Westport Planning & Zoning Commission Location Review

## **Proposed Sherwood** Substation

## 6 New Creek Road Westport, Connecticut

Prepared for



Connecticut Light & Power

The Northeast Utilities System

Prepared by

VHB / Vanasse Hangen Brustlin, Inc.54 Tuttle PlaceMiddletown, Connecticut 06457-1847

May 2009

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# **1** Introduction

The Applicant, The Connecticut Light and Power Company ("CL&P"), seeks to construct a new substation (the "Substation") on its property located at 6 New Creek Road in Westport, Connecticut (the "Property" or "Site") for the purpose of improving the electric power distribution system in the Town of Westport. The Substation project (the "Project") is subject to the jurisdiction of the Connecticut Siting Council, pursuant to Title 16, Chapter 277a 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 *Site Location Map*, *USGS*, provided as Figure 1 depicts the Property's approximate location and the existing substations currently supplying service to Westport.

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## **Project Description**

### Purpose of the Project

The purpose of the Project is to increase electric distribution system capacity and improve reliability in Westport by establishing a new bulk-power substation in the Greens Farms section of town. The existing substations system configuration will not meet the Town's growing electric demand and future reliability needs.

Currently, the distribution load in Westport is being served from two older and physically space-limited, 27.6 kV-supplied substations, Westport and Greens Farms Substations. Both Westport and Greens Farms Substations have no expansion capabilities due to the lack of physical space at each location. The new Substation would replace Greens Farms Substation with newer equipment and enhanced distribution capacity. Once the new Substation is operative, Greens Farms Substation would ultimately be de-energized and removed.

In addition to being supplied by the Westport and Greens Farms Substations, the electric load in town is currently being served from the transmission system by three bulk power substations; two located in Westport - Compo Substation and a temporary transformer within the Sasco Creek Substation – and a third, Weston Substation, located in the neighboring Town of Weston. Compo Substation was upgraded in the

mid-1990s to a 115 kV supply, but due to physical limitations, CL&P is unable to further expand this Substation to provide more capacity. Since CL&P will not be allowed to maintain its existing temporary transformer at Sasco Creek, the new Substation would also replace the Sasco Creek Substation temporary supply. Sasco Creek Substation would continue operations dedicated solely to the railroad. The Weston Substation, while supplied via a 115 kV transmission supply, is not a viable option for expanding its service farther into Westport due to its distance from the load center.

#### **Location Description**

The 2.56-acre Property consists of a residential house lot located at 6 New Creek Road. The Property is identified by the Westport Assessor's Office on Map G06, as Lot 5. After review of several other potential sites, the Property was purchased by CL&P on June 18, 2008 specifically with this Project in mind.

For the following reasons, the Property is well suited for the Substation:

- Two existing 115-kV transmission lines are located immediately to the north, providing for a direct connection without the need for substantial additional infrastructure and/or rights-of-way with associated clearing.
- Substantial transportation (active rail line and associated catenaries) and utility infrastructure (overhead transmission lines and support structures) abut the Property;
- There are optimal interconnection opportunities to existing distribution feeders along New Creek Road, Greens Farms Road, and Maple Lane;
- The Property has sufficient size and shape and access from a local road; and,
- Construction can be completed and the Substation can be operated with minimal effects on the surrounding environment.

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#### Site Vicinity Characteristics

Significantly, the Substation would connect to existing facilities within a multi-use transportation and energy infrastructure corridor. The Site is abutted to the north by two sets of single-circuit transmission structures that parallel the existing four-track MetroNorth New York to Boston railway, which includes overhead catenary structures. Interstate 95 lies immediately north of the active rail line. New Creek Road abuts the Property to the east and south; a tidal salt marsh and Greens Farms Brook are located across New Creek Road. A residential property bounds the Property to the west.

A 2006 color aerial photograph depicting conditions in the vicinity is provided as Figure 2, *Site Location Map, Aerial Photograph.* 

### **Proposed Activity**

The Substation would be located within an irregularly shaped fenced compound which would encompass a 20,610<u>+</u> square foot area in the eastern portion of the Property, just south of the existing transmission line and railroad corridor. No portion of the Substation would be located within on-site wetlands and none of the Substation components/structures would be situated within 50 feet of these wetlands. A small section of the Substation's northwest corner (consisting of trap rock and fencing) would be within 50 feet of the wetlands.

