

Proposed Stepstone 35L Substation

Stepstone Hill Road
Guilford, Connecticut

Prepared for



**Connecticut
Light & Power**

The Northeast Utilities System

Prepared by

VHB/Vanasse Hangen Brustlin, Inc.

54 Tuttle Place

Middletown, Connecticut 06457-1847

July 2006

Table of Contents

Introduction	1
Project Description	3
Purpose and Description of Project	3
Proposed Activity	4
Location Description	4
Site Vicinity Characteristics	5
Mapped Soil Types	6
Rare Species Habitat	6
Wetland and Vernal Pool Descriptions	7
Vernal Pool Evaluations	10
Proposed Activities Relative to Nearby Wetlands and Impact Analysis	11
Mitigation	12

Figures

Figure No.	Title
1	Site Location Map
2	Existing/Proposed Conditions Map
3	Environmental Resources Map

Appendices

Appendix	Description
A	Town of Guilford Inland Wetlands Commission Application
B	List of Property Abutters
C	Soil Report
D	Site Photographs
E	Descriptions of Site Wetlands/Vernal Pools
F	Location Approval Site Plans

1

Introduction

The Applicant, The Connecticut Light and Power Company (“CL&P”), seeks to construct a new substation (the “Substation”) on its property located north of Stepstone Hill Road and east of Route 77 in Guilford, Connecticut (the “Property”) for the purpose of increasing the capacity and the reliability of the electric power distribution system in Guilford and adjacent towns. The proposed Substation project is subject to the jurisdiction of the Connecticut Siting Council, pursuant to Title 16, Chapter 277a et seq. of the Connecticut General Statutes. However, local wetlands and zoning commissions are provided an opportunity to participate in the Council’s decision-making process with respect to the location of certain utility facilities, including substations.

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 located on the Property and to the local 23- and 13.8-kV distribution line system. The Substation will be strategically placed within a secluded, 38-acre parcel set aside by CL&P specifically for this purpose. The Property is forested, with the exception of the existing 115-kV transmission line corridor that crosses its southern portion. Access to the general location of the Substation currently exists, extending from Stepstone Hill Road to the transmission line corridor.

Three major habitat types exist on the Property including deciduous upland forest, deciduous wetland forest and vernal pool. There are seven wetland areas on the Property that are seasonally inundated and provide vernal pool habitat value. Woods roads that traverse the Property appear to be free from excessive ATV usage.

None of the wetlands on the Property will be directly affected by development of the Substation. Limited construction activities are proposed to occur within the 100-foot upland review area (established by the Town of Guilford Inland Wetlands Commission) of two wetlands located on the Property. Planned activities include establishing an approximately 20-foot wide gravel access drive from Stepstone Hill Road to the Substation (following the existing access), connecting the Substation to the existing 115-kV transmission line and installation of a culvert to facilitate the movement of seasonal surface water flows under the access drive.

A Site location map is provided as Figure 1. A completed Town of Guilford *Inland Wetlands Commission Application* for Location Approval is attached as Appendix A.

2

Project Description

Purpose and Description of Project

The purpose of the Substation 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. The current configuration of the distribution system lacks the capacity and reliability to meet future peak-load demands. Currently, all of 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.

Proposed Activity

The proposed Stepstone Substation would have a fenced area of 240 feet by 270 feet, located in the south central portion of CL&P's 38-acre Property, north of the existing transmission line corridor. CL&P proposes to increase capacity and reliability by installing a new bulk power transformer on the Property to connect the existing 115-kV transmission line to the distribution system. A gravel access drive will be established generally along the route of the existing dirt access. Construction is expected to occur over a period of 12 to 18 months with the Substation in service by June 2009.

Location Description

The proposed Stepstone Substation will be situated on a 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. 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.

Several alternate site locations were evaluated for development of this project, including other properties owned by CL&P as well as privately-owned parcels. These potential alternatives were ultimately not selected due to various constraints such as: insufficient area for development; encroachment into wetlands; visibility from nearby residences and historic resources; and, access limitations.

