

**PETITION TO THE  
CONNECTICUT SITING COUNCIL FOR DECLARATORY RULING**

**FOR THE HOUSATONIC RIVER CROSSING 115 kV TRANSMISSION LINE  
REPLACEMENT IN  
STRATFORD & MILFORD, CONNECTICUT**

**SUBMITTED BY  
THE UNITED ILLUMINATING COMPANY**

**January 30, 2015**

STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

PETITION OF THE UNITED ILLUMINATING : PETITION NO. \_\_\_\_\_  
COMPANY FOR A DECLARATORY RULING THAT :  
NO CERTIFICATE OF ENVIRONMENTAL :  
COMPATIBILITY AND PUBLIC NEED IS REQUIRED :  
REGARDING REPLACEMENT/RELOCATION OF :  
115kV TRANSMISSION LINES CROSSING THE :  
HOUSATONIC RIVER IN STRATFORD & MILFORD, : JANUARY 30, 2015  
CONNECTICUT :

**PETITION FOR DECLARATORY RULING**

This petition is filed pursuant to Section 16-50k of the Connecticut General Statutes and Section 16-50j-39 of the Regulations of Connecticut State Agencies requesting a determination from the Connecticut Siting Council (the “Council”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is necessary for The United Illuminating Company’s (“UI”) proposed Housatonic River Crossing 115 kV Transmission Line Replacement Project (the “Project”). The 8 [REDACTED] A and 8 [REDACTED] B lines connect the [REDACTED] Substation in Stratford and [REDACTED] Station in the City of Milford. These lines are currently supported on steel lattice extensions (commonly referred to as “bonnets”) that are attached on top of the Connecticut Department of Transportation (“CDOT”) rail bridge lattice catenary structures. Originally built in the early 1900s, some of these catenary structures are over one hundred years old. UI attached its wires to these structures in the 1940s (*see* Figure A).

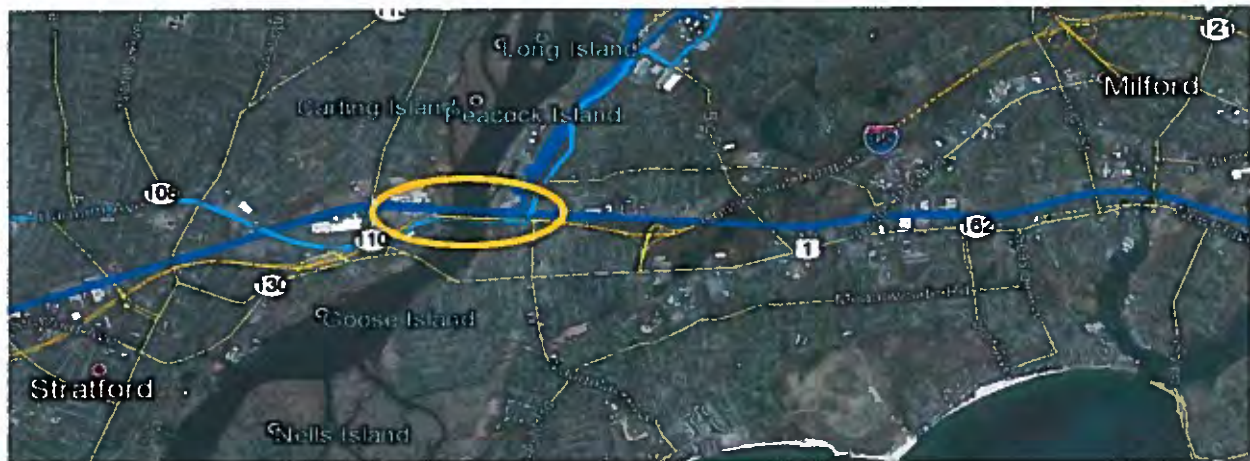


**Figure A: Existing Structure**

The Project will replace the existing bonnets with new tubular steel monopoles for both lines between the western bank of the Housatonic River on the Stratford side to the [REDACTED] Station in Milford on the eastern bank, for a total distance of approximately 1.0 Circuit miles. Eight of the new structures will be located within CDOT's existing right-of-way while 6 structures will be located within proposed easements on private property to the north of the existing bridge structure (2 Structures [REDACTED] on the west bank of the Housatonic River and 4 structures [REDACTED] [REDACTED] on the east bank). UI submits that a Certificate is not required because the Project, although it encompasses "modifications" of a "facility," will not have a substantial adverse environmental effect.

In 2009, CDOT performed a structural analysis of both the bridge structure and existing catenary structures 862, 862A, and 863 crossing the Housatonic River to determine if the existing structures meet current National Electrical Safety Code (“NESC”) design criteria, including an analysis of three loading scenarios: ice and wind, extreme wind and extreme ice and wind. Widespread overstresses were identified in all loading scenarios. A key contributor to the overloading was determined to be the bonnet extension and conductors UI installed in the 1940’s.

The Project covers two overhead transmission lines: 1) from the western bank of the Housatonic River adjacent to the [REDACTED] Property in Stratford to the [REDACTED] Station in Milford, where the 8 [REDACTED] A (north section) line extends for approximately .5 miles east to west and 2) from the western bank of the Housatonic River adjacent to the Ashcroft Property in Stratford to the Devon Tie Switching Station in Milford, where the 8 [REDACTED] B (south Section) line extends east to west for approximately .5 miles (*see* Figures 1 and 2).



**Figure 1: Overview map of Housatonic River Crossing 115 kV Transmission Lines**





**Figure 2: Housatonic River Crossing to Devon Tie Substation**

UI is proposing to upgrade the 115-kV transmission lines by relocating its facilities off of 14 steel columns on CDOT's rail bridge catenary structures onto 14 new tubular steel monopole structures as follows:

1. For the north circuit, the 8 [REDACTED] A line is currently constructed as a single circuit, with one conductor per phase. The existing seven 115-kV steel bonnets that are attached to the top of the CDOT's rail bridge catenary structures and the associated conductors will be replaced by a single set of conductors in a vertical orientation supported by seven 115-kV tubular steel monopoles. Four of the new monopoles will be located within the MNR ROW. The remaining three structures will be located on proposed easements within the [REDACTED] property on the western bank (one monopole) and the [REDACTED] property on the eastern bank (two monopoles).

2. For the South Circuit, the 8 [REDACTED] B line, the existing 7 115-kV steel bonnets that are attached to the top of the Metro North Railroad (“MNR”) catenary structures and the associated conductors will be replaced by seven 115-kV tubular steel monopoles. Four of the new monopoles will be located within the MNR ROW. The remaining three structures will be located on proposed permanent easements within the [REDACTED] property on the western bank (one monopole) and the [REDACTED] property on the eastern bank (two monopoles).

While the above-referenced work constitutes a “modification” of the existing facility, as set forth in the attached report entitled “Housatonic River Crossing 115 kV Transmission Line Replacement Project Supplemental Report in Support of the Petition for Declaratory Ruling” (the “Supplemental Report”), UI believes that there will be no substantial adverse environmental impact associated with the proposed Project for the following reasons:

- CDOT’s existing right-of-way (“ROW”) will be used for the majority of the replacement structures. Remaining structures will be located in proposed easement locations on the [REDACTED] [REDACTED] properties on the west and east banks (respectively) of the Housatonic River.
- There will be no permanent effects on wetlands and watercourses from the installation of the new structures.
- There will be no permanent effects on wetlands from access roads.
- The Peregrine Falcon will be protected via established protocols and communication through the CT DEEP Wildlife Division. *See Attachment C.*
- No effects will occur to fisheries, groundwater and surface water resources; no work is planned in an aquifer protection area or within stream channel encroachment lines.
- The visual character of the MNR ROW will not adversely change because there will be no significant impact to the visual character. *See Attachment A.*

- EMF levels will remain in compliance with the Council's EMF best management practices. See Attachment H.

Based on the above and as more fully described in the Supplemental Report, UI respectfully submits that the proposed Project will not have a substantial adverse environmental impact and does not warrant submission of a full Certificate Application to the Council. Accordingly, UI requests that the Council declare that the proposed Project described herein will not have a substantial adverse environmental effect and, therefore, that no Certificate of Environmental Compatibility and Public Need is required.

The name, title, addresses and telephone number of the person to whom correspondence and communication in regard to this petition are to be addressed is:

Richard J. Reed, PMP  
Vice President – Engineering & Project Excellence  
The United Illuminating Company  
180 Marsh Hill Road  
Orange, CT 06477  
Telephone: 203.926.4500  
Email: rich.reed@uinet.com

The name, address, and telephone of the UI's attorney is:

Bruce L. McDermott  
Managing Counsel - Operations  
UIL Holdings Corporation  
157 Church Street  
P.O. Box 1564  
New Haven, CT 06506-0901  
Telephone: 203.499.2422  
Email: bruce.mcdermott@uinet.com

Very truly yours,

THE UNITED ILLUMINATING COMPANY

By:  \_\_\_\_\_

Richard J. Reed, PMP

**HOUSATONIC RIVER CROSSING 115 KV TRANSMISSION LINE  
REPLACEMENT PROJECT  
SUPPLEMENTAL REPORT  
IN SUPPORT OF THE PETITION FOR A DECLARATORY RULING**

**SUBMITTED BY**

**THE UNITED ILLUMINATING COMPANY**

**January 30, 2015**

**HOUSATONIC RIVER CROSSING 115 KV TRANSMISSION LINE  
REPLACEMENT PROJECT  
SUPPLEMENTAL REPORT  
IN SUPPORT OF THE PETITION FOR A DECLARATORY RULING**

**CONTENTS**

EXECUTIVE SUMMARY .....	1
A. PROJECT BACKGROUND .....	2
B. TECHNICAL DESCRIPTION.....	2
B.1. EXISTING TRANSMISSION LINES AND SUPPORTING STRUCTURES.....	2
B.2. PROPOSED TRANSMISSION LINE RE-ROUTING AND STRUCTURE UPGRADES.....	5
C. ENVIRONMENTAL EFFECTS.....	7
C.1. AIR QUALITY AND NOISE.....	7
C.2. INLAND WETLANDS/WATERCOURSES AND FLOODPLAINS .....	7
C.3. SOIL AND SEDIMENT EROSION CONTROL APPLICATIONS AND TECHNIQUES .....	9
C.4. SPECIES AND VEGETATION.....	9
C.4.1 VERNAL POOL AND AMPHIBIAN HABITAT BREEDING AREAS .....	10
C.5. SURFACE AND STORM WATER.....	10
C.6. SOIL MANAGEMENT.....	10
C.7. GROUNDWATER .....	11
C.8. VISUAL.....	11
C.9. CULTURAL REVIEW AND STUDY .....	11
C.10. CONFIGURATION OF STRUCTURES NEAR AN AIRPORT.....	11
C.11. FEDERAL, STATE AND LOCAL LAND USE PLAN .....	12
C.12. ACCESS ROADS.....	12
C.13. ENVIRONMENTAL SUMMARY .....	13
D. CONSTRUCTION .....	14
D.1. OVERVIEW OF CONSTRUCTION .....	14
D.2. CONSTRUCTION PROCEDURES.....	14
D.3. RIGHT-OF-WAY VEGETATION CLEARING.....	14
D.4. CONSTRUCTION SCHEDULE.....	15
E. ELECTRIC AND MAGNETIC FIELDS .....	16
F. MUNICIPAL AND COMMUNITY OUTREACH.....	25
G. CONCLUSION .....	26

ATTACHMENTS:

Attachment A – Representative Photos

Attachment B – Key Map, Aerial Segment Maps and Descriptions

Attachment C – Correspondence with Connecticut Department of Energy & Environmental Protection

Attachment D – Cultural Review and Study

Attachment E – Correspondence with The State Historic Preservation Office (SHPO)

Attachment F – Vernal Pool Memo

Attachment G – Wetland Delineation Report

Attachment H – EMF

Attachment I – Letters from City Officials

Attachment J – Signed Notice Letters



## **EXECUTIVE SUMMARY**

The Housatonic River Crossing 115 kV Transmission Line Replacement Project (“Project”) will not result in any substantial adverse environmental effect for the following reasons (references in parentheses are to the Sections in this Supplemental Report):

1. CDOT’s existing right-of-way (“ROW”) will be used for the installation of eight monopole structures. (A)
2. A proposed permanent easement within the Ashcroft property on the west bank of the Housatonic River will be used for the installation of two monopole structures. (A)
3. A proposed permanent easement within the NRG property on the east bank of the Housatonic River will be used for the installation of four monopole structures. (A)
4. There will be no permanent effects on wetlands and watercourses from the installation of the new structures. (C)
5. There will be no permanent effects on wetlands from access roads. (C)
6. The Peregrine Falcon will be protected via established protocols and communication through the Connecticut Department of Energy and Environmental Protection (“CT DEEP”) Wildlife Division. (C)
7. No effects will occur to fisheries, groundwater and surface water resources; no work is planned in an aquifer protection area or within stream channel encroachment lines. (C)
8. The visual character of the ROW will not adversely change because although structure heights are increasing there will be no significant impact to the visual character. (A)
9. EMF levels will remain in compliance with the Council’s EMF best management practices. (H)

## **A. PROJECT BACKGROUND**

Two UI owned 115 kV transmission lines, designated as 8█A-1 and 8█B-1, connect the █ switching station in Milford and the █ substation in Stratford. These lines cross over the Housatonic River on three (3) nominally two hundred (200) foot tall lattice structures. These structures designated as 862, 862A, and 863 were built in approximately 1912 for the Stamford-New Haven Electrification project by the New York, New Haven & Hartford Railroad Company. These structures are owned by CDOT. UI entered into an agreement with the State in 1940 when UI first attached 69 kV transmission lines to the catenaries. In the 1960s the lines were upgraded to 115 kV and have been in operation ever since.

Under a recent UI project, structure 862A was evaluated to determine if it met current NESC loading requirements and if it is capable of withstanding one hundred thirty mile per hour (130mph) transverse wind loads. This evaluation was based on structural drawings from the original construction project. The analysis indicated that structure 862A failed under the NESC Heavy condition (0.5" radial ice, 4 lb./ft<sup>2</sup> wind pressure at 0°F) and under hurricane conditions. As a result further investigation into these structures was deemed necessary.

CDOT and Metro-North Railroad (MNR) were contacted to obtain the most recent inspection report. A condition inspection and structural analysis of the Devon Bridge High Towers (862, 862A, and 863) was performed by Stantec, Inc., for the CDOT Office of Rail, in 2009. The analysis showed widespread overstress on each structure attributed to UI's transmission facilities, and ultimately it was recommended that all three structures be replaced.

After reviewing these reports from Stantec, UI met with CDOT and MNR to determine if any projects were underway or being planned to repair or replace these structures. CDOT indicated that it was in the initiation phase of a project to replace the bridge beginning in 2020.

Given the reported condition of the structures noted in the CDOT inspection reports, the structures' inability to comply with the current version of the NESC and the need to support the State's bridge reconstruction project, UI believes it is necessary to begin relocating its facilities off of structures 862, 862A, and 863 onto independent transmission structures immediately.

## **B. TECHNICAL DESCRIPTION**

### **B.1. EXISTING TRANSMISSION LINES AND SUPPORTING STRUCTURES**

UI's circuits # 8█A and 8█B, each consisting of 3 - 1272 45/7 SSAC conductors and 1- 4/0 copper shield wire, are supported by the lattice structures # 862, 862A and 863. CDOT's / MNR's signal and feeder wires are also supported by these structures. These structures, about 200 feet tall, are built over the Housatonic River and are depicted by the following Figure B1.

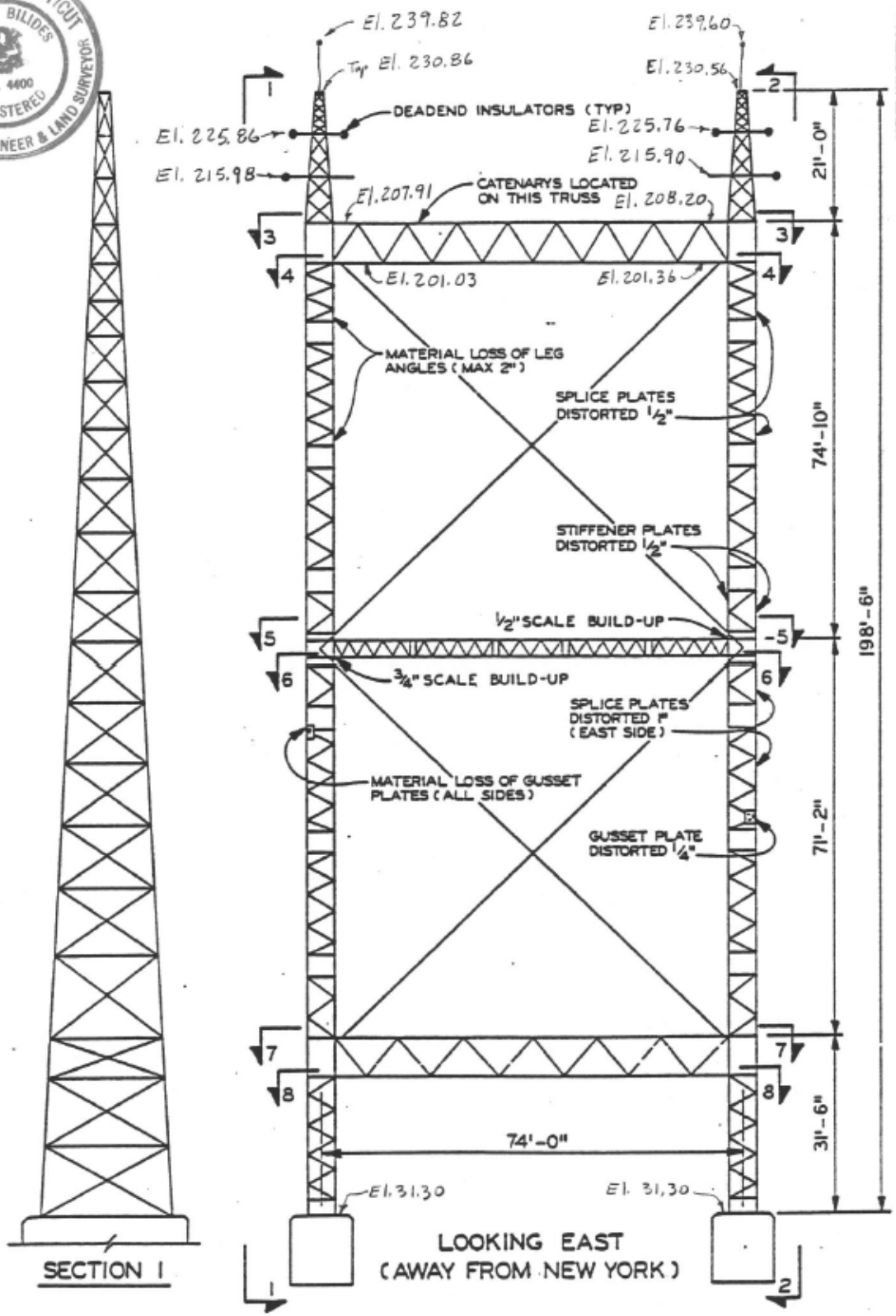
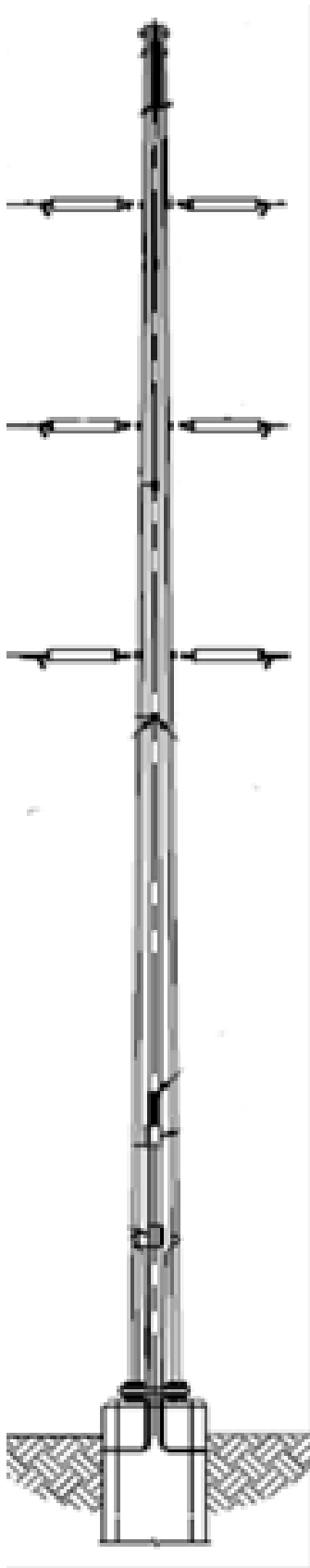


Figure B-1: Existing double circuit dead-end steel lattice structure



**Figure B-2: Proposed Single Circuit Dead End Steel Monopole (95 to 180 feet)**

## B.2. PROPOSED TRANSMISSION LINE RE-ROUTING AND STRUCTURE UPGRADES

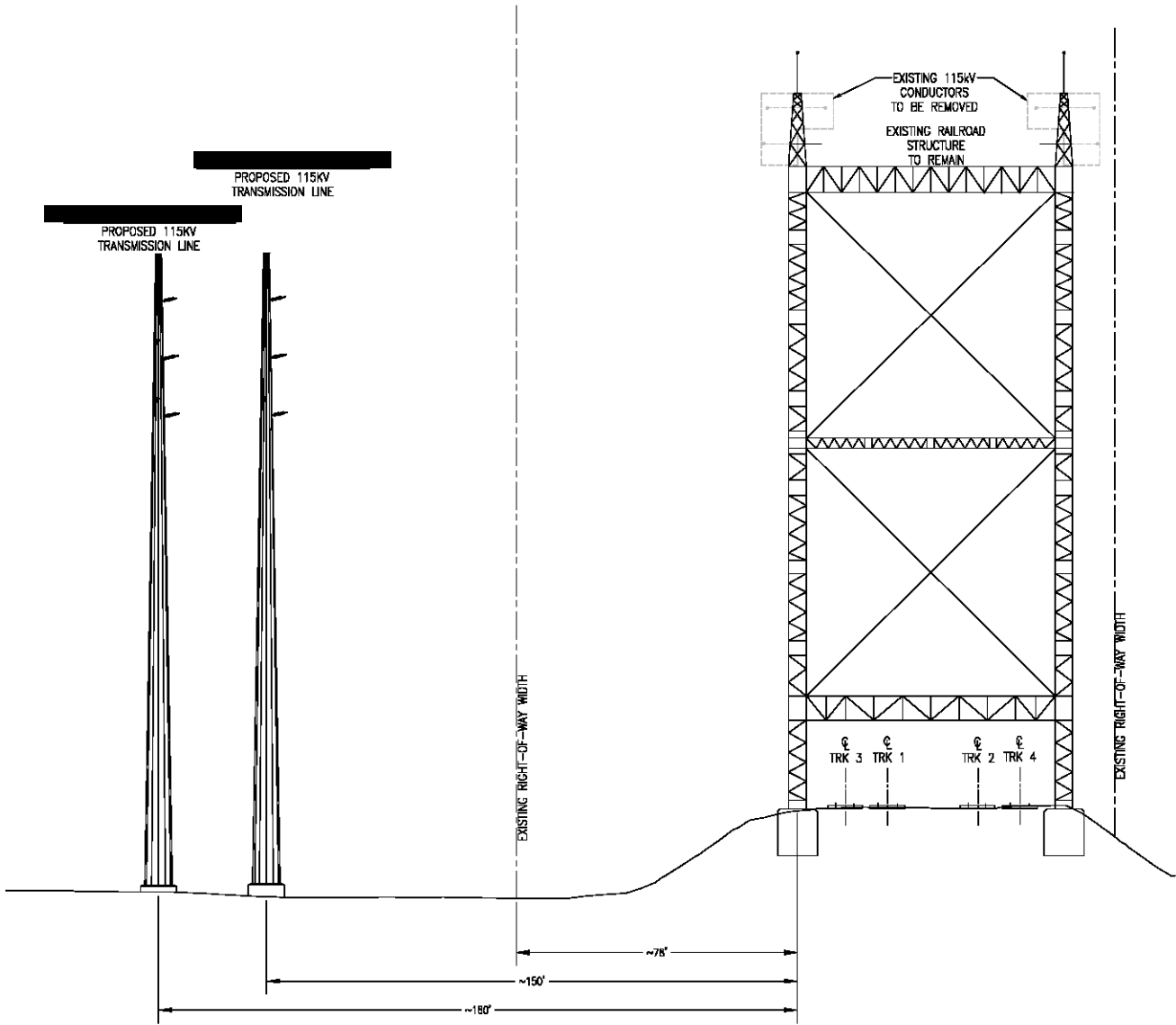
Due to the aforementioned reasons described under “Project background” UI plans to relocate its two circuits now spanning over the Housatonic River approximately 150 feet north of the existing bridge to accommodate construction of a future replacement bridge. The details of the proposed Project are as follows:

### B.2.1. 8█ A LINE

The 8█ A line will occupy the northern side of the new 175 feet ROW, and will be offset from the existing structure centerline by about 180 feet. The new structures will have an average height of about 135 feet (ranging from 95 to 180 feet). A rendering of proposed single deadend steel monopole is depicted in Figure B-2 above.

### B.2.2. 8█ B LINE

The 8█ B line occupies the southern side of the ROW, and will be offset from the existing north structure centerline by about 150 feet. The new structures will have an average height of about 135 feet (ranging from 100 to 180 feet). Generally the ROW varies from location to location. A cross-section of the existing and proposed ROW conditions is depicted in Figure B-3 below.



**Figure B-3: Cross-Section – Existing & Proposed Conditions**

The above mentioned two circuits will be spanning over two new properties [REDACTED] on eastern side of the River and [REDACTED] towards the western side of the River. These proposed overhead lines will align with the existing structures and transmission lines along the CDOT/MNR ROW towards the western end of the project while entering into UI's [REDACTED] Substation towards the eastern end of the Project.



## **C. ENVIRONMENTAL EFFECTS**

Based on a review of the data outlined within this section, UI believes that there will not be a substantial environmental impact to the State of Connecticut or its residents. The project is proposing to construct new transmission facilities approximately 150 feet north of the existing bridge structure. The project will cover approximately 0.5 linear miles (1.0 Circuit miles) from west to east. The project will span the Housatonic River, east from the [REDACTED] Power Station generating facility located at [REDACTED] Naugatuck Ave., Milford, and west from the [REDACTED] property located at [REDACTED] East Main St., Stratford.

At the close of the Project, all areas which were impacted due to construction will be restored as best as possible to their original state. Restoration includes but is not limited to seeding (*upland or wetland*), mulching and the stabilization of soils.

### **C.1. AIR QUALITY AND NOISE**

UI reviewed the proposed project and determined that there are no significant concerns or risks as it relates to air quality or noise.

Since the duration of the project is minimal, the air quality effects will be extremely minor. The effects will be a result of fugitive dust emissions from vehicle traffic, construction activities and exhaust from vehicles. UI is driven to maintain a high level of compliance and should fugitive dust become an issue, dust suppression techniques such as water or the chemical application of “Top-Seal” will be implemented to the affected area. UI is also required to manage any fugitive dust emissions through its Stormwater Pollution Control Plan.

Since one section of the Project will occur in Milford, which does not have a noise ordinance in place, UI will default to the general guidelines outlined by the Connecticut General Statutes §§ 22a-69.1 through 22a-69.7. The other section of the Project will be located in Stratford, which does have a Noise Ordinance. UI will work to the best of their abilities to abide by the document titled “TOWN OF STRATFORD NOISE CONTROL ORDINANCE, as passed by the Stratford Town Council dated Monday July 28, 1986<sup>1</sup>.”

### **C.2. INLAND WETLANDS/WATERCOURSES AND FLOODPLAINS**

UI performed the necessary wetlands and resource area survey for the presence of inland and tidal wetlands, waterways, vernal pools and floodplains/ways within the proposed new ROW. The following methods were used to determine the presence of inland/tidal wetlands, vernal pools, waterways and floodplains/ways:

- a) United State Department of Agriculture (USDA) Soil Survey Manual (1993),
- b) Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeastern Region (Version 2.0, January 2012), and
- c) CT DEEP Inland Wetlands and Watercourse Act (Connecticut General Statutes §§ 22a-36 through 45).

---

<sup>1</sup> See Town of Stratford Noise Control Ordinance Chapter 142 §§ 142-1 through 142-11.

Additionally, UI used the United States Army Corp of Engineers Highway Methodology Workbook to better understand the functionality of each wetland. The following are 13 specific functions used to assess each of the wetlands within the Project area:

- a) Groundwater Recharge/Discharge,
- b) Floodflow Alteration
- c) Fish/Shellfish Habitat
- d) Sediment/Toxicant Retention,
- e) Nutrient Removal/Retention/Transformation,
- f) Production Export,
- g) Sediment/Shoreline Stabilization,
- h) Wildlife Habitat,
- i) Recreation,
- j) Education/Scientific Value,
- k) Uniqueness/Heritage,
- l) Visual Quality/Aesthetics, and
- m) Endangered Species.

During the delineation it was discovered that three resource areas were identified; one inland scrub-shrub deciduous seasonal wetland, one intertidal emergent wetland and one estuarine sub tidal watercourse. Based on an outline of the proposed project’s construction footprint UI anticipates having 520 square feet of temporary wetland impact (see Table 1). The temporary impact to wetland 1 (as referred to in the Wetland Delineation Report), will be from the placement of construction (i.e., swamp) mats. *See* Attachment G. Additional measures to mitigate and reduce further impact to this and the other resource areas are as follows; silt fence, hay-bales, diversionary swales erosion blankets and the use of track vehicles.

Table 1 – Estimated Impact to Resource Areas

	Temporary Impact	Permanent Impact	Secondary Impact
Work Pads	0	0	0
Access Roads	520	0	0
Structure(s)	0	0	0

### C.3. SOIL EROSION AND SEDIMENT CONTROL APPLICATIONS AND TECHNIQUES

Based on the proposed scope of the Housatonic River Crossing Project, UI intends to perform certain types of clearing and earth work such as: the development of access roads; the use of work pads; and the installation of foundations supporting the erection of the associated monopoles. Therefore, based on the State of Connecticut's General Permit for the Discharge of Stormwater and Remediation Wastewaters from Construction Activities (DEEP-WPED-GP-015), UI has submitted both a registration and Stormwater Pollution Control Plan (SWPCP) outlining UI's approach for managing erosion and sedimentation during construction. During the clearing, grading and construction activities, UI will ensure the implementation of the outlined soil erosion and sediment controls identified within the SWPCP are installed and maintained properly. UI also will comply with the CT DEEP document, "2002 Connecticut Guidelines for Soil Erosion and Sediment Control." Some of the control measures and preventive maintenance that is anticipated to be installed on the Project are as follows:

#### Control Measures:

- a. Installation of silt fence, hay bales,
- b. silt blankets,
- c. check dams,
- d. drainage swales, etc.,

Consistently maintain effective sediment and erosion control measures, monitor and perform inspections regularly along Project corridor during construction and post-construction.

#### Techniques:

- a. Minimize width of roadways and work pad/construction areas,
- b. Use of track equipment in sensitive or resource areas,
- c. Use of heavy equipment to compact soils in large areas,
- d. Vehicles will exit in same location they entered from.

All sediment and erosion controls will be maintained and monitored throughout the duration of the Project. Once UI completes the Project an inspection of the Project corridor will take place identifying the areas where stabilization techniques and restoration will be performed. UI will either maintain the previously implemented sediment and erosion control measures or install new ones in those areas that require remediation post-construction until the area has been stabilized and restored. Inspections of these areas will follow the same format as those inspections made during the construction of the Project.

### C.4. SPECIES AND VEGETATION

Based on a thorough review of the Project area, there will not be any negative impacts to either species or vegetation. Based on the historic use of the MNR ROW, typically there is low growth vegetation that is maintained by both MNR and UI due to Federal and State standards. Any invasive trees growing off of the ROW and breaching the corridor are also maintained by both MNR and UI and trimmed to the Federal and State standards.

On November 20, 2013, UI submitted a National Diversity Database (NDDDB) request to the CT DEEP Wildlife Division. CT DEEP's response identified one species within the proposed Project footprint. The species that is recognized within the Project area is the Peregrine Falcon (*Falco peregrinus*). The species is identified as a "Threatened Species." The term "Threatened Species" is defined as the following: any native species documented by biological research and inventory to be likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state and to have no more than nine occurrences in the state, and any species determined to be a "threatened species" pursuant to the federal Endangered Species Act, except for such species determined to be endangered by the Commissioner in accordance with section 4 of this act any species which are vulnerable to endangerment in the near future.<sup>2</sup> Based on correspondence with CT DEEP staff (*see* Attachment C), UI intends to perform the following:

- a. Hire a subject matter expert to monitor the falcon when performing construction around the identified habitat during the noted breeding season (March 1 through July 31),
- b. Minimize to the best of UI's abilities the noise during construction activities.

UI submitted its annual renewal on December 11, 2014 to the CT DEEP Wildlife Group in anticipation of the length of the Project. UI intends to maintain the natural habitat of the identified species to the best of its capability and cause no adverse impact to its surroundings.

#### C.4.1 VERNAL POOL AND AMPHIBIAN HABITAT BREEDING AREAS

Based on a report dated May 16, 2014, there were no vernal pools or amphibian habitat breeding areas observed at the time of the survey. *See* Attachment F.

#### C.5. SURFACE AND STORM WATER

Based on the Project's anticipated surface area of impact of 5.1 acres, UI submitted a stormwater registration and SWPCP to the State of Connecticut for its proposed construction activities. UI has outlined many best management practices (i.e. diversionary swales, silt fence, hay bales, track pads) in its SWPCP to the State of Connecticut that will manage the surface and stormwater properly and cause minimal if not zero negative impact to the Project area.

