

Proposed Waterford Substation

325 Waterford Parkway North
Waterford, Connecticut

Prepared for



**Connecticut
Light & Power**

The Northeast Utilities System

Prepared by

VHB / Vanasse Hangen Brustlin, Inc.

54 Tuttle Place

Middletown, Connecticut 06457-1847

February 2008

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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 property located at 325 Waterford Parkway North in Waterford, Connecticut (the “Property” or “Site”) for the purpose of increasing the capacity and the reliability of the electric power distribution system in Waterford and adjacent areas. 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 would address the need for additional distribution-system capacity and reliability in the Town of Waterford by establishing a new bulk power source. The Substation will be strategically positioned to facilitate connection to an existing 115-kV transmission line (or “circuit”) that lies just north of the Property.

A *Site Location Map, USGS*, provided as Figure 1 depicts the approximate CL&P Property boundary location.

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Project Description

Purpose of the Project

The purpose of the Substation project is to address a need for additional distribution-system capacity and reliability in the Town of Waterford by establishing a new, strategically positioned power source in the town. Currently, the electric load in the Town of Waterford is served from three substations located in East Lyme, New London, and Uncasville. The existing substations cannot meet the future peak load demands without reducing their service area. The Waterford Substation will effectively alleviate loads on these existing substations by adding new capacity to the distribution system in a location within the service area to reliably serve loads in the Town of Waterford and provide a means of satisfying future growth in the area.

Location Description

The 5-acre Property consists of undeveloped land located immediately northeast of the intersection of Oil Mill Road and Waterford Parkway North. The Property was recently divided from a larger 55 ± acre parcel identified by the Waterford Assessor's Office on Map 88, as Lot 287. A new lot number has not yet been determined but the property has been assigned an address of 325 Waterford Parkway North. The 5-acre Property was purchased by CL&P on December 20, 2007 specifically for this Substation project.

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

- An existing 115-kV transmission line currently exists immediately north of the Property;
- There are optimal interconnection opportunities to existing 23-kV distribution feeders along Oil Mill Road and Waterford Parkway North;
- The Property has direct access from a local road; and,
- Construction can be completed and the Substation can be operated with minimal effects on the surrounding environment.

At the request of the Town Planner, CL&P investigated the possible future location of the Route 11 improvements and determined that such improvements would not affect the Substation Property. Based on current Department of Transportation mapping (included as Appendix A, *DOT Route 11 Alignment*), those improvements would be located south of the intersection of Oil Mill Road and Waterford Parkway North.

Site Vicinity Characteristics

Surrounding land use in the vicinity of the Site consists of rural residential and undeveloped properties. The Site is abutted to the south by Waterford Parkway North, to the north by a tree farm and residential property, to the east and west (across Oil Mill Road) by wooded undeveloped land. An exit ramp from Interstate 95 (southbound) to Waterford Parkway North is located immediately to the southeast across from the Site. A 2006 color aerial photograph depicting conditions in the vicinity is provided as Figure 2, *Site Location Map, Aerial*.

Proposed Activity

The Substation would include two bulk power transformers and connection to the adjacent 115-kV circuit. The proposed Substation would be located within an irregularly shaped fenced compound that would encompass a 47,578 ± square foot area in the western portion of CL&P's 5-acre Property, just south of the existing transmission line corridor. A gravel access drive to the Substation will be established from Waterford Parkway North. Connecting the Substation to the existing 115-kV line requires the installation of two new steel monopoles, similar to those currently occupying the transmission line corridor. An approximate 20-foot wide gravel access drive from Waterford Parkway North to the Substation will be established. In response to the Town of Waterford's request, CL&P intends to improve sight lines at the intersection of Oil Mill Road and Waterford Parkway North. Figure 3, *Existing/Proposed Conditions*, depicts the proposed activity on the Property. Location Review Site Plans are provide in Appendix B.

The two 60 Mega Volt-Ampere transformers to be installed at the Substation would contain insulating fluid (mineral oil). The transformer equipment would each have secondary containment consisting of a polyvinyl-lined sump, designed to hold 110% of a transformer's fluid capacity, and accidental spill prevention provisions. 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 fluid discharges from the containment sumps. Further, a low fluid level alarm, integral to the system, would be installed and monitored remotely and would alert CL&P in the event of abnormal conditions. Periodic inspections of the sumps are performed by CL&P personnel to promote proper functioning of the systems.

Lighting would be available within the Substation yard to facilitate work at night, during inclement weather, or under emergency conditions. The 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 extend beyond the limit of the fenced area.

The currently undeveloped Property is predominantly occupied by early successional upland forest with narrow forested wetland areas bordering a perennial watercourse, which flows south through the east central portion of the property. Neither wetlands nor the watercourse on the Property would be directly affected by development and operation of the Substation.

Construction is expected to occur over a period of 12 to 18 months with the Substation in service by June 2010. The general construction sequence for the Substation and line interconnection would include:

- Install erosion and sedimentation control barriers
- Develop the access drive
- Remove trees and shrubs within the areas to be graded
- Site preparation (cut, fill, grading)
- Installing Substation foundations, conduits and grounding grid
- Spreading of trap rock
- Install steel structures and Substation equipment
- Build transmission line interconnections
- Commission the Substation
- Complete site restoration activities
- Remove erosion and sedimentation control barriers

3

Alternatives Evaluated

Alternative Sites

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 reliability. Direct access to substations from a road is important to minimize land clearing for new road construction.

Evaluated Site Locations

CL&P identified six potential sites for the location of a substation near its 115-kV transmission circuits along Waterford Parkway North, Hartford Turnpike (Route 85), Vauxhall Street, Old Colchester Road, and Bloomingdale Road. These six sites were then evaluated using the following substation siting criteria:

- Proximity to existing transmission electrical circuits
- Proximity to distribution load center and existing feeders
- Ease of access
- Existing land-use constraints, including proximity to residences
- Earthwork requirements
- Sufficient parcel size and shape
- Existing environmental resources

The Property at 325 Waterford Parkway North (Location 1) best satisfied the criteria and is therefore the most feasible location, as summarized below.

Location 1, 325 Waterford Parkway North; the Property

- Direct connections available to existing 115-kV transmission circuit and four existing 23-kV distribution feeders.
- No wetland impacts.
- Direct access from Waterford Parkway North.
- Minimal earthwork required for development.

Location 2, 994 Hartford Turnpike (Route 85)

- Limited connection possibilities to existing 23-kV distribution circuits, requiring new line work.
- Direct impacts to wetlands necessary for connection to 115-kV transmission circuit.