For the following reasons, the Property is best suited for the proposed Substation:

- It is centrally located with respect to two existing bulk-power distribution substations in Branford and Madison, so it is well situated for relieving loads on those substations and for creating a more reliable distribution system configuration;
- An existing 115-kV transmission line currently traverses the Property;
- The Property has sufficient access from a local road;
- Construction can be completed and the Substation can be operated with minimal impact to the surrounding environment;
- Due to the large size of the Property, abundance of mature vegetation, and strategic placement of the proposed Substation, it will be well-screened from area residences; and,
- The 38-acre Property is already owned by CL&P.

An existing/proposed conditions map is provided as Figure 2. A list of property abutters is provided in Appendix B.

Site Vicinity Characteristics

The Property is abutted by Route 77 to the west and Stepstone Hill Road to the south. A 115-kV transmission line and corridor extend east and west off the Property. Land use in the vicinity of the Property is limited to residential. The West River flows parallel to the west side of Route 77. Northern and western portions of the Property are located within the Pinewood Well Field aquifer protection area managed by the Connecticut Water Company. Two associated wells are located west of Route 77. An environmental resources map, depicting these features, is provided as Figure 3.

Mapped Soil Types

A detailed wetland delineation and soil survey was performed by Soil Science and Environmental Services, Inc. of Cheshire, CT. The following soil mapping units were identified on the Property:

- ◆ Charlton-Hollis fine sandy loams
- ◆ Hollis-Charlton fine sandy loams
- ◆ Hollis-Rock outcrop complex
- ◆ Leicester fine sandy loam
- ◆ Ridgebury, Leicester and Whitman extremely stony fine sandy loams
- ◆ Sutton fine sandy loam
- ◆ Udorthents, smooted

Wetland soils on the site consist of Leicester fine sandy loam and Ridgebury, Leicester and Whitman extremely stony fine sandy loams. Details of the wetland delineation and identified soils can be found in the attached Soil Report, included as Appendix C. Site Photographs are presented in Appendix D.

Rare Species Habitat

There will be no adverse effects to rare species or critical habitat in association with the proposed project. The Property is within an area shown on the Connecticut Department of Environmental Protection ("CTDEP") Natural Diversity Data Base ("NDDB") map (see Figure 3, Environmental Resources Map). Information obtained from the CTDEP indicates that a Connecticut Species of Special Concern - Virginia snakeroot (*Aristolochia serpentaria*) - had been found to occur atop rock ledges a few feet from Route 77 under the 115-kV transmission line. Subsequent documentation indicates only one individual

plant was found during a follow-up inspection conducted by CTDEP at a later date. The area under the 115-kV line as well as the entire ±38-acre Property was searched for evidence of this species on June 21, 2005 by a VHB botanist. No specimens of Virginia snakeroot were found on the Property or in the formerly documented location.

Featherfoil (*Hottonia inflata*), another Connecticut Species of Special Concern, was identified on the Property. Featherfoil is an aquatic plant typically occurring in shallow water in ponds and slow streams. A population occurs in a vernal pool within Wetland 6 (flags #60 through #91) located in the northern portion of the Property. The population is approximately 500 feet from the proposed development activities and therefore this species will not be affected by construction activities associated with the Substation.

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.

Wetland and Vernal Pool Descriptions

Wetlands identified by Soil Science and Environmental Services, Inc. were confirmed during field visits by Vanasse Hangen Brustlin, Inc. ("VHB") Vernal pool inspections were conducted by VHB periodically during the months of May, June and July 2005. Further habitat evaluations have been ongoing this spring and will continue into the

summer of 2006. An initial vernal pool inspection was also conducted by a Soil Science and Environmental Services, Inc. biologist on May 11, 2005.