Connecting the Substation to the existing 115-kV line requires the installation of two new steel monopoles, similar in size to those currently occupying the transmission line corridor. The interconnections between the Substation and the new transmission line

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poles would be accomplished by installing two new line-terminal structures (approximately 50 feet in height) within the Substation. The Substation would also be outfitted with a circuit breaker, seven disconnect switches, five circuit switchers and two 60- Megavolt-Ampere (MVA) power transformers which would step down the voltage from 115 kV to 13.8 kV. A third transformer position would be provided to accommodate a temporary, mobile transformer for emergency conditions. Four metal switchgear enclosures, each approximately 21-feet long, 14-feet wide and 14-feet high would be installed to provide the switching equipment, relaying and control equipment as well as the battery and charger associated with the distribution equipment. In addition to the switchgear enclosures, a metal control enclosure, approximately 48-feet long by 14-feet wide by 14-feet high, would be installed at the east end of the Substation. This enclosure is designed to house the protective relaying and control equipment as well as the battery and charger associated with the transmission equipment. An approximately 15-foot wide access drive from New Creek Road to the Substation would be established and pavement associated with the existing driveway removed. The existing residence located on the Property would also be removed as part of the Project.

The Substation includes the installation of two 60-MVA transformers that would contain insulating (mineral) oil. The transformer equipment would each have secondary containment designed to hold 110% of a transformer's fluid capacity and accidental spill prevention measures in place. CL&P proposes to install Imbiber Bead® Containment Systems for the sumps, similar to containment systems installed at other CL&P substations, to assist in preventing oil discharges from the containment sumps. Further, a low oil level alarm that is integral to the system would be monitored remotely and would notify CL&P in the event of abnormal conditions. Periodic inspections of the sumps are performed by CL&P personnel to promote proper

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functioning of the systems. Based on these design considerations, the Project would have no adverse environmental impacts.

The Substation would be covered with a trap rock surface and secured by a seven-foot high chain link fence topped with one foot of barbed wire (three strands). CL&P would provide extensive landscaping around the Substation perimeter, resulting in the fencing and lower portions of internal equipment being largely out of view. Lighting would be available within the Substation yard to facilitate work at night under emergency conditions and during inclement weather. The Substation would have lowlevel lighting for safety and security purposes. However, these lights would be recessed or activated manually to minimize visual effects at night. Lighting would not extend beyond the limit of the fenced area.

Figure 3, *Existing/Proposed Conditions*, depicts the proposed activity on the Property. Location Review Site Plans are provided in Appendix A.

Construction is expected to occur over a period of 12 to 18 months with the Substation in service by January 2012. The general construction sequence for the Substation and line interconnection would include:

- Installation of erosion and sedimentation control measures
- Construction of the access drive
- Removal of the existing residential dwelling
- Removal of trees and shrubs within the areas to be graded
- Preparation of the Site (cut, fill, grading)
- Installation of Substation foundations, conduits and grounding grid
- Spreading trap rock
- Installation of steel structures and Substation equipment
- Building transmission line interconnections
- Commissioning the Substation
- Completion of Site restoration activities
- Removal of erosion and sedimentation control measures

## **3** Coastal Resources

The Site falls within the Coastal Area Management Boundary. No tidal wetlands/ watercourses or coastal resources are located on the Site. A tidal (wetland) salt marsh is located approximately 50 feet from the Site immediately southeast of New Creek Road. Greens Farms Brook flows within the marsh interior. An on-site inland freshwater wetland system discharges to the tidal marsh via a 15 inch culvert beneath New Creek Road.

The on-site freshwater wetland is not subject to tidal influence due to its elevation. Portions of the Site are located within the 100-year floodplain (Zone A-6) located at 11 feet above sea level and 500-year floodplain (Zone B), based on the National Geodetic Vertical Datum (NGVD) of 1929 as shown on the attached *FEMA Map*, Panel Number 090019 0002B, revised December 4, 1984, provided as Appendix B. However, the activities associated with the Substation would be located entirely outside of the 100year and 500-year floodplains. No coastal velocity flood zones (Zone V) are mapped on the Site or nearby salt marsh.