Location 3, 969 Hartford Turnpike (Route 85)

- Limited connection possibilities to existing 23-kV distribution circuits, requiring new line work.
- Substantial earthwork required for the Substation and new access road.

Location 4, North of 813 Vauxhall Road

- Limited connection possibilities to existing 23-kV distribution circuits, requiring new line work.
- Substantial vegetative clearing needed for connection to 115-kV transmission circuit.
- Significant wetland constraints exist.
- Close proximity to nearby residences with minimal buffer.

Location 5, 130 Old Colchester Road

- Poor connection possibilities to existing 23-kV distribution circuits, requiring extensive new line work.
- Substantial vegetative clearing needed for connection to 115-kV transmission circuit.
- Insufficient buffer from neighboring residences.

Location 6, North of Bloomingdale Road

- Poor connection possibilities to existing 23-kV distribution circuits, requiring extensive new line work.
- Substantial vegetative clearing needed for connection to 115-kV transmission circuit.
- Insufficient buffer from neighboring residences.

5

Project Contacts

Correspondence and other communications regarding the proposed Waterford

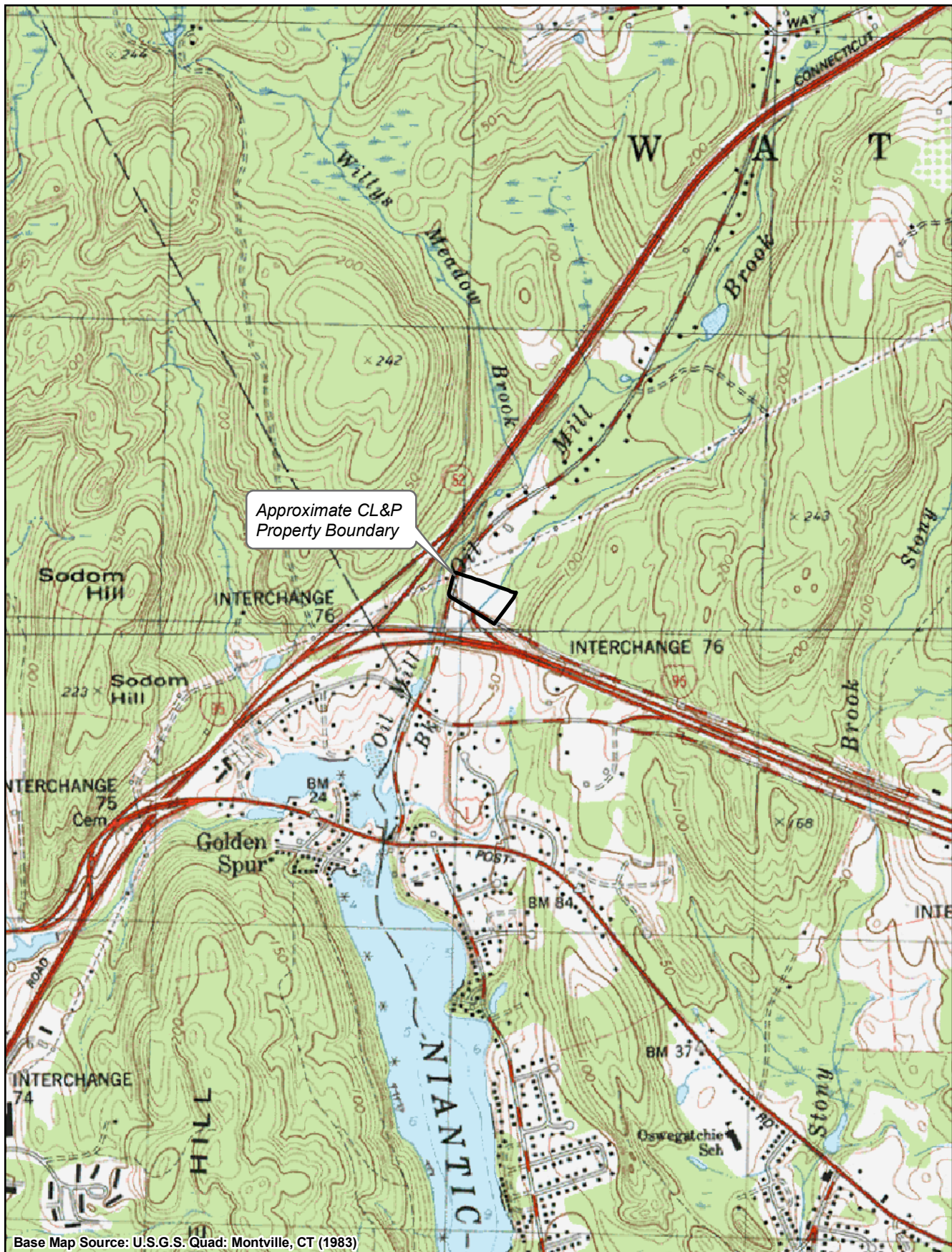
Substation should be addressed to:

Mr. Girish Behal
Transmission Projects
Northeast Utilities Service Company
107 Selden Street
Berlin, CT 06037
Telephone: (860) 665-3634
E-mail address: behalg@nu.com

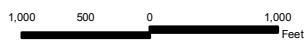
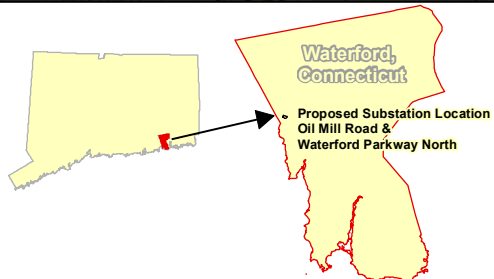
Mr. John R. Morissette, Manager
Transmission Siting and Permitting
Northeast Utilities Service Company
107 Selden Street
Berlin, CT 06037
Telephone: (860) 665-2036
E-mail address: morisjr@nu.com

Figures

Figure 1: Site Location Map, USGS



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Transportation Land Development Environmental Services



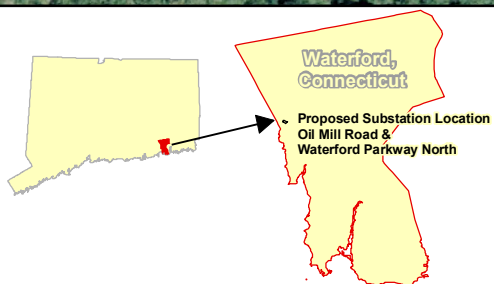
Connecticut Light & Power
The Northeast Utilities System