#### C.6. SOIL MANAGEMENT

During a pre-characterization event in 2014, UI took multiple soil samples from both the Milford side and Stratford side of the Project. The samples were analyzed for waste profiling purposes relating to the management of spoils. Based on the concentrations of soil from the samples taken within the defined Project scope, all material will be transported offsite to a permitted landfill for disposal. If material needs to be stored onsite due to logistical issues, all spoils will be stockpiled in a hay-bale corral and covered by poly/plastic.

---

<sup>2</sup> [http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323486&deepNav\\_GID=1628](http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323486&deepNav_GID=1628)

## C.7. GROUNDWATER

During a pre-characterization event in 2014, UI took one groundwater sample from the Milford side and one groundwater sample from the Stratford side of the Project. The samples were analyzed for comparison to the appropriate CT DEEP General Permit for groundwater management. Based on the results of the groundwater sample and proposed depths of the piers required for the construction of the towers, UI must to obtain the CT DEEP General Permit – Groundwater Remediation Wastewaters to Sanitary Sewer. UI will also work with the local water pollution control authorities for the discharge of this water.

## C.8. VISUAL

UI performed a visual impact study of the proposed Project area and concluded the view shed in the vicinity of the Project will not change significantly. Structure heights along the rail will increase, however structures spanning the river will be lower than the existing river crossing structures, resulting in no significant impact to the visual character.

## C.9. CULTURAL REVIEW AND STUDY

In 2014, UI performed a Cultural Resource Review/Study of the proposed Project area that consisted of:

1. Gathering data regarding the identification of cultural resources situated within the vicinity of the Area of Potential Impact,
2. Investigating the proposed Project area for natural and historical characteristics,
3. Identifying culturally sensitive resources.

A “Project Review Form” was submitted to the Connecticut State Historic Preservation Office (CT SHPO) in March 2014. On May 27, 2014, UI received a letter from the CT SHPO office stating that a review of the Project was performed and no adverse effects on historic properties were identified. *See Attachment E.*

## C.10. CONFIGURATION OF STRUCTURES NEAR AN AIRPORT

Based on UI’s review, the closest airport to the Project is Igor Sikorsky Airport, located approximately 5.0 miles to the southwest. Our analysis indicated that the new structures will not be in the airplanes’ glide path. In addition, since the proposed structures are below 200 feet, height, no FAA mandated navigational strobe lights or any special painting of the proposed structures will be required. The Project is not anticipated to carry health and safety risks to airport patrons or property.

## C.11. FEDERAL, STATE AND LOCAL LAND USE PLAN

The MNR/UI existing ROW has been upheld as both a conduit for public transportation and electrical infrastructure for the past century. However, based on the need for UI to develop a more functional and secure Transmission system, the existing structures and lines are to be moved into a new ROW abutting the existing corridor. The Project's land use for the newly proposed ROW is consistent with local, state and federal initiatives. Therefore, based on UI's obligation while conducting work within a new corridor as it relates to land use initiatives, a Coastal Site Plan Review will be submitted for the Project to both Milford and Stratford.

## C.12. ACCESS ROADS

Based on UI's proposed access roads and associated work pads for the structures at both Devon Power in Milford and Ashcroft in Stratford, UI submits that it will face few challenges. However, a couple of the items such as earth work and clearing will need to be addressed in order to gain safe access, provide effective work pads and meet the necessary Federal clearance requirements once the permanent structures have been installed. All of the earth work is located within the upland areas and the majority of the vegetative cutting is also within this same area. However, some of the vegetative cutting will need to take place within the resource areas. Within these resource areas the vegetation will be cut and not grubbed. As described within Section C.2., only one small access road wetland impact, approximately 520 square feet is anticipated on the Project. This impact is located on the Ashcroft property within Wetland 1. UI has determined that based on its proposed design of both the access roads and work pads, it has effectively provided a construction project with minimal impacts.

UI will attempt to avoid any negative environmental impact to sensitive or resource areas such as: wetlands, vernal pools, and species habitats. To avoid any impact or to mitigate a potential one, UI will use the placement of temporary construction (or swamp) mats and certain best management techniques to reduce the impact to these areas. Also, note that based on the BL report (dated 5/19/2014), there were no vernal pools observed within the Project vicinity.

UI proposes that its access roads in upland areas are built using 4-8 inch angular stone and be no more than 16 feet in width. In resource areas, UI is proposing that its roads be built with swamp/construction mats that are no more than 14 feet in width. Swamp/construction mats will keep the natural integrity of the landscape and allow the vegetation to suppress naturally and grow back in the next growing season.

In order to construct the necessary foundations and erect the towers a work pad will be required at each of the 14 tower locations. These work pads will range in size but be no larger than 170 feet by 100 feet. Earth work and vegetative clearing will be needed at each location in order to provide a safe and level work pad. Where UI is unable to grade certain areas, construction pads and/or fill may be used as an alternative to provide a safe and level work pad.

In order to maintain compliance with certain best management practices and construction standards while working within the vicinity of sensitive or resource areas, UI will implement the necessary techniques from the "CT DEEP: 2002 Connecticut Guidelines for Soil Erosion and Sediment Control." UI will also provide and implement compliance efforts from its Stormwater



Pollution Control Plan (submitted to CT DEEP on 12/2014) during construction to effectively manage any migration of nuisance sediment into sensitive or resource areas.

At the close of the Project, all areas which were impacted due to construction will be restored to the best of UI capabilities as close as possible to their original state. Restoration includes, but is not limited to, seeding (upland and/or wetland), mulching and the stabilization of soils.

### C.13. ENVIRONMENTAL SUMMARY

Based on the information above, UI has taken all of the necessary measures in reviewing the environmental impacts within the sensitive areas in and around the Project. These sensitive areas include Endangered, Threatened and Special Concern Species (CT NDDB), wetlands, waterways and vernal pools, soil and groundwater management and the management of nuisance sediment and erosion through Connecticut's Stormwater Management Program. Therefore, based on the review of this information UI has applied for multiple permits with the governing agencies to these sensitive areas. These permits are as follows: Category II Coastal Activities Permit with the Army Corp of Engineers, a Certificate of Permission with the Office of Long Island Sound Programs, a Stormwater Registration and Pollution Control Plan with the CT DEEP and a Coastal Site Plan Review with both the Town of Stratford and City of Milford. UI anticipates that with these permits in place and the implementation of the conditions within the permits and execution of best management practices the environmental impacts on the Project as a whole and during construction will be non-existent.

## **D. CONSTRUCTION**

### D.1. OVERVIEW OF CONSTRUCTION

UI would construct the Project in several stages, some overlapping in time. Certain work activities and sequences may vary, based on factors such as site-specific conditions, the final Project design, the availability of circuit outages, and the requirements of regulatory approvals. UI would complete pre-construction planning activities and continue consulting with the affected municipalities and State and federal agencies to avoid adverse effects to the environment and to the public.

### D.2. CONSTRUCTION PROCEDURES

The Project will be constructed in accordance with UI specifications, established industry practices, *Best Management Practices Manual Construction & Maintenance Environmental Requirements Connecticut*, and any conditions of the decision issued by the Connecticut Siting Council (“Council”). A typical construction sequence will be as follows:

#### **D.2.1. Pre-construction activities include the following:**

- Survey and stake the property lines, ROW boundaries, and proposed structure locations, and
- Mark wetland and watercourse boundaries, cultural resource areas of concern where avoidance or special procedures are required and sensitive environmental resource areas are to be avoided.

#### **D.2.2. Construction activities include the following:**

- Establish field construction areas and prepare staging and lay-down areas;
- Prepare the ROW (including the installation of erosion and sediment (“E&S”) controls, removal of vegetation as needed, and access road improvement/installation);
- Prepare work areas (pads) at structure sites;
- Excavate and install foundations, erect new structures,
- Install insulators and hardware,
- String, sag, and clip conductors and Optical Ground Wire (OPGW),
- Remove existing conductors, and
- Clean-up and restore, including re-vegetation of disturbed sites.

Construction equipment such as pickup trucks, bucket trucks, front loaders, reel trailers, bulldozers, wood chippers, cranes, forklifts, side booms and dump trucks are anticipated to be involved in the overhead transmission lines within the existing ROW.

### D.3. RIGHT-OF-WAY VEGETATION CLEARING

Based on a thorough review of the Project area, UI determined that there will not be any negative impacts to vegetation from the necessary and/or required cutting, grubbing or tree removal. Based on the location of the newly proposed ROW, the majority of the cutting will be done to upland species. UI is also proposing to perform cutting within its newly proposed ROW within

the Coastal Jurisdiction Line and tidal wetland areas in order to meet the necessary electrical Federal and State clearance criteria. UI has accounted for these areas within its permit submittals to both the Army Corp of Engineers and CT DEEP Office of Long Island Sound Programs. UI submits that all of the cutting associated with the Project will not negatively impact the plant life within the new ROW.

#### D.4. CONSTRUCTION SCHEDULE

The planned in-service date for the Project is End of the Second Quarter of 2016. Construction activities are planned to commence the third quarter of 2015 with access road preparation and ROW vegetation clearing, assuming all required regulatory approvals have been obtained by that time.

## E. ELECTRIC AND MAGNETIC FIELDS

UI retained Exponent, Incorporated (Exponent) to model the EMF levels associated with the rebuild of the 8█ A-1 and 8█ B-1 transmission lines. Exponent modeled the EMF with existing and proposed configurations in three sections:

- **Section HRX-1** represents the existing and proposed configuration west of the Housatonic River, between structures B858 and B862. Circuit 8█ A-1 is rebuilt on a steel monopole approximately 33 feet north of the existing centerline with 12-foot vertical conductor spacing. Circuit 8█ B-1 is rebuilt on the existing bonnet support structures on the south side of the ROW's existing centerline, and the conductors of the rebuilt circuit will be raised approximately 10 feet. The width of the ROW in section HRX-1 is 140 feet.
- **Section HRX-2** includes the structures B862, B862A, and B863 that span the Housatonic River. The ROW in section HRX-2 is 163 feet wide. Circuit 8█ A-1 is rebuilt approximately 180 feet north of its existing centerline, and circuit 8█ B-1 is moved approximately 225 feet north of its existing centerline. The rebuilt circuits are each supported by single-circuit monopoles with 18-foot vertical conductor spacing.
- **Section HRX-3** includes spans west of the Housatonic River, between structure B863 and the █ Box Structure. Circuit 8█ A-1 is rebuilt on a vertical steel monopole approximately 180 feet north of its existing centerline with 18-foot vertical conductor spacing. Circuit 8█ B-1 is rebuilt on a vertical steel monopole also with 18-foot conductor spacing, approximately 245 feet north of its existing centerline. The ROW width in section HRX-3 is 188.5 feet.

**Table 2. Projected transmission line loading**

Line	kV	From	To	Current Magnitude (Amperes)			
				Pre-Project		Post-Project	
				Average	Peak	Average	Peak
8█ A-1	115	D█ T█	B█	803	1241	816	1261
8█ B-1	115	D█ T█	B█	804	1241	816	1261

Though the distribution and catenary conductors of the MNR were not included in the magnetic field models under average and peak load conditions, the increases noted above provide a conservative upper

bound on project-related changes in the calculated magnetic field. See Attachment H for the full EMF report.

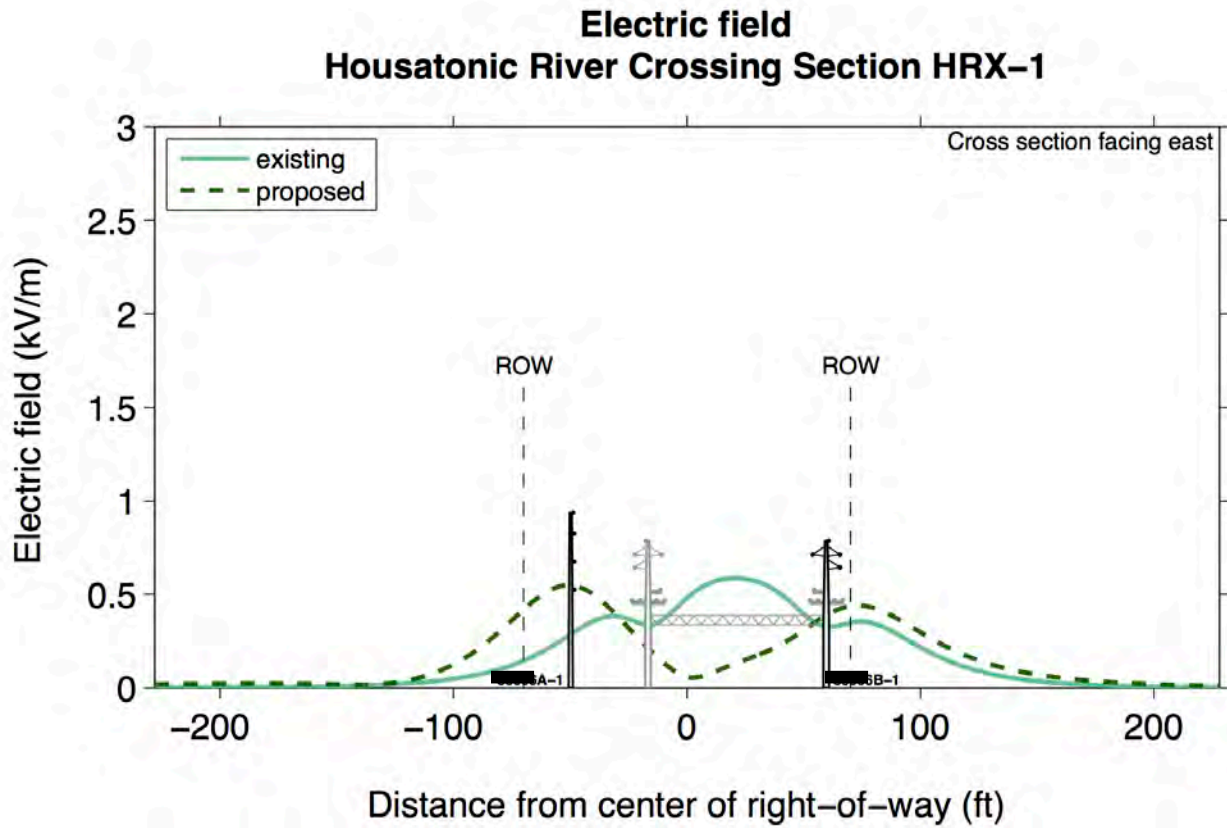


Figure 1. Calculated electric-field profile in section HRX-1 for existing and proposed configurations, between structures B858 and B862.

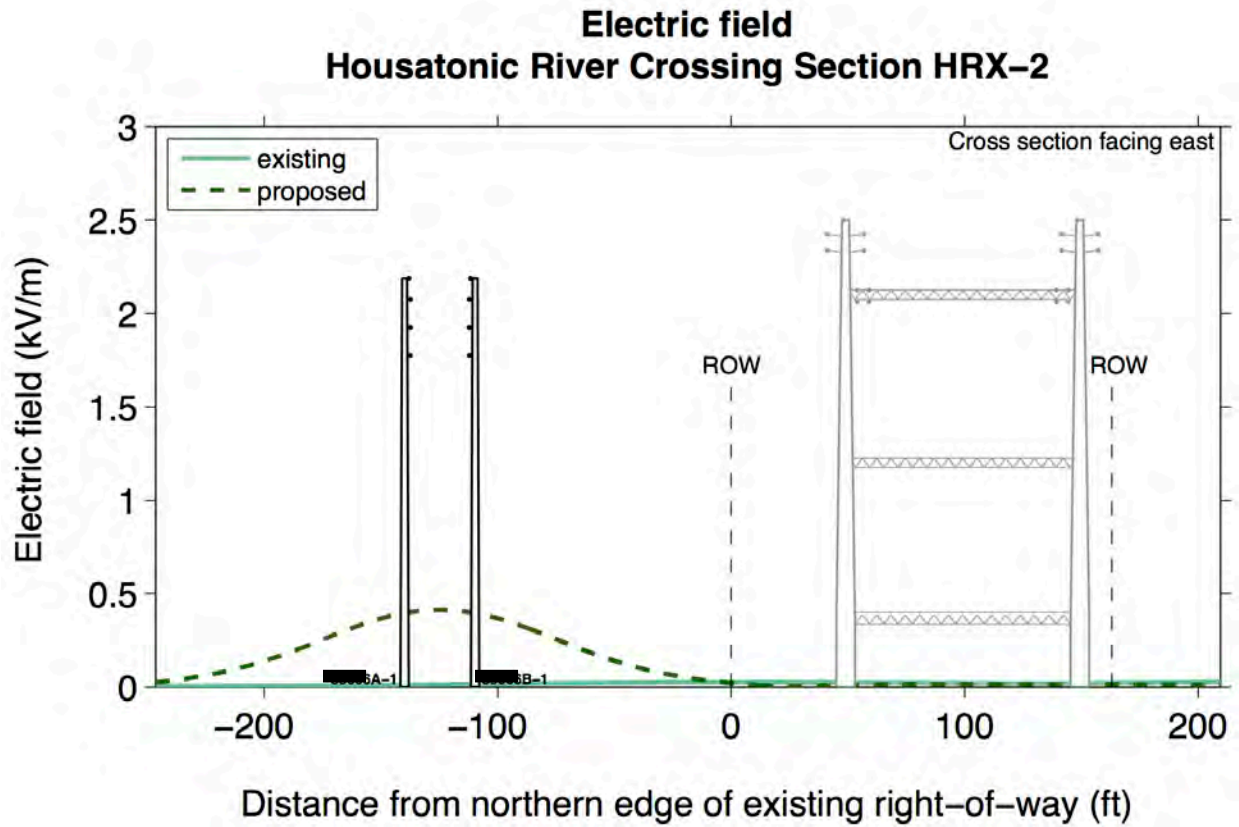


Figure 2. Calculated electric-field profile in section HRX-2 for existing and proposed configurations, between structures B862 and B863.



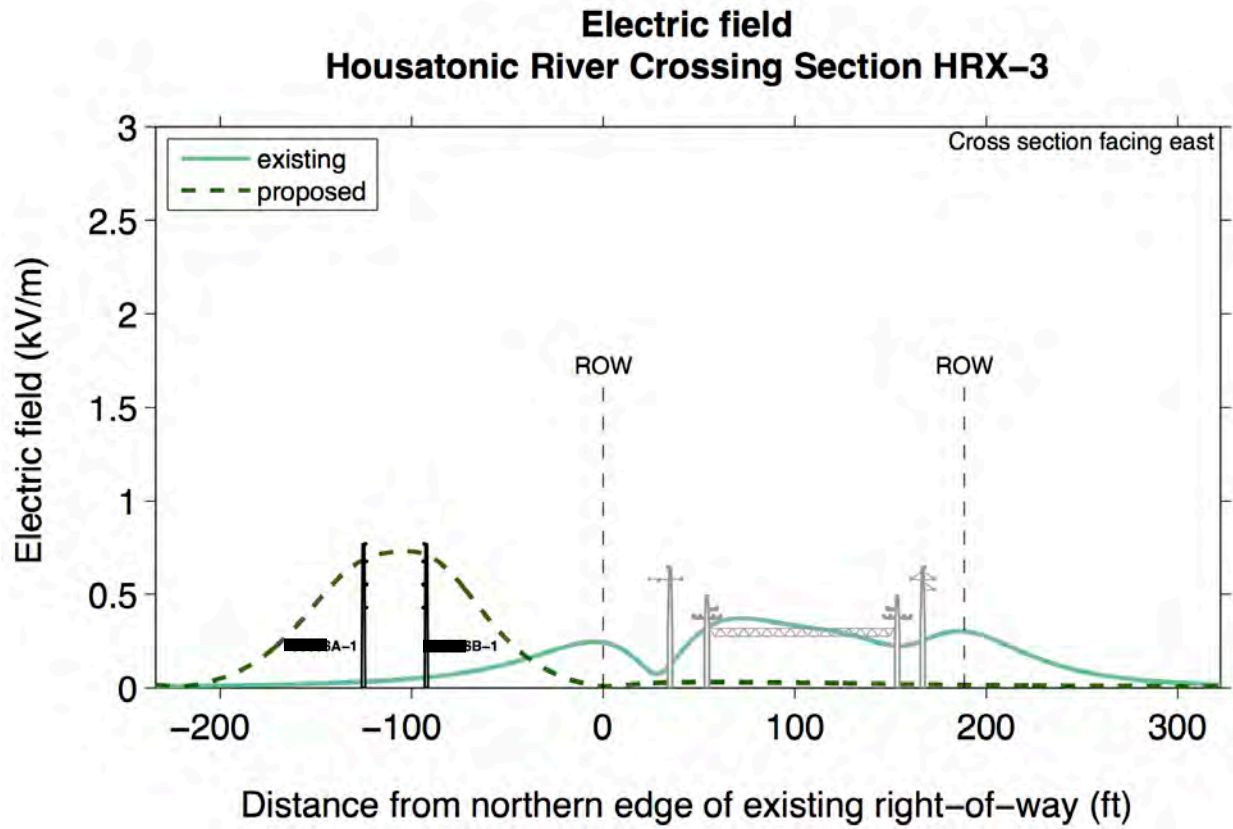


Figure 3. Calculated electric-field profile in section HRX-3 for existing and proposed configurations, between structure B863 and [REDACTED] Box Structure.

### Magnetic field Housatonic River Crossing Section HRX-1

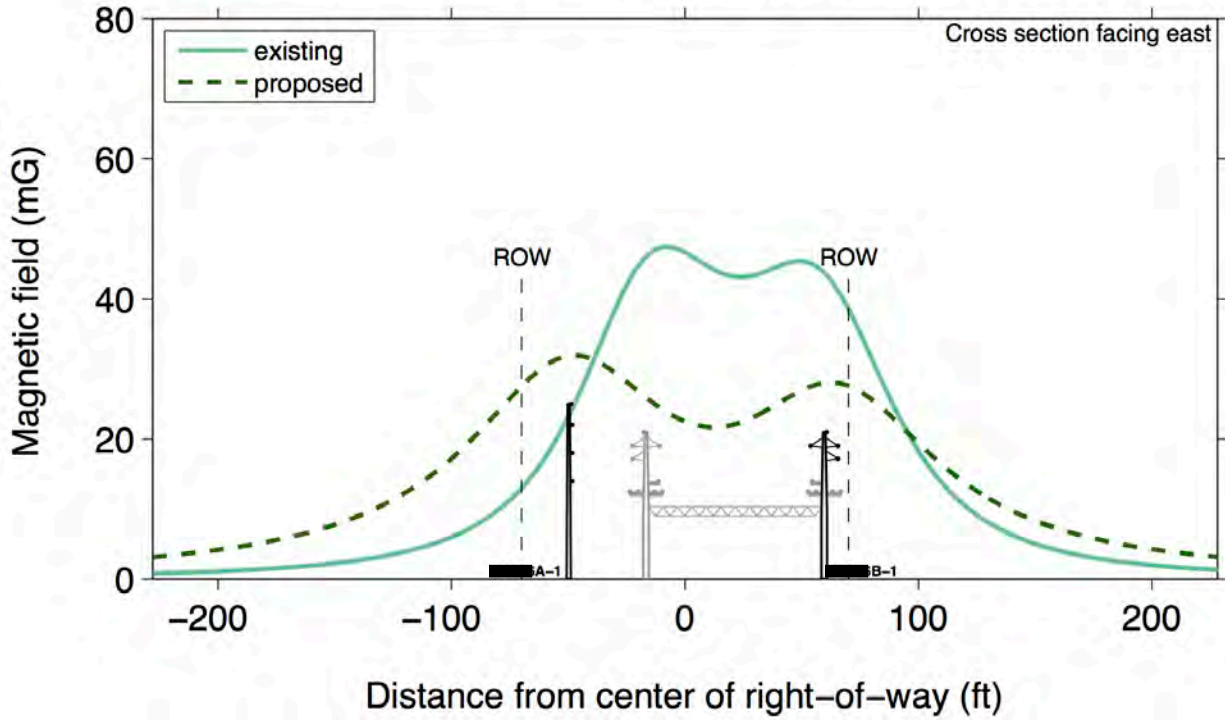


Figure 4. Calculated magnetic-field profile in section HRX-1 for existing and proposed configurations, average load case, between structures B858 and B862.

### Magnetic field Housatonic River Crossing Section HRX-2

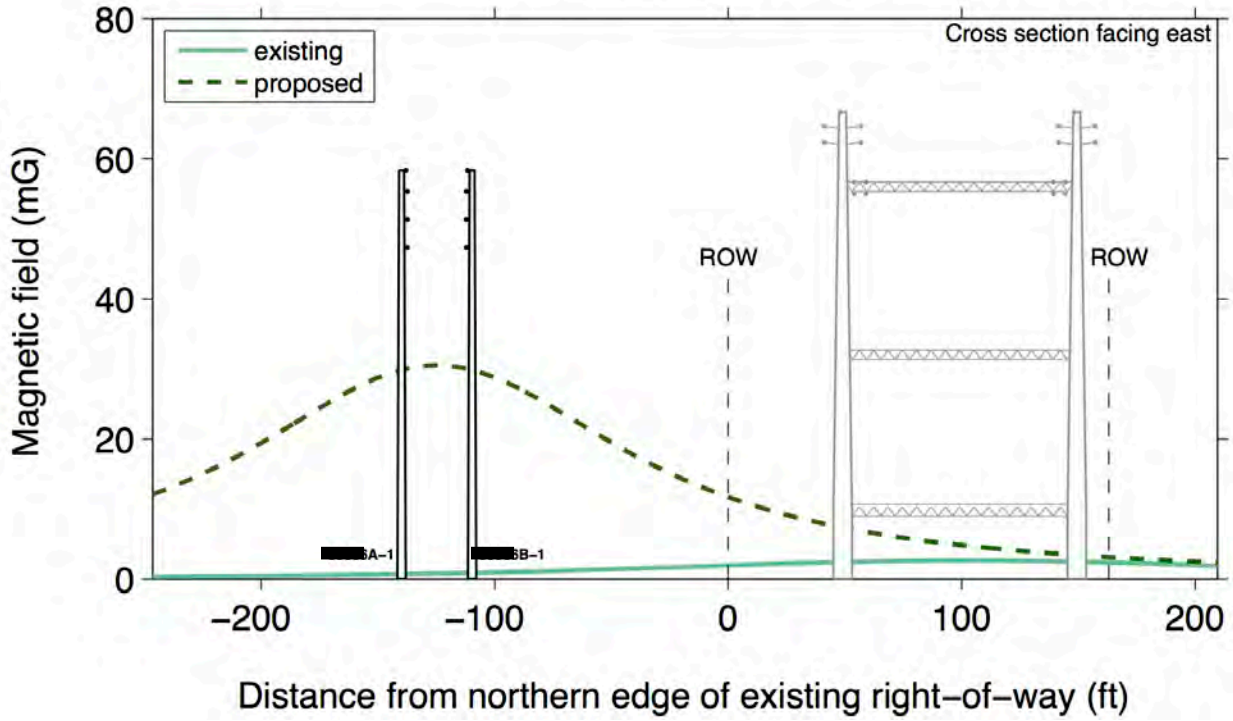


Figure 5. Calculated magnetic-field profile in section HRX-2 for existing and proposed configurations, average load case, between structures B862 and B863.

### Magnetic field Housatonic River Crossing Section HRX-3

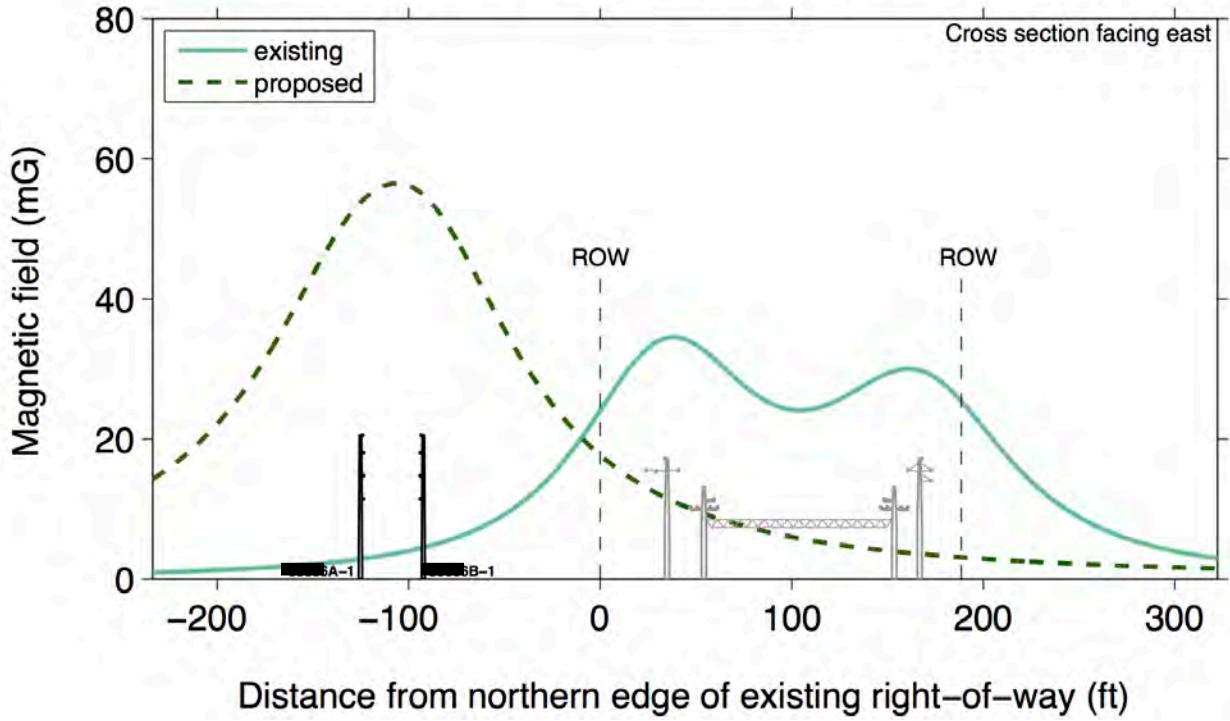


Figure 6. Calculated magnetic-field profile in section HRX-3 for existing and proposed configurations, average load case, between structure B863 and the [redacted] Box Structure.

**Table 3 Calculated electric-field levels**

Section	Configuration	Electric Field (kV/m)				
		200 feet north of ROW edge	100 feet north of ROW edge	North edge of ROW	South edge of ROW	Max on profile
HRX-1	Existing	<0.01	0.01	0.15	0.35	0.59
	Proposed	0.02	0.02	0.42	0.44	0.55
HRX-2	Existing	0.01	0.02	0.03	0.02	0.03
	Proposed	0.14	0.37	0.02	0.01	0.41
HRX-3	Existing	0.01	0.05	0.24	0.30	0.37
	Proposed	0.05	0.73	0.01	0.02	0.73

**Table 4 Calculated magnetic-field levels, average load case**

Section	Configuration	Magnetic Field (mG)				
		200 feet north of ROW edge	100 feet north of ROW edge	North edge of ROW	South edge of ROW	Max on profile
HRX-1	Existing	0.5	1.7	13.0	38.6	47.4
	Proposed	2.2	6.0	27.5	27.6	31.9
HRX-2	Existing	0.5	1.0	2.0	2.4	2.7
	Proposed	19.4	28.8	11.7	3.2	30.5
HRX-3	Existing	1.3	4.0	24.1	25.6	34.5
	Proposed	22.2	56.1	17.7	3.1	56.5

**Table 5** Calculated magnetic-field levels, peak load case

Section	Configuration	Magnetic Field (mG)				
		200 feet north of ROW edge	100 feet north of ROW edge	North edge of ROW	South edge of ROW	Max on profile
HRX-1	Existing	0.8	2.6	20.1	59.5	73.3
	Proposed	3.4	9.2	42.5	42.6	49.4
HRX-2	Existing	0.7	1.5	3.0	3.7	4.1
	Proposed	30.0	44.5	18.1	4.9	47.1
HRX-3	Existing	2.0	6.3	37.2	39.4	53.4
	Proposed	34.2	86.8	27.3	4.8	87.3

## **F. MUNICIPAL AND COMMUNITY OUTREACH**

On February 20, 2014, UI met with Mayor John Harkins, the chief elected official in Stratford to discuss several proposed RR upgrade projects, including the Housatonic River Crossing Project. Project personnel briefed Mayor Harkins and Chief of Staff Marc Dillon on the projects, explained why these initiatives are necessary, and outlined the potential impacts to the Town of Stratford. UI obtained a letter of support from the Town of Stratford on April 21, 2014. Communications with the Town have been on-going as appropriate and required.

On March 5, 2014, UI met with Milford Officials to discuss several RR upgrade projects, including the Housatonic River Crossing Project. Project personnel initially briefed Milford's Assistant Mayor, Steven Fournier, City Engineer, Gary Wassmer and Executive Director Henry D. Jadach of the Milford Transit District. UI presented an overview of the Project, answered questions and provided a point of contact to obtain additional information. Subsequent to this meeting, Project personnel have been in contact with a number of municipal department heads to discuss potential wetland mitigation areas, access to and across city-owned land. UI obtained a letter of support from the City of Milford on May 13, 2014. Communications with the City have been on-going as appropriate and required.

Beginning in October of 2013, UI and its representatives have had written, verbal and face-to-face meetings regarding the Project on an on-going basis with the two abutters, which are Ashcroft Incorporated and Devon Power LLC property. *See* Attachment F.

A copy of the Petition was provided to the CEO's of Milford and Stratford concurrent with this submission.

## **G. CONCLUSION**

Based on the foregoing, UI respectfully submits that the Project will not have a substantial adverse environmental effect and, therefore, does not require a Certificate of Environmental Compatibility and Public Need pursuant to Conn. Gen. Stat. § 16-50k(a).