There are seven palustrine-forested wetland areas on the Property (Wetlands 1 – 7 depicted on Figure 2). These wetlands are primarily groundwater-controlled and function to receive and store groundwater and surface runoff, recharge groundwater, and to provide food for living organisms and wildlife habitat. Each wetland provides vernal pool habitat characteristics. Wetlands 6 and 7 are part of a large wetland system that directs surface water from an area north of the Property westward to the West River and provides nutrient removal, retention and transformation. Most of the wetlands on the Property offer visual quality and aesthetic value especially during the growing season. Portions of the proposed gravel access drive occur within the 100-foot upland review areas of Wetlands 2 and 3. A description of these two wetlands follows. Information regarding the other five wetlands and associated upland review areas, all of which will remain unaffected by the Substation activities, is included in Appendix E, *Descriptions of Wetlands/Vernal Pools*.

Wetland 2 (flags #13 through #22) is a large groundwater-controlled depressional wetland located in the southwest corner of the Property. This wetland extends off the Property onto the adjacent residential property and drains south under Stepstone Hill Road. Shallow fragmented pools of water observed on the Property in early May dissipated by late May. Wood-frog tadpoles observed in these shallow pools (before they dried) were unable to complete the aquatic phase of their lifecycle. In addition to the small shallow pools associated with this wetland, a large \pm 100-foot long by \pm 60-foot wide seasonally inundated pond is located along the Property boundary. Large tree buttresses, tree throws, tree snags, arching shrubs and fallen tree limbs were observed within and around the perimeter of the pool. A large ledge wall and associated talus

slope is located northeast of the pool. Egg masses observed within the pool were typically attached to fallen branches and arching shrubs. This pool maintained a sufficient amount of water through the growing season to allow vernal pool species to complete the aquatic development phase of their lifecycle. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Fauna observed within the pool included wood-frog tadpoles, spotted salamander (*Ambystoma maculatum*) egg masses and larvae, marbled salamander larvae (*Ambystoma opacum*), spotted turtle (*Clemmys guttata*), mosquito larvae, predaceous diving beetle and caddisfly larvae. The forested wetland is dominantly vegetated with pin oak (*Quercus palustris*), tulip poplar, red maple, pepperbush, spicebush (*Lindera benzoin*), highbush blueberry (*Vaccinium corymbosum*) and sphagnum moss. The wetland contains a range of timber sizes from sapling/seedling (<7 inch DBH) to mature sawtimber (> 11 inch DHB) with a canopy closure greater than 60 percent.

Wetland 3 (flags #118 through #137) consists of a small wetland located in the southern portion of the Property. The wetland occurs within the transmission line corridor and within a wooded area north of the corridor. This wetland is groundwater controlled and experiences seasonally shallow inundation. The pool within the wetland is approximately 150 feet long and 40 feet wide and is characterized by a depression with water-stained leaves. The pool is sparsely vegetated in the forest with arching shrubs and downed limbs and has a dense herbaceous layer in the transmission line corridor. The pool contained shallow levels of inundation in early May. By mid May the pool had completely dried. Wood-frog tadpoles observed within this pool before it dried did not have time to complete the aquatic phase of their lifecycle. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Fauna observed within the pool include wood-frog tadpoles and one adult, adult green frogs, adult eastern American toad (*Bufo americanus*), spotted turtle and mosquito

larvae. The forested portion of the wetland is dominantly vegetated with pin oak, red maple, highbush blueberry and mountain laurel. Within the transmission line corridor the wetland is dominantly vegetated with steeplebush, pepperbush, bristly dewberry, deer tongue grass (*Dichanthelium clandestinum*) and soft rush (*Juncus effuses*). Trees within the forested area are generally pole timber with the majority of wetland vegetated with shrubs and herbaceous species.