Figure 2: Site Location Map, Aerial



Base Map Source: 2006 color aerial photograph with 1 foot resolution

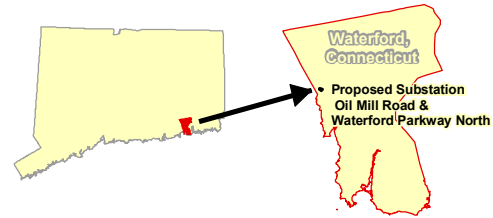
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Transportation Land Development Environmental Services



150 75 0 150 Feet

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Figure 3: Existing/Proposed Conditions



Appendix A

DOT Route 11 Alignment

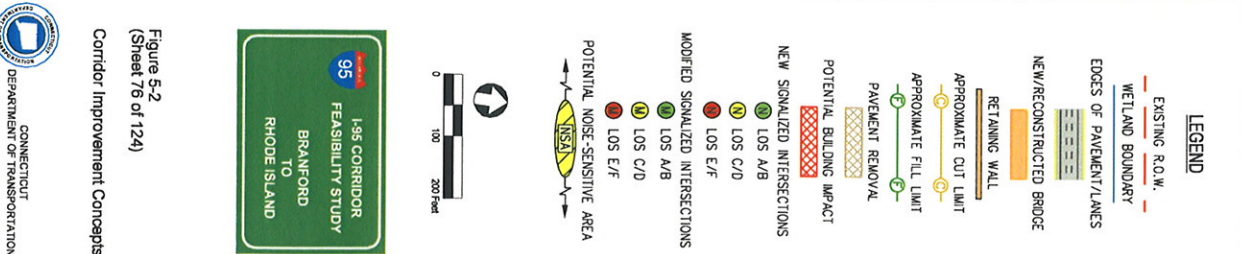
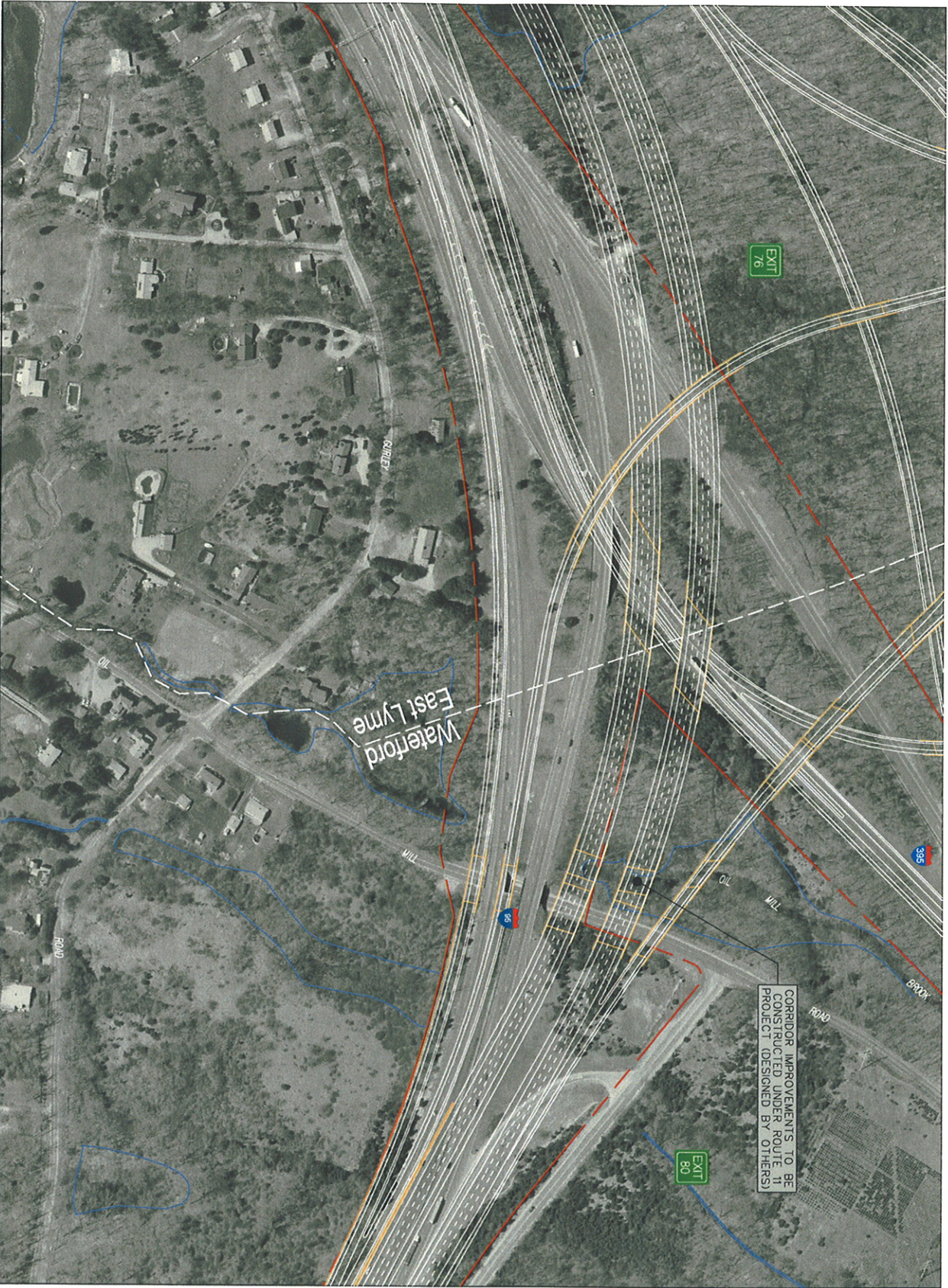


Figure 5-2
(Sheet 76 of 124)

Corridor Improvement Concepts



Appendix B

Location Review Concept Plans

Concept Plans

Issued for: **Location Review - PZC**

Date Issued: February 21, 2008

Latest Issue: February 21, 2008

Index

| No. | Drawing Title | Latest Issue |
|---------------------------|--|--------------|
| Cp-1 | Layout Plan | 02/21/08 |
| Cp-2 | Grading, Drainage & Erosion Ctrl. Plan | 02/21/08 |
| Cp-3 | Sightline Profile | 02/21/08 |
| Reference Drawings | | |
| Sv-1 | Property Survey | 10/15/07 |

Waterford Substation

325 Waterford Parkway North
Waterford, Connecticut



Site Location Map ↑ 0 1000 2000 Feet

* Property Information

Owner:
The Connecticut Light and Power Company
P.O. Box 270
Hartford, Connecticut 061414-0270
(860) 605-5000