### **Project Impacts**

Project activities include the demolition of an existing residential structure and the construction of a 20,610<u>+</u> square foot substation in the eastern portion of the Property, just south of the existing transmission line corridor. A comprehensive stormwater

management system is being designed to adequately treat the quantity and quality of stormwater generated by the Project prior to discharge to the on-site wetlands. Therefore, the adjacent coastal resources would not be adversely affected by the proposed activities.

#### **Coastal Consistency Review**

The Project would not result in adverse impacts to coastal resources as defined in the Connecticut Coastal Management Act (CCMA). The CCMA identifies eight adverse impacts to coastal resources. This section provides a definition of each adverse impact for each resource area and explains why the Project would not adversely affect each resource.

1) Degrading *water quality* of coastal waters by introducing significant amounts of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity.

The Project would not affect water quality within the adjacent tidal marsh or Greens Farms Brook. Erosion and sediment controls would be established as required by the State of Connecticut DEP Bulletin 34 Connecticut Guidelines for Soil and Erosion and Sediment Control, dated 2002. Stormwater generated by the Project would be adequately treated, both in quantity and quality, in general accordance with the 2004 CT Stormwater Quality manual.

2) Degrading *existing circulation patterns of coastal waters* by impacting tidal exchange or flushing rates, freshwater input, or existing basin characteristics and channel contours.

The Project is located on property that is currently developed and outside of tidally influenced areas and as such would not impact current drainage or circulation patterns.

3) Degrading *natural erosion patterns* by significantly altering littoral transport of sediments in terms of deposition or source reduction.

The Project would not affect littoral transport of sediments.

4) Degrading *natural or existing drainage patterns* by significantly altering groundwater flow and recharge and volume of runoff.

Drainage patterns would not be significantly altered by the Project. It is anticipated that the proposed stormwater treatment practices would maintain or increase groundwater recharge at the Site and not increase runoff for the 5-, 10- and 25-year design storms.

5) Increasing the hazard of **coastal flooding** by significantly altering shoreline configurations or bathymetry, particularly within high velocity flood zones.

Portions of the Site occur within the 100-year and 500-year floodplains; however, the proposed activities would be located outside of the 100-year and 500-year floodplains and would not affect the shoreline configuration.

6) Degrading *visual quality* by significantly altering the natural features of vistas and viewpoints.

The Project is located approximately 1,000 feet from the nearest coastal resource and would not degrade the visual quality of the area. The Project consists of demolishing an existing residential structure and constructing the Substation in the east portion of the Site. The Substation would be located at a ground elevation approximately 4 to 8 feet lower than what exists today. Planned landscaping would incorporate earthen berms and extensive vegetative screening, resulting in the lower portions of the Substation being largely out of view.

7) Degrading or destroying *essential wildlife, finfish or shellfish habitat* by significantly altering the composition, migration patterns, distribution, breeding or other population characteristics of the natural species or significantly altering the natural components of the habitat.

No essential wildlife, finfish or shellfish habitat exist on portions of the Property planned for construction activities.

8) Degrading tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments by significantly altering their natural characteristics or function.

The Project would not alter the natural characteristics of any coastal resource area as none exist on the Site.

## ${f 4}$ Alternatives Evaluated

### **Location Rationale**

The primary selection criteria for the location of a new bulk-power substation are: proximity to an existing transmission circuit, proximity to the load area, and accessibility from a public road. Locating the facility near an existing 115-kV circuit avoids new right-of-way (ROW) acquisitions and new transmission line construction. A site located near the load center minimizes distribution circuit lengths and enhances contingency tie capabilities with distribution circuits. Direct access to substations from an existing road is important to minimize land clearing for new road construction.

#### **Evaluated Site Locations**

CL&P identified several potential sites near its 115-kV transmission circuits along the MetroNorth rail line that appeared to meet the primary selection criteria. These sites were then further evaluated using the following substation siting criteria:

- Proximity to existing distribution (feeders) system
- Ease of access
- Existing land-use constraints, including proximity to residences
- Earthwork requirements
- Sufficient parcel size and shape
- Existing environmental resources

The Property best satisfied the criteria and is therefore the most feasible location, as summarized below.