Vernal Pool Evaluations

A vernal pool habitat evaluation is being performed on the seven wetland areas occupying the Property. This evaluation is ongoing and is based on biweekly field collection of data from the spring and summer of 2005 and spring of 2006 (data will continue to be collected during the summer of 2006). The preliminary analysis of data over these two seasons is generally consistent and reveals that although each of the seven wetland areas provides potential amphibian breeding habitat, only four of those aquatic habitats have been found to meet the definition of *vernal pool* as defined in the University of Connecticut Cooperative Extension Service System's *A Guide to the Identification and Protection of Vernal Pool Wetlands of Connecticut*. Those four vernal pool habitats are identified as vernal pools 2, 5, 6 and 7, which correspond with the wetland areas identified by the same numerical identification system. 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. Each of these vernal pool habitats were found to contain the physical characteristics that typically define a vernal pool along with documented observations of obligate vernal pool species. Only common obligate vernal pool species in egg, tadpole/larvae and adult forms, such as wood frog (*Rana sylvatica*) and spotted

salamander (*Ambystoma maculatum*), were observed. These vernal pools have also been found to maintain an appropriate hydroperiod to allow for the successful maturation of these obligate species' eggs and juvenile.

Observations of Wetland 3, located near the proposed access drive and substation, reveal that it does not maintain a sufficiently long hydroperiod to provide appropriate 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.

Proposed Activities Relative to Nearby Wetlands and Impact Analysis

The Substation will not result in any direct impacts to wetlands or watercourses or result in an adverse impact to the Town's wetland resources. Limited work is anticipated within the Town of Guilford's 100-foot upland review area of Wetland 2 and Wetland 3 including the construction of the gravel access drive, installation of new transmission line structures that will connect the existing 115-kV line to the Substation and installation of a culvert to facilitate the movement of seasonal surface water flows under the access drive.

Developed and disturbed areas within the upland review area will remain pervious to stormwater. Approximately 0.5-acre of the 100-foot upland review area of these wetlands will be subject to proposed construction activities. The majority of 100-foot upland review areas to be altered as a result of the proposed project activities are

currently occupied by the existing transmission line corridor and the existing access. Limited tree cutting is proposed in the upland review area of Wetland 3 to accommodate the eastern transmission line interconnection.

A series of Best Management Practices will be utilized in accordance with the *2002 Connecticut Guidelines for Erosion and Sediment Control* throughout the course of construction activities at the site and maintained until disturbed areas have been stabilized to prevent erosion and sedimentation within the wetland areas. Silt fencing and hay bales will generally be installed around the perimeter of construction activities protecting nearby resources, including the nearby wetlands. Conservation seed mix containing native grasses and forbs will be used to stabilize exposed areas post construction.

Location Approval Site Plans depicting the proposed activities are provided in Appendix F.

Mitigation

A steep ledge and associated talus slope separate Wetland 2 from the proposed construction area and approximately 70 feet of undisturbed forested buffer will remain between the wetland edge and the limit of work. Due to the nature of the project and the topographical features and undisturbed buffer between Wetland 2 and the construction, neither Wetland 2 nor its associated vernal pool habitat will be adversely affected by the proposed project.

Relatively minor disturbances associated with the access drive and drainage culvert are proposed within the upland review area of Wetland 3. A central portion of Wetland 3 has been altered by vegetation maintenance activities associated with the existing transmission line corridor.

Mitigation will consist of CL&P's Best Management Practices for erosion and sediment control (see typical details on enclosed drawings). Geotextile fabric sediment barriers will be placed between the project and wetland resource areas during construction and maintained until the site is stabilized and rehabilitated. Cut and fill slopes will not exceed 2 to 1 grades, and will be loamed and seeded.

As part of site restoration, a New England conservation/wildlife seed mix will be planted in disturbed portions of the regulated area to provide both good erosion control and wildlife habitat value. Use of this seed mix, which contains native grasses, forbs, wildflowers and legumes, will provide a natural vegetative transition zone between upland and nearby wetland regimes.