Applicant:
The Connecticut Light and Power Company
P.O. Box 270
Hartford, Connecticut 061414-0270
(860) 605-5000

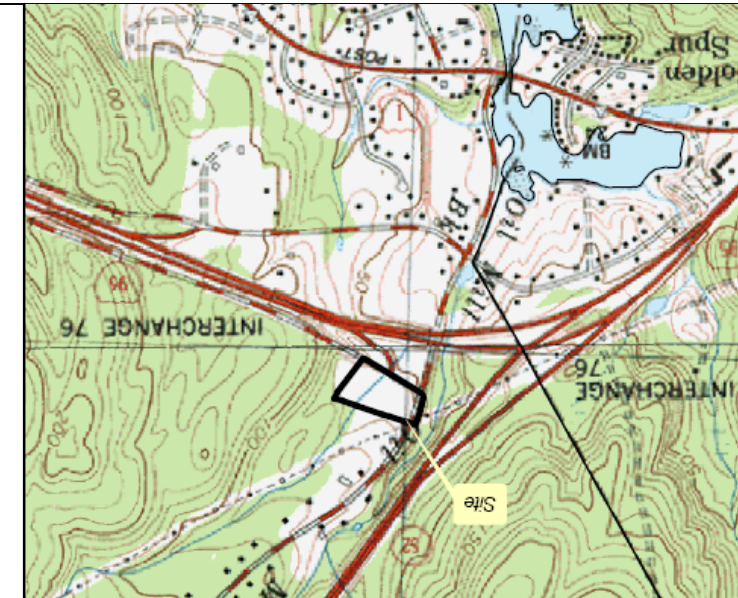
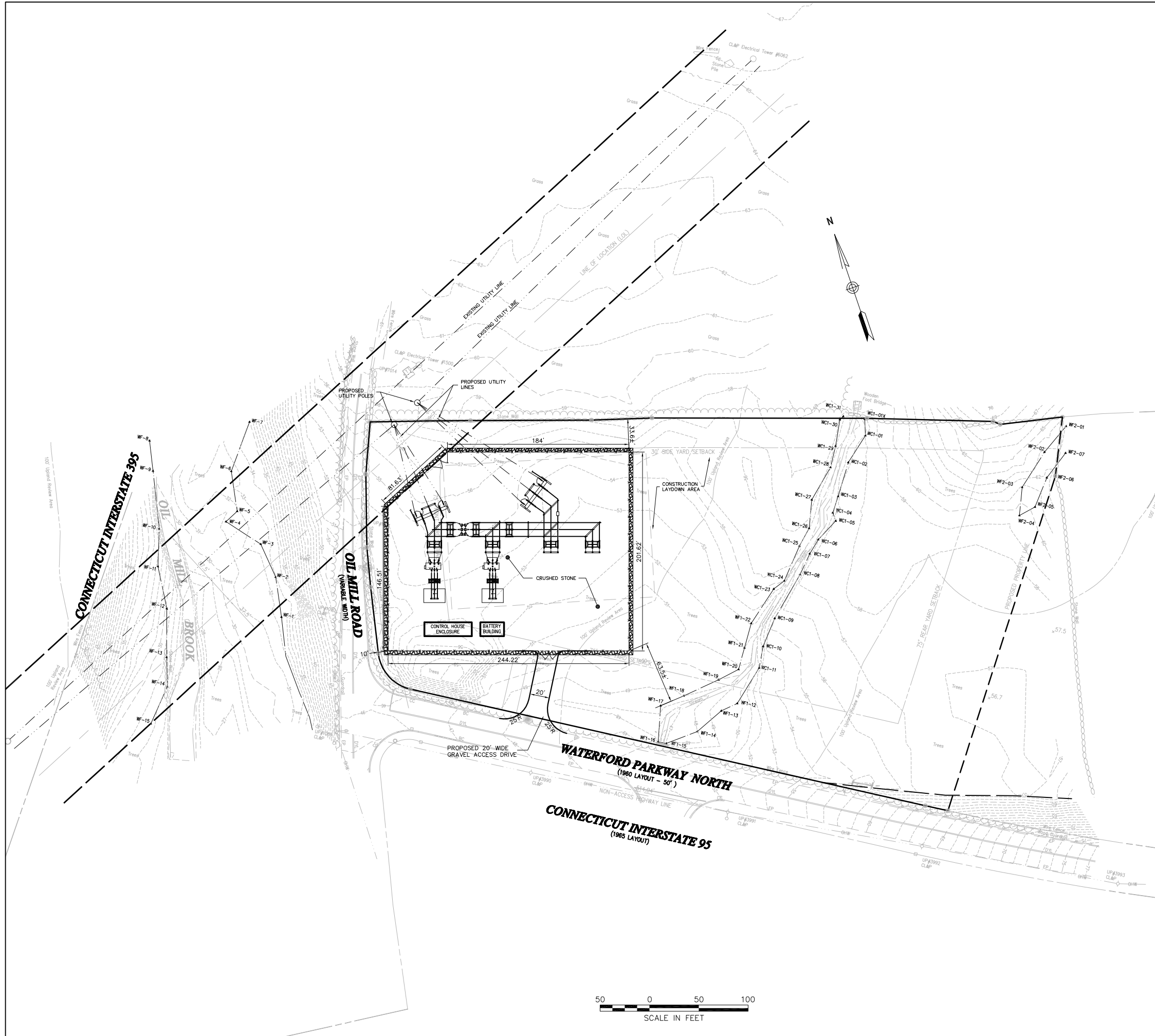
Assessor's Plat: Map 88
Lot: 287

* **Note: CL&P purchased (December 2007) five acres of a 55±acre parcel. No parcel lot number has been established for the new 5 acre piece. The parcel has been assigned a street address as shown above.**

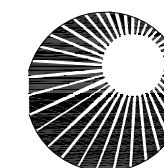


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SCALE IN FEET



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Progress Print
Not For Construction



