit will be much lower than the levels found beneath the circuit. Beyond distances of not more than 200 feet from the center of the circuit EMF levels are at very low background or negligible levels.

Post-Project Electric and Magnetic Fields on Boundaries of the Stepstone Property

The fence of the proposed Substation is more than 200 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 due to the following three factors: 1) physical changes to the 1508 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 circuit; and 3) new distribution circuit getaway lines or cables from the Substation which cross over or under Property lines.

New 115-kV line spans (i.e., "substation entry spans") will be constructed to loop the existing 1508 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 easterly and westerly Property lines where they meet the existing CL&P right-of-way. This will lead to changes in the electric and magnetic fields along the easterly and westerly Property lines for a short distance on either side of the transmission line. This change will be in addition to changes in magnetic field levels caused by changes in currents on the transmission circuit.

The substation will lead to an increase in peak-load currents on the line segment crossing over the westerly Property line and a small decrease in currents on the line segment crossing over the easterly Property line. Together with the physical line changes, CL&P projects that magnetic field levels beneath and close to the 115-kV line along the westerly Property line will increase, and magnetic field levels beneath and close to the 115-kV line along the easterly Property line will decrease. Because of the conductor height differences, the EMF levels near to the line along the easterly boundary will still be higher than the levels along the westerly boundary. The transmission line employs a relatively small conductor size, and so this line has a lower current-carrying capacity in comparison to many of CL&P's 115-kV transmission lines. The 1508 circuit also experiences relatively light power transfers because of its location within the

transmission network. CL&P's model projections of peak line currents in future years are below 300 amperes.

The highest levels of EMF will continue to be found on the westerly and easterly Property lines directly beneath where the 115-kV transmission circuit conductors cross over these Property lines. The field levels will continue to drop off rapidly with distance from this line source, so the levels of EMF at all points along Property boundaries to the north and south of the transmission circuit will be much lower than the levels found beneath the circuit. Beyond distances of not more than 200 feet from the center of the circuit EMF levels will remain at very low background or negligible levels at all times.

The 23-kV circuit would exit the Substation underground with 13.8-kV cables and extend underground along the Substation driveway southward, where each would rise up on utility poles close to the driveway's intersection with Stepstone Hill Road. The 13.8-kV cable risers would connect respectively to the east and west sections of the overhead 13.8-kV line on Stepstone Hill Road. The 23-kV cable riser would connect to an aerial cable installed on the road-side poles out to and then south on Route 77Current flows over the distribution cables and conductors will produce magnetic fields along the Property line where they cross, perhaps extending to a distance of 50 feet to either side of the crossing of the Property line. Generally speaking, the magnetic field levels in the vicinity of the distribution lines will be lower than those associated with the 115-kV line, and typically less than 20 mG maximum.

For an upcoming application to the Connecticut Siting 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 prepare projections of EMF levels on the Property lines using projected peak-day line currents for a period of 5 years after the Substation's in-

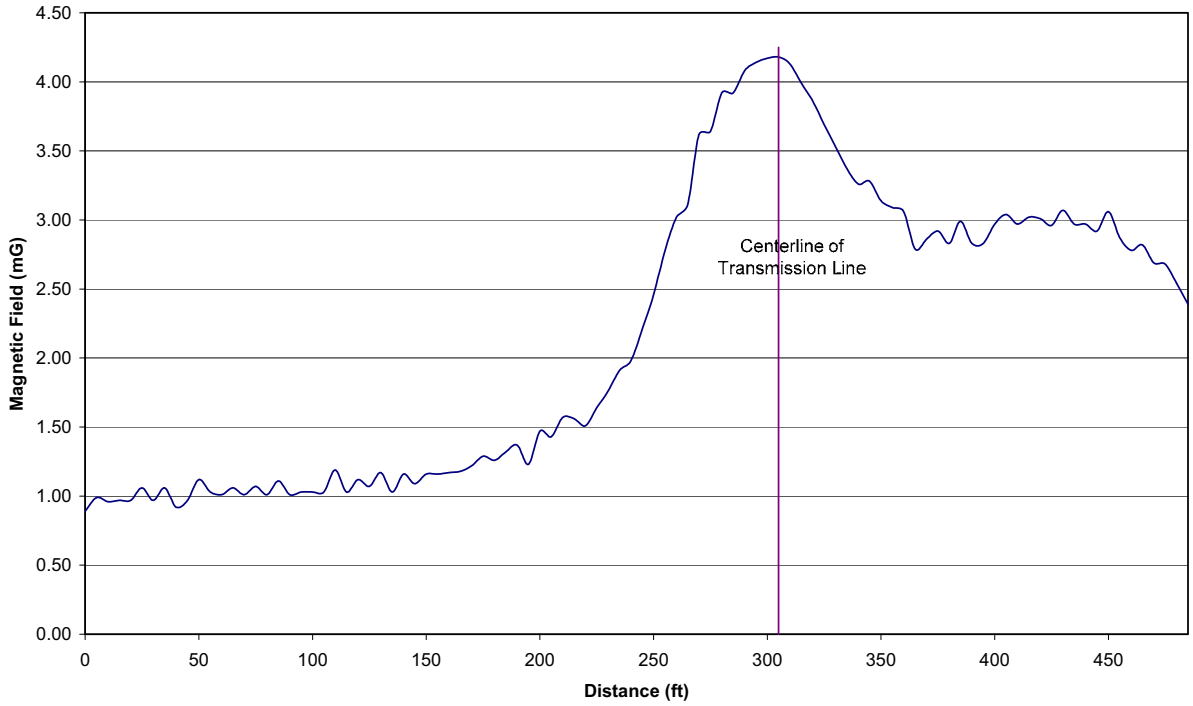
service-date, which in this case is 2013. These calculations will be made both for the pre-project condition, assuming the proposed project was not built, and the proposed post-project condition.