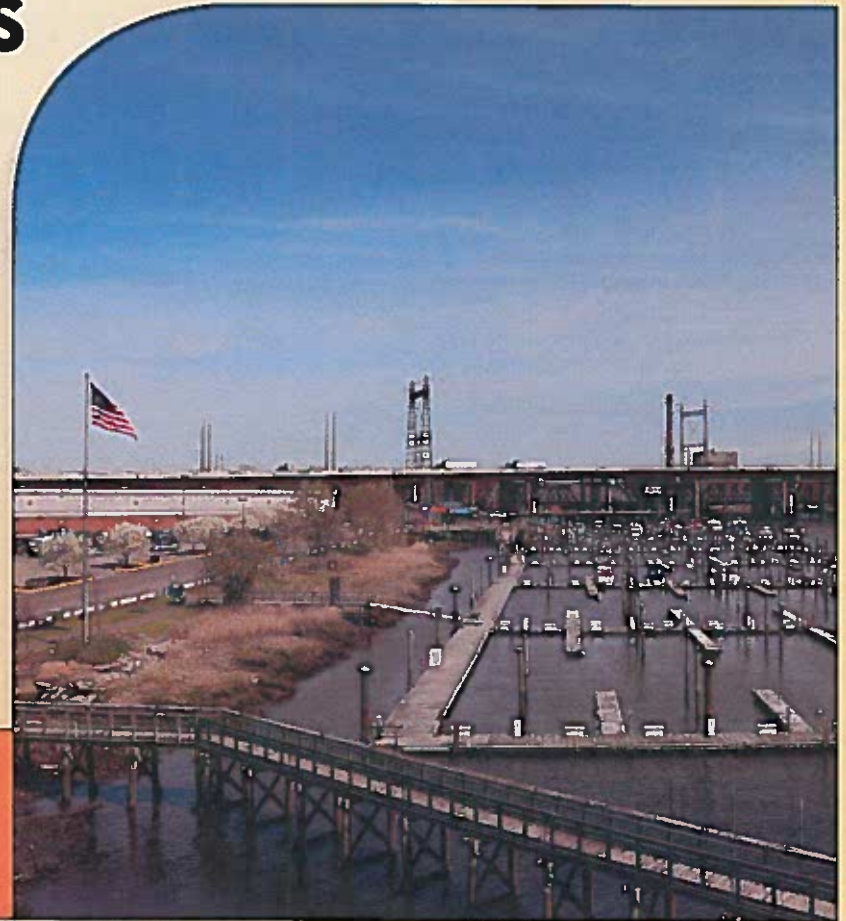
**Attachment A**  
Representative Photos

# Photographic Documentation & Simulations

## HOUSATONIC RIVER CROSSING

*Prepared in December 2014 by:*  
All-Points Technology Corporation, P.C.  
3 Saddlebrook Drive  
Killingworth, CT 06141

*Prepared for The United Illuminating Company*





# PHOTO LOG

Legend

- Photo Location
- Structure Location
- Transmission Line







**EXISTING**

PHOTO

1

LOCATION

WASHINGTON BRIDGE (24mm Focal Length)

ORIENTATION

NORTH



**PROPOSED**

PHOTO  
1

LOCATION  
**WASHINGTON BRIDGE (24mm Focal Length)**

ORIENTATION  
**NORTH**





**EXISTING**

PHOTO

2

LOCATION

**BEHIND WALMART**

ORIENTATION

**EAST**





**PROPOSED**

PHOTO  
2

LOCATION  
BEHIND WALMART

ORIENTATION  
EAST







**EXISTING**

PHOTO

3

LOCATION

NAUGATUCK AVENUE (24mm Focal Length)

ORIENTATION

WEST





**PROPOSED**

PHOTO

3

LOCATION

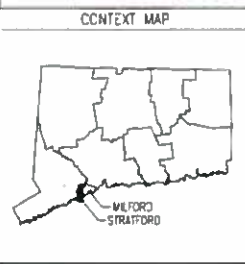
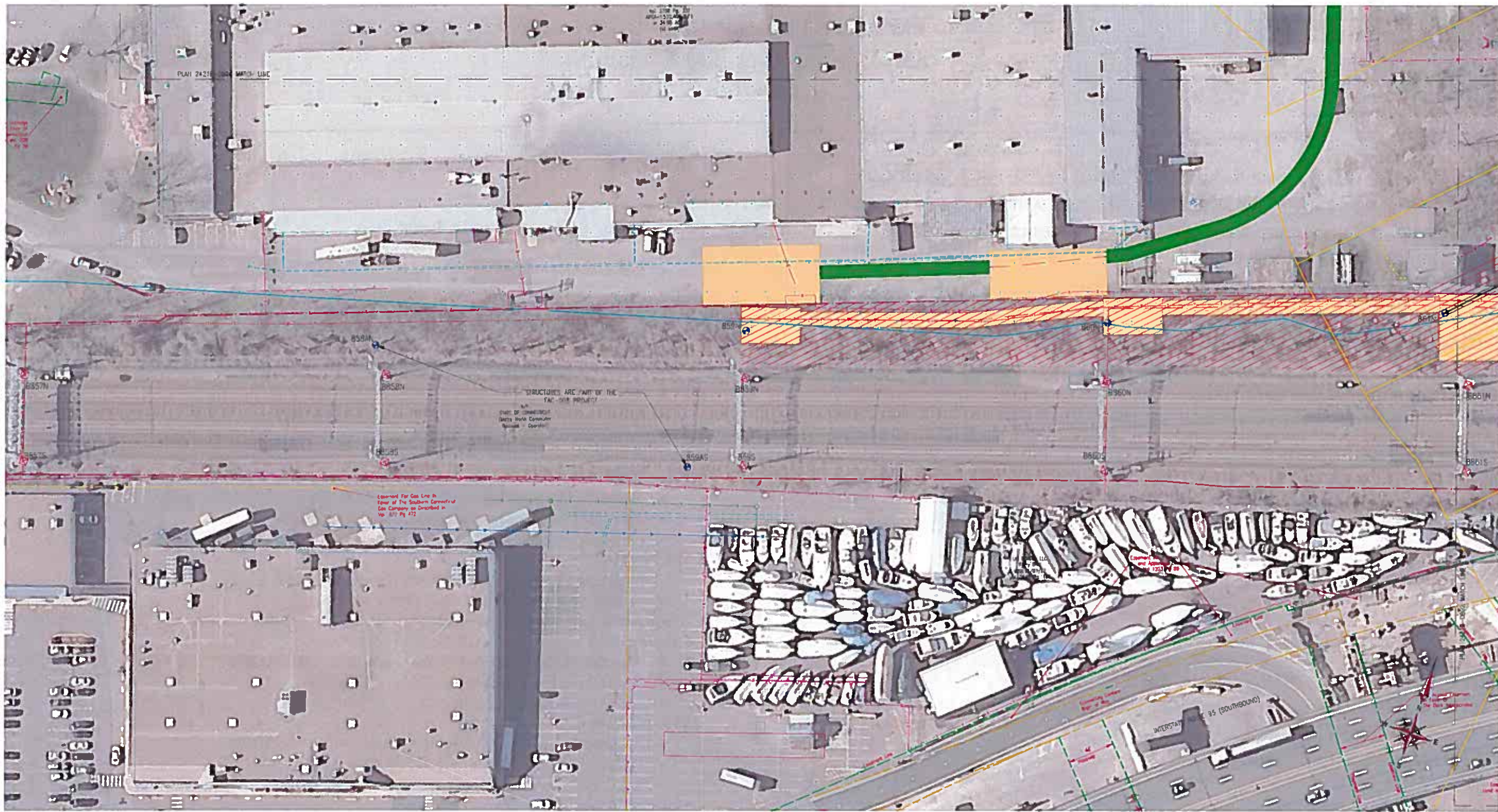
**NAUGATUCK AVENUE (24mm Focal Length)**

ORIENTATION

**WEST**

**Attachment B**  
Key Map, Aerial Segment Maps and Descriptions





**LEGEND:**

--- ALL CONSTRUCTION TRAFFIC	--- UNDERGROUND ELECTRIC LINE	--- COASTAL JURISDICTION LINE	■ FEMA SPECIAL FLOOD HAZARD AREAS
--- TOWN LINE	--- GAS LINE	--- WATERCOURSE	■ NATURAL DIVERSITY DATABASE (NDD) AREA
--- LI PROPERTY LINE	--- SANITARY SEWER	--- LIMIT OF WETLANDS	--- EXISTING ACCESS ROAD
--- PROPERTY LINE	--- STORM SEWER	--- FEMA 100 YEAR	■ CONSTRUCTION AREA
--- RAILROAD EDGE OF RIGHT OF WAY	--- TELECOMMUNICATIONS LINE	■ WETLANDS/MARSH	■ OCCUPATION AREA
--- EASEMENT	--- WATER LINE	■ VERNAL POOL	■ VEGETATION CLEARANCE
--- RETAINING WALL	--- FENCE	■ EXISTING STRUCTURE	■ WETLAND IMPACT AREA
		■ PROPOSED STRUCTURE	

40' 20' 0 40' 80'

# PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference?

DESIGNED	MAP	DATE	CAJ
CHECKED	MAP	DATE	10/10/2014

NO	DATE	REVISION	DPN	DES	CHK	SUPR
B	11/03/2014	ISSUE FOR LI 70% REVIEW - PROJECT 181893	ALI	MAP		
A	10/10/2014	ISSUE FOR LI 30% REVIEW - PROJECT 181893	EJ	MAP		

REFERENCE DRAWINGS:  
DRAWING INDEX: 242 9-0002

No	Date	Revision	By	Chkd	Engr	Supv

**ui**  
The United Illuminating Company

Crown	Date	Scale: 1"=40'
	Design Engr.	Design Supv.

D [ ] TO B [ ] & [ ] A-1  
TRANSMISSION LINE  
GENERAL ACCESS PLAN  
859N TO 861N

CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
		24219-0801



**DRAWING #:24219-0801**

Structure Locations 859 to 861  
250 E Main St & 200 E Main St  
Stratford

**General Work Description:**

New steel monopoles will be installed at 859N, 860N, 861N, 860S, 861SS, and 861SN. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 15 Days
- Installation of foundation – 18 Days
- Installation of steel pole – 24 Days
- Installation of wire – 18 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDDB area: Y (861N, 860S, & 861SN)

Environmentally Sensitive Area: N

Night work: Y

Feeder/Signal Outages: Y

Track Outages: Y

**Reference Drawings:**

24219-101 – Plan & Profile (859N, 860N, 861N)

24219-300 – Drilled Pier Foundations (859N, 860N, 861N)

24219-500 – 859N, 860N Structure Loading

24219-501 – 861N Structure Loading

24220-102 – Plan & Profile (860S, 861SS, 861SN)

24220-300 – Drilled Pier Foundations (860S, 861SS, 861SN)

24220-500 – 860S Structure Loading

24220-501 – 861SS Structure Loading

24220-502 – 861SN Structure Loading

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

**Access**

- 250 E Main St, Stratford, CT 06614
  - 859N, 860N, 861N, and 861SN
- 200 E Main St, Stratford, CT 06614
  - 860S and 861SS

**Construction Footprint**

- Occupation Area = 2,150 square feet (200 E Main St) (NOT SHOWN)

**Structure 859N:**

- Vegetation/Land clearing = 8,250 square feet (MNR ROW)
- Access road = 3,720 square feet (250 E Main St)
- Work pad = 1,500 square feet 50' X 30'(MNR ROW)
- Work pad = 5,000 square feet 100' X 50'(250 E Main St) (Crane Pad)

**Structure 860N:**

- Vegetation/Land clearing = 18,250 square feet (MNR ROW)
- Access road = 3,240 square feet (250 E Main St)
- Work pad = 1,500 square feet 50' X 30'(MNR ROW)
- Work pad = 4,000 square feet 100' X 40'(250 E Main St) (Crane Pad)

**Structure 861N:**

- Vegetation/Land clearing = 10,000 square feet (MNR ROW)
- Access road = 3,960 square feet (250 E Main St)
- Work pad = 4,125 square feet 75' X 55'(MNR ROW)

**Structure 860S:**

- Vegetation/Land clearing = 4,300 square feet (MNR ROW)
- Access road = 3,240 square feet (200 E Main St)
- Work pad = 1,875 square feet 75' X 25'(MNR ROW)

**Structure 861SS:**

- Vegetation/Land clearing = 4,300 square feet (MNR ROW)
- Access road = 1,800 square feet (200 E Main St)
- Work pad = 1,875 square feet 75' X 25'(MNR ROW)

**Structure 861SN:**

- Vegetation/Land clearing = 0 square feet (MNR ROW)
- Access road = 0 square feet (200 E Main St)
- Work pad = 4,125 square feet 75' X 55'(MNR ROW)

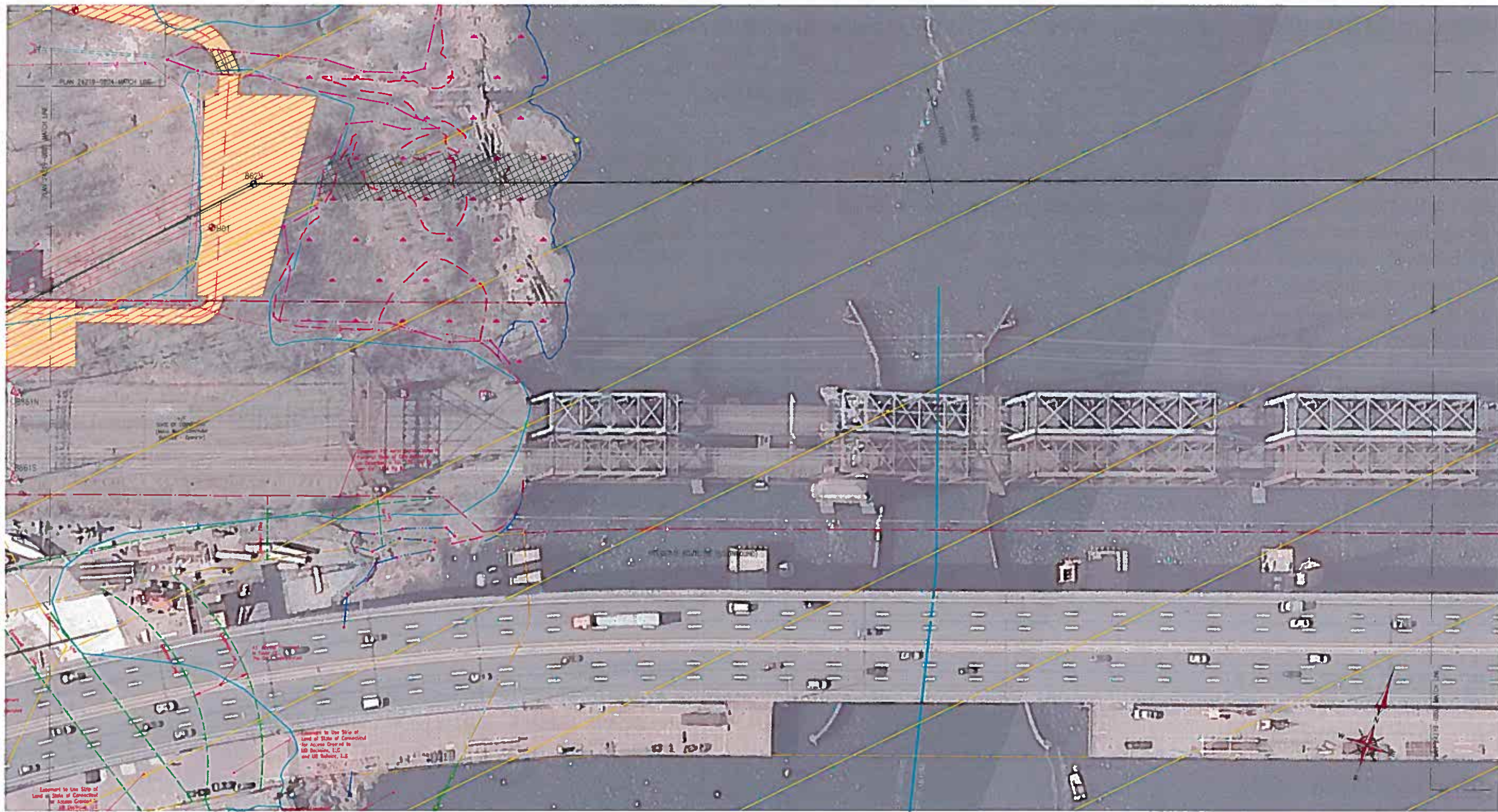
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18tx1570630 dated March 18, 2012





CONTEXT MAP



INDEX MAP



LEGEND:

- ALL CONSTRUCTION TRAFFIC
- TOWN LINE
- UI PROPERTY LINE
- PROPERTY LINE
- RAILROAD EDGE OF RIGHT OF WAY
- EASEMENT
- RETAINING WALL
- UNDERGROUND ELECTRIC LINE
- GAS LINE
- SANITARY SEWER
- STORM SEWER
- TELECOMMUNICATIONS LINE
- WATER LINE
- FENCE
- COASTAL JURISDICTION LINE
- WATERCOURSE
- LIMIT OF WETLANDS
- FEMA 100 YEAR WETLANDS/MARSH
- VERNAL POOL
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- FEMA SPECIAL FLOOD HAZARD AREAS
- NATURAL DIVERSITY DATABASE (NDD) AREA
- EXISTING ACCESS ROAD
- CONSTRUCTION AREA
- OCCUPATION AREA
- VEGETATION CLEARANCE
- WETLAND IMPACT AREA

REFERENCE DRAWINGS:  
DRAWING INDEX: 24129-0002



**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNED BY	MAP	DATE	SCALE
10/10/2014			

NO	DATE	REVISION	DRN	DESN	CHKD	SUPR
1	10/10/2014	ISSUE FOR LA 70% REVIEW - PROJECT 181893	ALT	MAP		
2	10/10/2014	ISSUE FOR LA 30% REVIEW - PROJECT 181893	CU	MAP		

No	Date	Revision	By	Chkd	Engr.	Supv.

**ui**  
The United Illuminating Company

Crown	Date	Scale: 1"=40'
Chkd.	Design Engr.	Design Supv.

TO B 8 A-1  
TRANSMISSION LINE  
GENERAL ACCESS PLAN  
862N

CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
		24219-0802



**DRAWING #:24219-0802**

Structure Locations 862  
250 E Main St  
Stratford

**General Work Description:**

New steel monopoles will be installed at 862N, and 862S. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 15 Days
- Installation of foundation – 10 Days
- Installation of steel pole – 10 Days
- Installation of wire – 10 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDB area: Y

Environmentally Sensitive Area: N

Night work: N

Feeder/Signal Outages: N

Track Outages: N

**Reference Drawings:**

24219-101 – Plan & Profile (862N)

24219-300 – Drilled Pier Foundations (862N)

24219-502 – 862N Structure Loading

24220-102 – Plan & Profile (862S)

24220-300 – Drilled Pier Foundations (862S)

24220-503 – 862S Structure Loading

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 250 E Main St, Stratford, CT 06614
  - 860N and 862S

**Construction Footprint**

**Structure 862N:**

- Vegetation/Land clearing = 16,850 square feet (250 E Main St)
- Wetland Impact = 8,700 square feet (250 E Main St)
- Access road = 0 square feet (250 E Main St)
- Work pad = 12,750 square feet 170' X 75' (250 E Main St)

**Structure 862S:**

- Vegetation/Land clearing = 14,000 square feet (250 E Main St)
- Wetland Impact = 8,800 square feet (250 E Main St)
- Access road = 0 square feet (250 E Main St)
- Work pad = 12,750 square feet 170' X 75' (250 E Main St)

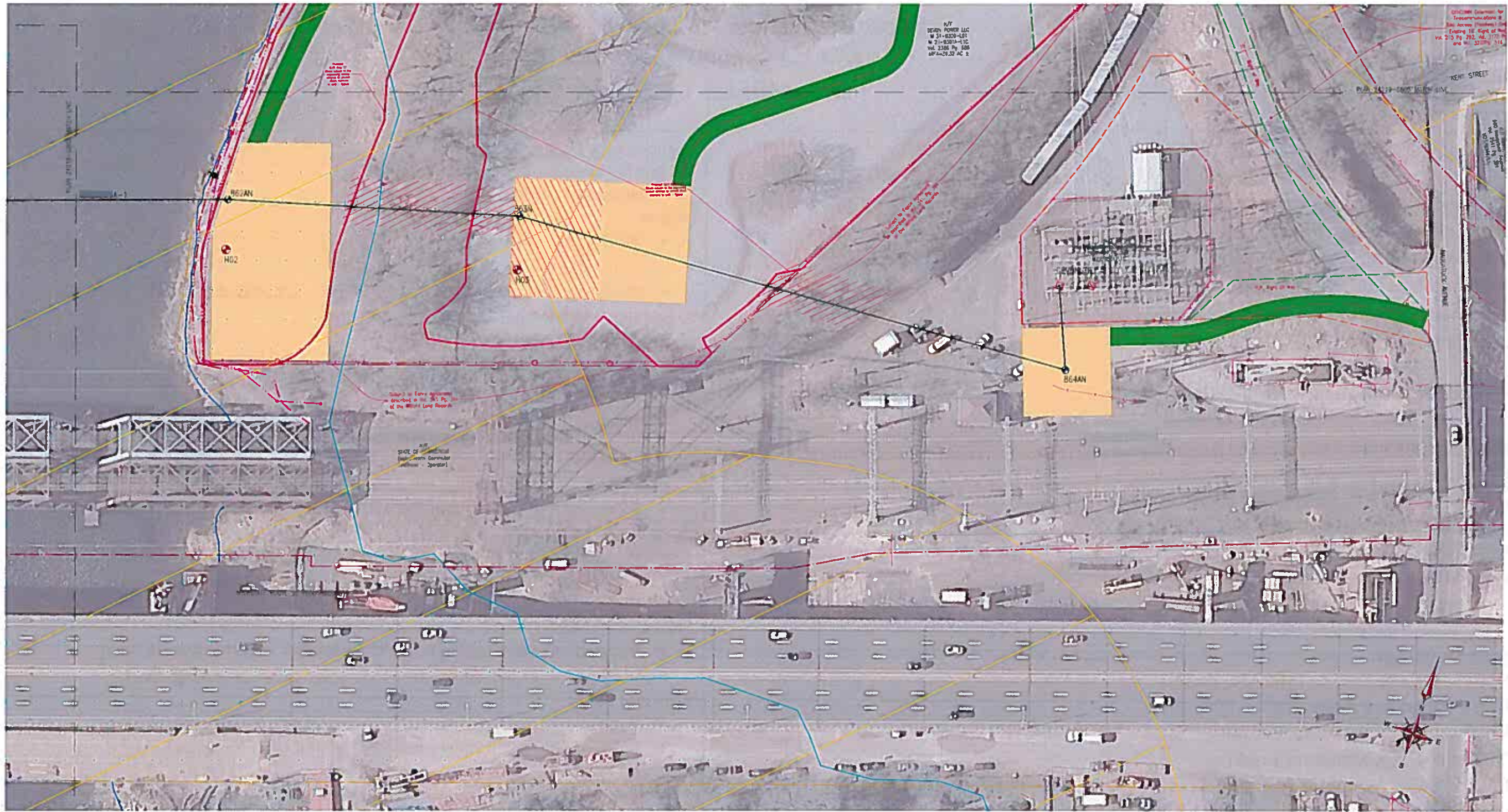
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18txl570630 dated March 18, 2012
- USGS 18txl585630 dated March 18, 2012





**LEGEND:**

--- ALL CONSTRUCTION TRAFFIC	--- UNDERGROUND ELECTRIC LINE	--- COASTAL JURISDICTION LINE	■ FEMA SPECIAL FLOOD HAZARD AREAS
--- TOWN LINE	--- GAS LINE	--- WATERCOURSE	■ NATURAL DIVERSITY DATABASE (NODB) AREA
--- UI PROPERTY LINE	--- SANITARY SEWER	--- LIMIT OF WETLANDS	--- EXISTING ACCESS ROAD
--- PROPERTY LINE	--- STORM SEWER	--- FEMA 100 YEAR WETLANDS/MARSH	■ CONSTRUCTION AREA
--- RAILROAD EDGE OF RIGHT-OF-WAY	--- TELECOMMUNICATIONS LINE	--- VERNAL POOL	■ OCCUPATION AREA
--- EASEMENT	--- WATER LINE	⊗ EXISTING STRUCTURE	■ VEGETATION CLEARANCE
--- RETAINING WALL	--- FENCE	⊕ PROPOSED STRUCTURE	■ WETLAND IMPACT AREA

40' 20' 0' 40' 80'

# PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNER	MAP	DATE
CREATED		10/10/2014
PROJECT #	181893	

NO	DATE	REVISION	DRN	DESN	CHKD	SUPR
1	10/03/2014	ISSUE FOR UI 7CR REVIEW - PROJECT 181893		ALT	MAP	
2	10/10/2014	ISSUE FOR UI 3CR REVIEW - PROJECT 181893		ALT	MAP	

REFERENCE DRAWINGS:  
DRAWING INDEX: 24219-0002

No	Date	Revision	By	Chkd	Engr. Supv.

**ui**  
The United Illuminating Company

Drawn	Date	Scale: 1"=40'
CHKd	Design Engr.	Design Svap.

D [redacted] TO B [redacted] A-1	
TRANSMISSION LINE	
GENERAL ACCESS PLAN	
862AN TO D [redacted]	
CAD FILE NAME	SEQUENCE NO.
	DRAWING NUMBER
	24219-0803



**DRAWING #:24219-0803**

Structure Locations 862A to 864A  
694 Naugatuck Ave  
Milford

**General Work Description:**

New steel monopoles will be installed at 862AN, 863N, 864AN, 862AS, 863S, and 864AN. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 15 Days
- Installation of foundation – 22 Days
- Installation of steel pole – 26 Days
- Installation of wire – 20 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDB area: Y (862AN, 863N, 862AS, & 863S)

Environmentally Sensitive Area: N

Night work: Y

Feeder/Signal Outages: Y

Track Outages: Y

**Reference Drawings:**

24219-101 – Plan & Profile (862AN, 863N)

24219-102 – Plan & Profile (863N, 864AN)

24219-300 – Drilled Pier Foundations (862AN, 863N, 864AN)

24219-502 – 862AN Structure Loading

24219-503 – 863N Structure Loading

24219-504 – 864AN Structure Loading

24220-102 – Plan & Profile (862AS, 863S, 864AS)

24220-300 – Drilled Pier Foundations (862AS, 863S, 864AS)

24220-503 – 862AS Structure Loading

24220-504 – 863S Structure Loading

24220-505 – 864AS Structure Loading

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 700 Naugatuck Ave., Milford, CT 06461
  - 862AN, 863N, 862AS, and 863S
- 694 Naugatuck Ave., Milford, CT 06461 – UI owned
  - 864AN and 864AS

**Construction Footprint**

- Occupation Area = None

**Structure 862AN:**

- Vegetation/Land clearing = 6,000 square feet (700 Naugatuck Ave)
- Work pad = 17,760 square feet 185' X 96' (700 Naugatuck Ave)

**Structure 863N:**

- Vegetation/Land clearing = 3,750 square feet (700 Naugatuck Ave)
- Work pad = 15,000 square feet 150' X 100' (700 Naugatuck Ave)

**Structure 864AN:**

- Vegetation/Land clearing = 3,800 square feet (MNR ROW)
- Access road = 4,400 square feet (694 Naugatuck Ave)
- Work pad = 5,625 square feet 75' X 75' (MNR ROW)

**Structure 862AS:**

- Vegetation/Land clearing = 6,100 square feet (700 Naugatuck Ave)
- Work pad = 17,760 square feet 185' X 96' (700 Naugatuck Ave)

**Structure 863S:**

- Vegetation/Land clearing = 3,750 square feet (700 Naugatuck Ave)
- Work pad = 15,000 square feet 150' X 100' (700 Naugatuck Ave)

**Structure 864AS:**

- Vegetation/Land clearing = 3,200 square feet (MNR ROW)
- Access road = 0 square feet (694 Naugatuck Ave)
- Work pad = 5,625 square feet 75' X 75' (MNR ROW)

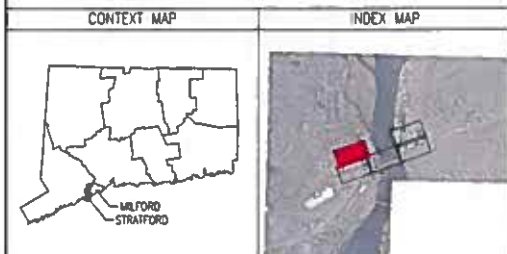
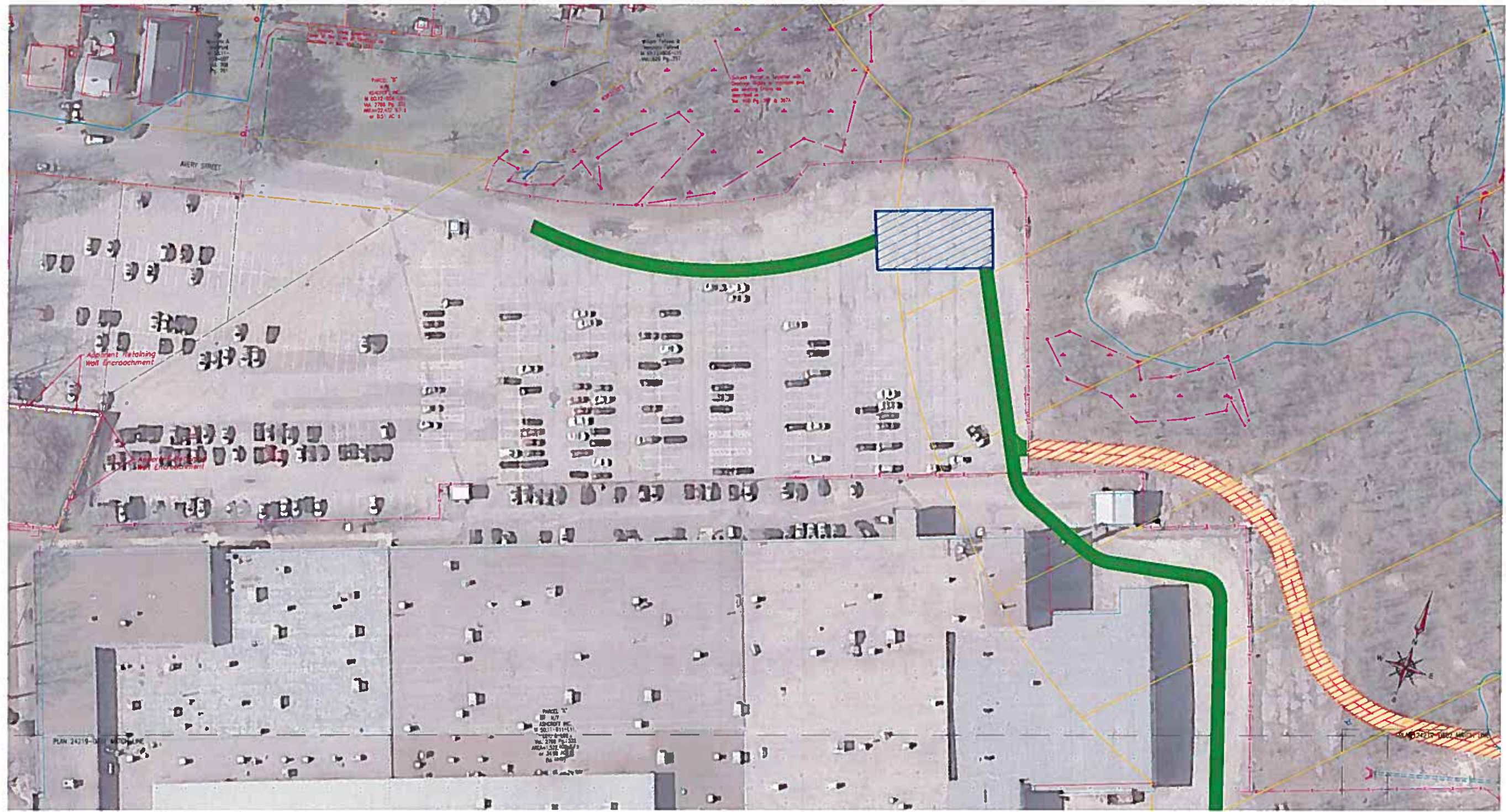
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18tx1585630 dated March 18, 2012





**LEGEND:**

--- ALL CONSTRUCTION TRAFFIC	--- UNDERGROUND ELECTRIC LINE	--- COASTAL JURISDICTION LINE	--- FEMA SPECIAL FLOOD HAZARD AREAS
--- TOWN LINE	--- GAS LINE	--- WATERCOURSE	--- NATURAL DIVERSITY DATABASE (NODD) AREA
--- UI PROPERTY LINE	--- SANITARY SEWER	--- LIMIT OF WETLANDS	--- EXISTING ACCESS ROAD
--- PROPERTY LINE	--- STORM SEWER	--- FEMA 100 YEAR	--- CONSTRUCTION AREA
--- RAILROAD EDGE OF RIGHT-OF-WAY	--- TELECOMMUNICATIONS LINE	--- WETLANDS/MARSH	--- OCCUPATION AREA
--- EASEMENT	--- WATER LINE	--- VERNAL POOL	--- VEGETATION CLEARANCE
--- RETAINING WALL	--- FENCE	--- EXISTING STRUCTURE	--- WETLAND IMPACT AREA
		--- PROPOSED STRUCTURE	

40' 20' 0 40' 80'

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNER	MAP	DATE	EJ
CHECKED		DATE	10/10/2014
PROJECT / 181893			

B	11/03/2014	ISSUE FOR UI 70% REVIEW - PROJECT 181893	ALT	MAP	--	--
A	10/10/2014	ISSUE FOR UI 30% REVIEW - PROJECT 181893	MAP			
NO	DATE	REVISION	DRN	DESN	CHKD	SUPR

**REFERENCE DRAWINGS:**  
DRAWING INDEX: 24219-0002

No	Date	Revision	By	Chkd	Engr	Supv
----	------	----------	----	------	------	------

No	Date	Revision	By	Chkd	Engr	Supv
----	------	----------	----	------	------	------

**ui**  
The United Illuminating Company

Drawn	Date	Scale: 1"=40'
Chkd.	Design Engr.	Design Supv.