#### Interstate Right-of-Way, north of Sherwood Island Connector between I-95 Northbound Ramp and MetroNorth Railroad

- Located west of load area.
- Poor connection possibilities to existing distribution network.
- Substantial earthwork required to accommodate substation development.
- Access would have to be gained directly from highway ramp.

#### 6 New Creek Road; the Property

- Direct connections available to existing 115-kV transmission circuit.
- Optimal connection to existing distribution feeders.
- Adjacent to existing transportation and utility infrastructure.
- No wetland impacts.
- Direct access from New Creek Road.
- Minimal impacts to environment as a result of development.

#### South side of Greens Farms Road east of Beachside Drive

- Connections to existing transmission circuit would require extensive new infrastructure.
- Connections to existing distribution network would require bundling several new overhead circuits onto one existing line on Greens Farms Road.
- Potential archaeological resources exist.
- Several homes located immediately to the north.

#### Terminus of Post Office Lane (between I-95 and MetroNorth Railroad)

- Site configuration limits ability to fit all required equipment within substation; the site could only accommodate two transformers with no room for a mobile position or third transformer expansion.
- Connections to existing distribution network would require bundling several new overhead circuits onto one existing line on Greens Farms Road.
- Parcel would require an access/utility easement from third party; easement not available.
- Parcel not available for purchase.

#### West of existing Sasco Creek Substation

- MetroNorth will not allow development of a permanent substation for use other than railroad.
- Abuts several neighboring residences.

#### Saugatuck Avenue at Exit 17, south side of I-95

- Connection to existing transmission circuits would require extensive new infrastructure.
- Numerous neighboring residences located along Ferry Lane West, Indian Hill Road and Hiawatha Lane.
- Potential impacts to existing business operation.
- Long distance to load center.

# **5** Project Contacts

Correspondence and other communications regarding the Project should be addressed

to:

Mr. Chris Swan Director, Transmission Municipal Relation, Siting and Permitting Northeast Utilities Service Company 9 Tindall Avenue Norwalk, CT 06851 Telephone: (203) 845-3421 E-mail address: swancc@nu.com

Mr. Kris Aberg Project Manager Northeast Utilities Service Company 107 Selden Street Berlin, CT 06037 Telephone: (860) 665-6733 E-mail address: abergk@nu.com

Mr. John R. Morissette Manager, Transmission Siting and Permitting Northeast Utilities Service Company 107 Selden Street Berlin, CT 06037 Telephone: (860) 665-2036 E-mail address: morisjr@nu.com VHB

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## Figures

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Quadrangle Location

Connecticut Light & Power The Northeast Utilities System \ctmiddat\projects\41448.00\graphics\figures\Figure2\_Westport\_Site\_Location\_Map\_Aerial.pdf



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Figure 2 Site Location Map, Aerial Photograph 6 New Creek Road Westport, Connecticut





### Legend



Proposed Substation Layout Existing Paved Road

Site Property

Field Delineated Freshwater Wetland

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Figure 3 Existing and Proposed Conditions 6 New Creek Road Westport, Connecticut



## Appendix A Location Review Concept Plans

## **Concept Plans**

Issued for: Location Review Date Issued: May 14, 2009

Latest Issue: May 14, 2009

Index		
No.	Drawing Title	Latest Issue
C-1	Overall Site Plan	05/14/09
C-2	Layout and Materials Plan	05/14/09
C-2	Site Development Plan	05/14/09

#### **Reference Drawings**

SV-1 04/08 Boundary and Topographic Survey

# **Sherwood Substation**

6 New Creek Road Westport, Connecticut



### **Property Information**

Owner: The Connecticut Light and Power Company P.O. Box 270 Hartford, Connecticut 06141-0270 (860) 605-5000

Applicant: The Connecticut Light and Power Company P.O. Box 270 Hartford, Connecticut 06141-0270 (860) 605-5000

Assessor's Plat- Map: G06



Vanasse Hangen Brustlin, Inc. Transportation Land Development Environmental Services



### Lot: 005

VHB Project No. 41448 6 New Creek Road, Westport, Connectiout Issued for: Location Review - May 14, 20