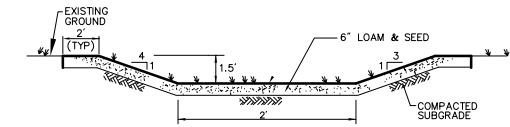
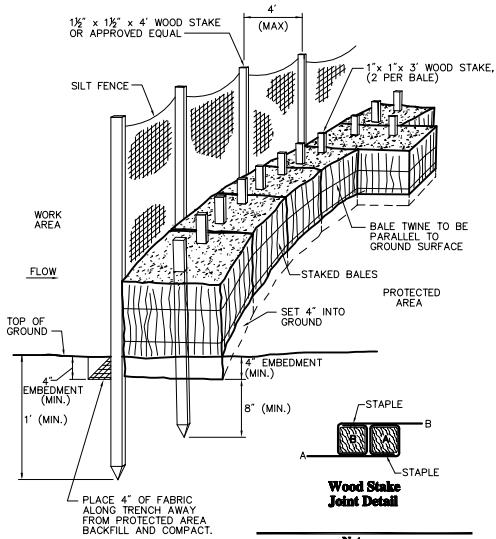
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Transportation • Land Development • Environmental Services
54 Tullio Place, Middletown, Connecticut 06457-1847
Tel: 860 632-1500 • Fax: 860 632-7879

PLANS AND SPECIFICATIONS ARE SUBJECT TO REVISIONS PENDING FINAL SITING COUNCIL APPROVAL

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GENERATED
DWG

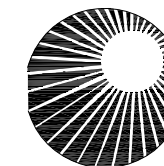
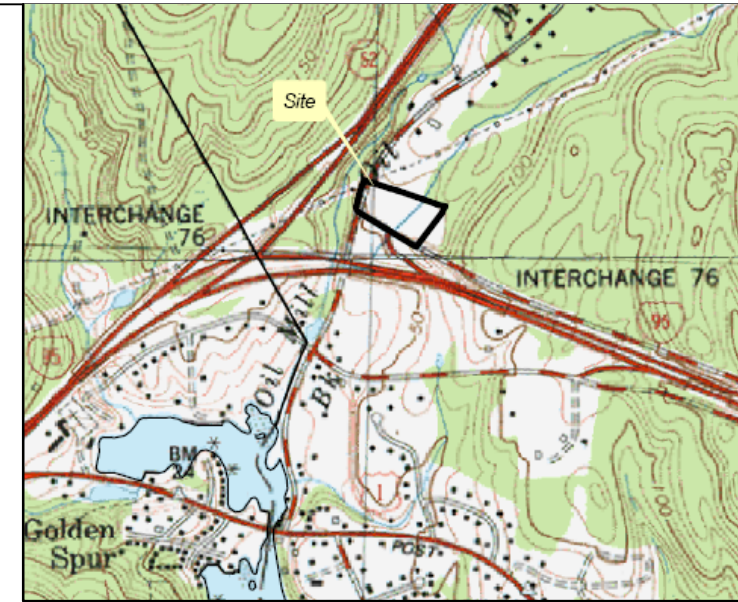
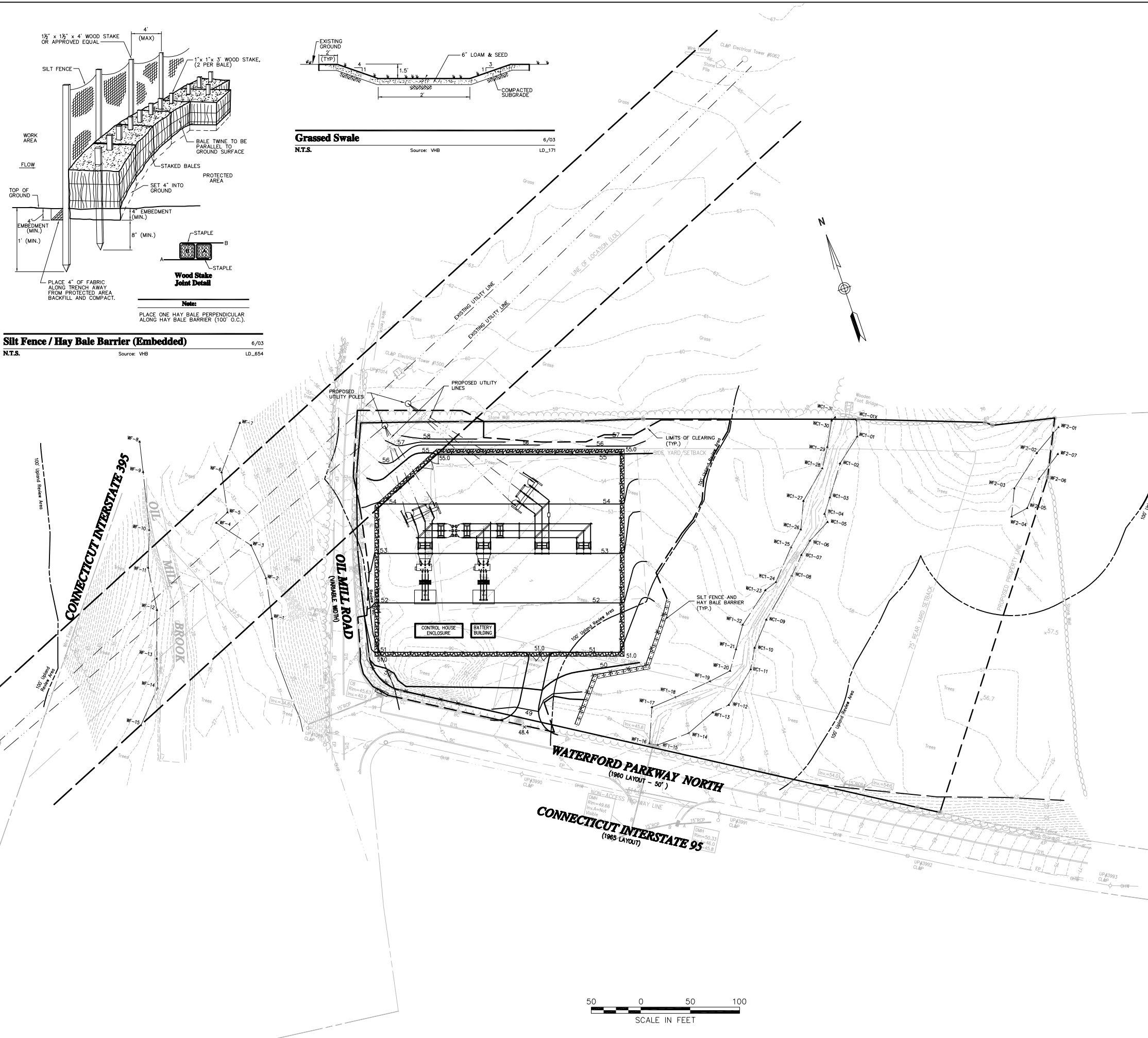
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| | | | | FOR THE CONNECTICUT LIGHT & POWER COMPANY | | | |
| | | | | TITLE Layout Plan Waterford Substation Waterford, Connecticut | | | |
| BY | CHKD | APP | APP | DATE | DATE | DATE | DATE |
| | | | | 02/21/08 | | | |
| SCALE | | | | 1"=50' | | DWG. NO. | |
| | | | | Cp-1 | | | |
| MF | NO | DATE | REVISIONS | BY | CHK | APP | APP |