Figures

Figure 1: Site Location Map

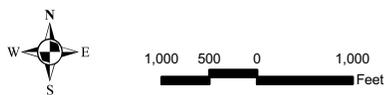
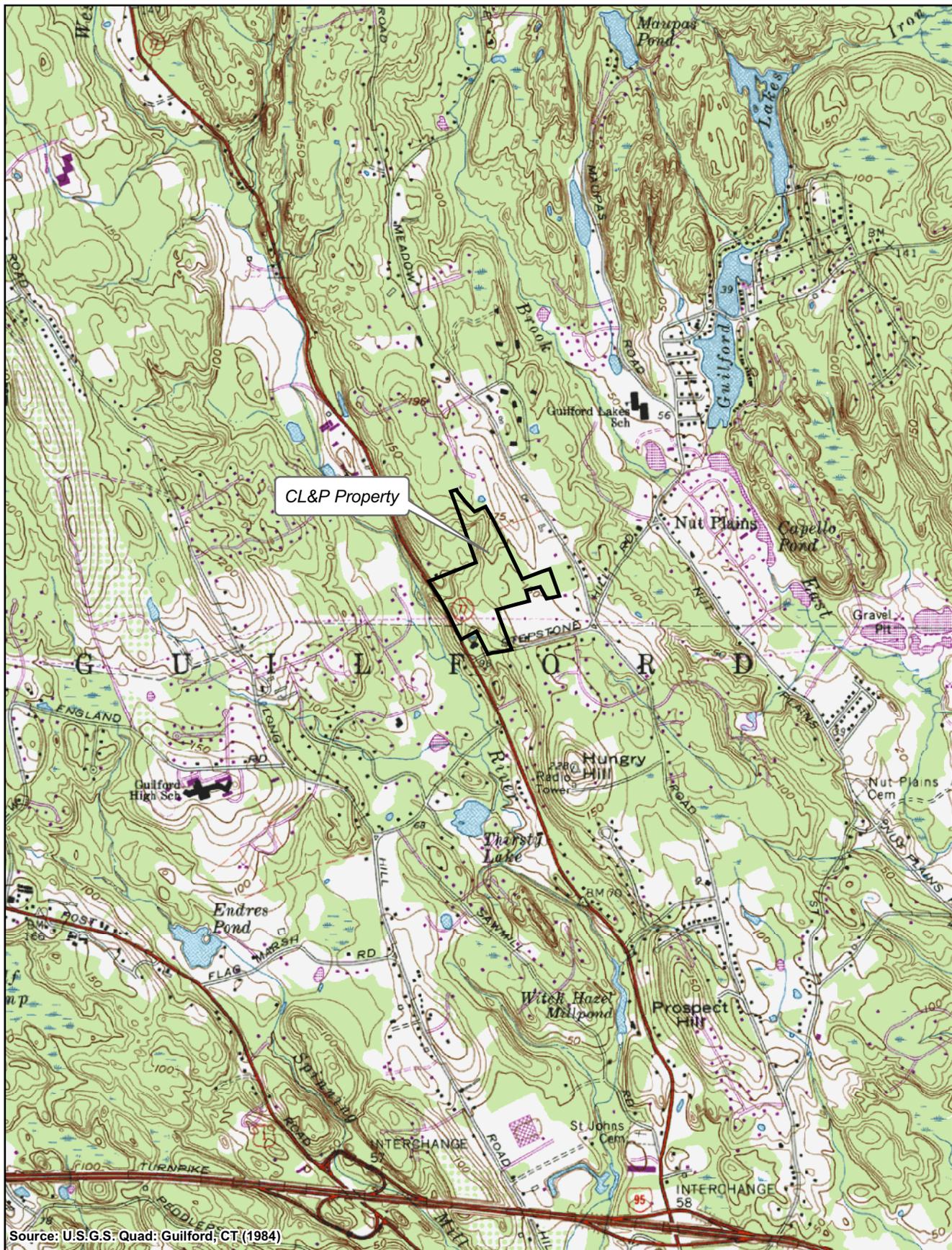