D [redacted] T TO B [redacted] A-1		
11KV TRANSMISSION LINE		
GENERAL ACCESS PLAN		
[redacted] ACCESS ROADS		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
		24219-0804



**DRAWING #:24219-0804**

Structure Locations 859 to 862  
250 E Main St  
Stratford

**General Work Description:**

Access road to new steel monopoles will be installed for 859N, 860N, 861N, 862N, 861SN, and 862S. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 10 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDB area: Y

Environmentally Sensitive Area: N

Night work: N

Feeder/Signal Outages: N

Track Outages: N

**Reference Drawings:**

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 250 E Main St, Stratford, CT 06614
  - 859N, 860N, 861N, 862N, 861SN, and 862S

**Construction Footprint**

- Occupation Area = 5,000 square feet (250 E Main St)

**862N & 862S Access:**

- Vegetation/Land clearing = 11,550 square feet (250 E Main St)
- Access road = 10,080 square feet (250 E Main St)

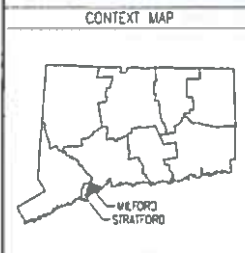
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18txl570630 dated March 18, 2012





**LEGEND:**

--- ALL CONSTRUCTION TRAFFIC	--- UNDERGROUND ELECTRIC LINE	--- COASTAL JURISDICTION LINE	--- FEMA SPECIAL FLOOD HAZARD AREAS
--- TOWN LINE	--- GAS LINE	--- WATERCOURSE	--- NATURAL DIVERSITY DATABASE (NDDDB) AREA
--- LI PROPERTY LINE	--- SANITARY SEWER	--- LIMIT OF WETLANDS	--- EXISTING ACCESS ROAD
--- PROPERTY LINE	--- STORM SEWER	--- FEMA 100 YEAR	--- CONSTRUCTION AREA
--- RAILROAD EDGE OF RIGHT-OF-WAY	--- TELECOMMUNICATIONS LINE	--- WETLANDS/MARSH	--- OCCUPATION AREA
--- EASEMENT	--- WATER LINE	--- VERNAL POOL	--- VEGETATION CLEARANCE
--- RETAINING WALL	--- FENCE	--- EXISTING STRUCTURE	--- WETLAND IMPACT AREA
		--- PROPOSED STRUCTURE	

40' 20' 0 40' 80'

# PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

<b>BLACK &amp; VEATCH</b> Building a world of difference?							
DESIGNED	MAP	DATE	DATE	DATE	DATE	DATE	DATE
		10/10/2014					
PROJECT #	191893						
NO	DATE	REVISION	DRN	DESN	CHKD	SUPR	
B	11/03/2014	ISSUE FOR LI 70% REVIEW - PROJECT 191893		ALI	MAP		
A	0/10/2014	ISSUE FOR LI 30% REVIEW - PROJECT 191893		EJJ	MAP		

**REFERENCE DRAWINGS:**

DRAWING NUMBER: 24219-0002

No	Date	Revision	By	Chkd	Engr. Supv.

No	Date	Revision	By	Chkd	Engr. Supv.

**The United Illuminating Company**

Crown: \_\_\_\_\_ Date: \_\_\_\_\_ Scale: 1"=40'  
 Chkd: \_\_\_\_\_ Design Engr.: \_\_\_\_\_ Design Svup.: \_\_\_\_\_

D TO B A-1		
TRANSMISSION LINE		
GENERAL ACCESS PLAN		
ACCESS ROADS		
CAD FILE NAME	SEQUENCE NO.	DRAWING NUMBER
		24219-0805



**DRAWING #:24219-0805**

Structure Locations 862A to 863  
250 E Main St  
Stratford

**General Work Description:**

Access road to new steel monopoles will be installed for 862AN, 863N, 862AS, and 863S. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road – 3 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDDB area: Y

Environmentally Sensitive Area: N

Night work: N

Feeder/Signal Outages: N

Track Outages: N

**Reference Drawings:**

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 700 Naugatuck Ave., Milford, CT 06461
  - 862AN, 863N, 862AS, and 863S

**Construction Footprint**

- Occupation Area = None

**862AN & 862AS Access:**

- Access road = 10,560 square feet (700 Naugatuck Ave)

**863N & 863S Access:**

- Access road = 10,080 square feet (700 Naugatuck Ave)

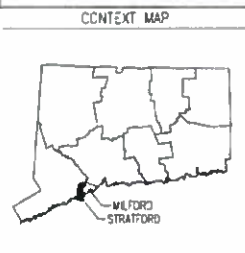
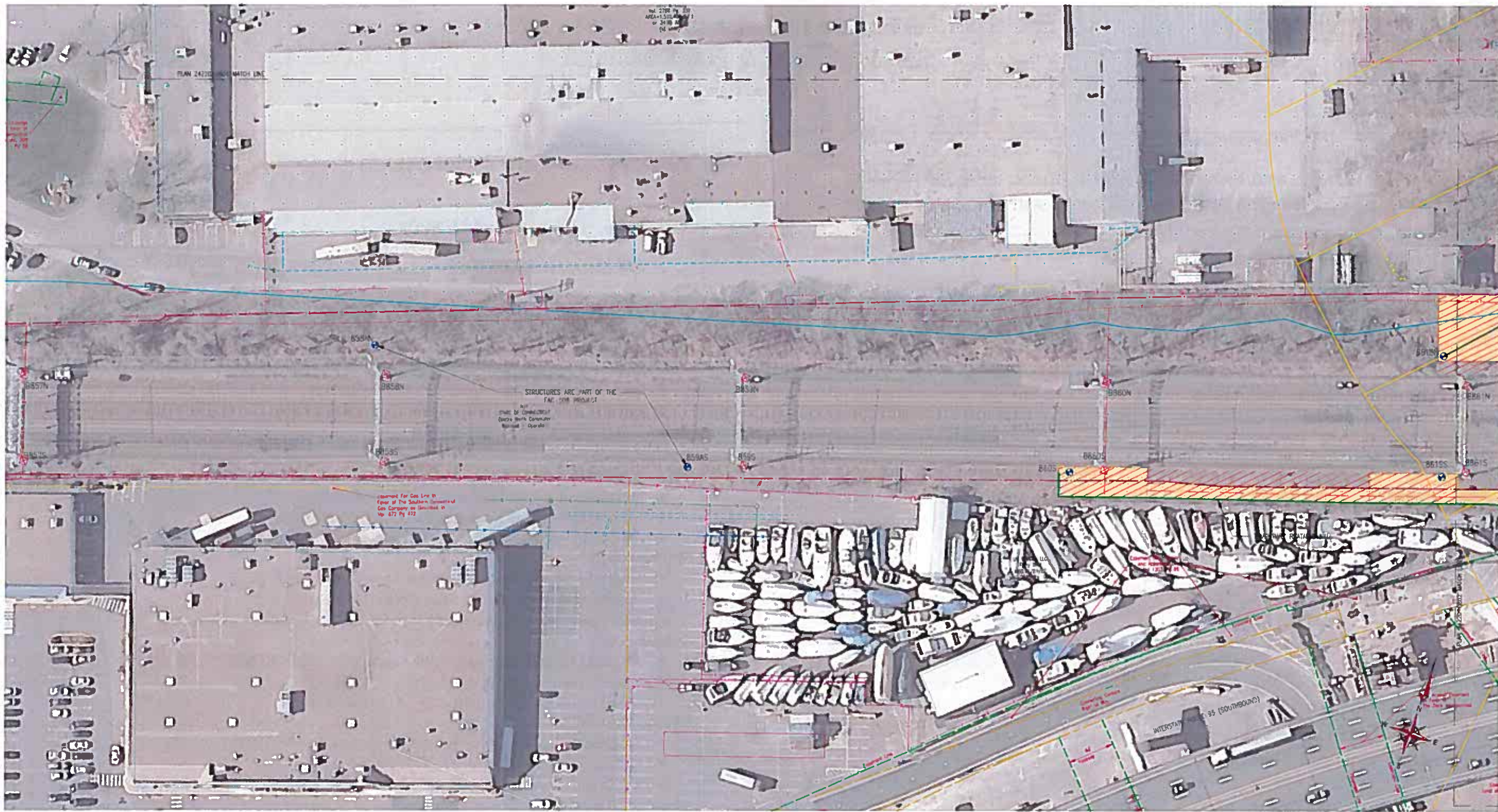
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18txl585630 dated March 18, 2012





**LEGEND:**

ALL CONSTRUCTION TRAFFIC	UNDERGROUND ELECTRIC LINE	COASTAL JURISDICTION LINE	FEMA SPECIAL FLOOD HAZARD AREAS
TOWN LINE	GAS LINE	WATERCOURSE	NATURAL DIVERSITY DATABASE (NDD) AREA
LI PROPERTY LINE	SANITARY SEWER	LIMIT OF WETLANDS	EXISTING ACCESS ROAD
PROPERTY LINE	STORM SEWER	FEMA 100 YEAR	CONSTRUCTION AREA
RAILROAD EDGE OF RIGHT-OF-WAY	TELECOMMUNICATIONS LINE	WETLANDS/MARSH	OCCUPATION AREA
EASEMENT	WATER LINE	VERNAL POOL	VEGETATION CLEARANCE
RETAINING WALL	FENCE	EXISTING STRUCTURE	WETLAND IMPACT AREA
		PROPOSED STRUCTURE	



**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNER	MAP	DRAWN	ALT
CHECKED	DATE	11/03/2014	
PROJECT # 181893			

NO	DATE	REVISION	DPN	DESN	CHKD	SUPR
A	11/03/2014	ISSUE FOR LI 7CR REVIEW - PROJECT 181893		ALT	MAP	

REFERENCE DRAWINGS:  
DRAWING INDEX: 24220-0002

No	Date	Revision	By	Chkd	Engr	Supv



TO E 8-1		DRAWING NUMBER	
TRANSMISSION LINE		24220-0801	
GENERAL ACCESS PLAN			
860S TO 861SN			
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER	

Crawn	Date	Scale: 1"=40'
Chkd	Design Engr.	Design Subv.



## DRAWING #:24220-0801

## Structure Locations 859 to 861 250 E Main St & 200 E Main St Stratford

### General Work Description:

New steel monopoles will be installed at 859N, 860N, 861N, 860S, 861SS, and 861SN. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 15 Days
- Installation of foundation – 18 Days
- Installation of steel pole – 24 Days
- Installation of wire – 18 Days

See reference drawings below for details.

### Special Provisions:

Permit #s

NDDDB area: Y (861N, 860S, & 861SN)

Environmentally Sensitive Area: N

Night work: Y

Feeder/Signal Outages: Y

Track Outages: Y

### Reference Drawings:

24219-101 – Plan & Profile (859N, 860N, 861N)

24219-300 – Drilled Pier Foundations (859N, 860N, 861N)

24219-500 – 859N, 860N Structure Loading

24219-501 – 861N Structure Loading

24220-102 – Plan & Profile (860S, 861SS, 861SN)

24220-300 – Drilled Pier Foundations (860S, 861SS, 861SN)

24220-500 – 860S Structure Loading

24220-501 – 861SS Structure Loading

24220-502 – 861SN Structure Loading

### Right-of-way Description:

#### Wetlands, Watercourses and Waterways

#### Access

- 250 E Main St, Stratford, CT 06614
  - 859N, 860N, 861N, and 861SN
- 200 E Main St, Stratford, CT 06614
  - 860S and 861SS

#### Construction Footprint

- Occupation Area = 2,150 square feet (200 E Main St) (NOT SHOWN)

#### Structure 859N:

- Vegetation/Land clearing = 8,250 square feet (MNR ROW)
- Access road = 3,720 square feet (250 E Main St)
- Work pad = 1,500 square feet 50' X 30' (MNR ROW)
- Work pad = 5,000 square feet 100' X 50' (250 E Main St) (Crane Pad)

#### Structure 860N:

- Vegetation/Land clearing = 18,250 square feet (MNR ROW)
- Access road = 3,240 square feet (250 E Main St)
- Work pad = 1,500 square feet 50' X 30' (MNR ROW)
- Work pad = 4,000 square feet 100' X 40' (250 E Main St) (Crane Pad)

#### Structure 861N:

- Vegetation/Land clearing = 10,000 square feet (MNR ROW)
- Access road = 3,960 square feet (250 E Main St)
- Work pad = 4,125 square feet 75' X 55' (MNR ROW)

#### Structure 860S:

- Vegetation/Land clearing = 4,300 square feet (MNR ROW)
- Access road = 3,240 square feet (200 E Main St)
- Work pad = 1,875 square feet 75' X 25' (MNR ROW)

#### Structure 861SS:

- Vegetation/Land clearing = 4,300 square feet (MNR ROW)
- Access road = 1,800 square feet (200 E Main St)
- Work pad = 1,875 square feet 75' X 25' (MNR ROW)

#### Structure 861SN:

- Vegetation/Land clearing = 0 square feet (MNR ROW)
- Access road = 0 square feet (200 E Main St)
- Work pad = 4,125 square feet 75' X 55' (MNR ROW)

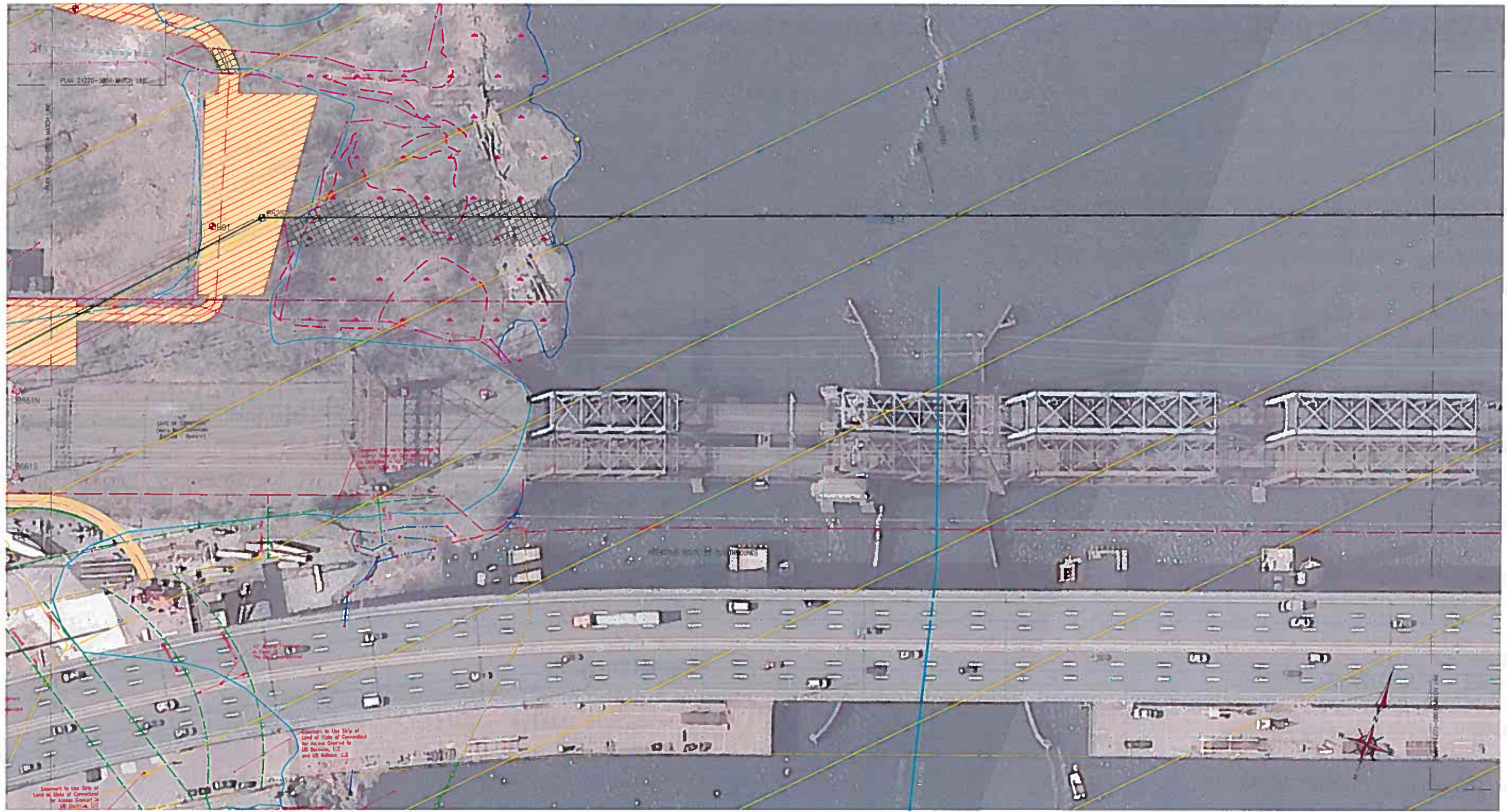
#### Road crossings

- NA

#### Aerial Imagery

- USGS 18tx1570630 dated March 18, 2012





**LEGEND**

--- ALL CONSTRUCTION TRAFFIC	--- UNDERGROUND ELECTRIC LINE	--- COASTAL JURISDICTION LINE	--- FEMA SPECIAL FLOOD HAZARD AREAS
--- TOWN LINE	--- GAS LINE	--- WATERCOURSE	--- NATURAL DIVERSITY DATABASE (NDD) ARFA
--- LI PROPERTY LINE	--- SANITARY SEWER	--- LIMIT OF WETLANDS	--- EXISTING ACCESS ROAD
--- PROPERTY LINE	--- STORM SEWER	--- FEMA 100 YEAR	--- CONSTRUCTION AREA
--- RAILROAD EDGE OF RIGHT OF WAY	--- TELECOMMUNICATIONS LINE	--- WETLANDS/MARSH	--- OCCUPATION AREA
--- EASEMENT	--- WATER LINE	--- VERNAL POOL	--- VEGETATION CLEARANCE
--- RETAINING WALL	--- FENCE	--- EXISTING STRUCTURE	--- WETLAND IMPACT AREA
		--- PROPOSED STRUCTURE	

40' 20' 0 40' 80'

# PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNER: JLS  
DRAWN: ALI  
CHECKED: DATE: 11/03/2014  
PROJECT # 181893

NO	DATE	REVISION	DRN	DES	CHKD	SUPR
A	11/03/2014	ISSUE FOR LI 70% REVIEW - PROJECT 181893		ALI	JLS	

REFERENCE DRAWINGS:  
DRAWING INDEX: 24220-0002

No	Date	Revision	By	Chkd	Engr	Supv

**ui**  
The United Illuminating Company

Crown: \_\_\_\_\_ Date: \_\_\_\_\_ Scale: 1"=40'  
Chkd: \_\_\_\_\_ Design Engr: \_\_\_\_\_ Design Supv: \_\_\_\_\_

TO E 3-1  
TRANSMISSION LINE  
GENERAL ACCESS PLAN  
862S

CAD FILE NAME: \_\_\_\_\_ SEQUENCE No: \_\_\_\_\_ DRAWING NUMBER: 24220-0802



**DRAWING #:24220-0802**

Structure Locations 862  
250 E Main St  
Stratford

**General Work Description:**

New steel monopoles will be installed at 862N, and 862S. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 15 Days
- Installation of foundation – 10 Days
- Installation of steel pole – 10 Days
- Installation of wire – 10 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDB area: Y

Environmentally Sensitive Area: N

Night work: N

Feeder/Signal Outages: N

Track Outages: N

**Reference Drawings:**

24219-101 – Plan & Profile (862N)

24219-300 – Drilled Pier Foundations (862N)

24219-502 – 862N Structure Loading

24220-102 – Plan & Profile (862S)

24220-300 – Drilled Pier Foundations (862S)

24220-503 – 862S Structure Loading

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 250 E Main St, Stratford, CT 06614
  - 860N and 862S

**Construction Footprint**

**Structure 862N:**

- Vegetation/Land clearing = 16,850 square feet (250 E Main St)
- Wetland Impact = 8,700 square feet (250 E Main St)
- Access road = 0 square feet (250 E Main St)
- Work pad = 12,750 square feet 170' X 75' (250 E Main St)

**Structure 862S:**

- Vegetation/Land clearing = 14,000 square feet (250 E Main St)
- Wetland Impact = 8,800 square feet (250 E Main St)
- Access road = 0 square feet (250 E Main St)
- Work pad = 12,750 square feet 170' X 75' (250 E Main St)

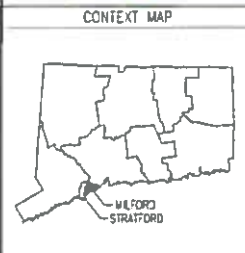
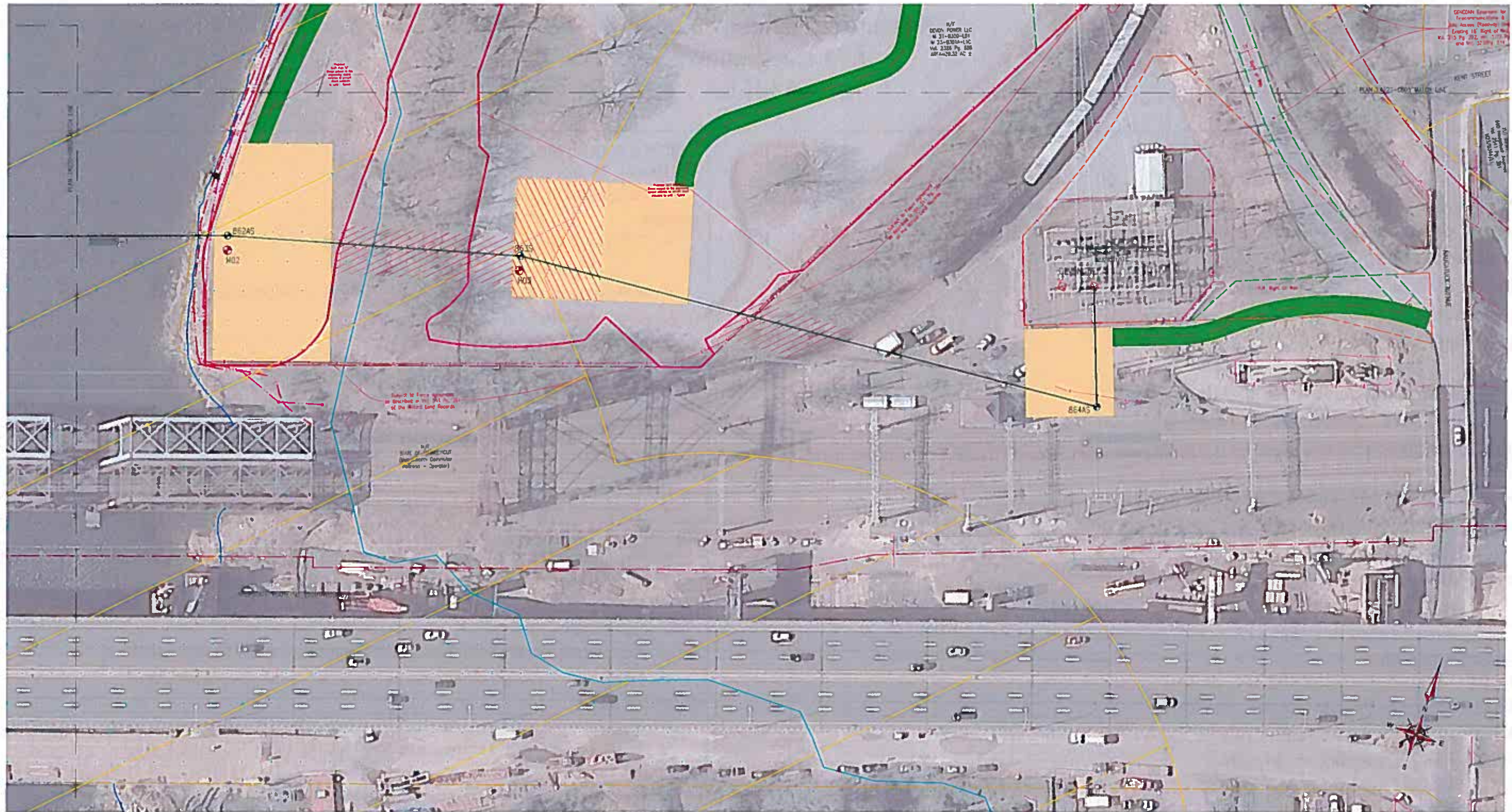
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18txl570630 dated March 18, 2012
- USGS 18txl585630 dated March 18, 2012





**LEGEND:**

--- ALL CONSTRUCTION TRAFFIC	--- UNDERGROUND ELECTRIC LINE	--- COASTAL JURISDICTION LINE
--- TOWN LINE	--- GAS LINE	--- WATERCOURSE
--- LI PROPERTY LINE	--- SANITARY SEWER	--- LIMIT OF WETLANDS
--- PROPERTY LINE	--- STORM SEWER	--- FEMA 100 YEAR
--- RAILROAD EDGE OF RIGHT-OF-WAY	--- TELECOMMUNICATIONS LINE	--- WETLANDS/MARSH
--- EASEMENT	--- WATER LINE	--- VERNAL POOL
--- RETAINING WALL	--- FENCE	--- EXISTING STRUCTURE
		--- PROPOSED STRUCTURE

--- FEMA SPECIAL FLOOD HAZARD AREAS
--- NATURAL DIVERSITY DATABASE (NDD) ARFA
--- EXISTING ACCESS ROAD
--- CONSTRUCTION AREA
--- OCCUPATION AREA
--- VEGETATION CLEARANCE
--- WETLAND IMPACT AREA



**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNER: JLS  
DRAWN: ALI  
CHECKED: --  
DATE: 11/03/2014  
PROJECT #: 181893

NO.	DATE	REVISION	DRN	DESN	CHKD	SUPR
A	11/03/2014	ISSUE FOR LI 70% REVIEW - PROJECT 181893		ALI	JLS	--

REFERENCE DRAWINGS:  
DRAWING INDEX: 24220-0002

No.	Date	Revision	By	Chkd	Engr.	Supv.

**ui**  
The United Illuminating Company

Drawn: \_\_\_\_\_ Date: \_\_\_\_\_  
Chkd: \_\_\_\_\_ Design Engr.: \_\_\_\_\_  
Scale: 1"=40'  
Design Suov.: \_\_\_\_\_

D █ TO E █ 8 █ 3-1	
TRANSMISSION LINE	
GENERAL ACCESS PLAN	
862AS TO D █ █	
CAD FILE NAME	SEQUENCE NO.
DRAWING NUMBER	
24220-0803	



**DRAWING #:24220-0803**

Structure Locations 862A to 864A  
694 Naugatuck Ave  
Milford

General Work Description:

New steel monopoles will be installed at 862AN, 863N, 864AN, 862AS, 863S, and 864AN. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 15 Days
- Installation of foundation – 22 Days
- Installation of steel pole – 26 Days
- Installation of wire – 20 Days

See reference drawings below for details.

Special Provisions:

Permit #s

NDDB area: Y (862AN, 863N, 862AS, & 863S)

Environmentally Sensitive Area: N

Night work: Y

Feeder/Signal Outages: Y

Track Outages: Y

Reference Drawings:

24219-101 – Plan & Profile (862AN, 863N)

24219-102 – Plan & Profile (863N, 864AN)

24219-300 – Drilled Pier Foundations (862AN, 863N, 864AN)

24219-502 – 862AN Structure Loading

24219-503 – 863N Structure Loading

24219-504 – 864AN Structure Loading

24220-102 – Plan & Profile (862AS, 863S, 864AS)

24220-300 – Drilled Pier Foundations (862AS, 863S, 864AS)

24220-503 – 862AS Structure Loading

24220-504 – 863S Structure Loading

24220-505 – 864AS Structure Loading

Right-of-way Description:

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 700 Naugatuck Ave., Milford, CT 06461
  - 862AN, 863N, 862AS, and 863S
- 694 Naugatuck Ave., Milford, CT 06461 – UI owned
  - 864AN and 864AS

**Construction Footprint**

- Occupation Area = None

Structure 862AN:

- Vegetation/Land clearing = 6,000 square feet (700 Naugatuck Ave)
- Work pad = 17,760 square feet 185' X 96' (700 Naugatuck Ave)

Structure 863N:

- Vegetation/Land clearing = 3,750 square feet (700 Naugatuck Ave)
- Work pad = 15,000 square feet 150' X 100' (700 Naugatuck Ave)

Structure 864AN:

- Vegetation/Land clearing = 3,800 square feet (MNR ROW)
- Access road = 4,400 square feet (694 Naugatuck Ave)
- Work pad = 5,625 square feet 75' X 75' (MNR ROW)

Structure 862AS:

- Vegetation/Land clearing = 6,100 square feet (700 Naugatuck Ave)
- Work pad = 17,760 square feet 185' X 96' (700 Naugatuck Ave)

Structure 863S:

- Vegetation/Land clearing = 3,750 square feet (700 Naugatuck Ave)
- Work pad = 15,000 square feet 150' X 100' (700 Naugatuck Ave)

Structure 864AS:

- Vegetation/Land clearing = 3,200 square feet (MNR ROW)
- Access road = 0 square feet (694 Naugatuck Ave)
- Work pad = 5,625 square feet 75' X 75' (MNR ROW)

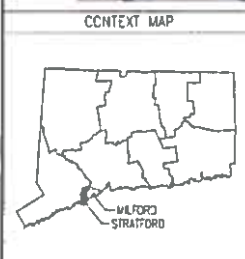
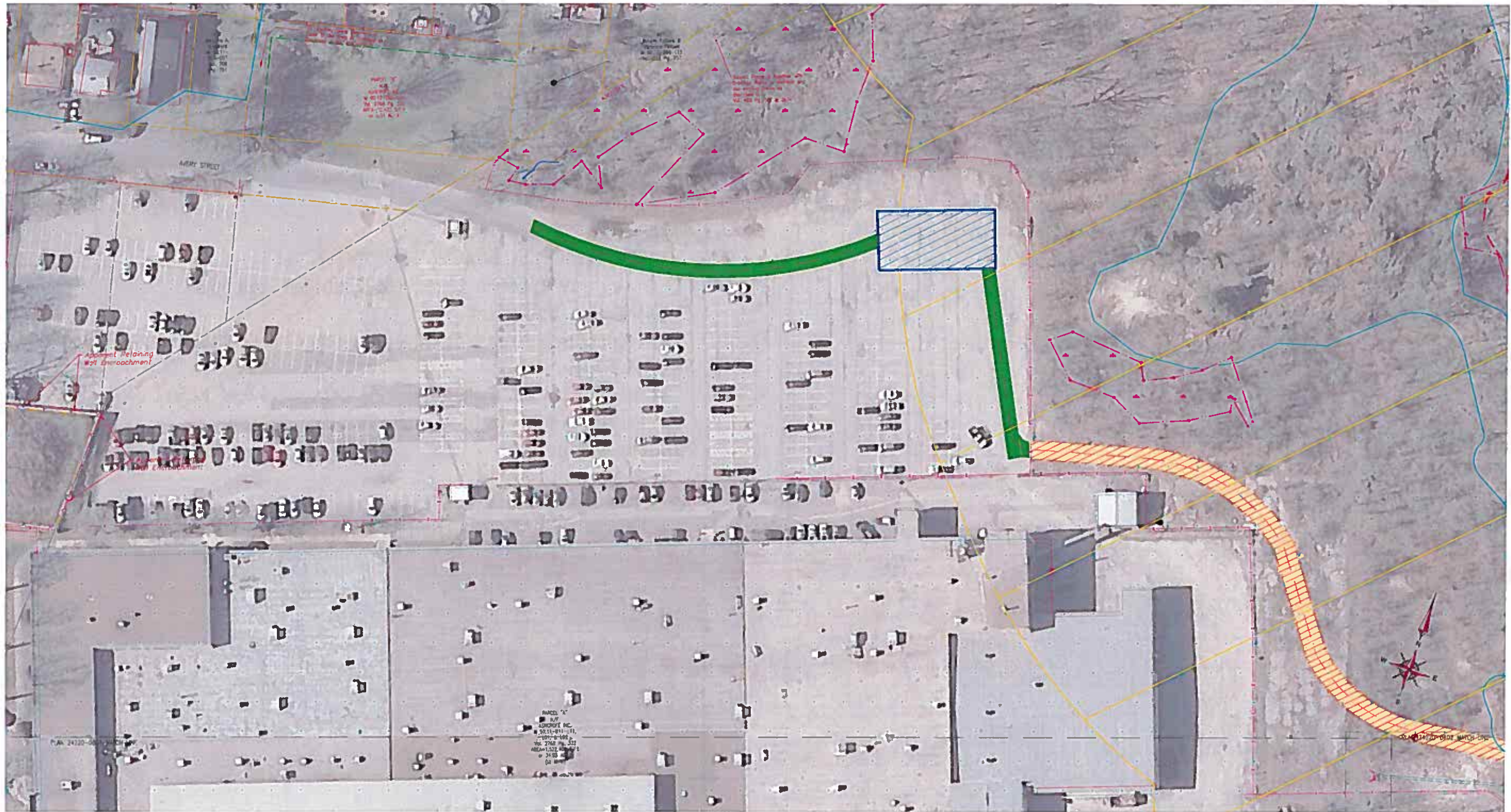
**Road crossings**

- NA

**Aerial Imagery**

- USGS 18tx1585630 dated March 18, 2012





**LEGEND:**

ALL CONSTRUCTION TRAFFIC	UNDERGROUND ELECTRIC LINE	COASTAL JURISDICTION LINE	FEMA SPECIAL FLOOD HAZARD AREAS
TOWN LINE	GAS LINE	WATERCOURSE	NATURAL DIVERSITY DATABASE (NDOB) AREA
LI PROPERTY LINE	SANITARY SEWER	LIMIT OF WETLANDS	EXISTING ACCESS ROAD
PROPERTY LINE	STORM SEWER	FEMA 100 YEAR	CONSTRUCTION AREA
RAILROAD EDGE OF RIGHT-OF-WAY	TELECOMMUNICATIONS LINE	WETLANDS/MARSH	OCCUPATION AREA
EASEMENT	WATER LINE	VERNAL POOL	VEGETATION CLEARANCE
RETAINING WALL	FENCE	EXISTING STRUCTURE	WETLAND IN FACT AREA
		PROPOSED STRUCTURE	

**REFERENCE DRAWINGS:**

NO.	DATE	REVISION	BY	CHKD.	ENGR./SUPV.