### **Connecticut Light & Power**

The Northeast Utilities System



Vanasse Hangen Brustlin, Inc. Transportation • Land Development • Environmental Services 54 Tetle Place, Middetown, Connection 04(57-1847 Tet 400 (52-1500 • Pez: 480 (52-787)

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### Connecticut Light & Power

PROPOSED RETAINING WALL (APPROX. 3'-4' HIGH)

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The Northeast Utilities System



Vanasse Hangen Brustlin, Inc. Transportation • Land Development • Ravironmental Services 54 Tutle Phee, Middletown, Counscient 06457-1847 Tel: \$60 632-1500 • Pag: \$60 632-7879

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#### NOTES:

. 1. BEARINGS AND ELEVATIONS SHOWN ARE NAD 83 AND NAVD 88 RESPECTIVELY, COORDINATE INFORMATION DERIVED FROM GPS DATA COLLECTED BY NORTHEAST UTILITY SURVEY DEPARTMENT AND INFORMATION PROVIDED BY THE STATE OF CONNECTUOI DEPARTMENT OF TRANSPORTATION.

2. THE FIELD SURVEY SHOWN WAS PERFORMED ON THE GROUND BY NORTHEAST UTILITIES SURVEY DEPARTMENT IN APRIL 2008.

3. WETLAND FLAGS SHOWN WERE FIELD DELINEATED BY COLLIN DUNCAN, CERTIFIED SOIL SCIENTIST, IN APRIL 2008.

4. SUBJECT PARCEL SHOWN IS LOCATED IN ZONE "AAA" AS SHOWN ON THE TOWN OF WESTPORT ZONING MAP. TAX MAP G6, LOT 5.

5. PARCEL SHOWN SUBJECT TO POSSIBLE "RIGHTS OF OTHERS IN AND TO THE STREAM TRAVERSING THE PREMISES".

6. SUBJECT PARCEL SHOWN IS LOCATED PARTLY IN FLOOD ZONE 'B' AREAS BETWEEN LIMITS OF THE 100-YEAR AND 500-YEAR FLOOD AND PARTLY IN FLOOD ZONE 'A6' AREAS OF 100-YEAR FLOOD (FLOOD ELEVATION 11), AS SHOWN ON FLOOD INSURANCE RATE MAP 'FIRM' TOWN OF WESTPORT, CONNECTCUT, FAIRFIELD COUNTY, COMMUNITY PANEL NUMBER 090019 00028, REVSED DATE: DECEMBER A, 1984

TO UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES OR GOVERNMENTAL AGENCIES, FROM PAROL TESTIMONY AND FROM OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO NORTHEAST UTILITES SURVEY DEPARTMENT, THE SIZE LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATED AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG: 1.800.922.4455.

#### MAP REFERENCES:

- 1. SURVEY PREPARED FOR THOMAS F. HUGHES ET ALS, WESTPORT, CONN. SCALE: 1" = 60', DATE: DEC. 30, 1965. BY CHARLES S. LYMAN.
- SURVEY PREPARED FOR ALBERT V. T. DAY, WESTPORT, CONN, SCALE: 1" = 60', DATE: MARCH 1957.
- PROPERTY OF NICHOLAS S. HILL JR. GREENS FARMS, WESTPORT CONN. SCALE: 1" = 40°, DATE: JAN. 31, 1926. BY ALFRED H. TERRY.
- SURVEY OF PREMISES LOCATED AT 1 BEACHSIDE AVENUE, WESTPORT, CT. SCALE: 1' = 50', DATE: DECEMBER 16, 2003 REVISED THROUGH MARCH 9, 2004. BY AIDAN C. MCCANN.
- 5. RIGHT OF WAY AND TRACK MAP THE NEW YORK NEW HAVEN AND HARTFORD R.R. CO. OPERATED BY THE NEW YORK NEW HAVEN AND HARTFORD R.R. CO. FROM WOODLAWN TO NEW HAVEN STATION 1815+20 TO STATION 1868+00, TOWN OF WESTFORT, STATE OF CONN. SCALE: 1" = 100', DATE: JUNE 30, 1915

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## Appendix B FEMA Map