All calculations of electric and magnetic fields will be made for points on the Property, assuming that these circuits are the only source of such fields on the 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 or close to the Property line are not included. 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.

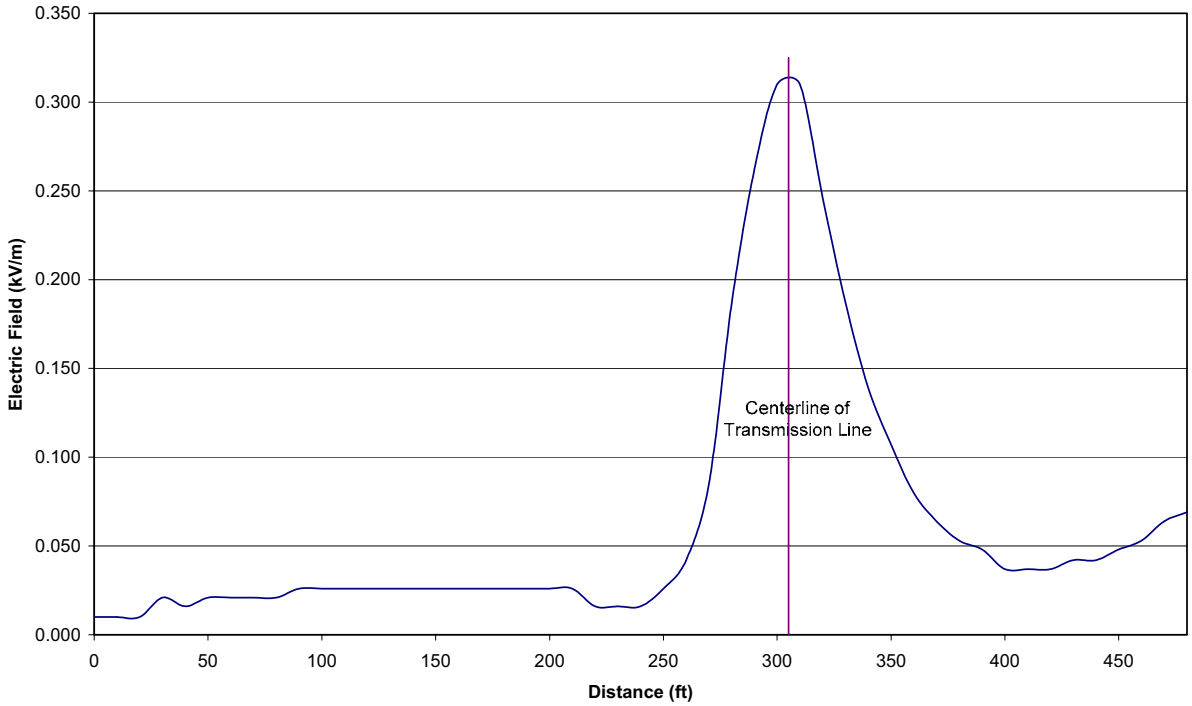
Measurements of Electric and Magnetic Fields

Measurements of electric and magnetic fields were taken along two borders of the Property. The measurement results are plotted on four attached graphs, two for magnetic fields and two for electric fields. Per an industry standard, these measurements were made at 1 meter above grade over a path on the Property that is approximately perpendicular to the existing transmission lines. The result is called a lateral profile. One EMF profile was taken on March 17, 2006 along Route 77, the westerly border of the Property. This profile extends for a distance of 485 feet and crosses beneath the existing 115-kV transmission line. The other EMF profile was taken on September 21, 2006 along a stone wall which marks the easterly Property boundary, also crossing beneath the existing 115-kV transmission line and within this line's right-of-way. This profile extends for a distance of 125 feet. The locations of the centerline of the existing transmission line are marked on the graphs.