**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

**BLACK & VEATCH**  
Building a world of difference

DESIGNER: J.S. UNP/AN: ALT  
CHECKED: DATE: 11/03/2014  
PROJECT # 181893

NO.	DATE	REVISION	BY	CHKD.	SUPR.
A	11/03/2014	ISSUE FOR LA 7CR REVIEW - PROJECT 181893	ALT	MAP	-

REFERENCE DRAWINGS:  
DRAWING INDEX: 24220-0002

No.	Date	Revision	By	Chkd.	Engr./Supv.

**ui**  
The United Illuminating Company

Crown: \_\_\_\_\_ Date: \_\_\_\_\_ Scale: 1"=40'  
Chkd.: \_\_\_\_\_ Design Engr.: \_\_\_\_\_ Design Supv.: \_\_\_\_\_

DRAWING TITLE: TO E 8-1	SEQUENCE NO.:	DRAWING NUMBER:
1 TRANSMISSION LINE		24220-0804
GENERAL ACCESS PLAN		
ACCESS ROADS		



**DRAWING #:24220-0804**

Structure Locations 859 to 862  
250 E Main St  
Stratford

**General Work Description:**

Access road to new steel monopoles will be installed for 859N, 860N, 861N, 862N, 861SN, and 862S. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road/clearing – 10 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDB area: Y

Environmentally Sensitive Area: N

Night work: N

Feeder/Signal Outages: N

Track Outages: N

**Reference Drawings:**

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 250 E Main St, Stratford, CT 06614
  - 859N, 860N, 861N, 862N, 861SN, and 862S

**Construction Footprint**

- Occupation Area = 5,000 square feet (250 E Main St)

**862N & 862S Access:**

- Vegetation/Land clearing = 11,550 square feet (250 E Main St)
- Access road = 10,080 square feet (250 E Main St)

**Road crossings**

- NA

**Aerial Imagery**

- USGS 18txl570630 dated March 18, 2012







**DRAWING #:24220-0805**

Structure Locations 862A to 863  
250 E Main St  
Stratford

**General Work Description:**

Access road to new steel monopoles will be installed for 862AN, 863N, 862AS, and 863S. The following construction activities will occur with the stated durations, but may not occur on consecutive dates and may occur concurrently.

- Installation of access road – 3 Days

See reference drawings below for details.

**Special Provisions:**

Permit #s

NDDB area: Y

Environmentally Sensitive Area: N

Night work: N

Feeder/Signal Outages: N

Track Outages: N

**Reference Drawings:**

**Right-of-way Description:**

**Wetlands, Watercourses and Waterways**

Housatonic River

**Access**

- 700 Naugatuck Ave., Milford, CT 06461
  - 862AN, 863N, 862AS, and 863S

**Construction Footprint**

- Occupation Area = None

**862AN & 862AS Access:**

- Access road = 10,560 square feet (700 Naugatuck Ave)

**863N & 863S Access:**

- Access road = 10,080 square feet (700 Naugatuck Ave)

**Road crossings**

- NA

**Aerial Imagery**

- USGS 18txl585630 dated March 18, 2012

## **Attachment C**

Correspondence with Connecticut Department of Energy & Environmental Protection



Connecticut Department of  
**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

Bureau of Natural Resources  
Wildlife Division  
Natural History Survey – Natural Diversity Data Base

January 13, 2014

Mr. Shawn C. Crosbie  
The United Illuminating Company  
180 Marsh Hill Road  
Orange, CT 06477  
Shawn.crosbe@uinet.com

Regarding: Housatonic River Crossing, Milford/ Stratford – installation of 115 kva transmission towers  
Natural Diversity Data Base 201306483

Dear Mr. Crosbie:

In response to your request for a Natural Diversity Data Base (NDDB) Review of State Listed Species for Housatonic River Crossing in Milford/ Stratford, our records indicate the following extant populations of species on or within the vicinity of the site:

Peregrine Falcon (*Falco peregrinus*) Protection Status: Threatened Species

A pair of peregrine falcons is known to nest north of the Interstate 95 Bridge. Though somewhat tolerable of human disturbance, peregrine falcons will be negatively affected if work occurs during their nesting season and is too close to the nest.

Recommendation: Preferably work should be conducted work outside of the breeding season (July 31 – March 1) to protect nesting peregrine falcons. If work is conduct during the breeding season, activity should be a minimum of 600' from the nest.

The Natural Diversity Data Base includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. If the project is not implemented within 12 months, then another Natural Diversity Data Base review should be requested for up-to-date information.

Please be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEEP for the proposed site.

Thank you for consulting the Natural Diversity Data Base. If you have any additional questions, please feel free to contact me at [Elaine.Hinsch@po.state.ct.us](mailto:Elaine.Hinsch@po.state.ct.us).

Sincerely,  
/s/  
Elaine Hinsch  
Program Specialist II  
Wildlife Division



**Attachment D**  
CULTURAL REVIEW AND STUDY



## *INTEGRATED HISTORIC PRESERVATION PLANNING*

March 21, 2014

Shawn C. Crosbie  
Environmental Analyst  
UIL Holdings Corporation  
180 Marsh Hill Road  
Orange, Connecticut 06477

**RE: Preliminary Archeological Assessment of the Proposed United Housatonic Crossing Upgrade Project in Milford and Stratford, Connecticut**

Mr. Crosbie:

Heritage Consultants, LLC, is pleased to have this opportunity to provide United Illuminating, with the following preliminary archeological assessment of the Proposed United Housatonic Crossing Upgrade Project in Milford and Stratford, Connecticut. The currently proposed project plans for the separation of the existing utility lines from the overhead catenary system along Metro North's rail line system to a series of free-standing poles near the edge of the existing railroad corridor on eastern and western sides of the Housatonic River (Figure 1). The current project entailed completion of an existing conditions cultural resources summary based on the examination of GIS data obtained from the Connecticut State Historic Preservation Office, as well as historic maps, aerial photographs, and topographic quadrangles maintained by Heritage Consultants, LLC. This investigation did not consider the effects of the proposed construction upon built resources, and it is based upon project location information provided to Heritage Consultants, LLC by United Illuminating. The objectives of this study were: 1) to gather and present data regarding previously identified cultural resources situated within the vicinity of the Areas of Potential Effect; 2) to investigate the proposed project areas in terms of their natural and historical characteristics; and 3) to evaluate the need for completing additional cultural resources investigations.

**Brief Contextual History of the New York and New Haven Railroad (Metro North)**

In order to evaluate possible impacts the construction project may have cultural resource in the region, it was necessary to produce a historical context of the area. Railroad history in Fairfield and New Haven began in the 1840s, when the state's third railroad, the New York and New Haven Railroad, was incorporated. Its line from New Haven into New York State was completed in 1849, and it featured a single 69 mile iron track designed mainly for passenger traffic. During the 1860s, the line's economic situation improved, allowing for replacement of the rails with steel, the construction of new stations, and the expansion of maintenance facilities. The railroad also began to take more of an interest in freight shipping at that time. In 1872, the New York and New Haven Railroad merged with the Hartford and New Haven Railroad. Together they were the largest transportation company in Connecticut, and was renamed the New York, New Haven, and Hartford Railroad. Over the succeeding three decades, company leaders carried out a series of acquisitions and long-term leases, through which the rail line became a near-monopoly on transportation in the state. The company owned railroads (including almost 1,000 steam engines by 1904), steamboats, and electric trolley lines (Turner and Jacobus 1987). In the process it also purchased a number of electricity generation facilities (Campbell 1950). The company was an early

experimenter with electric engines, first moving the route between New Haven and New York to that mode of propulsion. The choice of overhead wire systems was made because the third-rail system was demonstrably unsafe on open tracks (Turner and Jacobus 1987).

In 1907, the rail line participated in fiscal overreach and shady dealings in the opening years of the twentieth century which led to a 1907 exposé and a series of investigations, fiscal retrenchment, and a series of fatal accidents. The president of the company resigned in 1913 and a series of prosecutions under the Sherman Anti-Trust Act led to some divestments. This anti-trust process was interrupted by the federal takeover of the railroads during World War I, and in 1920 a partially revived company began adding buses and trucking companies to its portfolio. Old debts from the pre-war era caught up to it during the Great Depression, however, and in 1935 it entered bankruptcy and a 12 year long period of reorganization that carried the company through World War II. In 1947, however, it was taken over by a corporate profiteer, and the combination of persistently deferred maintenance, cost-cutting, and competition from Interstate 95 (opened in 1958 as the Connecticut Turnpike) led to a new bankruptcy in 1961. This bankruptcy led to its forced merger – and consequent disappearance as a corporate entity – into the new Penn Central Transportation Company in 1968. That poorly-run company went into bankruptcy in by 1970, and in 1985, the Connecticut Department of Transportation bought much of the track and facilities. It now operates as Metro North.

### **Electrical Generation and Transmission along the Railroad Corridor**

The process of using electricity to power New York, New Haven and Hartford Railroad trains began in 1904, when the process of electrifying the track between Woodlawn, New York, and Stamford, Connecticut was begun. Opened for use in 1907, it was the country's first trunk line electrification and used alternating current, which was a break with the less efficient direct current systems that had been in common use up to that point. Much of the system was designed and built by Westinghouse Electric and Manufacturing Company, which was pioneering commercial use of alternating current at the time. Between 1911 and 1914, the electrification was continued an additional 45 miles to New Haven. Power generation was at first handled by a plant in Cos Cob, Greenwich, which was the first facility for generating 11,000 volts of alternating current at 25 cycles for railroad use. This later became the standard for railroad electrification in the United States. The plant included a monitoring and control system, and transmission was along an overhead catenary and trolley wire system. Electricity was also provided to stations and maintenance facilities. Finally, a signaling and communications system was also added. Various components of the system were improved while in service between 1907 and 1924. By 1912, further extension of electrification on other lines required the company to begin buying power from a Consolidated Edison predecessor company, in addition to that provided by the expanded Cos Cob plant (Stewart 2000).

Regardless of where the power came from, the railroad developed two different systems for transmitting it to the trains. There is an unusual section within a small area in Stamford, near the Darien line, which contains three wires above the track spaced by hangers, forming a downward-pointing triangle. The powered trolley wire comprises the lower point. Use of this type of system, however, showed that the hangers caused too much wear on the contact wire. As a result, flexible clips were installed to hold a new trolley wire below the original one, and no more of the triangular suspension system was built. The remainder of the electrical line uses a simpler system, with the catenary line suspended from “hanger beams” between “bridges.” The powered trolley line is suspended by hangers from those. The four trolley wires (for the four tracks) were insulated from one another and a system of separate powered sections and circuit breakers helped make operation and repair safer. The system also called for steel open truss bridges over the tracks about 300 feet apart to support the complex of wires. It also includes “anchor

bridges” about every two miles, which are much stronger structures that help support the weight of the wires and also carry transformers, access walkways, and other necessary items (Stewart 2000). This system has remained in place and in operation for over 100 years; however, the proposed project calls for the separation of the existing utility lines from the overhead catenary system to free-standing poles.

### **Results of the Current Investigation**

As the historical discussion above suggests, the portions of Milford and Stratford containing the proposed project tower locations were settled by the middle of the nineteenth century. This is confirmed by Figures 2 and 3, historic maps from 1856 and 1867, respectively, which demonstrate that these areas contained a well-developed system of roads and residential homes, as well as the tracks associated with the New York and New Haven Railroad (now Metro North). The area also contained many parcels of open land that were likely use for agricultural purposes. Thus, the area could be described as moderately settled as of the 1860s. As Figure 4, an aerial image taken in 1934, shows the railroad was fully built and in operation by the early twentieth century, and its path crossed through developed portions of Milford and Stratford. By this time a large subdivision had been built to the east and several large industrial facilities are located throughout the project region. Figure 5 shows continued development of the area surrounding the proposed tower locations and the associated railroad corridor as of 1949. This image shows major disturbance areas on both sides of the Housatonic River, and in close proximity to the rail line and the proposed tower locations. Figure 6, an aerial image captured in 1970, shows continued growth in the region, with the addition of a large manufacturing facility to the northwest of the proposed project area. Finally, Figures 7 and 8, aerial images dating from 1990 and 2012, respectively, show the area encompassing the proposed tower locations in their essentially modern state. It confirms the highly developed nature of the proposed tower locations and their proximity to the Metro North rail line.

During the current investigation, Heritage Consultants, LLC also collected data relating to previously completed cultural resources investigations within the vicinity of the proposed tower locations. The survey files of the Connecticut State Historic Preservation Office and Heritage Consultants, LLC revealed that these portions of Milford, Connecticut have been subjected to seven cultural resources studies (CHPC 234, 820, 1283, 1284, 1347, 1509, and 1715) (Figure 9). CHPC 234 is particularly important for the current investigation since was specific to the existing railroad corridor containing the currently proposed project items. During the 1980s, De Leuw, Cather completed CHPC234, which resulted in the identification of three National Register eligible structures, one historic railroad station, and one other historic bridge in Milford, Connecticut. Since the results of this investigation simply represent an inventory of what cultural resources present in the area as of 1980, there were no recommendations concerning additional recordation of these cultural resources. Finally, Heritage Consultants, LLC also completed a review of previously recorded archaeological sites and National Register of Historic Places Properties on file with the Connecticut State Historic Preservation Office (Figures 10 and 11). This review failed to identify any previously identified archaeological sites or National Register of Historic Places Properties within 0.4 km (0.25 mi) of the proposed tower locations.

In addition to a review of historic maps, aerial images, previously completed cultural resources investigations, and previously recorded cultural resources, Heritage Consultants, LLC reviewed, environmental characteristics that frequently are used to predict the location of yet-to-be-identified archeological sites. Typically distance to water, slope, and soil types are included as part of these predictive models. Favorable conditions are characterized by gently sloping, well-drained, undisturbed soils in close proximity to fresh water. While some of the proposed towers are situated in proximity to gently sloping areas and fresh water sources, it is clear in Figure 12 that the soils situated along the entirety of the railroad corridor have been substantially impacted by development over the last 150 years



or more. That is, all the proposed tower locations are situated within soil series designated as either Udorthents or Urban Land. While Udorthents are characterized by soils that have been substantially disturbed through cutting and filling activities, Urban Land is described as a land surface where at least 85 percent of it is covered by streets, parking lots, buildings and other impervious surfaces. Generally, the original soils within these series have been so significantly altered through excavating or filling that no other soil designation is possible. Udorthents and Urban Land soil types retain little, if any, potential to yield intact cultural deposits. Finally, pedestrian survey of the areas encompassing each of the proposed project items also was completed, the result of which clearly demonstrated the disturbed nature of each areas, as well as the presence of additional underground facilities (Photos 1 through 10).

### **Summary and Recommendations**

A review of environmental characteristics, historic maps and aerial images, and previously recorded cultural resources was used to assess the potential for the proposed project areas to contain intact subsurface deposits. Given the substantial amount of development within the proposed areas and the large number of previous disturbances, it is highly unlikely that intact soil deposits remain. Therefore, it is the professional opinion of Heritage Consultants, LLC that no further archeological investigations of the tower locations associated with the proposed United Illuminating Housatonic Crossing Upgrade Project in Milford and Stafford, Connecticut are warranted.

If you have any questions regarding this Technical Memorandum, or if we may be of additional assistance with this or any other projects you may have, please do not hesitate to call us at 860-667-3001 or email us [info@heritage-consultants.com](mailto:info@heritage-consultants.com). We are at your service.

Sincerely,



Nicholas Griffis, M.A.  
Staff Archaeologist

## REFERENCES CITED

- Campbell, C. L.  
1950 *Progress and Change: A Brief History of Connecticut's Largest Electric & Gas Utility*. NY: The Newcomen Society in North America.
- Connecticut, State of  
1932 *State Register and Manual*. Hartford, CT: The State.
- Cunningham, Janice P.  
1992 *Western Coastal Slope: Historical and Architectural Overview and Management Guide*. Historic Preservation in Connecticut, Volume I. Hartford, CT: Connecticut Historical Commission, State Historic Preservation Office.
- De Leuw, Cather  
1980 *CHPC 234: Historic and Archeological Resources of the Northeast Corridor: Connecticut*. Northeast Corridor Improvement Project. Washington, DC: U.S. Department of Transportation, Federal Railroad Administration.
- Grant, Tina, and Pederson, Jay P.  
1998 "The United Illuminating Company." *International Directory of Company Histories*, Vol. 21. Online resource: Funding Universe, < <http://www.fundinguniverse.com/company-histories/the-united-illuminating-company-history/>>, accessed March 19, 2014.
- Stewart, Robert C.  
2000 *New York, New Haven & Hartford Railroad Catenary Systems*. West Suffield, CT Historical Technologies; Newington, CT: Connecticut Department of Transportation.
- Turner, G. M., and M. W. Jacobus  
1989 *Connecticut Railroads: An Illustrated History*. Hartford, CT: Connecticut Historical Society.

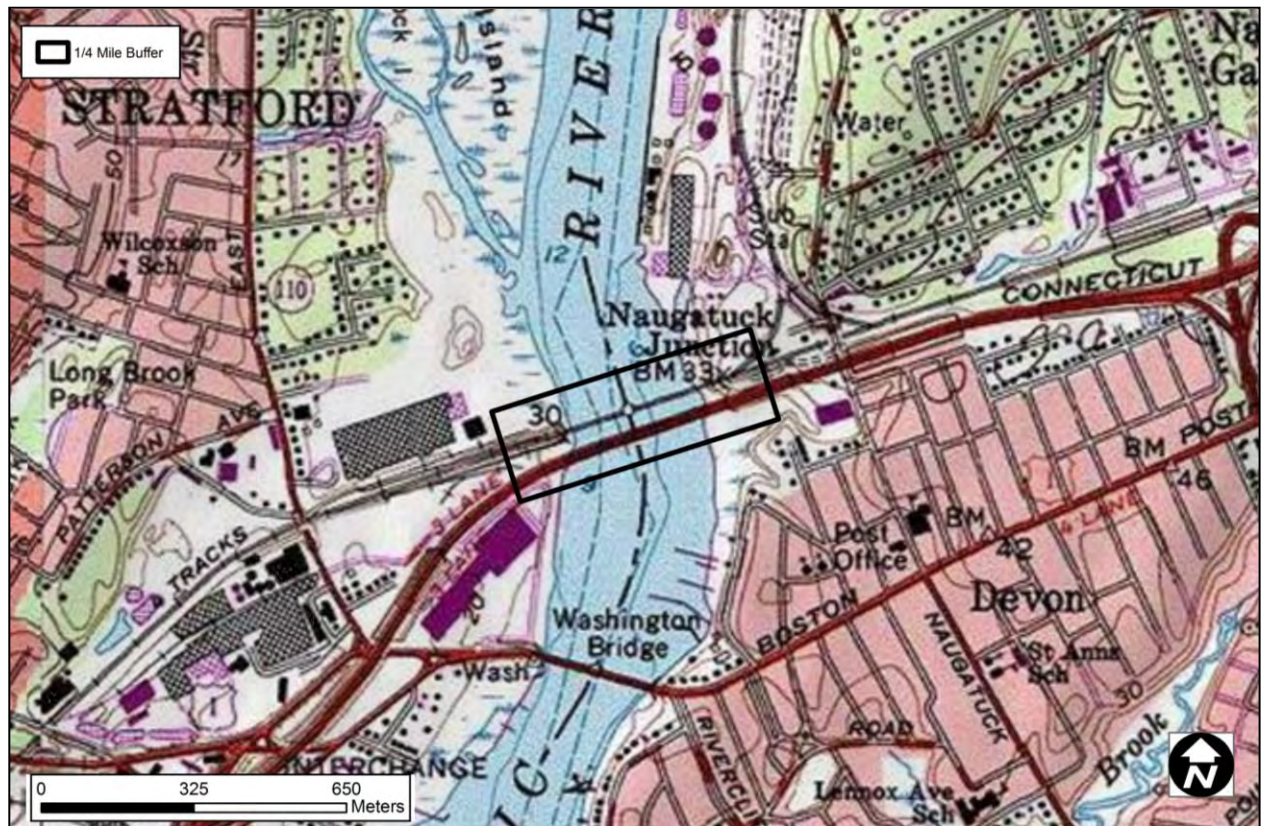


Figure 1. Excerpt from recent USGS topographic quadrangle map, depicting the proposed Housatonic Crossing Project Area.





Figure 2. Excerpt from a 1856 historic map depicting the proposed Housatonic Crossing Project Area.



Figure 3. Excerpt from a 1867 historic map depicting the proposed Housatonic Crossing Project Area.



Figure 4. Excerpt from a 1934 aerial image depicting the proposed Housatonic Crossing Project Area.





Figure 5. Excerpt from a 1949 aerial image depicting the proposed Housatonic Crossing Project Area.

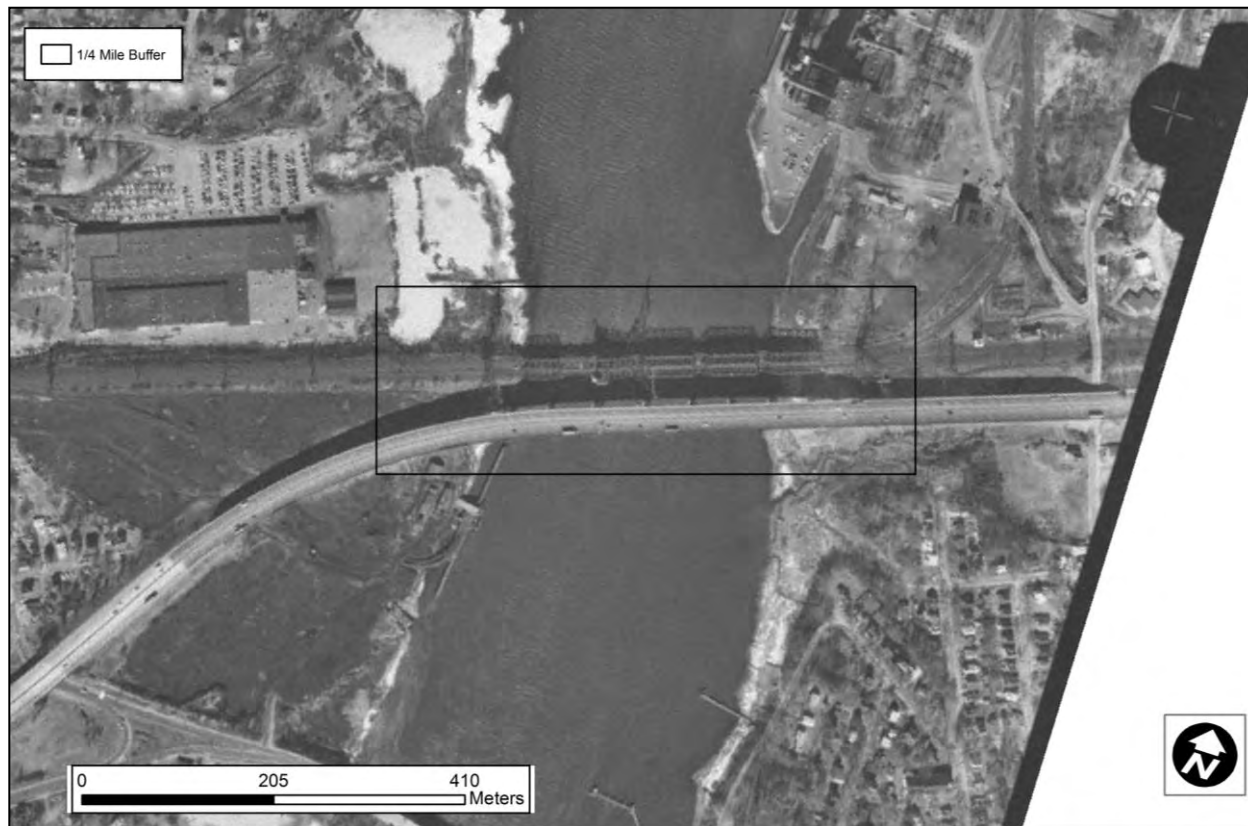


Figure 6. Excerpt from a 1970 aerial image depicting the proposed Housatonic Crossing Project Area.

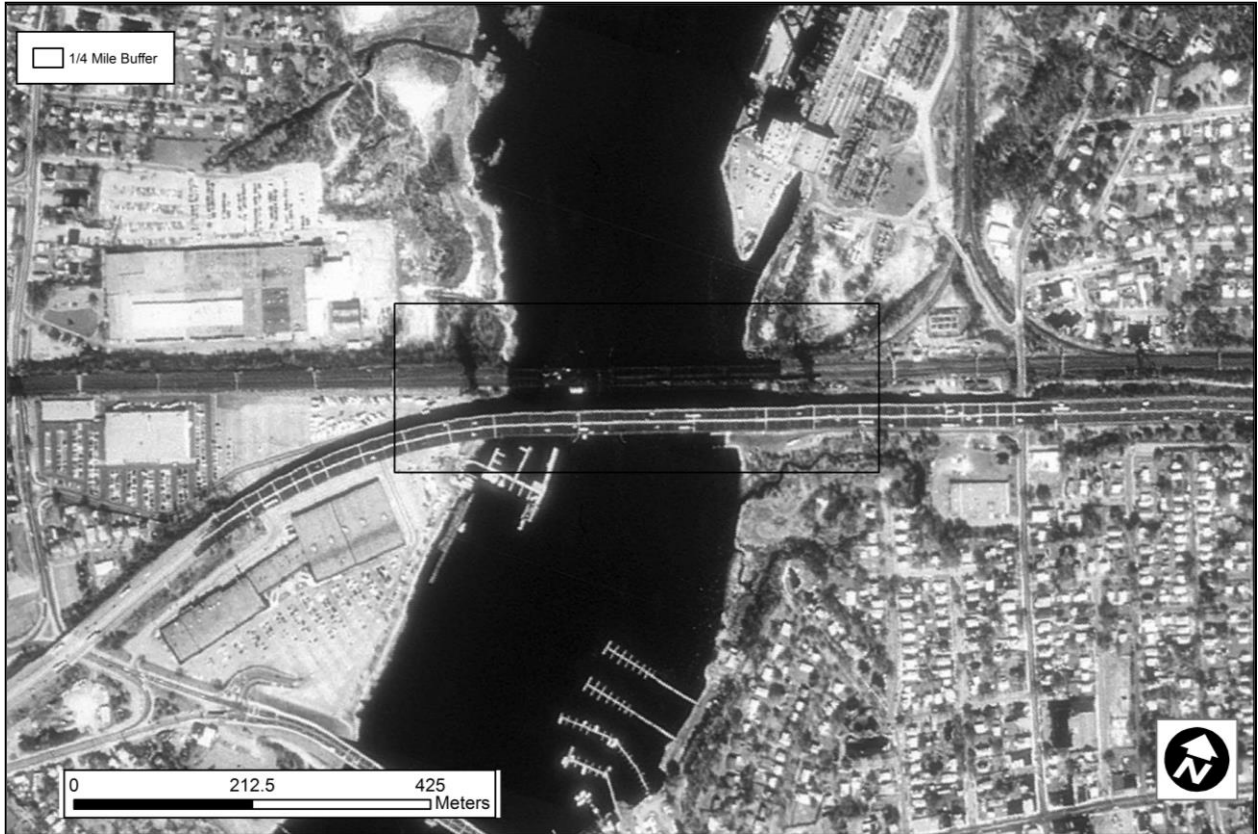


Figure 7. Excerpt from a 1990 aerial image depicting the proposed Housatonic Crossing Project Area.





Figure 8. Excerpt from a 2012 aerial image depicting the proposed Housatonic Crossing Project Area.

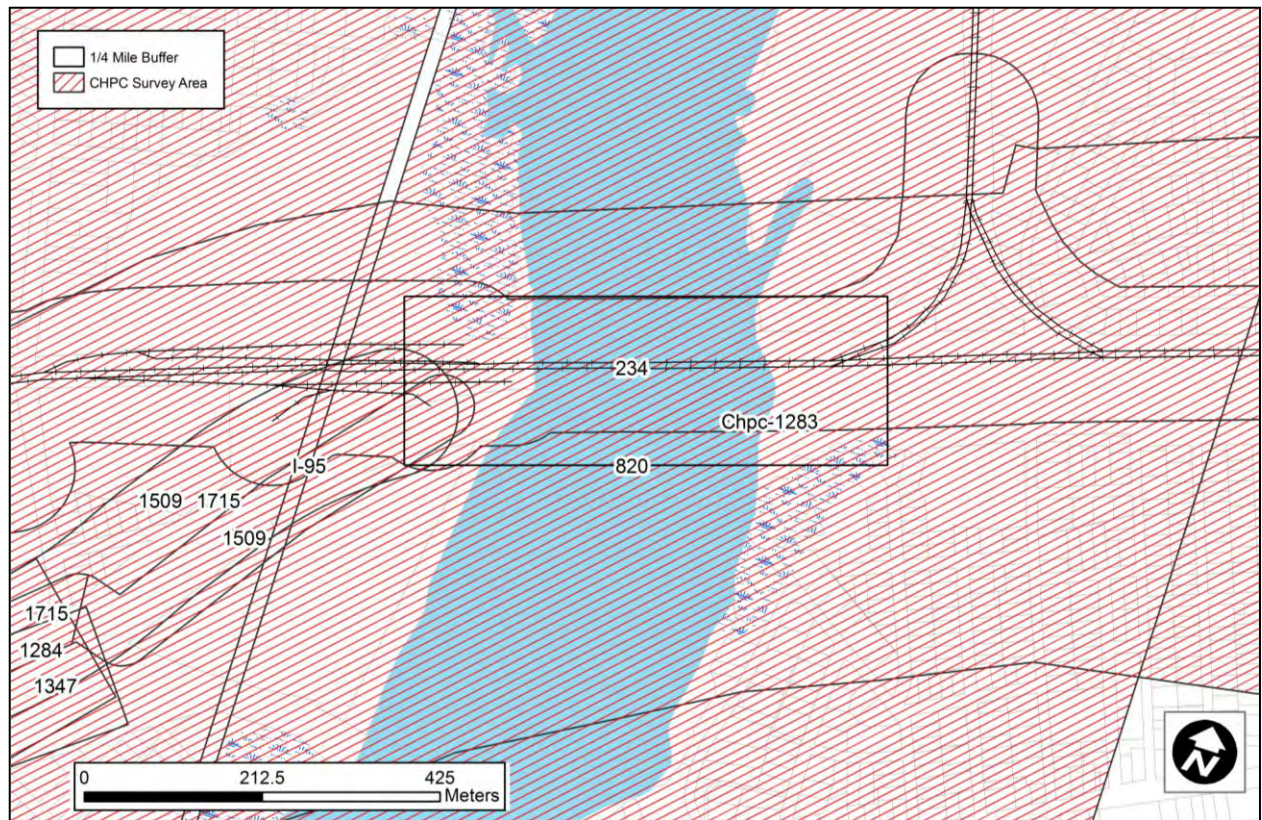


Figure 9. Digital map depicting the locations of previously completed cultural resources surveys in the vicinity of the proposed Housatonic Crossing Project Area.



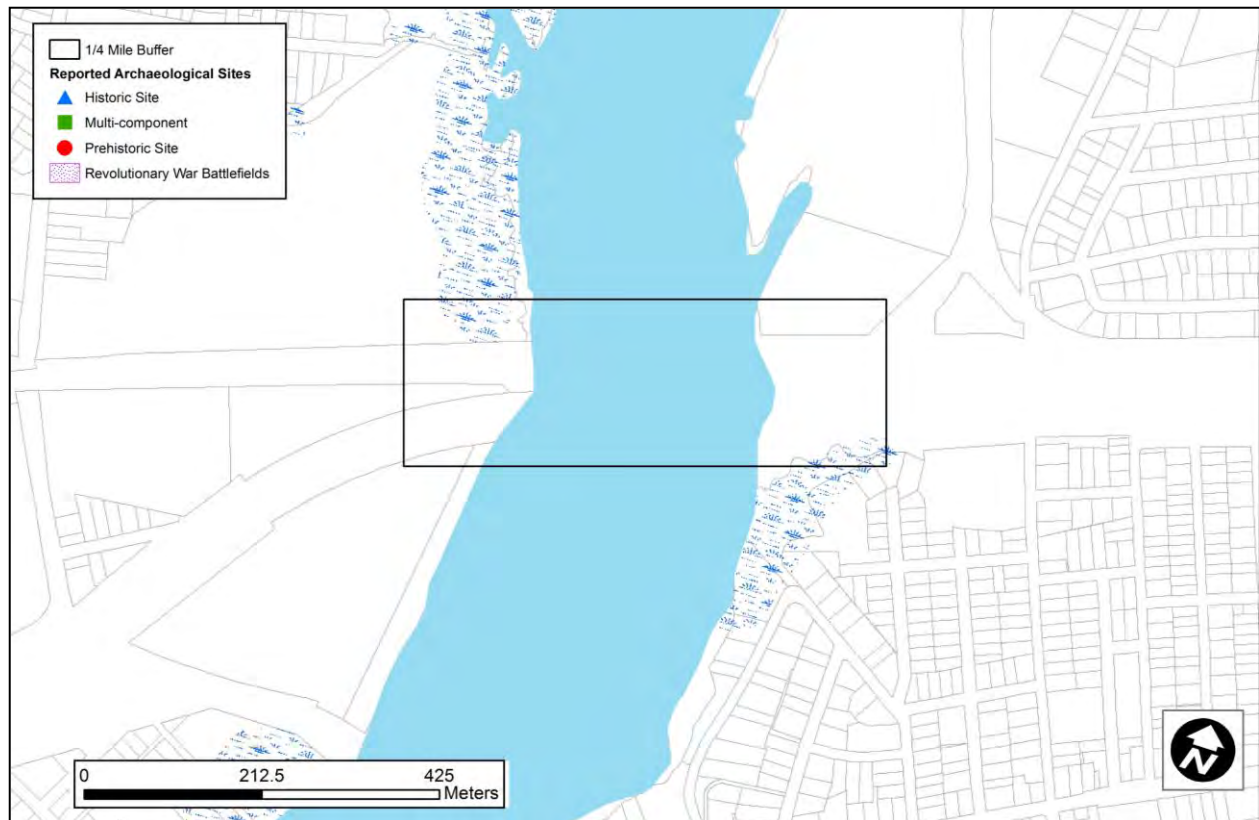


Figure 10. Digital map depicting the locations of previously recorded archaeological sites in the vicinity of the proposed Housatonic Crossing Project Area.