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Grassed Swale
 N.T.S. Source: VHB 6/03 LD_171

Silt Fence / Hay Bale Barrier (Embedded)
 N.T.S. Source: VHB 6/03 LD_854



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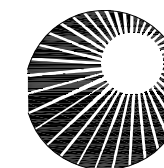
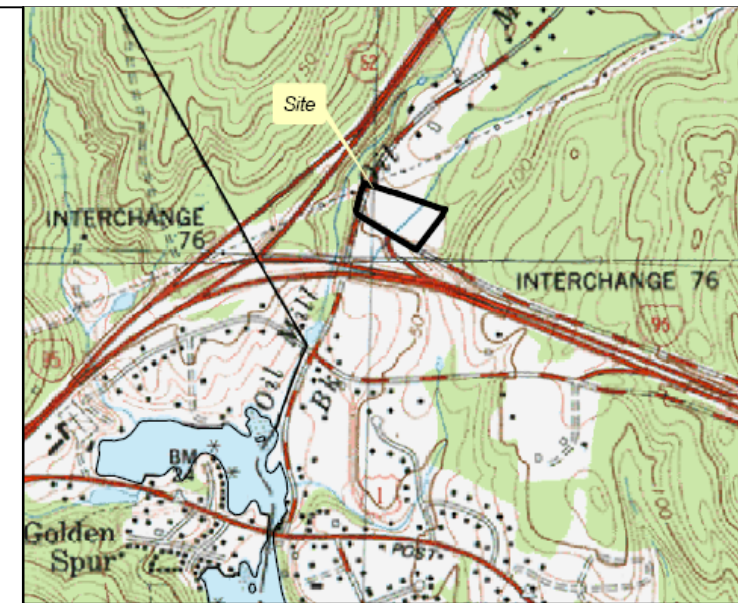
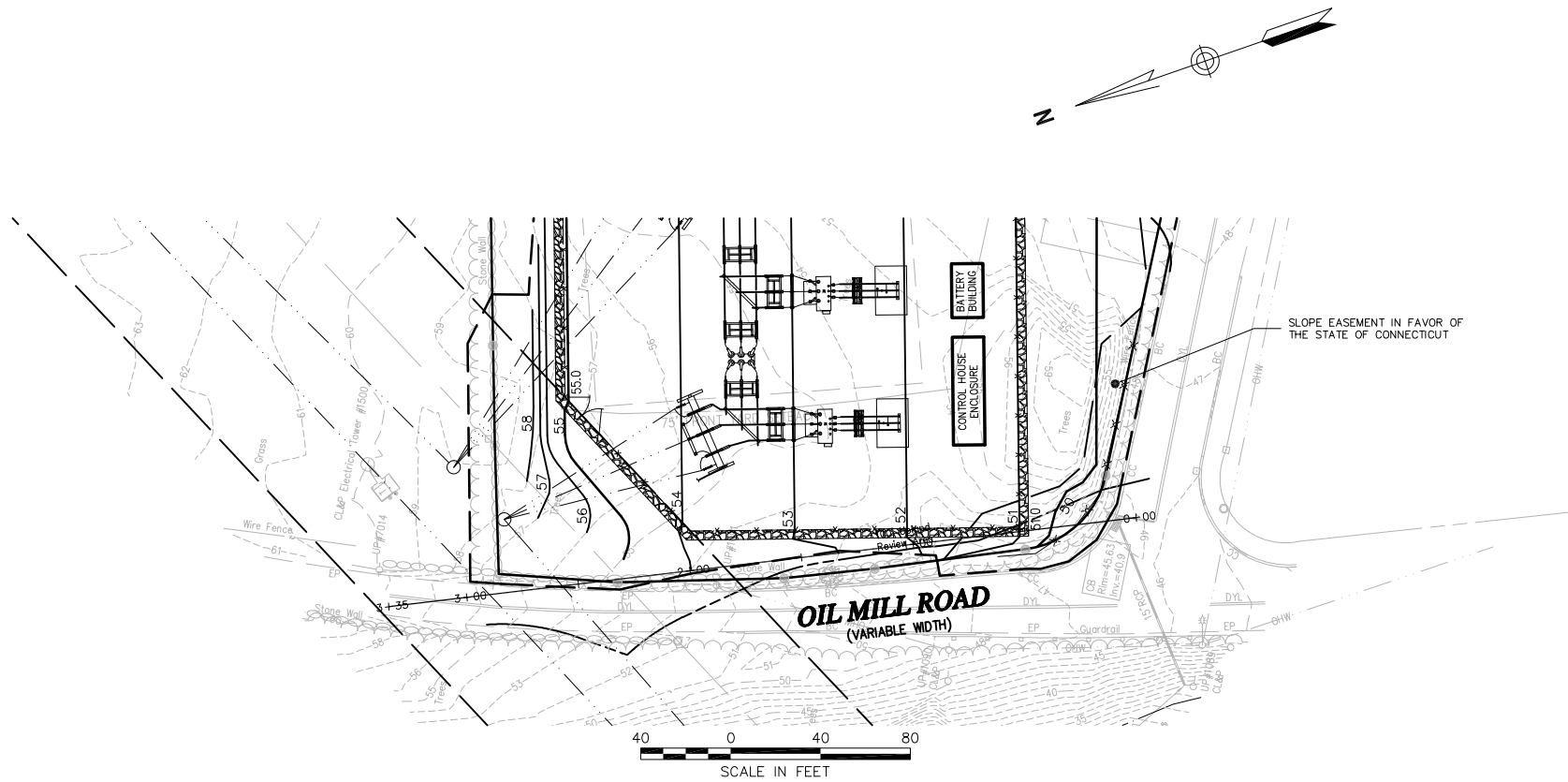