Figure 2: Existing/Proposed Conditions

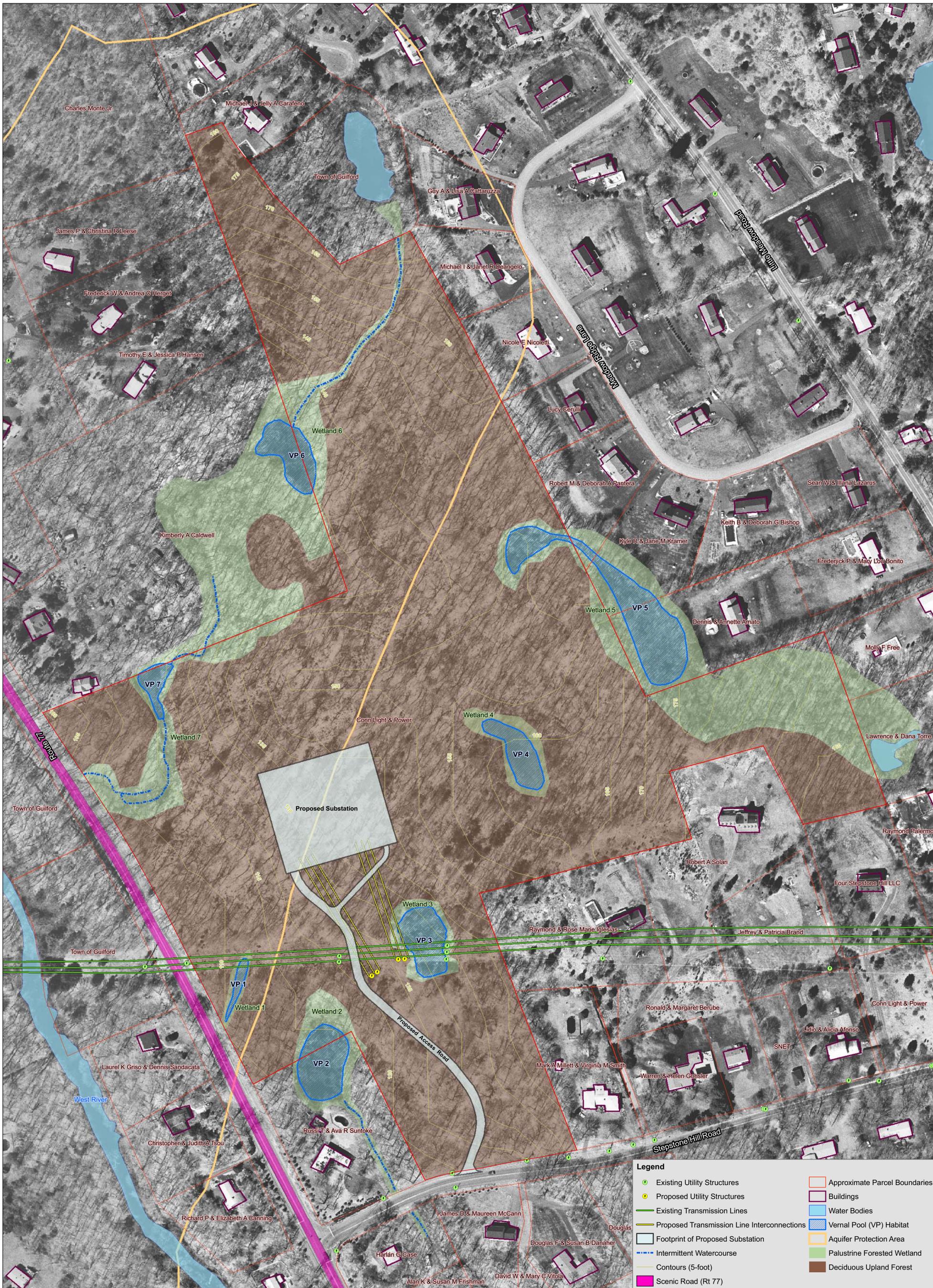
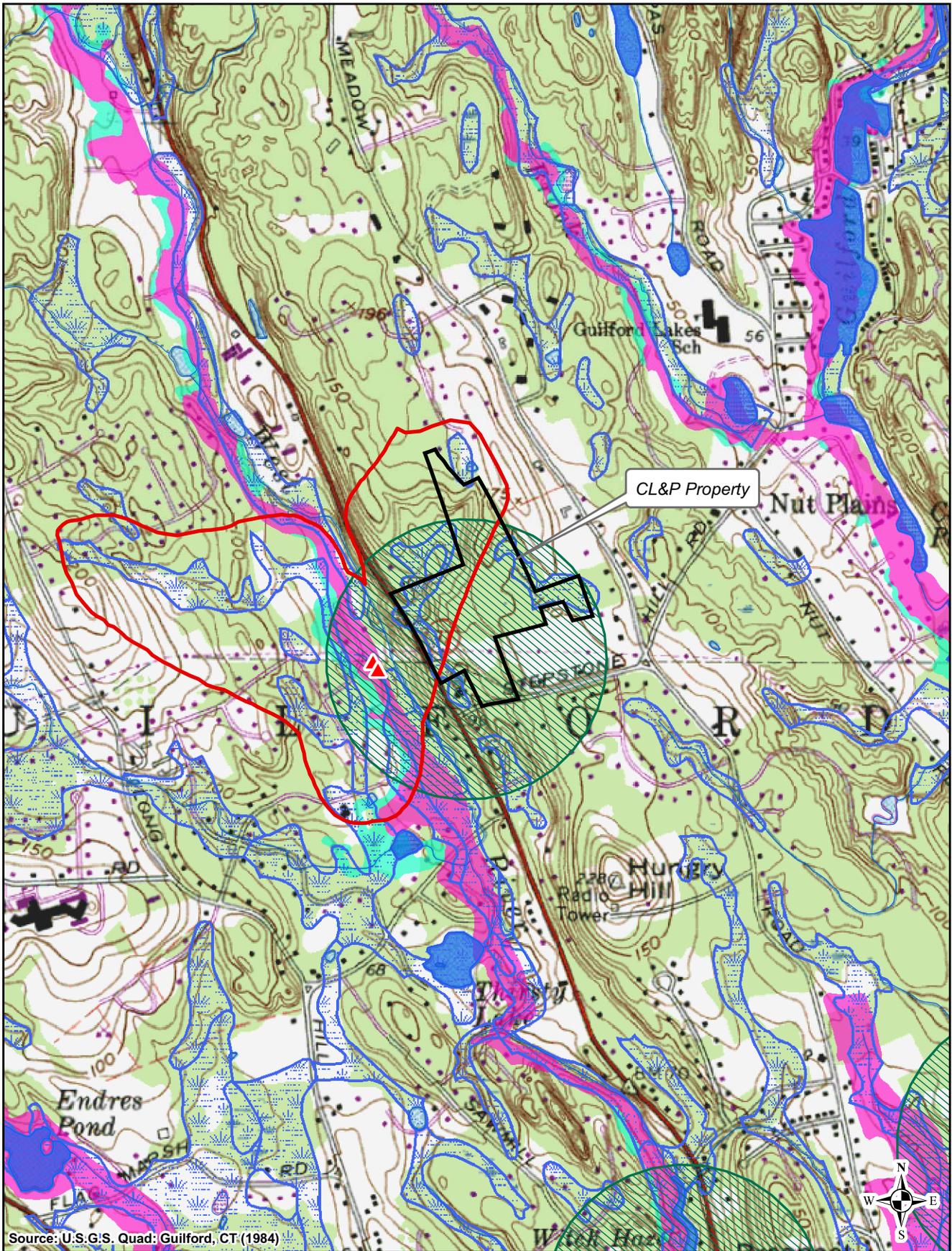


Figure 3: Environmental Resources Map



VHB Vanasse Hangen Brustlin, Inc.

1,000 500 0 1,000
Feet

03/28/06

Legend

- Property Boundary
- Aquifer Protection Well
- Aquifer Protection Area
- Wetlands
- Open Water
- NDDB Threatened and Endangered Species (buffered; 12/2005)

- New Haven County Floodplains**
- 100 Year Floodplain
 - 500 Year Floodplain
 - Floodway



Connecticut Light & Power
The Northeast Utilities System