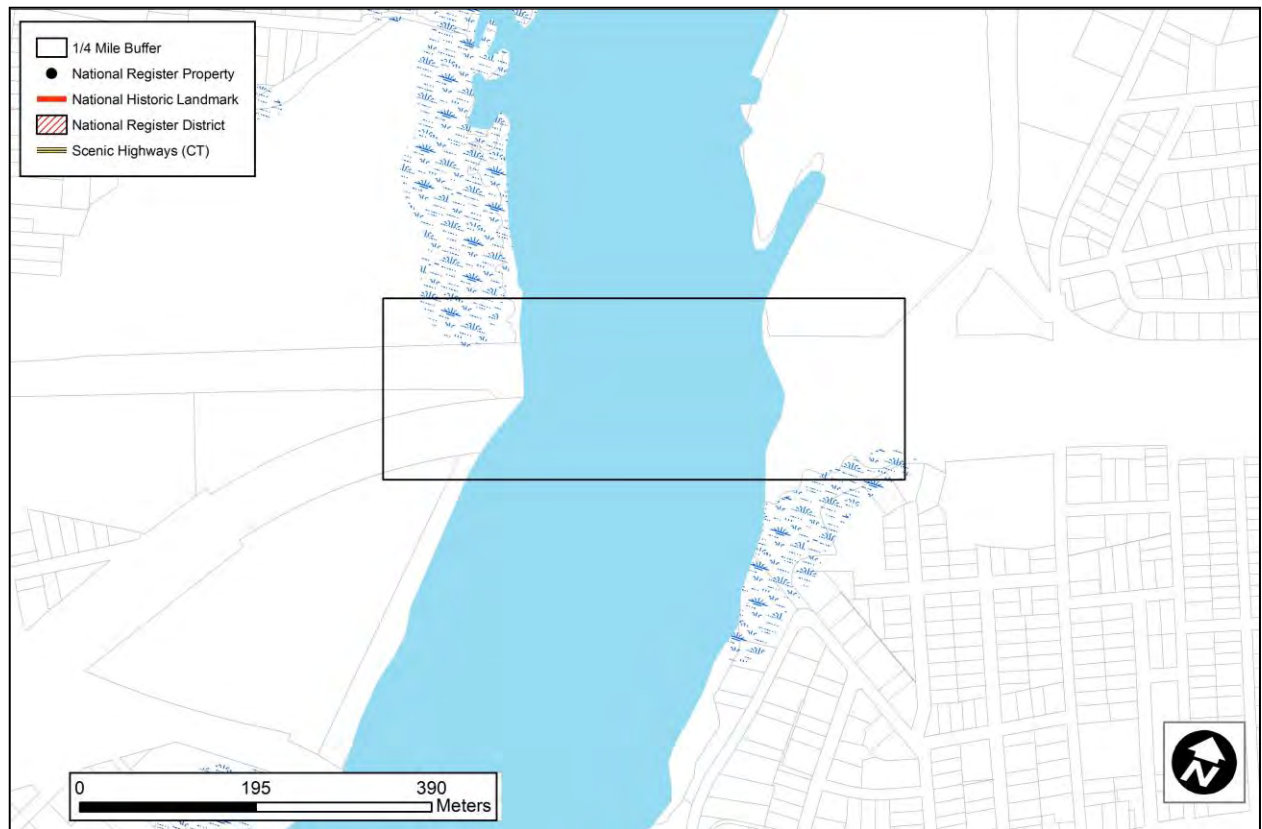


Figure 11. Digital map depicting the locations of previously recorded National Register of Historic Places properties in the vicinity of the proposed Housatonic Crossing Project Area.

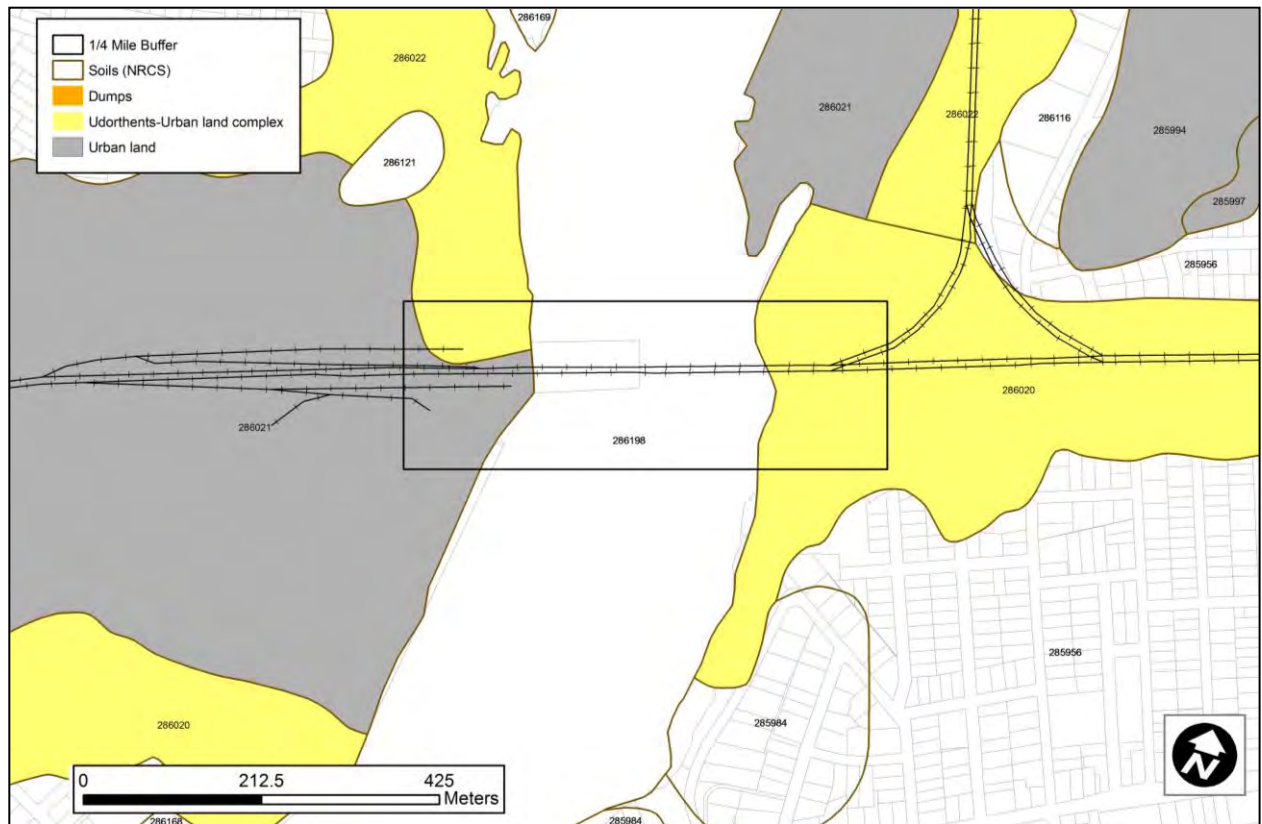


Figure 12. Digital map depicting the distribution of various soil in the vicinity of the proposed Housatonic Crossing Project Area.



Photo 1. Overview photo of the proposed project area located on the east side of the Housatonic River facing west.



Photo 2. Overview photo of the proposed project area on the east side of the Housatonic River facing west.





Photo 3. Overview photo of the proposed project area on the east side of the Housatonic River facing northwest (note towers will be located in the graveled area in the background of the photo).



Photo 4. Overview photo of access to the proposed project area on the east side of the Housatonic River facing east.



Photo 5. Overview photo of access to the proposed project area on the east side of the Housatonic River facing northwest.



Photo 6. Overview photo of access to the proposed project area on the east side of the Housatonic River facing southwest (note that the proposed towers will be built adjacent to the tower shown in the background).





Photo 7. Overview photo of access to the proposed project area on the west side of the Housatonic River facing west.



Photo 8. Overview photo of access to the proposed project area on the west side of the Housatonic River facing southwest.





Photo 9. Overview photo of the proposed project area on the west side of the Housatonic River facing east.



Photo 10. Overview photo of the access to the proposed tower locations on the west side of the Housatonic River facing northwest.

**Attachment E**  
CORRESPONDENCE WITH THE STATE HISTORIC PRESERVATION OFFICE  
(SHPO)



Department of Economic and  
Community Development



May 27, 2014

Shawn C. Crosbie  
Environmental Analyst  
UIL Holdings Corporation  
180 Marsh Hill Road  
Orange, Connecticut 06477

Subject: Comments on Preliminary Archeological Assessment of the Proposed United Housatonic Crossing Upgrade Project in Milford and Stratford, Connecticut

Dear Mr. Crosbie,

The State Historic Preservation Office (SHPO) is responding to your request for our review of the above-referenced project and an archaeological assessment prepared by Heritage Consultants, LLC (Heritage). United Illuminating (UI) proposes the separation of utility lines from the existing overhead catenary system on Metro North's rail line system to free-standing monopoles constructed along the margins of the rail line. Heritage completed a review of SHPO historic resource inventories and background research to assess the potential for the project to affect known archaeological sites and/or areas where archaeological resources can be anticipated (i.e. "archaeologically sensitive areas"). Based on the materials submitted to our office, SHPO believes the Heritage investigations were conducted in accordance with our *Environmental Review Primer for Connecticut's Archaeological Resources* and provide a sound basis for evaluating the project's potential impacts to buried historic properties.

As noted by Heritage, the proposed installation of new poles will be largely confined to previously developed and now disturbed areas. Historic cartographic sources, soil mapping, existing underground utility installations, and pedestrian survey of the Areas of Potential Effects (APE) for this undertaking all support Heritage's opinion that intact and potentially significant archaeological resources are unlikely to be present within the areas of anticipated ground disturbance.

*"[It] is the professional opinion of Heritage Consultants, LLC that no further archeological investigations of the tower locations associated with the proposed United Illuminating Housatonic Crossing Upgrade Project in Milford and Stratford, Connecticut are warranted." (Heritage Technical Memorandum dated 3/21/14).*

SHPO therefore concurs with Heritage's recommendation that further archaeological surveys or other investigations are not warranted with respect to this project. Prior ground disturbance appears to have affected the soils and sediments which may once have contained archaeological deposits.

The 1904 Housatonic River Railroad Bridge, also known as the Devon Railroad Bridge, appears to be in the APE for the Housatonic River Crossing Project. As we noted in our recent comments on the related United Illuminating FAC008 project, the structure was listed in the National Register of Historic Places in 1987 and is a significant early example of a Scherzer Rolling Lift Bascule-type movable bridge. It is our understanding from consultations with United Illuminating representatives that this project will not include any physical alterations to the bridge, itself. Based on the materials provided to our office, it is SHPO's opinion that this undertaking will have no adverse effects to historic properties.

The State Historic Preservation Office appreciates the opportunity to review and comment on this proposal and the CT Siting Council's consideration of historic resources in the exercise of its jurisdiction. We look forward to





Department of Economic and  
Community Development

**Connecticut**  
*still revolutionary*

working with you and your clients on this important project. If you have any questions concerning our comments please contact me at (860) 256-2761 or Daniel.Forrest@CT.gov.

Sincerely,

A handwritten signature in blue ink that reads "Daniel T. Forrest".

Daniel T. Forrest  
State Historic Preservation Officer

CC: Bellantoni/OSA

**Attachment F**  
VERNAL POOL MEMO



May 16, 2014

Black and Veatch Corporation  
11401 Lamar Avenue  
Overland Park, KS

**Re: Project:** Housatonic River Crossing Replacement, UI  
**Site:** NRG property, Milford; Ashcroft property, Stratford, Connecticut  
**BL Project No.:** 13S2020

Dear Black and Veatch,

BL Companies, Inc. (BL) completed an on-site investigation to determine the presence or absence of vernal pools on the above referenced properties (NRG property, Milford and Ashcroft property, Stratford, CT), as requested and authorized. This investigation involved an inspection for the presence of or potential for, a seasonal or permanent wetland in a defined depression or basin that lacks a fish population and supports or is capable of supporting breeding and development of amphibian or invertebrate species recognized as obligate to such wetlands.

#### **INVESTIGATION**

The project site was investigated on May 6, 2014 with a temperature in the mid-60's under partly cloudy conditions. The site visit was conducted during normal working hours between eight in the morning and four in the afternoon. The entirety of the property limits were walked in diagonal patterns to search for isolated depressions, basins and areas of seasonal or permanent inundation. The project site was investigated during the time of year when it was confirmed that breeding in other known vernal pools in the region had begun, and therefore, if any vernal pools were present, they would display evidence of breeding activity (i.e. egg masses). Biologists conducting the field work also listened for frog calls during their investigation.

The geographic location of the project site itself limits the presence and potential for vernal pools. The site straddles the mouth of the Housatonic River near it's confluence with Long Island Sound, which is a tidal area that fluctuates water levels with the tides. These conditions are not conducive to the presence of amphibians that would inhabit vernal pools. The project site on the Milford side of the river is heavily developed, with electrical substations and gravel lay down yards. No presence of or potential for vernal pools were observed in this area.

On the west side of the river, in Stratford, the landscape transitions from a tidal floodplain shelf to a lightly forested and disturbed upland with notable exposed areas of granite bedrock. It was evident by the small mounds and areas of pavement that this portion of the site had been previously disturbed. Five inundated depressions were found in the central portion on the Stratford



side of the site. No indicators of amphibian breeding or development were observed or heard at these depressions during the site investigation. The area surrounding the observed depressions is not suitable habitat for species that utilize vernal pools. This area includes paved and gravel parking lots associated with an industrial development and smooth exposed granite bedrock. No adult or larval stages of amphibians were observed in the isolated depression areas. No egg masses were present, and no invertebrates were observed in these isolated depressions. No frog calls were noted.

## CONCLUSION

Based on the site's juxtaposition, surrounding habitat types and field investigation, no evidence was observed within the project limits either east or west of the Housatonic River that would suggest the presence of vernal pools.

## REFERENCES

1. Pawlak, Edward M. , 2000. *Guidance to Connecticut's Municipal Inland Wetlands and Watercourses Agencies: Vernal Pool Definition/ Indicators*, DEP Bureau of Water Management, Hartford, CT.

## CLOSING

Thank for the opportunity to work with you on this project.

Very truly yours,



BL COMPANIES

Chris McGinness, CPESC  
Project Scientist  
Environmental Resources Group

Enclosures



**BL** Architecture  
Engineering  
Environmental  
Land Surveying  
Companies

13S2020

**Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014**

**SITE  
MAP**



PHOTO 1: View of watercourse 1 - eastern bank looking south.



PHOTO 2: View of watercourse 1 - western bank looking south.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
1





PHOTO 3: View of northern floodplain of watercourse 1 looking south.



PHOTO 4: View of floodplain of watercourse 1 looking southeast.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
2





PHOTO 5: View of northwestern bank of watercourse 1 in vicinity of coastal jurisdiction line.



PHOTO 6: View of the northern finger of wetland 1 looking northeast toward the Housatonic River - Stratford side.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
3





PHOTO 7: View of wetland 1 at the northern portion of the site limits on the Stratford side.  
Looking north.



PHOTO 8: View of wetland 2 looking northwest at the central portion of the wetland.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
4





PHOTO 9: View of wetland 2 in the central portion of the site looking south (Stratford Side)



PHOTO 10: View of southern portion of wetland 2 located in the central portion of the Stratford side of the site.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
5





PHOTO 11: View of western end of wetland 2 looking northwest.



PHOTO 12: View of upland portion northwest of wetland 2 at typical exposed bedrock.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
6

**Attachment G**  
**WETLAND DELINIATION REPORT**





Architecture  
Engineering  
Environmental  
Land Surveying

**Wetland Identification and Delineation Report**

**Housatonic River Crossing Replacement  
179785.78.0106**

**Milford and Stamford, CT**

**BL Project No.: 13S202**

Prepared for

**Black & Veatch Corporation  
Overland Park, KS**

Prepared by

**BL Companies, Inc.  
355 Research Parkway  
Meriden, CT 06450**

**May 16, 2014**

**Wetland Identification and Delineation Report**

**Housatonic River Crossing Replacement  
Milford and Stamford, CT**

**TABLE OF CONTENTS**

	<u>Page</u>
I. Introduction .....	1
II. Methods .....	1
III. Regulatory Information.....	2
IV. Site Investigation .....	3
V. Resource Descriptions .....	4
VI. Summary .....	5
VII. Preparer .....	5

**Figures**

Site Location Map.....	1
------------------------	---

**Appendices**

- A. Photographs
- B. Resource Mapping
- C. Wetland Survey Mapping
- D. Wetland Data Sheets

## I. INTRODUCTION

BL Companies, Inc. (BL) conducted a site investigation to delineate state and federal wetlands and Waters of the United States. The project site is located in the Towns of Milford and Stamford, Connecticut (Figure 1). The coordinates for the approximate center of the project are Latitude 41°12'22.61"N and Longitude 73° 6'35.78"W. The project site is approximately 0.4 mile long, spanning from the east and west banks of the Housatonic River, north of the Metro North rail way and associated wetlands in the vicinity of the right-of-way (hereinafter referred to as the "Site").

The purpose of this report is to document and describe state, and federal jurisdictional wetlands, i.e. Waters of the United States.



Figure 1 – Site Location Map Milford and Stamford, CT

## II. METHODS

This investigation involved a wetland/watercourse delineation that was completed by a wetland scientist and qualified soil scientist and conducted in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) Soil Survey Manual (1993). The soil classification system of the National Cooperative Soil Survey was used in this investigation to identify the soil map units present on the project site.



Vegetation, soils, and hydrology were observed and documented during the site investigation in accordance with state and federal delineation methodologies. Soil types were identified by observing soil morphology (soil texture, color, structure, etc.). To observe the morphology of the soils, test pits and/or hand borings (generally to a depth of at least two feet) are completed. Where wetland and/or watercourses were determined to be present, their boundaries were identified with flags and hung from vegetation or small wood stakes if in fields or grass communities. These flags are labeled "Wetland Boundary" and generally spaced a maximum of approximately 50 feet apart. It is important to note that flagged wetland and watercourse boundaries are subject to verification by local, state, or federal regulatory agencies.

### III. REGULATORY INFORMATION

Inland wetlands and watercourses are regulated by both state, municipal and federal laws and regulations, each with different definitions and regulatory requirements. Accordingly, the State and municipalities may regulate wetland and waters that fall outside of federal jurisdiction; however, where federal jurisdiction exists concurrent State jurisdiction is almost always present. It is important to note that Municipalities do not have jurisdiction over tidal waters and wetlands in Connecticut, as permitting is at the state level regarding these resources. Various local commissions (Harbor Management and Shellfish) do however, have input into this permitting process.

#### State/Municipal Jurisdiction

Inland wetland determinations are based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land. Watercourses are defined as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." Intermittent watercourse determinations are made based on the presence of a defined permanent channel and bank, and two of the following characteristics: (1) evidence of scour or deposits of recent alluvium or detritus, (2) the presence of standing or flowing water for a duration longer than a particular storm incident, and (3) the presence of hydrophytic vegetation. (See Inland Wetlands and Watercourses Act §22a-38 CGS.)

The DEEP's Office of Long Island Sound Programs (OLISP) regulates all activities conducted in tidal wetlands and in tidal, coastal or navigable waters in Connecticut under the [Structures, Dredging and Fill Act](#) (Conn. Gen. Statutes (CGS) Sec. 22a-359 - 22a-363f, inclusive) and the [Tidal Wetlands Act](#) (CGS Sec. 22a-28 - 22a-35, inclusive). Recently, The High Tide Line (HTL), which was used as the jurisdictional limit for DEEP OLISP, was replaced by a Coastal Jurisdiction Line (CJL). The CJL elevation for Milford is 4.7' and Stratford is 4.8' (NAVD 88). Tidal wetlands are also separately regulated below the CJL, and up to one foot above the CJL if the area is deemed "capable of supporting" tidal wetland vegetation based on field investigations, through identification of certain plants and the presence of tidal waters.

### **Federal Jurisdiction**

Jurisdictional wetlands at the Federal level consist of "waters of the United States", which includes lakes, rivers and streams, as well as vegetated wetlands (See 33 CFR 328.8). The onsite waters and wetlands, regulated by the U.S. Army Corps of Engineers (ACOE), were delineated in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual Northcentral and Northeast Region* (Version 2.0) (January 2012). This *Manual* requires there to be dominant hydrophytic vegetation, hydric soils, and hydrological conditions present in determining wetland areas

Federal coastal jurisdiction under the Section 404 Clean Water Act includes navigable waters of the US below the High Tide Line (HTL). Federal jurisdiction includes all waters and their tributaries to the head of tide, which extends shoreward to the mean high water line under Section 10 of the Rivers and Harbors Act, and extends shoreward to the 1 year frequency tidal flood under Section 404 of the Clean Water Act.

## **IV. SITE INVESTIGATION**

The project Site was investigated on May 6, 2014, with a temperature in the upper 60's °F under sunny conditions.

The field investigations were conducted within the area between the Ashcroft Property (Stratford, CT, west bank of Housatonic River) and Devon Power (Milford, CT, east bank of Housatonic River).

Areas identified as jurisdictional wetlands at the federal, state and municipal levels during the field investigations included:

1. An estuarine subtidal unconsolidated bottom subtidal mixohaline (E1UEL3) watercourse (Housatonic River) located along the Devon Power property; and
2. An estuarine intertidal emergent persistent wetland (E2EM1) that receives tidal and fresh waters and is located on the west side of the Housatonic River on the Ashcroft property; and
3. A palustrine scrub-shrub broad-leaved deciduous seasonally flooded/saturated wetland (PSS1E) along the west boundary of the Ashcroft property.

Data on the current plant communities, soils, and hydrology were documented to support the wetland delineation. Descriptions of the delineated wetland resources are provided in **Section V**. Photographs of the identified wetland resources, taken to provide visual documentation of the area, are located in **Appendix A**. Additional resource mapping and information is located in **Appendix B**. The location of the data points are identified on the wetland mapping located in **Appendix C**, and data sheets are located in **Appendix D**.

## V. RESOURCE DESCRIPTIONS

### Watercourse 1: USFWS Classification: E1UEL3

This watercourse is classified as estuarine subtidal unconsolidated bottom subtidal mixohaline (E1UEL3) which receives both fresh and tidal waters. This system is the Housatonic River and is brackish. The area is well developed and the subject property is used as a substation. The watercourse bordering the property to the west is lined with riprap and is very steep. A small peninsula juts out from the property, with an area above the high tide line and CJL that is capable of tidal vegetation growth. High-tide bush (*Iva frutescens*), Stilt Grass (*Panicum virginica*) and Gray Birch (*Betula populifolia*) are prevalent along the watercourse edge growing through the riprap and along the top of the peninsula area. High-tide bush and Stilt Grass are considered tidal vegetation by the State of Connecticut.

The watercourse itself is a navigable waterway and therefore falls within the jurisdiction of CTDEEP-OLISP, the U.S. Army Corp of Engineers as well as the U.S. Coast Guard. The HTL and CJL incorporates the majority of the river bank along the west side of the Devon Power property. Tidal vegetation is also present within the voids of the riprap armoring (above the CJL) and therefore is also subject to regulation by CTDEEP OLISP under the [Tidal Wetlands Act](#) (CGS Sec. 22a-28 - 22a-35, inclusive).

### Wetland 1: USFWS Classification: E2EM1

Wetland 1 is classified as an estuarine intertidal emergent persistent wetland (E2EM1) and is located along the east boundary of the Ashcroft property on the west side of the Housatonic River. This wetland receives tidal flows, as is evident by the varying wrack lines along the watercourse edge. The wetland is dominated by Common Reed (*Phragmites australis*) up to the wetland edge. Saltmarsh Grass (*Spartina alterniflora*) is prominent along the watercourse edge; however was limited to a narrow fringe.

The soil profile is considerably disturbed from historic site activities due to fill and construction. The soil series identified is Udorthents-Urban land complex- Udorthents consist primarily of areas that have been cut for leveling or filled for development. Hydrologic conditions are influenced by the tidal ebb and flow, storm events and precipitation.

The HTL and CJL incorporate the majority of wetland 1 along the east side of the Ashcroft property. The CJL and the wetland boundary (as defined by the Connecticut requirement regarding hydric soils) are fairly coincident. In some areas the wetland boundary or the CJL lays farther inland than the other. In this situation, CTDEEP OLISP would have jurisdiction up to one foot above the CJL (and would be classified as "areas capable of" supporting tidal wetland vegetation). Areas where wetlands soils extend beyond that elevation, could be considered inland wetlands and may require further permitting or coordination with CTDEEP IWRD. The U.S. Army Corp of Engineers would have jurisdiction over both of these areas.

### Wetland 2: USFWS Classification: PSS1E

Wetland 2 is classified as a palustrine scrub-shrub broad-leaved deciduous seasonally flooded/saturated wetland (PSS1E). This wetland is located just east of the fenced area, adjacent to the Ashcroft Property back parking lot. This wetland is highly disturbed; characterized by concrete slabs and man-made berms surrounding the area. The wetland is



dominated by Red maple (*Acer rubrum*) and Coastal Sweet Pepper Bush (*Clethra alnifolia*). Approximately 2 inches of water was present at the time of the field visit. The soil series identified is Urban land. Hydrologic conditions are influenced by the storm events, and overland run off.

Wetland 2 has no connection to other tidal wetlands on site and is situated well above the CJL, and therefore would fall under the jurisdiction of CTDEEP Inland Water Resources Division (IWRD) and the Army Corp of Engineers as an inland wetland.

## VI. SUMMARY

BL Companies identified two (2) regulated and jurisdictional wetland areas and one (1) navigable watercourse on the Site. Poorly drained soils, hydric soils, hydrophytic vegetation, and hydrology were all observed in the wetland locations satisfying the criteria of the State and ACOE methodology for wetland delineations. The watercourse and one wetland are tidal in nature while wetland 2 is a fresh water wetland with no tidal influence. In addition to the descriptions within the previous sections of this report, supporting data forms and photographs are attached that document the findings of the on-site field investigations.

## VII. PREPARER

### Raina Huebner

Ms. Huebner holds a Master's Degree in Wetland, Watercourse and Ecosystem Management and Soil Science. Ms. Huebner has been delineating federal and state wetlands for the past 4 years. In addition, Ms. Huebner has acted as lead wetland scientist and conducted many function value impact assessments throughout New England, New York, New Jersey, Pennsylvania and Ohio. Ms. Huebner received a Certificate of Army Corps Wetland Delineation Training (Institute for Wetland Education and Environmental Research), received her Wetland Professional In Training Certification from the Society of Wetland Scientists and is a Soil Scientist.

## REFERENCES

1. Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. Tech. Rpt.WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
2. Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. Washington, D.C. FWS/OBS-79/31.
3. United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil descriptions. Internet site:  
(<http://soils.usda.gov/technical/classification/osd/index.html>)

4. Environmental Laboratory, 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. US Army Engineer Waterways Experiment Station. Vicksburg, Miss.
5. Lichvar, R.W. 2012 *The National Wetland Plant List; 2013 wetland ratings, Phytoneuron 2013-49; 1-241*. [http://wetland\\_plants.usace.army.mil/](http://wetland_plants.usace.army.mil/) Cold Regions Research and Engineering Laboratory, US Army Corps of Engineers.
6. United States Army Corps of Engineers. January 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*. Ed. J.S. Wakely, R.W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Research and Development Center.
7. USACOE. 1993. *The Highway Methodology Workbook*. US Army Corps of Engineers New England Division. 28pp. NEDEP-360-1-30.

[Faint, illegible text block]

**APPENDIX A**

[Faint, illegible text block]

Page 1  
Total 1





PHOTO 1: View of water course 1 eastern bank looking south at the coastal jurisdiction line.



PHOTO 2: View of water course 1 western bank looking south at the coastal jurisdiction line.





PHOTO 3: View of northern bench of water course 1 looking south.



PHOTO 4: View of northern bench of water course 1 looking southeast.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
2





PHOTO 5: View of northwestern bank of water course 1 looking at the coastal jurisdiction line.



PHOTO 6: View of the northern finger of wetland 1 looking northeast toward the Housatonic river from the Stratford side of the project.





**PHOTO 7:** View of wetland 1 at the northern portion of the site limits on the Stratford side. Looking north toward the channel of the wetland.



**PHOTO 8:** View of wetland 2 looking northwest at the central portion of the wetland.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
4





PHOTO 9: View of wetland 2 in the central portion of the Stratford side of the site looking south at the depression area of the wetland.



PHOTO 10: View of southern portion of wetland 2 in the central portion of the Stratford side of the site.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
5





PHOTO 11: View of western end of wetland 2 looking northwest.



PHOTO 12: View of upland portion northwest of wetland 2 at smooth exposed bedrock.



Architecture  
Engineering  
Environmental  
Land Surveying

13S2020

Housatonic River Crossing  
Replacement  
NRG and Ashcroft properties  
Milford to Shelton, Connecticut  
May, 6, 2014

PLATE  
6



## APPENDIX B



Soil Map—State of Connecticut

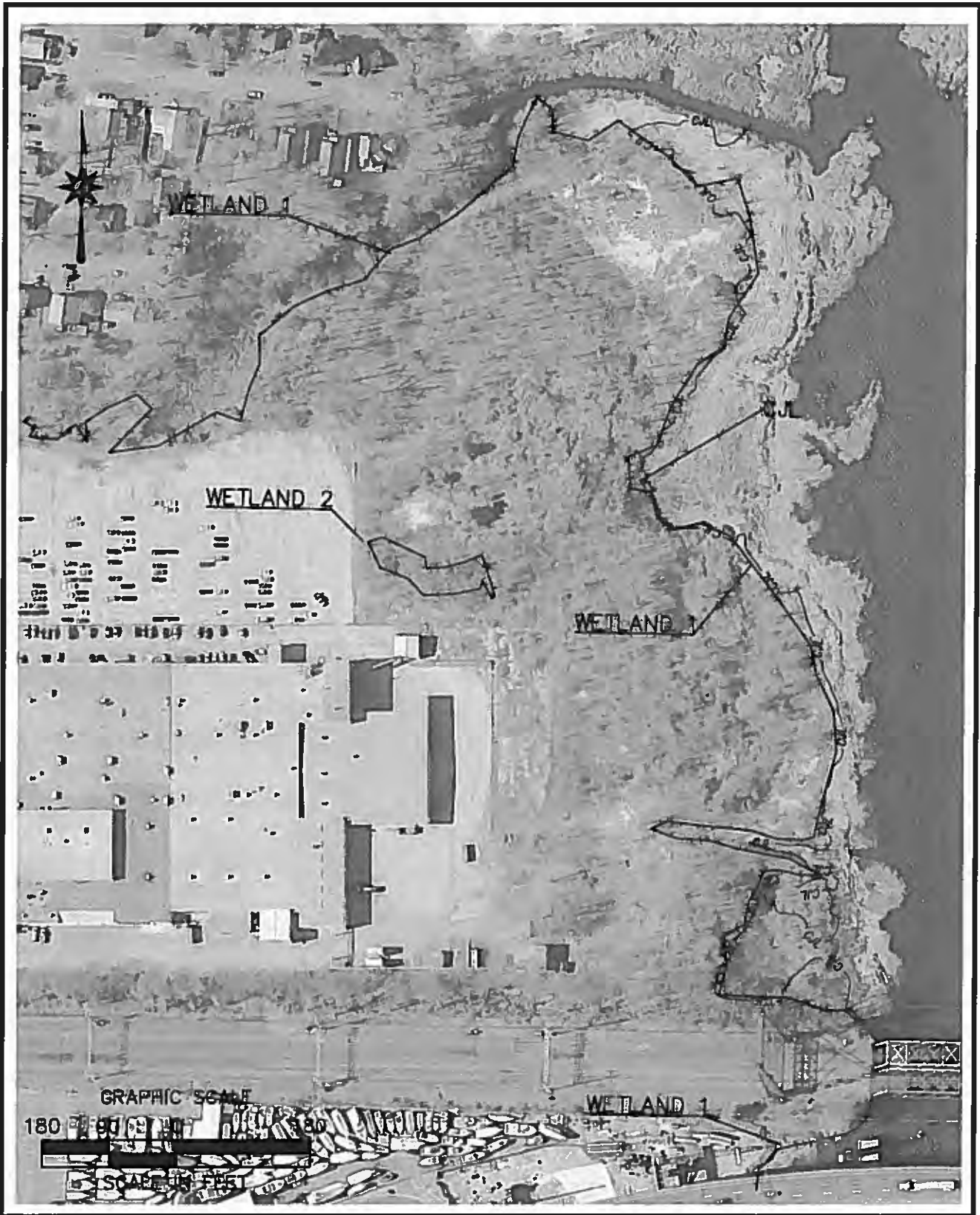




## Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
76E	Rock outcrop-Hollis complex, 3 to 45 percent slopes	2.3	2.0%
99	Westbrook mucky peat, low salt	0.6	0.5%
229B	Agawam-Urban land complex, 0 to 8 percent slopes	4.3	3.8%
306	Udorthents-Urban land complex	18.2	16.1%
307	Urban land	30.8	27.2%
308	Udorthents, smoothed	22.3	19.7%
W	Water	35.0	30.8%
<b>Totals for Area of Interest</b>		<b>113.4</b>	<b>100.0%</b>

## APPENDIX C



ARCHITECTURE  
ENGINEERING  
ENVIRONMENTAL  
LAND SURVEYING

**HOUSATONIC RIVER CROSSING**  
TRANSMISSION TOWER REPLACEMENT  
250 EAST MAIN STREET  
STRATFORD, CONNECTICUT

Designed  
Drawn  
Checked  
Approved  
Scale  
Project No.  
Date  
CAD File

R.H.  
P.V.L.