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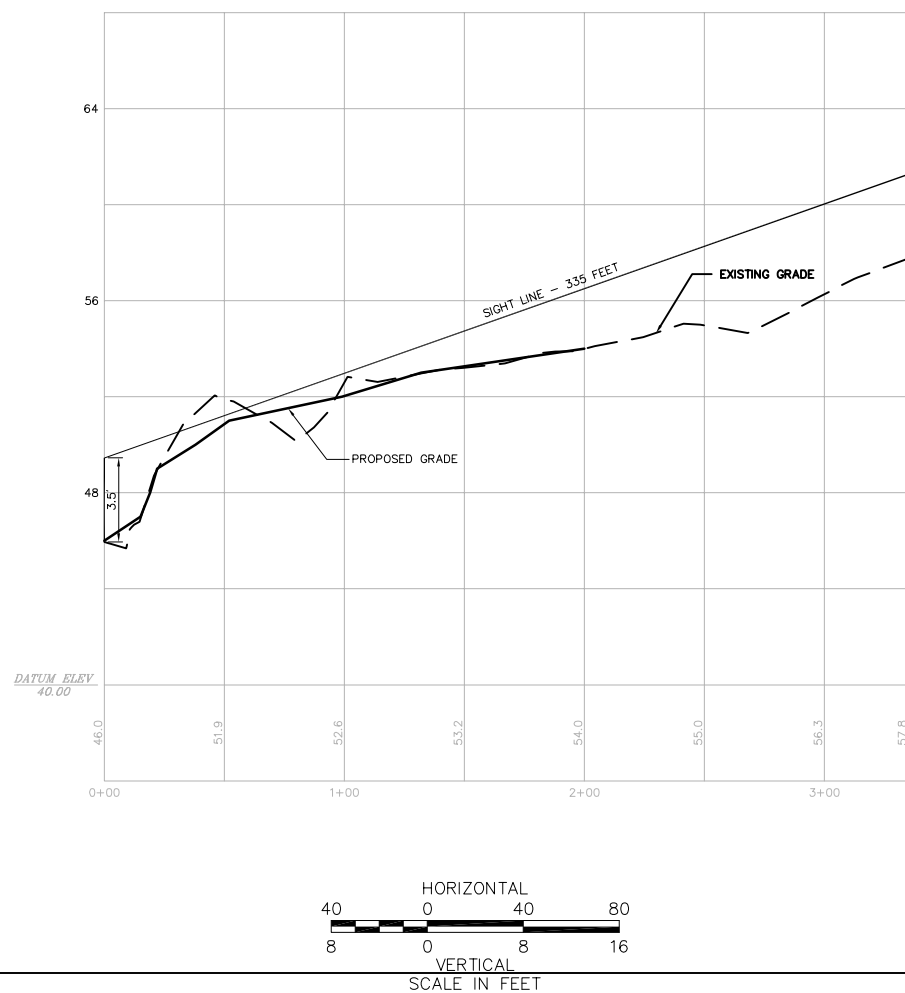


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| FOR THE CONNECTICUT LIGHT & POWER COMPANY | | | |
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| Waterford, Connecticut | | | |
| BY | CHKD | APP | APP |
| DATE 02/21/08 | DATE | DATE | DATE |
| SCALE 1"=50' | DWG. NO. | | CP-2 |
| MF NO. | DATE | REVISIONS | BY CHK APP APP |



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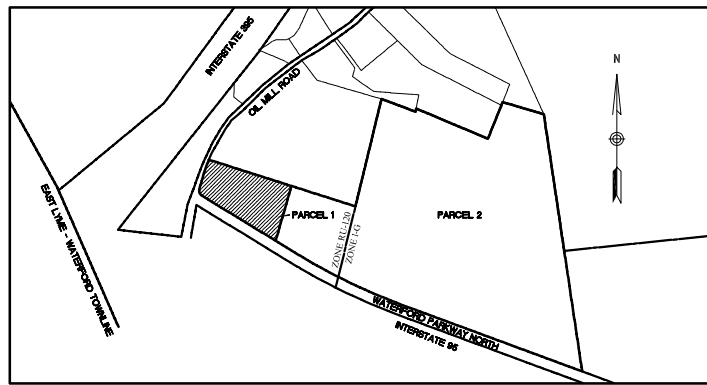
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| MF | NO | DATE | REVISIONS | BY | CHK | APP | APP |



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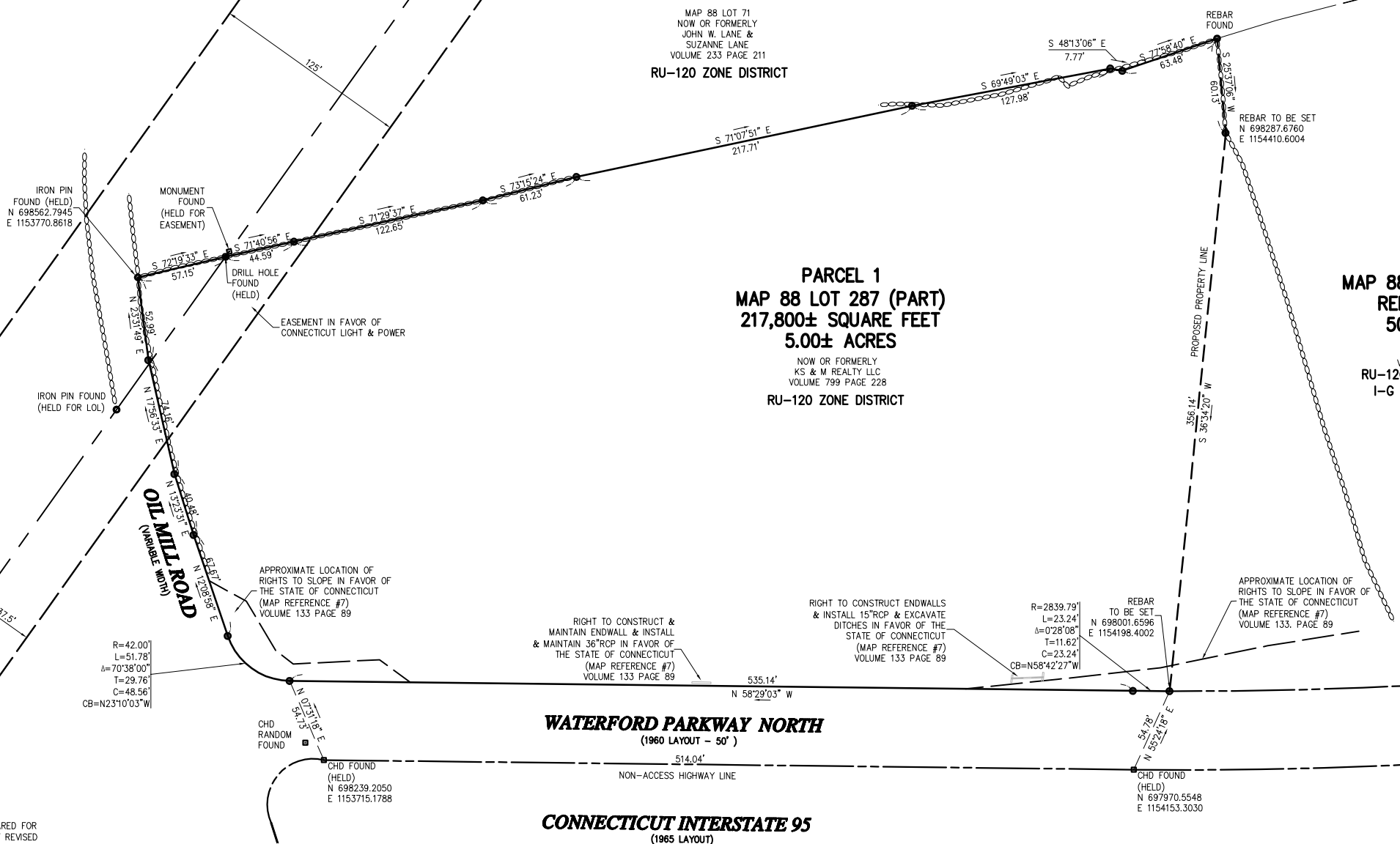
Area Map
(NOT TO SCALE)