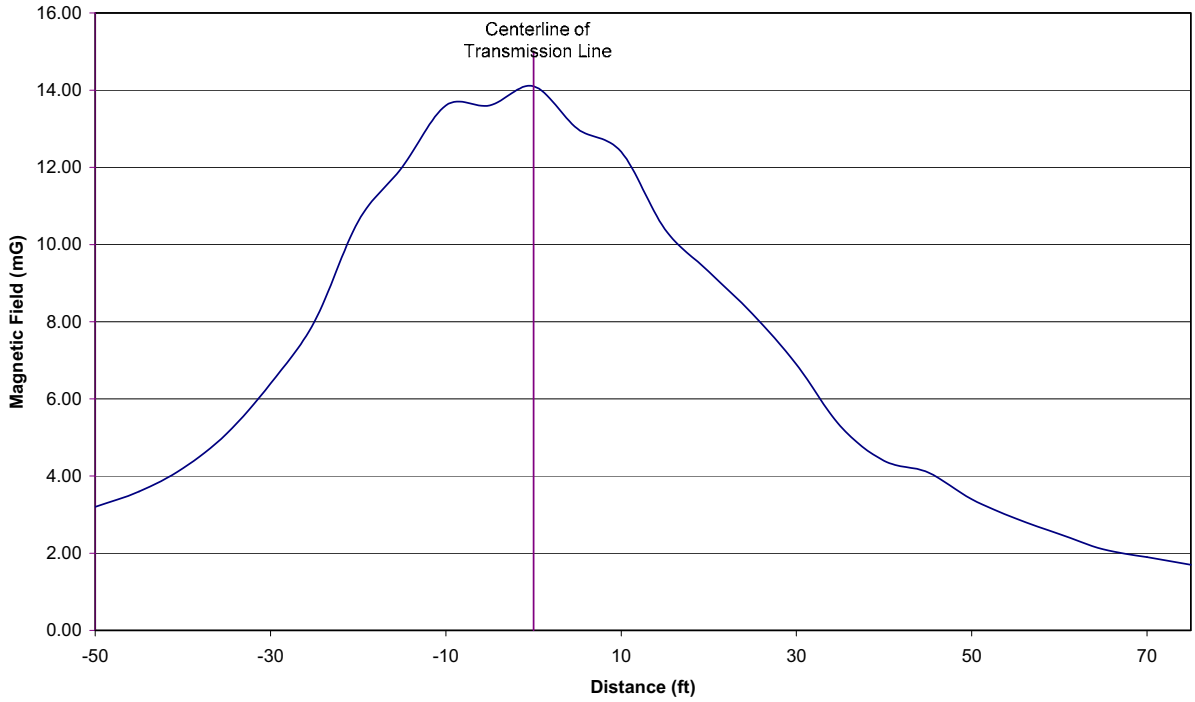
STEPSTONE SUBSTATION PROPERTY
MEASURED MAGNETIC FIELDS ALONG THE WEST PROPERTY LINE, MARCH 17, 2006