1" = 180'  
13S2020  
05/16/14  
EV13S202001

**WD-1**

Xref (e) : XX13S202001





**HOUSATONIC RIVER CROSSING**  
**TRANSMISSION TOWER REPLACEMENT**  
 250 EAST MAIN STREET  
 MILFORD, CONNECTICUT

Designed R.H.  
 Drawn P.V.L.  
 Checked  
 Approved  
 Scale 1" = 180'  
 Project No. 13S2020  
 Date 05/16/14  
 CAD File EV13S202001

**WD-2**

Xref (a) : XX13S202001

**APPENDIX D**





**VEGETATION – Use scientific names of plants.**

Sampling Point: Wet-1

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: <u>30' radius</u> )				
1. <u>Betula populifolia</u>	5	Y	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	5	= Total Cover		
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15' radius</u> )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		= Total Cover		
<b>Herb Stratum</b> (Plot size: <u>5' radius</u> )				
1. <u>Phragmites australis</u>	95	Y	FACW	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	95	= Total Cover		
<b>Woody Vine Stratum</b> (Plot size: <u>30' radius</u> )				
1. _____				
2. _____				
3. _____				
4. _____				
		= Total Cover		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

<u>5</u> Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes Y No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

**Photos 6 and 7.**



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Housatonic River Crossing City/County: Stratford Sampling Date: 5-6-2013  
 Applicant/Owner: UI State: CT Sampling Point: Up-2  
 Investigator(s): Raina Huebner Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): backslope Local relief (concave, convex, none): none  
 Slope (%): 0 Lat: 41 deg 12 min 21.76 sec Long: 73 deg 06 min 49.05 sec Datum: MSL  
 Soil Map Unit Name: urban land NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>BL-WL-2</u>
Remarks: (Explain alternative procedures here or in a separate report.) <b>area is heavily disturbed. Areas of exposed bedrock.</b>	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



**VEGETATION – Use scientific names of plants.**

Sampling Point: Up-2

<u>Tree Stratum</u> (Plot size: <u>30 feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	10	Y	FACU	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)	
2. _____	20	Y	FACU		
3. _____	20	Y	FACW		
4. _____					
5. _____					
6. _____					
7. _____					
<u>50</u> = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Pinus Strobus</u>	5	Y	FACU		<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
<u>5</u> = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.   <b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>N</u>	
<u>Herb Stratum</u> (Plot size: <u>5 feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>manicured grass- unknown</u>	70	Y	FACU		<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>N</u>
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
<u>70</u> = Total Cover					
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>N</u>	
2. _____					
3. _____					
4. _____					
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Housatonic River Crossing City/County: Stratford Sampling Date: 5-6-2013  
 Applicant/Owner: UI State: CT Sampling Point: Up-2  
 Investigator(s): Raina Huebner Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): backslope Local relief (concave, convex, none): none  
 Slope (%): 0 Lat: 41 deg 12 min 21.76 sec Long: 73 deg 06 min 49.05 sec Datum: MSL  
 Soil Map Unit Name: urban land NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No N (If no, explain in Remarks.)  
 Are Vegetation Y, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>BL-WL-2</u>
Remarks: (Explain alternative procedures here or in a separate report.) area is heavily disturbed. Areas of exposed bedrock.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)      ___ Water-Stained Leaves (B9) ___ High Water Table (A2)      ___ Aquatic Fauna (B13) ___ Saturation (A3)      ___ Marl Deposits (B15) ___ Water Marks (B1)      ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2)      ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3)      ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4)      ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5)      ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7)      ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:	



**VEGETATION – Use scientific names of plants.**

Sampling Point: Up-2

<u>Tree Stratum</u> (Plot size: <u>30 feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	10	Y	FACU	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
2. _____	20	Y	FACU	
3. _____	20	Y	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
	<u>50</u>	= Total Cover		<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u> )				
1. <u>Pinus Strobus</u>	5	Y	FACU	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>5</u>	= Total Cover		
<u>Herb Stratum</u> (Plot size: <u>5 feet</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>manicured grass- unknown</u>	70	Y	FACU	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>70</u>	= Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u> )				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
1. <u>None</u>				
2. _____				
3. _____				
4. _____				
				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>N</u>
Remarks: (Include photo numbers here or on a separate sheet.)				



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Housatonic River Crossing City/County: Stratford Sampling Date: 5-6-2013  
 Applicant/Owner: UI State: CT Sampling Point: Up-2  
 Investigator(s): Raina Huebner Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): backslope Local relief (concave, convex, none): none  
 Slope (%): 0 Lat: 41 deg 12 min 21.76 sec Long: 73 deg 06 min 49.05 sec Datum: MSL  
 Soil Map Unit Name: urban land NWI classification: PEM  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No N (If no, explain in Remarks.)  
 Are Vegetation Y, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>BL-WL-2</u>
Remarks: (Explain alternative procedures here or in a separate report.) area is heavily disturbed. Areas of exposed bedrock.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	



**VEGETATION – Use scientific names of plants.**

Sampling Point: Up-2

<u>Tree Stratum</u> (Plot size: <u>30 feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	10	Y	FACU	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)																
2. _____	20	Y	FACU																	
3. _____	20	Y	FACW																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
<u>50</u> = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width:100%; border:none;"> <tr> <td style="width:50%;"><u>Total % Cover of:</u></td> <td style="width:50%;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u> )																				
1. <u>Pinus Strobus</u>	5	Y	FACU																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
<u>5</u> = Total Cover																				
<u>Herb Stratum</u> (Plot size: <u>5 feet</u> )																				
1. <u>manicured grass- unknown</u>	70	Y	FACU	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
<u>70</u> = Total Cover																				
<u>Woody Vine Stratum</u> (Plot size <u>30 feet</u> )																				
1. <u>None</u>				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.																
2. _____																				
3. _____																				
4. _____																				
_____ = Total Cover																				
Hydrophytic Vegetation Present? Yes _____ No <u>N</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				



## **Attachment H**

Electric and Magnetic Fields (EMF) at the Housatonic River Crossing





## M E M O R A N D U M

---

TO: Mohammad Pasha  
FROM: Joshua Phinney  
Benjamin Cotts  
DATE: December 4, 2014  
PROJECT: 1400077.001  
SUBJECT: EMF Report for Housatonic River Crossing

---

Attached is Exponent's updated report of the electric and magnetic fields associated with the rebuild of the 8█ A-1 and 8█ B-1 transmission lines in the vicinity of the Housatonic River Crossing between the Barnum Substation and the Devon Tie Switching Station. This report has been produced in a format based on the "Electric and Magnetic Fields" section of the proposed 1990 line structure replacement project.

At the request of United Illuminating, Exponent conducted specific modeling and evaluations of the electrical environment for the Housatonic River Crossing Project. This report summarizes work performed to date and presents the findings resulting from that work. In the analysis, we have relied on geometry, material data, usage conditions, specifications, and various other types of information provided by the client. We cannot verify the correctness of this input data, and rely on the client for the data's accuracy. Although Exponent has exercised usual and customary care in the conduct of this analysis, the responsibility for the design and operation of the project remains fully with the client.

The findings presented herein are made to a reasonable degree of engineering and scientific certainty. Exponent reserves the right to supplement this report and to expand or modify opinions based on review of additional material as it becomes available, through any additional work, or review of additional work performed by others.

The scope of services performed during this investigation may not adequately address the needs of other users of this report, and any re-use of this report or its findings, conclusions, or recommendations presented herein are at the sole risk of the user. The opinions and comments formulated during this assessment are based on observations and information available at the time of the investigation. No guarantee or warranty as to future life or performance of any reviewed condition is expressed or implied.

## Executive Summary

---

UI seeks to rebuild an approximate 0.5-mile section of the 115 kilovolt (kV) double-circuit overhead transmission lines, circuit numbers 8█A-1 and 8█B-1, in the vicinity of the Housatonic River Crossing between the Barnum Substation and the Devon Tie Switching Station. The modifications are divided into three sections: west of the Housatonic River, crossing the Housatonic River, and east of the Housatonic River.

West of the Housatonic River crossing, electric and magnetic fields (EMF) following the proposed line modifications are expected to increase on the north side of the right-of-way (ROW) relative to those produced by the existing transmission lines. The anticipated increase in EMF is due to the repositioned conductors of the 8█A-1 circuit closer to the northern ROW edge. At the south edge of the ROW, calculated EMF from the proposed configuration increase slightly at most locations, despite the increase in the conductor height of approximately 10 feet above that of the existing 8█B-1 circuit.

In the spans proposed to cross the Housatonic River, the 8█A-1 and 8█B-1 circuits are to be rebuilt north of the existing ROW, each on a vertical steel monopole. The new 8█A-1 and 8█B-1 structures, located between 110 and 140 feet north of the existing ROW, introduce electric and magnetic field profiles with maxima centered at 125 feet north of the existing ROW edge. For average load conditions, the calculated magnetic field from the repositioned circuits has a maximum value of 30.5 milligauss (mG), falling below 19.4 mG beyond 200 feet north of the northern edge of the existing ROW. At peak load, calculated magnetic fields for both the existing and proposed configurations are approximately 50% higher for the peak load case compared to the average load case.

East of the Housatonic River crossing, the calculated magnetic field level is similar to that of the crossing itself, though the repositioned 8█A-1 and 8█B-1 conductors are approximately 25 feet closer to the ground. For this reason, the maximum calculated magnetic field is higher in the proposed configuration (56.5 mG 109 feet north of the existing ROW edge), but falls off more rapidly with distance from the repositioned 115-kV circuits ( $\leq 22.2$  mG at distances more than 200 feet north of the existing ROW).

In all modeled conditions, the calculated field levels associated with the project are far below international standards for EMF levels. Though the distribution and catenary conductors of the Metro North Railroad were not included in the magnetic field models under average and peak load conditions, the increases noted above are a conservative upper bound on project-related changes in the calculated magnetic field.

The engineering design and other activities initiated by UI demonstrate compliance with the Council's EMF BMPs.



## Background

---

Any source that generates, transmits, or uses electricity produces EMF. Electricity travels as current from distant generating sources on high-voltage transmission lines, to substations, then on to local distribution lines, and finally to our homes and workplaces for consumption. All things connected to our electrical system—power lines; wiring in our homes, businesses, and schools; and all electric appliances and machines—are a source of EMF. In North America, the vast majority of electricity is transmitted as alternating current (AC) at a frequency of 60 cycles per second measured in Hertz (Hz), i.e., 60 Hz. The EMF from these AC sources is commonly referred to as power-frequency or extremely low frequency (ELF) EMF.

Both electric fields and magnetic fields are properties of the space near all electrical sources. Electric fields exert a force on electrically charged objects, while magnetic fields exert a force on moving electrical charges. Although commonly referred to together as EMF, they each have different properties.

**Electric fields** are produced by voltage applied to electrical conductors and equipment. The electric field is expressed in measurement units of volts per meter (V/m) or kilovolts per meter (kV/m), where 1 kV/m is equal to 1,000 V/m. The electric-field level increases as the voltage increases. Electric fields are present even when an appliance is turned off if it is still connected to the power source.

Since conducting objects such as buildings, fences, and trees easily block electric fields, the major sources of exposure to electric fields indoors are appliances, equipment, and machines within homes, office, and factories. Transmission lines, distribution lines, and other power-related infrastructure are the major source of electric fields outdoors.

Transmission line electric fields emanate radially outward from the charged conductor and terminate at any other conducting object such as trees, fences, vehicles, people, or transmission line towers. Electric fields are vector quantities meaning that they have both a magnitude and direction.

**Magnetic fields** are the result of the flow of electric currents through wires and electrical devices. The strength of a magnetic field is expressed as magnetic flux density in units called gauss (G) or mG, where  $1 \text{ G} = 1,000 \text{ mG}$ .<sup>1</sup> In general, the strength of a magnetic field increases as the current increases, but the strength also depends on characteristics of the source, including the arrangement and separation of the conductors. Unlike electric fields, magnetic fields are not easily blocked by conducting objects. In addition, a time-varying magnetic field (such as that used in power transmission systems) induces an electric field and currents in nearby conducting objects. Like electric fields, magnetic fields are vector quantities described by both their magnitude and direction.

The intensity of both electric fields and magnetic fields diminishes with increasing distance from the source. In the case of transmission lines, electric and magnetic fields generally decrease with distance from the conductors in proportion to the square of the distance. Since line voltage is quite stable and does not change very much over time, electric-field levels are also stable. Magnetic-field levels, however, can vary depending on load conditions (i.e., the currents flowing in a conductor).

---

<sup>1</sup> Scientists also refer to magnetic flux density at these levels in units of microtesla ( $\mu\text{T}$ ). Magnetic flux density in mG units can be converted to  $\mu\text{T}$  by dividing by 10 (i.e.,  $1 \text{ mG} = 0.1 \mu\text{T}$ ).

## EMF Guidance

---

After more than 30 years of research that includes hundreds of studies, none of the scientific organizations conducting reviews of scientific and medical research has concluded that exposure to EMF in the ELF frequency range is a demonstrated cause of any long-term adverse health effect. Compliance with exposure guidelines, as recommended by the WHO, provides protection against possible short-term adverse responses to EMF.

The evidence in support of a causal relationship is weak because it is founded largely, if not entirely, on some epidemiology studies that reported statistical associations between magnetic field exposure (or some proxy of exposure) and a disease. Scientists have placed less weight on these associations because they are weak, often inconsistent between studies, and possibly due to errors in the way the study was designed or conducted. Overall, animal studies have not reported an increase in cancer among animals exposed to high levels of EMF, and no mechanism has been discovered in laboratory studies that would explain how electric or magnetic fields could initiate disease.

Most notably, a weak association has been reported between childhood leukemia and estimates of long-term exposure to high, average magnetic field levels (IARC, 2002). Combined with the limitations of epidemiology and the lack of consistent findings from animal and laboratory studies, however, the overall body of research does not indicate that this association, or any other, is causal in nature.

More relevant EMF assessment criteria are the exposure limits recommended by scientific organizations. These exposure limits were developed to protect health and safety and are based on reviews and evaluations of relevant health research. These guidelines include exposure limits for the general public recommended by the International Committee on Electromagnetic Safety (ICES) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) to address health and safety issues (ICES 2002; ICNIRP 2010).



The only confirmed relationship between EMF and an adverse biological or health effect is when electric currents, at very high levels of exposure, are induced in the body and experienced as stimulation of nerves. The levels at which these short-term effects occur are typically much higher than levels found under transmission lines, and still higher than levels found in most homes or commercial establishments. As mentioned, ICES and ICNIRP have recommended exposure limits to protect against the occurrence of these acute adverse effects from short-term exposures. Table 1 summarizes the recommended exposure limits.

**Table 1. Reference levels for whole body exposure to 60-Hz fields: general public**

Organization	Magnetic fields	Electric fields*
ICNIRP, reference level	2,000 mG	4.2 kV/m
ICES, maximum permissible exposure (MPE)	9,040 mG	5 kV/m 10 kV/m†

\*Both organizations judged that evidence for effects from long-term exposure was insufficient for setting exposure standards.

†Exception within a transmission line ROW.

The World Health Organization (WHO) established the International EMF Project in 1996, in response to public concerns about exposures to EMF and possible adverse health effects. The Project’s membership includes 8 international organizations, 8 collaborating institutions and over 54 national authorities. The overall purpose of the Project is to assess any possible health and environmental effects of exposure to static and time-varying EMF. A key objective was to evaluate the scientific literature and make a status report on health effects, to be used as the basis for a coherent international response. The review was prepared by 21 scientists from around the world with expertise in a wide range of disciplines and published in June 2007 as part of WHO’s Environmental Health Criteria (EHC) Programme.

The WHO concluded the following:

Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection. Consistent epidemiological evidence suggests that chronic low-intensity ELF magnetic field exposure is associated with an increased risk of

childhood leukaemia. However, the evidence for a causal relationship is limited, therefore exposure limits based upon epidemiological evidence are not recommended, but some precautionary measures are warranted. (WHO, 2007, p. 355)

The absence of clear evidence for adverse effects after continued research and testing increases the certainty that there is not an adverse effect, or that any risk associated with exposure is small. Because of the inherent limitations of scientific investigation it is very difficult for a review panel to ever completely rule out the possibility that EMF in our communities and workplaces might have some adverse effect. Science cannot prove the absence of any effect but can effectively address uncertainty about effects by continued research. Given the amount and quality of research that has been conducted thus far, the opinions from the WHO and other agencies is strong that ELF EMF is not a cause of long-term, adverse health effects.

The Connecticut Siting Council adopted “EMF Best Management Practices for the Construction of Electric Transmission Lines in Connecticut” (BMP) in 2007 based upon a consensus of health and scientific agencies that the scientific evidence “reflects the lack of credible scientific evidence for a causal relationship between MF [magnetic field] exposure and adverse health effects.” (CSC, p. 3). Nevertheless, the CSC concluded that precautionary measures for the siting of new transmission lines in the state of Connecticut are appropriate and should include “the use of effective no-cost and low-cost technologies and management techniques on a project-specific basis to reduce MF [magnetic field] exposure to the public while allowing for the development of efficient and cost-effective electrical transmission projects” (CSC, p. 11). The BMPs also stated that the CSC will “consider and review evidence of any new developments in scientific research addressing MF and public health effects or changes in scientific consensus group positions regarding MF” (CSC, p. 5).

In Council Docket No. 370 in 2010 the Council again considered the status of current research on EMF and health, and concluded: “There is no new evidence that might alter the scientific consensus articulated in the Council’s 2007 EMF BMP document.”<sup>2</sup> This same conclusion was articulated in the latest 2014 update to the Council’s EMF BMP guidance based upon reports

---

<sup>2</sup> Connecticut Siting Council Docket 370, Opinion at 12; Docket 370A-MR Opinion at 4; *and see* Docket 370 Findings of Fact par, 284-286 (<http://www.ct.gov/csc/cwp/view.asp?a=3&Q=437458&PM=1>)

submitted by Exponent in Council Dockets 424 and 435 (CSC, 2014). As specified in the 2014 BMPs, compliance is demonstrated by providing reference to new developments in EMF scientific research, calculations of electric and magnetic fields, consideration of buffer zones, and engineering controls.<sup>3</sup> For this project, the Council's 2014 BMP serves as the current reference to new developments in EMF scientific research, calculations of EMF are provided here, and the project has been designed with due consideration to the following engineering controls:

- Distance — The proposed structures are now proposed to be constructed further away from the railroad line in an area with less frequent public access and exposure;
- Height of Support Structures — The height of the structures crossing the Housatonic River are considerably higher than the existing structures shared with Metro North;
- Conductor Configuration — The line will be rebuilt on monopoles in a vertical configuration that serves in some configurations to increase the height of the conductors above ground and water; and,
- Optimum Phasing — The phasing of adjacent circuits was considered in the engineering plan for this project and the phasing selected will result in lower magnetic fields than the standard ABC: ABC phasing.

As there are no areas where children congregate adjacent to the proposed rebuilt transmission lines, the above engineering controls and other actions that minimize potential exposure to EMF by UI serve to confirm compliance with the Council's EMF BMPs.

---

<sup>3</sup> Pre-construction EMF measurements were also taken per the 2007 BMP at the original proposed site of the project. These measurements likely provide an upper bound to the existing EMF levels at the current proposed location because of the presence of EMF sources related to Metro North at the original site.



## EMF Modeling

---

UI seeks to rebuild an approximate 0.5-mile section of the 115-kV double-circuit overhead transmission lines, circuit numbers 8[REDACTED]A-1 and 8[REDACTED]B-1, in the vicinity of the Housatonic River Crossing between the [REDACTED] Substation and the [REDACTED] Switching Station. The project would extend from structure B858 in the Town of Stratford to [REDACTED] Frame in Milford, affecting a total of 14 structures. In most spans of this portion of the Metro-North Railroad Corridor, the existing circuits are mounted on metal support “bonnets” that are attached to railroad structures, which also support the distribution conductors and catenaries of the New Haven Line. West of the Housatonic River, the proposed project would reposition the 8[REDACTED]A-1 circuit to new steel monopoles to the north of the existing structures, and rebuilt the 8[REDACTED]B-2 circuit on the existing structures on the south side of the ROW. East of the Housatonic River, the proposed project would reposition both the 8[REDACTED]A-1 and 8[REDACTED]B-2 circuits north of the existing ROW, with each circuit supported separately on new vertical steel monopoles.

UI retained Exponent to model the EMF levels associated with the rebuild of the 8[REDACTED]A-1 and 8[REDACTED]B-1 transmission lines. Exponent modeled the EMF with existing and proposed configurations in three sections:

- **Section HRX-1** represents the existing and proposed configuration west of the Housatonic River, between structures B858 and B862. Circuit 8[REDACTED]A-1 is rebuilt on a steel monopole approximately 33 feet north of the existing centerline with 12-foot vertical conductor spacing. Circuit 8[REDACTED]B-1 is rebuilt on the existing bonnet support structures on the south side of the ROW’s existing centerline, and the conductors of the rebuilt circuit will be raised approximately 10 feet. The width of the ROW in section HRX-1 is 140 feet.
- **Section HRX-2** includes the structures B862, B862A, and B863 that span the Housatonic River. The ROW in section HRX-2 is 163 feet wide. Circuit 8[REDACTED]A-1 is rebuilt approximately 180 feet north of its existing centerline, and circuit 8[REDACTED]B-1 is

moved approximately 225 feet north of its existing centerline. The rebuilt circuits are each supported by single-circuit monopoles with 18-foot vertical conductor spacing.

- **Section HRX-3** includes spans west of the Housatonic River, between structure B863 and the [REDACTED] Frame. Circuit 8[REDACTED]A-1 is rebuilt on a vertical steel monopole approximately 180 feet north of its existing centerline with 18-foot vertical conductor spacing. Circuit 8[REDACTED]B-1 is rebuilt on a vertical steel monopole also with 18-foot conductor spacing, approximately 245 feet north of its existing centerline. The ROW width in section HRX-3 is 188.5 feet.

In the proposed configurations of Sections HRX-1, HRX-2, and HRX-3, circuit 8[REDACTED]A-1 is supported on single-circuit vertical monopoles having A-C-B phasing, top to bottom. Where rebuilt on vertical monopoles in Sections HRX-2 and HRX-3, Circuit 8[REDACTED]B-1 is phased A-B-C, top to bottom.

## Calculation Assumptions

Existing and proposed levels of EMF were calculated using computer algorithms developed by the Bonneville Power Administration, an agency of the U.S. Department of Energy (BPA, 1991). These algorithms have been shown to accurately predict EMF levels measured near transmission lines. The electric fields and magnetic fields were calculated as the resultant of x, y, and z field vectors. Exponent calculated electric- and magnetic-field levels at 1 meter (3.28 feet) above ground, in accordance with IEEE Std. C95.3.1-2010 and IEEE Std. 0644-1994a, as the root-mean-square value of the field ellipse at each location along a transect perpendicular to the transmission centerlines.

The inputs to the program are data regarding voltage, current flow, phasing, and conductor configurations. UI Transmission & Substation Engineering provided Exponent with data regarding the conductor position, size, voltage, and phasing of the existing and proposed circuits. The values of EMF associated with the transmission lines were calculated along profiles perpendicular to the transmission lines at the point of lowest conductor sag (mid-span), i.e., closest to the ground. The transmission line conductors were assumed to be positioned at maximum sag for the entire distance between structures and over flat terrain. An overvoltage

condition of 5% was used for all 115-kV circuits in calculating electric fields from the transmission lines. These modeling assumptions are made to ensure that the calculated values represent the maximum expected EMF values for the cases analyzed. Distribution and catenary conductors operated by Metro North Railroad were not included in the model in order to limit the assessment to project-related sources, rather than the time-varying EMF and largely intermittent exposure associated with the passage of trains on the New Haven Line. A further discussion of the EMF from the Metro North Railroad conductors is included in the Measurements section, below.

Projected operational data for the 8█A-1 and 8█B-1 transmission lines was provided by UI Transmission Planning, and is summarized in Table 2, below.

**Table 2. Projected transmission line loading**

Line	kV	From	To	Current Magnitude (Amperes)			
				Pre-Project		Post-Project	
				Average	Peak	Average	Peak
8█A-1	115	D█ T█	B█	803	1241	816	1261
8█B-1	115	D█ T█	B█	804	1241	816	1261

## Results and Discussion

Calculated electric-field profiles are depicted in Figures 1-3 for Sections HRX-1 through HRX-3, respectively. Table 3 summarizes the calculated electric-field levels on the ROW and ROW edges. Calculated magnetic-field profiles for average loading conditions are depicted in Figures 4-6 for Sections HRX-1 through HRX-3, respectively. Table 4 summarizes the calculated magnetic-field levels on the ROW and ROW edges for average-load conditions, and Table 5 includes the calculated magnetic-field levels at the same reporting locations for peak-load conditions.

In all modeled sections, calculated electric-field values are quite low, less than 0.8 kV/m at all locations. In HRX-1, operation of the project is expected to increase the calculated electric field particularly at the north edge of the ROW, since the conductors of the repositioned 8█A-1



circuit are approximately 33 feet closer to the northern ROW edge. Near circuit 8█B-1 at the southern edge of the ROW, the calculated electric field also increases slightly (from 0.35 kV/m to 0.44 kV/m) even with higher midspan elevation of the 8█B-1 conductors. At this location, the greater separation between the rebuilt 115-kV circuits affords less mutual cancellation of electric fields compared to the existing configuration.

In HRX-2, conductors of the existing circuits are located approximately 170 feet above grade, and the calculated electric field is correspondingly low (<0.03 kV/m). The new 8█A-1 and 8█B-1 monopoles, located approximately 140 and 110 feet north of the existing ROW, introduce an electric field profile centered at 125 feet north of the existing ROW edge, with a peak calculated value of 0.41 kV/m. The calculated electric field falls below 0.14 kV/m 200 feet north of the northern edge of the existing ROW. The calculated electric field in HRX-3 is similar, though the repositioned 8█A-1 and 8█B-1 conductors are approximately 15 feet further south and 25 feet closer to the ground in HRX-3, compared to HRX-2. For this reason, the peak calculated electric field is higher in the proposed configuration of HRX-3 (0.73 kV/m at 109 feet north of the existing ROW edge), but falls off more rapidly with distance from the repositioned 115-kV circuits ( $\leq 0.05$  kV/m at distances more than 200 feet north of the existing ROW).

Operation of the project in the average-load case increases the calculated magnetic-field level at the north ROW edge in HRX-1 (from 13.0 mG to 27.5 mG), since the conductors of the repositioned 8█A-1 circuit are approximately 33 feet closer to the northern ROW edge. The calculated magnetic field at the southern edge of the ROW decreases slightly, from 38.6 mG to 27.6 mG, where the conductors of the rebuilt circuit 8█B-1 are raised approximately 10 feet compared to the existing elevation. At locations further south of the ROW (beyond approximately 25 feet from the ROW edge), the calculated magnetic field is somewhat higher (<4 mG) compared to the existing case. For HRX-1 and all other sections, calculated magnetic fields for both the existing and proposed configurations are approximately 50% higher for the peak load case compared to the average load case (see Table 5).

In HRX-2, conductors of the existing circuits are located approximately 170 feet above grade, and the calculated magnetic field is correspondingly low ( $\leq 2.7$  mG for average load and  $\leq 4.1$

mG for peak load). The new 8█A-1 and 8█B-1 monopoles, located approximately 140 and 110 feet north of the existing ROW, introduce a magnetic-field profile centered at 125 feet north of the existing ROW edge, and having a peak calculated value of 30.5 mG for average load. The calculated magnetic field falls below 19.4 mG 200 feet north of the northern edge of the existing ROW. The calculated magnetic field in HRX-3 is similar, though the repositioned 8█A-1 and 8█B-1 conductors are approximately 25 feet closer to the ground in HRX-3 compared to HRX-2. For this reason, the maximum calculated magnetic field is higher in the proposed configuration of HRX-3 (56.5 mG 109 feet north of the existing ROW edge), but falls off more rapidly with distance from the repositioned 115-kV circuits ( $\leq 22.2$  mG at distances more than 200 feet north of the existing ROW).

Though the distribution and catenary conductors of the Metro North Railroad were not included in the magnetic field models under average and peak load conditions, the increases noted above provide a conservative upper bound on project-related changes in the calculated magnetic field.

### Electric field Hausatonic River Crossing Section HRX-1

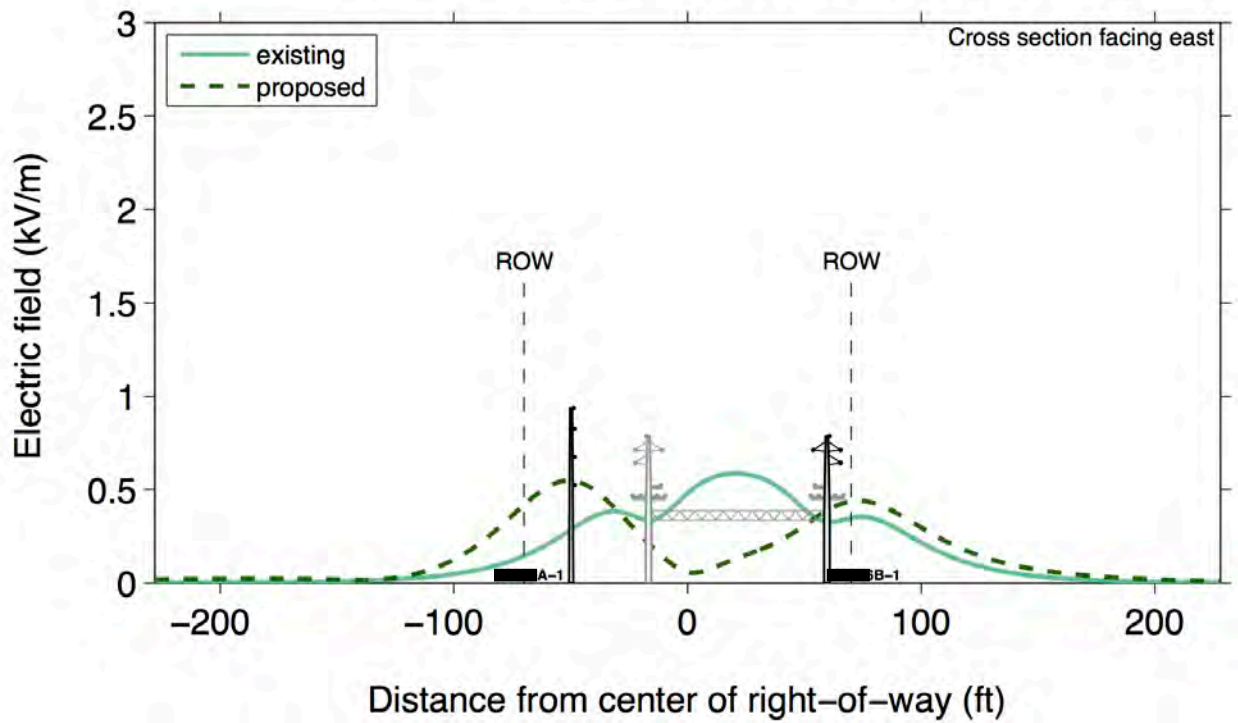


Figure 1. Calculated electric-field profile in section HRX-1 for existing and proposed configurations, between structures B858 and B862.