Legend

- LINE OF LOCATION
- EASEMENT LINE
- STATE HIGHWAY LINE
- APPROXIMATE PROPERTY LINE
- TOWN LAYOUT LINE
- ASSESSORS PARCEL LINE
- PROPOSED PROPERTY LINE
- DRILL HOLE FOUND
- IRON PIN/REBAR FOUND
- MONUMENT FOUND
- REBAR TO BE SET



SCALE IN FEET



Map References

- MAP TITLED "PERIMETER SURVEY, PROPERTY OF ANNIE G. KRAVCHUK PREPARED FOR CARRAIGE HOUSE MERCEDES-BENZ" SHEET NO. S-25 DATED JULY 2004, LAST REVISED FEBRUARY 16, 2005, SCALE 1"=100'. PREPARED BY BOUNDARIES LLC.
- OVERALL SITE PLAN LAYOUT FOR PROPOSED AUTO DEALERSHIP. PREPARED BY E.H. WENKE & ASSOCIATES, P.C. SHEET S-06, SCALE 1"=100', DECEMBER 2003.
- MAP TITLED "COHANZIE JCT. - FLANDERS S/S 115 KV LINE PLAN & PROFILE" BY NORTHEAST UTILITIES SERVICE CO. D.W.C. NO. 01087-10002 DATED 12/30/71 SHEET 3 OF 4
- MAP TITLED "MAP SHOWING EASEMENT AREA TO BE GRANTED TO CONNECTICUT LIGHT AND POWER COMPANY ACROSS THE PROPERTY OF JOHN W. AND SUZANNE M. LANE #71 OIL MILL ROAD WATERFORD, CT" PROJECT NUMBER 00-346-460 BY DIVERSIFIED TECHNOLOGY CONSULTANTS DATED 7/2/02
- MAP TITLED "LOCATION OF RIGHT OF WAY OF THE CONNECTICUT LIGHT & POWER COMPANY ACROSS THE PROPERTY OF ANDREW DOMBROWSKI & ESTATE OF MARY E. DOMBROWSKI" DATED MAY 1943
- MAPS TITLED "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF WATERFORD INTERSTATE ROUTE 95 FROM EAST LYME TOWN LINE EASTERLY TO TYKE LANE" DATED OCTOBER 18, 1965 NUMBER 152-12 SHEET NUMBER 1 AND 2 OF 5
- MAP TITLED "TOWN OF WATERFORD MAP SHOWING LAND, EASEMENTS & RIGHTS OF ACCESS ACQUIRED FROM ANNIE G. KRAVCHUK" PROJECT NO. 152-55 DATED SEPTEMBER 1960, SHEET 1 OF 4

Zoning Summary Chart - Parcel 1

| Zoning District(s): RU-120 | Required | Provided |
|----------------------------|------------|-------------|
| MIN. LOT AREA | 120,000 SF | 217,000± SF |
| FRONTAGE | 150 FT | 235.3± FT |
| FRONT YARD SETBACK | 75 FT* | NA |
| SIDE YARD SETBACK | 30 FT | NA |
| REAR YARD SETBACK | 75 FT | NA |
| MIN. LOT WIDTH | 200 FT | 277.5±' |
| MAX. BUILDING HEIGHT | 35 FT | NA |
| MAX. BUILDING COVERAGE | 15% | NA |

Zoning Summary Chart - Parcel 2

| Zoning District(s): RU-120 & I-G | Required R-120 | Required I-G | Provided |
|----------------------------------|----------------|--------------|--------------|
| MIN. LOT AREA | 120,000 SF | 40,000 SF | 50.28 ACRES± |
| FRONTAGE | 150 FT | 125 FT | 2,490± FT |
| FRONT YARD SETBACK | 75 FT* | 150 FT** | NA |
| SIDE YARD SETBACK | 30 FT | 30 FT | NA |
| REAR YARD SETBACK | 75 FT | 50 FT | NA |
| MIN. LOT WIDTH | 200 FT | 150 FT | 2350± FT |
| MAX. BUILDING HEIGHT | 35 FT | 40 FT | NA |
| MAX. BUILDING COVERAGE | 15% | 40% | NA |

* FRONT YARD - 50 FEET, EXCEPT WHEN LOTS FRONT A STATE HIGHWAY, THE MINIMUM SETBACK SHALL BE 75 FEET.
 ** FRONT YARD - 75 FEET, EXCEPT WHEN LOTS ABUTTING FRONTAGE ROAD PARALLELING INTERSTATE 95, THE MINIMUM FRONT YARD SETBACK SHALL BE 150 FEET.

THIS SURVEY AND MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

THIS IS A SUBDIVISION MAP CONFORMING TO A HORIZONTAL CLASS A-2 ACCURACY. THE BOUNDARY DETERMINATION IS A RESURVEY AND A SUBDIVISION SURVEY.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON. THIS PLAN IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL.

| No. | Revision | Date | Appr. |
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Waterford Parkway North & Oil Mill Road

Waterford, Connecticut
 Proposed Property Division Map

Drawing Title
 Property Survey

Drawing Number
Sv-1
 Sheet of 2
 Project Number
 41357



CHRISTOPHER C. DANFORTH, L.S. #70118 DATE