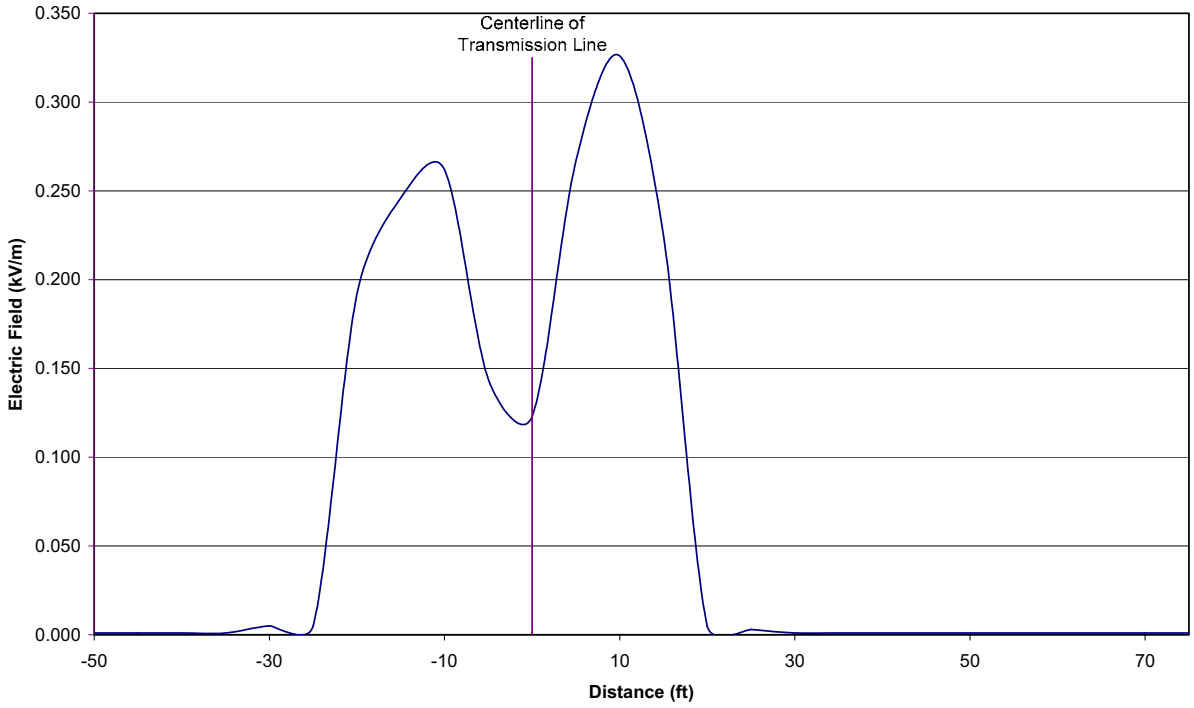
STEPSTONE SUBSTATION PROPERTY
MEASURED ELECTRIC FIELDS ALONG THE WEST PROPERTY LINE, MARCH 17, 2006



STEPSTONE SUBSTATION PROPERTY
MEASURED MAGNETIC FIELDS ALONG THE EAST PROPERTY LINE, SEPTEMBER 21, 2006



STEPSTONE SUBSTATION PROPERTY
MEASURED ELECTRIC FIELDS ALONG THE EAST PROPERTY LINE, SEPTEMBER 21, 2006



The highest magnetic field level recorded on the Route 77 profile was 4.18 mG, and the highest magnetic field level recorded along the easterly Property boundary was 14.1 mG. The difference is due to the different conductor configuration and conductor heights above ground at these two locations, and to differences in the transmission line current that was flowing on the two measurement days. The highest electric field recorded on the Route 77 profile was 0.31 kV/m, and the highest electric field recorded along the easterly Property boundary was 0.326 kV/m. These electric field results to some degree reflect shielding by nearby vegetation.

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 periods on March 17, 2006 and 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 reasonable examples of the existing condition on the borders of Property in the vicinity of the existing transmission line. As previously described, EMF calculations will subsequently be prepared to model peak-day conditions in a future year.

Summary

Consistent with the Connecticut Siting *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 to Stepstone Hill Road with close circuit spacings and conductor-phase spacings
- a new 23-kV distribution line will exit the Substation overhead to Route 77 in close proximity to the 115-kV line
- 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 at or adjacent to the Substation Property.

M.2 Site Security

A seven foot high chain link fence topped by three strands of barbed wire would enclose the Substation yard to prevent unauthorized access. The Substation yard would also be gated and locked. All gates would be padlocked at the end of the workday during construction activities and at all times once the Substation is in service. Appropriate signage would be posted at the Substation alerting the general public of high voltage facilities located 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 equipment to alert CL&P of any abnormal or emergency situations. The access road would be gated and locked at its entrance along Stepstone Hill Road.

M.3 Traffic Considerations and Hours of Operation

Construction traffic would not greatly affect local traffic because Route 77 provides the main north-south route used by motorists traveling through the area and site access would be gained from an existing, at-grade drive established along Stepstone Hill Road. Post-construction site conditions would not substantially affect existing traffic patterns. Once construction of the Substation is complete, the facility would be remotely operated, with personnel onsite only for periodic inspections, maintenance and emergency work.

N. PROJECT SCHEDULE

Construction is expected to occur over a period of 12 to 18 months, with the Substation in service by June 2009.