## Electric field Housatonic River Crossing Section HRX-2

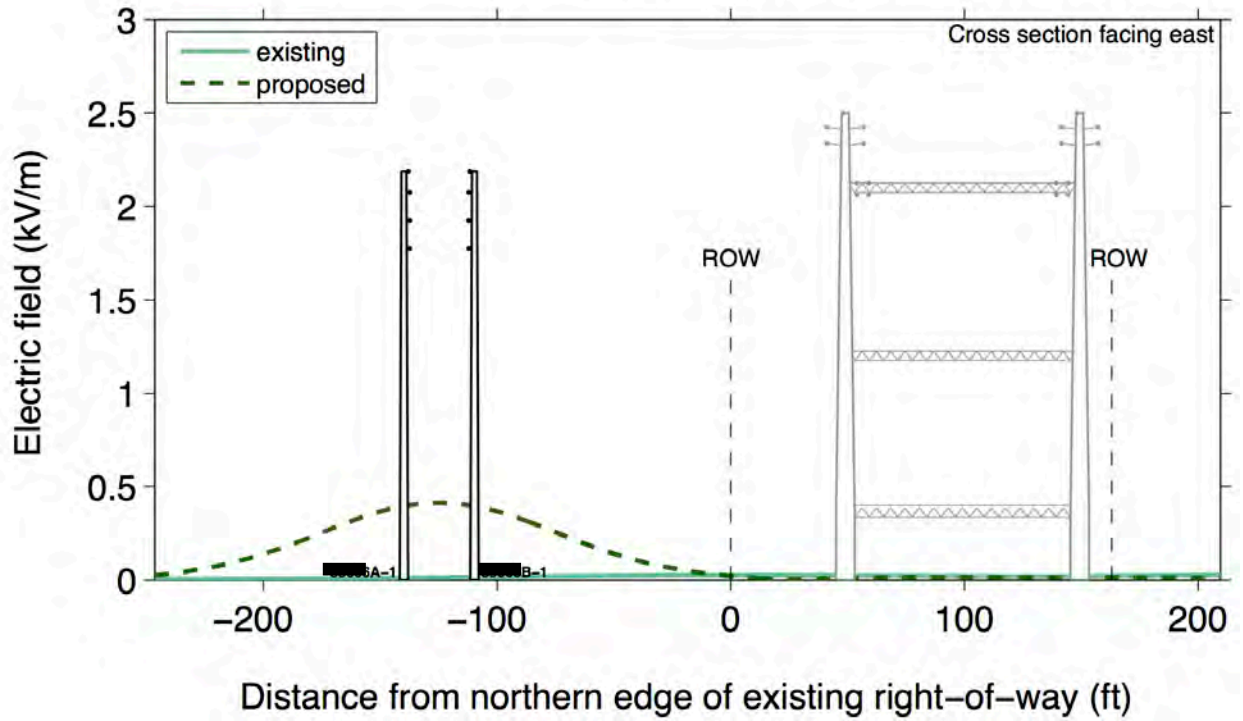


Figure 2. Calculated electric-field profile in section HRX-2 for existing and proposed configurations, between structures B862 and B863.

### Electric field Hausatonic River Crossing Section HRX-3

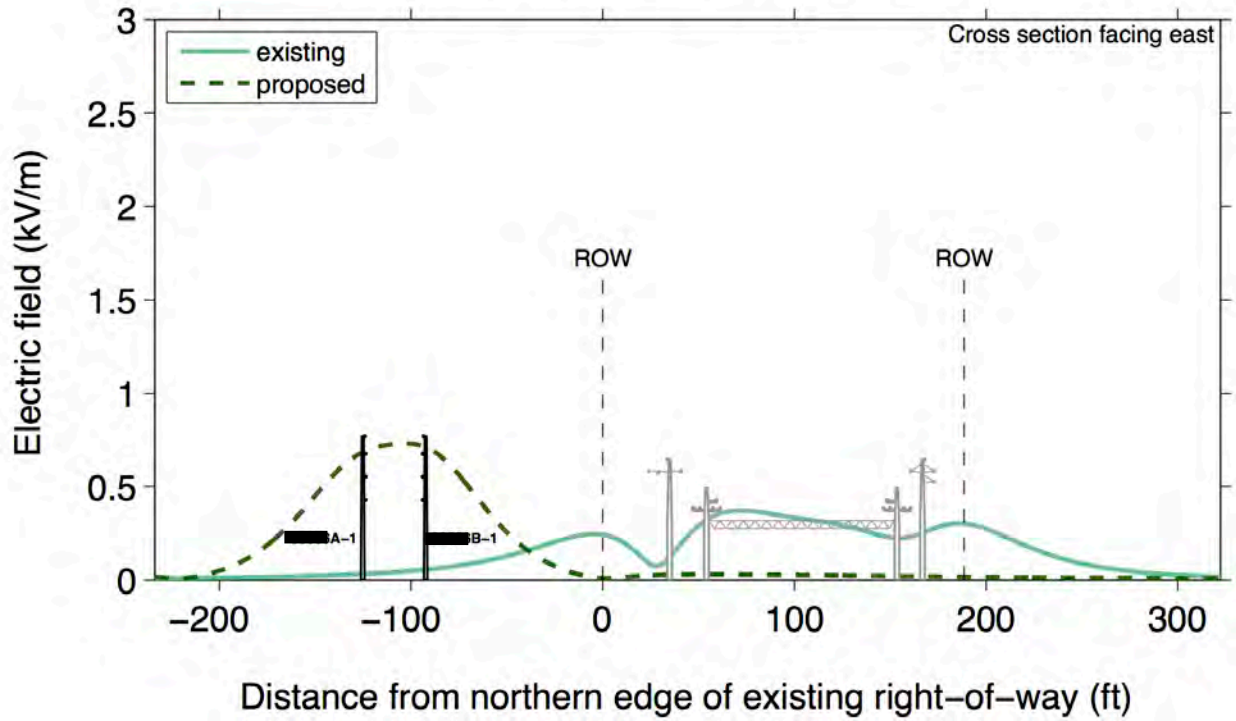


Figure 3. Calculated electric-field profile in section HRX-3 for existing and proposed configurations, between structure B863 and the [redacted] Frame.

### Magnetic field Hausatonic River Crossing Section HRX-1

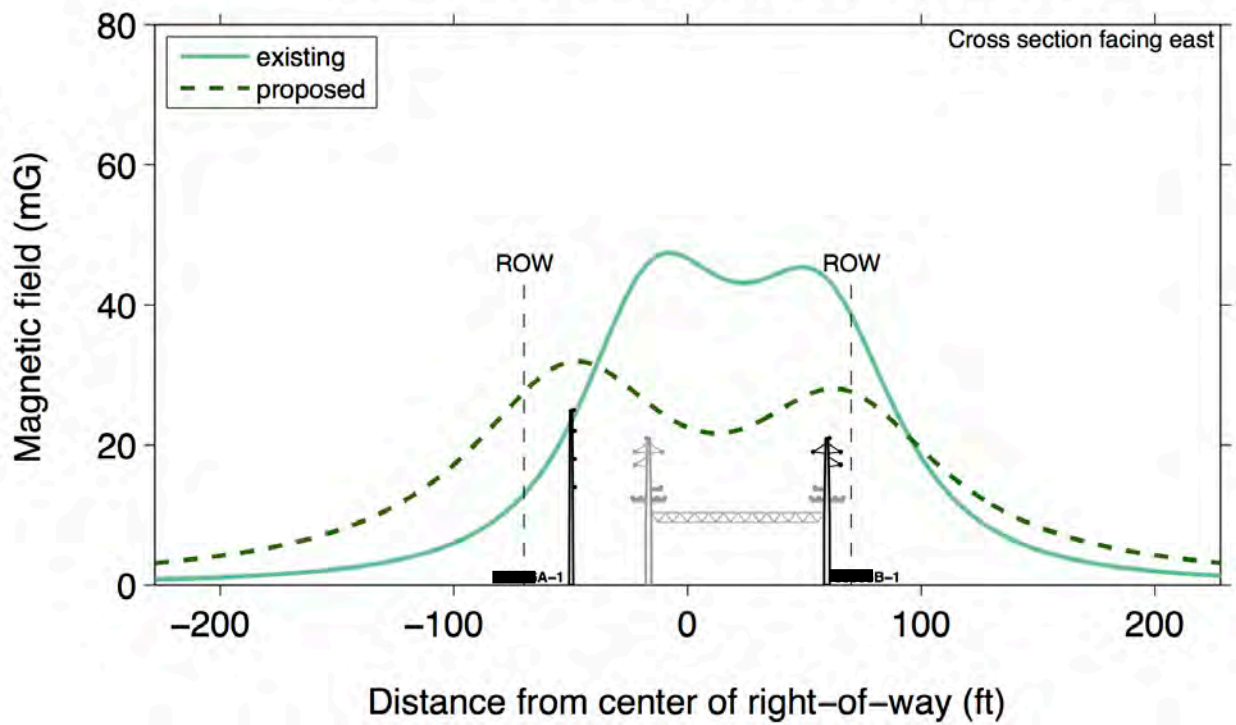


Figure 4. Calculated magnetic-field profile in section HRX-1 for existing and proposed configurations, average load case, between structures B858 and B862.



### Magnetic field Housatonic River Crossing Section HRX-2

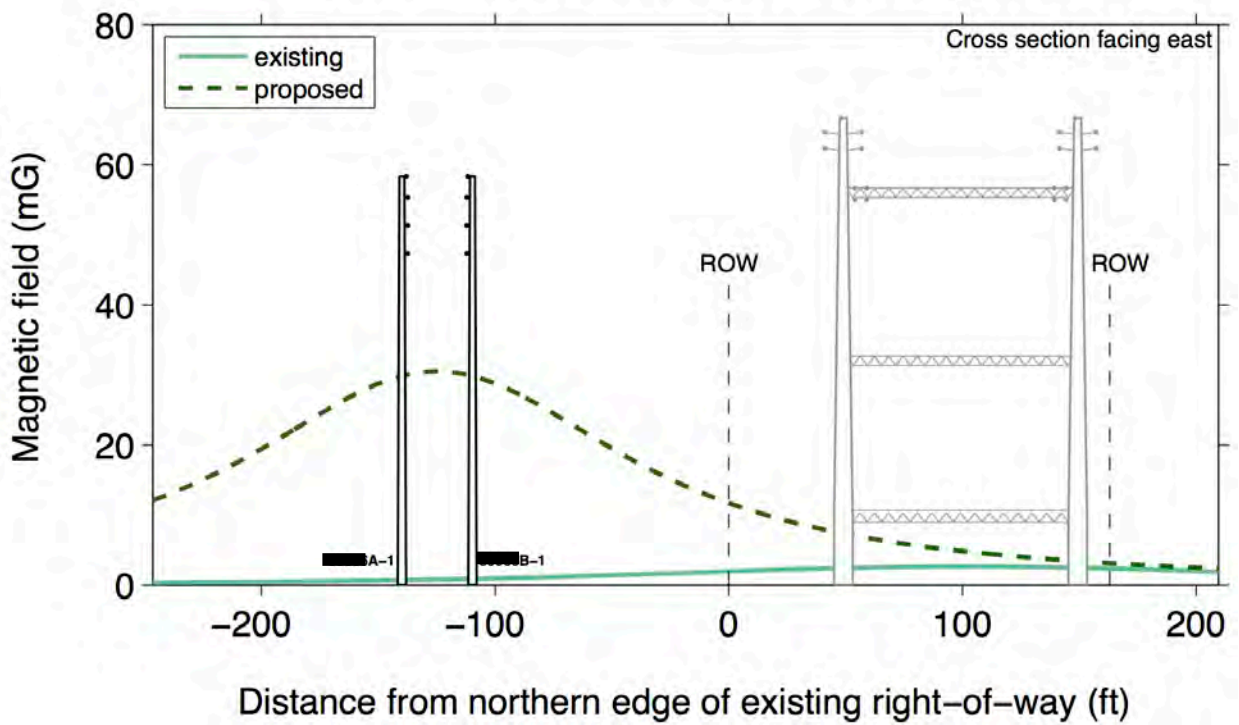


Figure 5. Calculated magnetic-field profile in section HRX-2 for existing and proposed configurations, average load case, between structures B862 and B863.

### Magnetic field Hausatonic River Crossing Section HRX-3

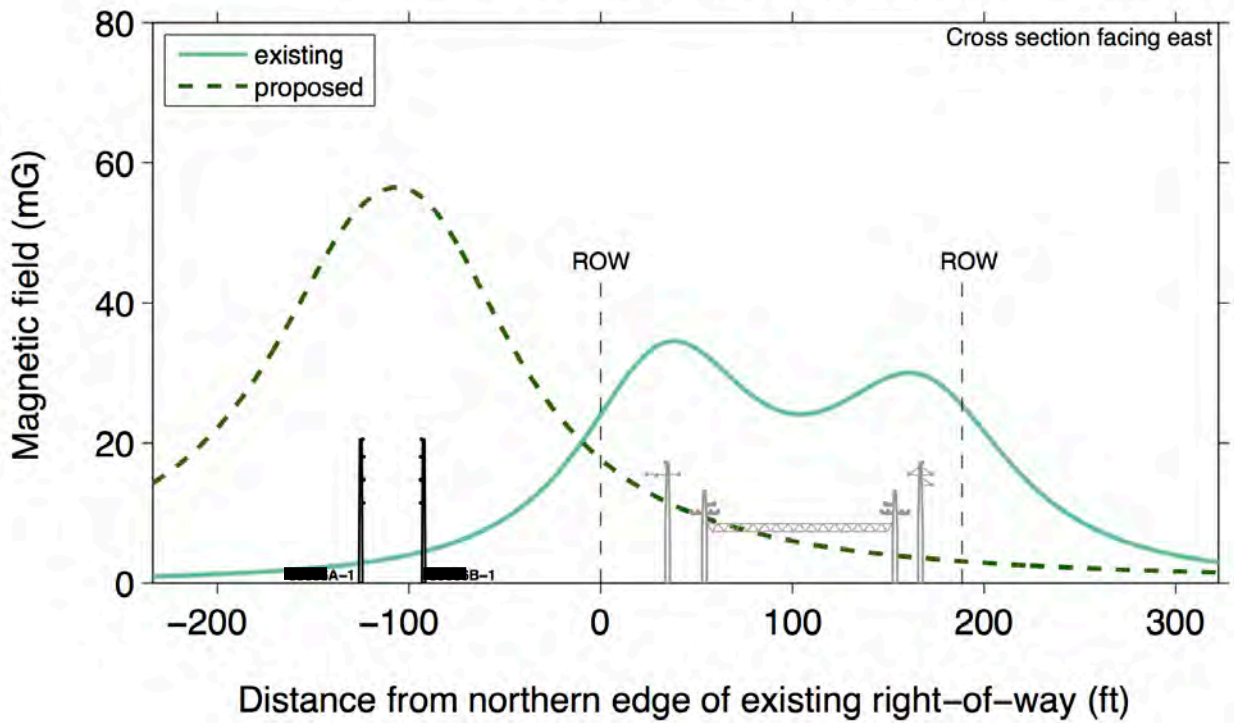


Figure 6. Calculated magnetic-field profile in section HRX-3 for existing and proposed configurations, average load case, between structure B863 and the [redacted] Frame.

**Table 3** Calculated electric-field levels

Section	Configuration	Electric Field (kV/m)				
		200 feet north of ROW edge	100 feet north of ROW edge	North edge of ROW	South edge of ROW	Max on profile
HRX-1	Existing	<0.01	0.01	0.15	0.35	0.59
	Proposed	0.02	0.02	0.42	0.44	0.55
HRX-2	Existing	0.01	0.02	0.03	0.02	0.03
	Proposed	0.14	0.37	0.02	0.01	0.41
HRX-3	Existing	0.01	0.05	0.24	0.30	0.37
	Proposed	0.05	0.73	0.01	0.02	0.73

**Table 4** Calculated magnetic-field levels, average load case

Section	Configuration	Magnetic Field (mG)				
		200 feet north of ROW edge	100 feet north of ROW edge	North edge of ROW	South edge of ROW	Max on profile
HRX-1	Existing	0.5	1.7	13.0	38.6	47.4
	Proposed	2.2	6.0	27.5	27.6	31.9
HRX-2	Existing	0.5	1.0	2.0	2.4	2.7
	Proposed	19.4	28.8	11.7	3.2	30.5
HRX-3	Existing	1.3	4.0	24.1	25.6	34.5
	Proposed	22.2	56.1	17.7	3.1	56.5

**Table 5** Calculated magnetic-field levels, peak load case

Section	Configuration	Magnetic Field (mG)				
		200 feet north of ROW edge	100 feet north of ROW edge	North edge of ROW	South edge of ROW	Max on profile
HRX-1	Existing	0.8	2.6	20.1	59.5	73.3
	Proposed	3.4	9.2	42.5	42.6	49.4
HRX-2	Existing	0.7	1.5	3.0	3.7	4.1
	Proposed	30.0	44.5	18.1	4.9	47.1
HRX-3	Existing	2.0	6.3	37.2	39.4	53.4
	Proposed	34.2	86.8	27.3	4.8	87.3

## Pre-construction measurements

In order to characterize the EMF of un-modeled Metro North Railroad conductors, EMF for pre-construction conditions were measured on April 28, 2014. The measurements were taken at a height of 1 meter (3.28 feet) above ground in accordance with the standard methods for measuring near power lines (IEEE Std. 644-1994a). Both electric and magnetic fields were expressed as the total field computed as the resultant of field vectors measured along vertical, transverse, and longitudinal axes.<sup>4</sup> The electric field was measured in units of kV/m with a single-axis field sensor and meter manufactured by Enertech Consultants. The magnetic field was measured in units of mG by orthogonally-mounted sensing coils whose output was logged by a digital recording meter (EMDEX II) manufactured by Enertech Consultants. These instruments meet the Institute of Electrical and Electronics Engineers (IEEE) instrumentation standard for obtaining accurate field measurements at power line frequencies (IEEE Std. 1308-1994b). The meters were calibrated by the manufacturer by methods like those described in IEEE Std. 644-1994a.

<sup>4</sup> Measurements along the vertical, transverse, and longitudinal axes were recorded as root-mean-square magnitudes. Root mean square refers to the common mathematical method of defining the effective voltage, current, or field of an AC system.



The New Haven Line includes a 12.6-kV, 60-Hz catenary system that powers some rolling stock, and magnetic fields in the vicinity of the tracks would be expected to exhibit variation with traction load during periods of train acceleration. Figure 7 depicts the time variation of the magnetic field above the catenaries and distribution circuits of the New Haven Line, measured between structures B865W and B866W on the [REDACTED] overpass, east of the [REDACTED] Frame. Variations of four times or more in the measured magnetic field, lasting for 1-2 minutes, were observed after the passage of east- and west-bound trains.

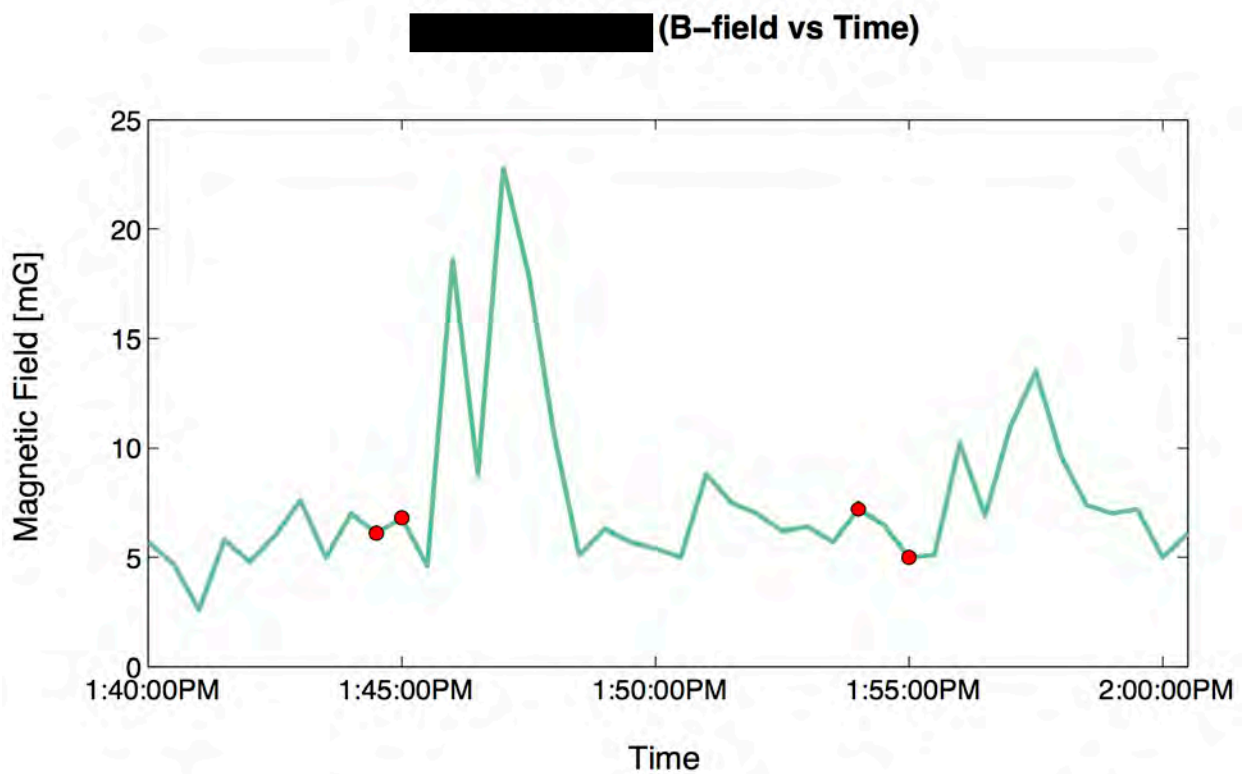


Figure 7. Time variation of magnetic field, measured on the [REDACTED] overpass between structures B865E and B866W. The time of train passage under the measurement location is denoted by red markers.

Figure 8 depicts the measured electric field on a span in section HRX-1, overlaid on the calculated electric-field profile for this section. Figure 9 likewise depicts the measured magnetic field on the same span, overlaid on the calculated magnetic-field profiles at average load. No operational data (loading at the time of measurements) or span-specific line height data were used to refine the calculated profiles. The data show that the un-modeled conductors of the Metro North Railroad electrical system (which are nearer to the ground) primarily affect EMF levels between the existing 8█ A-1 and 8█ B-1 transmission lines. For this reason, the modeled EMF profiles provide a conservative bound on project-related changes in EMF at the ROW edges and beyond.

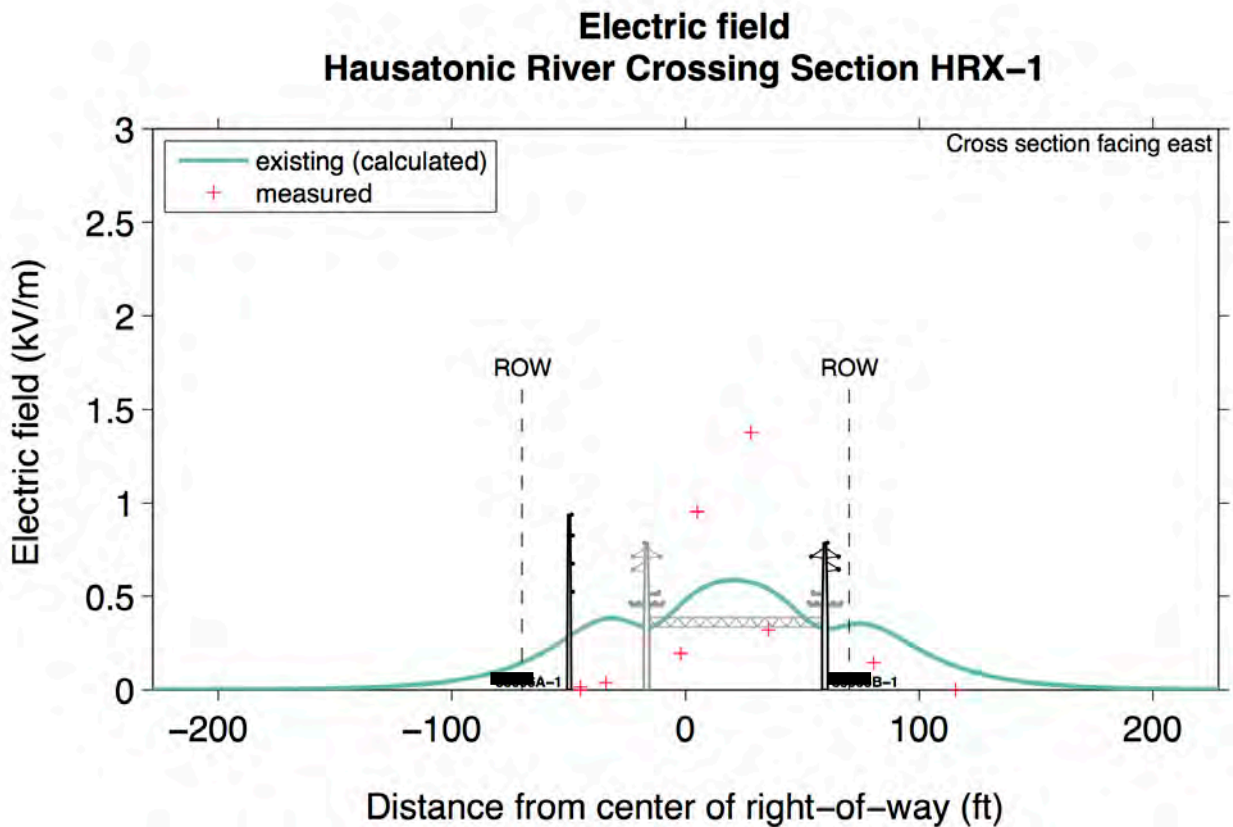


Figure 8. Measured electric-field profile of the existing transmission-line configuration between structures B861 and B862, in section HRX-1.

### Magnetic field Hausatonic River Crossing Section HRX-1

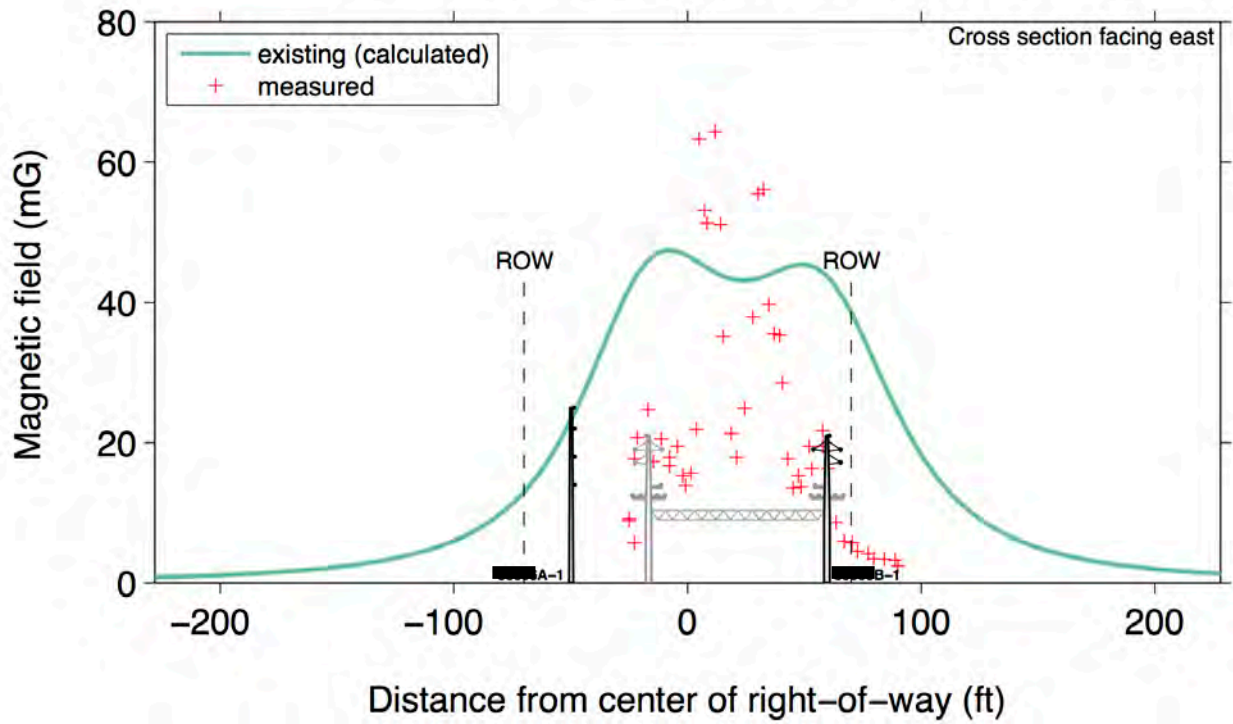


Figure 9. Measured magnetic-field profile of the existing transmission-line configuration between structures B861 and B862, in section HRX-1.

## References

---

Bonneville Power Administration (BPA). Corona and Field Effects Computer Program. Portland, OR: Bonneville Power Administration, 1991.

Connecticut Siting Council (CSC). Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut. December 14, 2007 (2007).

Connecticut Siting Council (CSC). Petition 754 - Best Management Practices for Electric and Magnetic Fields. February 14, 2014.

International Agency for Research on Cancer (IARC). IARC Monographs on the evaluation of carcinogenic risks to humans. Volume 80: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields. IARC Press. Lyon, France, 2002.

Institute of Electrical and Electronics Engineers (IEEE). IEEE standard procedures for measurement of power frequency electric and magnetic fields from AC power lines. IEEE Standard 644-1994 (Revision of IEEE Standard 644-1987), 1994a.

Institute of Electrical and Electronics Engineers (IEEE). IEEE recommended practice for instrumentation: specifications for magnetic flux density and electric field strength meters-10 Hz to 3 kHz. IEEE Standard 1308-1994, 1994b.

Institute of Electrical and Electronics Engineers (IEEE). IEEE recommended practice for measurements and computations of electric, magnetic, and electromagnetic fields with respect to human exposure to such fields, 0 Hz to 100 kHz. IEEE Standard C95.3.1-2010, 2010.

International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 3 kHz. Piscataway, NJ: IEEE, 2002.

International Commission on Non-ionizing Radiation Protection (ICNIRP). ICNIRP Statement—Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Physics 99:818-836, 2010.

World Health Organization (WHO). Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. WHO, Geneva, Switzerland, ISBN 978-92-4-157238-5, 2007.



**Attachment I**  
Letters from City Officials



**A UIL HOLDINGS COMPANY**

---

The United Illuminating Company  
180 Marsh Hill Road, Orange, CT 06477-3629  
203-499-2000

January 30, 2015

Benjamin G. Blake  
Mayor, City of Milford  
City Hall  
110 River Street  
Milford, CT 06460

Dear Mayor Blake:


Enclosed please find a copy of the petition to the Connecticut Siting Council requesting a determination that no Certificate of Environmental Compatibility and Public Need is necessary for The United Illuminating Company's proposed Housatonic River Crossing 115 kV Transmission Line Replacement Project. The Project will replace/relocate the 115kV transmission lines crossing the Housatonic River in Stratford & Milford, Connecticut.

With this letter, UI is providing you notice of its proposed work activity, as described in the enclosed petition. You have 30 days from the date of this letter to send any comments or concerns to the Council at the following address:

Attorney Melanie Bachman  
Acting Executive Director/Staff Attorney  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051  
Email: [siting.council@ct.gov](mailto:siting.council@ct.gov)

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work.

Sincerely,

  
James M. Yeske, PMP  
Sr. Project Manager



**A UIL HOLDINGS COMPANY**

---

The United Illuminating Company  
180 Marsh Hill Road, Orange, CT 06477-3629  
203-499-2000

January 30, 2015

John A. Harkins  
Mayor, Town of Stratford  
Town Hall  
2725 Main Street  
Stratford, CT 06615

Dear Mayor Harkins:

Enclosed please find a copy of the petition to the Connecticut Siting Council requesting a determination that no Certificate of Environmental Compatibility and Public Need is necessary for The United Illuminating Company's proposed Housatonic River Crossing 115 kV Transmission Line Replacement Project. The Project will replace/relocate the 115kV transmission lines crossing the Housatonic River in Stratford & Milford, Connecticut.

With this letter, UI is providing you notice of its proposed work activity, as described in the enclosed petition. You have 30 days from the date of this letter to send any comments or concerns to the Council at the following address:

Attorney Melanie Bachman  
Acting Executive Director/Staff Attorney  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051  
Email: [siting.council@ct.gov](mailto:siting.council@ct.gov)

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work.

Sincerely,

A handwritten signature in blue ink, appearing to read 'James M. Yeske', is written over a faint, larger version of the same signature.

James M. Yeske, PMP  
Sr. Project Manager



**A UIL HOLDINGS COMPANY**

---

The United Illuminating Company  
180 Marsh Hill Road, Orange, CT 06477-3629  
203-499-2000

January 30, 2015

Dear Property Owner:

The purpose of this letter is to notify you that The United Illuminating Company ("UI") is filing a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council"). In it, UI proposes relocating just over 0.5 miles of existing transmission lines approximately 150 feet to the north of a Connecticut Department of Transportation ("CDOT") railway bridge that spans the Housatonic River.


UI will locate eight of the new structures within CDOT's existing right-of-way and six structures on private properties adjacent to the bridge. Specifically, UI plans to install two structures on property owned by Ashcroft Inc. in Stratford and four structures on property owned by NRG Company in Milford.

UI is required to notify town(s) and abutting property owners of its proposed activity in order to allow those notified 30 days to comment or express concerns about the project to the Council. Please accept this letter as notice of UI's proposed work. You have 30 days from the date of this letter to send any comments or concerns to the Council at the following address:

Attorney Melanie Bachman  
Acting Executive Director/Staff Attorney  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051  
Email: [siting.council@ct.gov](mailto:siting.council@ct.gov)

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work.

Sincerely,

  
James M. Yeske, PMP  
Sr. Project Manager



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

PETITION OF THE UNITED ILLUMINATING : PETITION NO. \_\_\_\_\_  
COMPANY FOR A DECLARATORY RULING THAT :  
NO CERTIFICATE OF ENVIRONMENTAL :  
COMPATIBILITY AND PUBLIC NEED IS :  
REQUIRED REGARDING :  
REPLACEMENT/RELOCATION OF 115kV :  
TRANSMISSION LINES CROSSING THE :  
HOUSATONIC RIVER IN STRATFORD & :  
MILFORD, CONNECTICUT : JANUARY 30, 2015

**AFFIDAVIT OF JAMES YESKE**

STATE OF CONNECTICUT )  
 ) ss: Orange  
COUNTY OF NEW HAVEN )

JAMES YESKE, being duly sworn, states:

1. I am a Project Manager for The United Illuminating Company, 180 Marsh Hill Road, Orange, Connecticut (“UI” or the “Company”). I am over the age of eighteen years and understand the obligations of making statements under oath.

2. I am familiar with the Petition of The United Illuminating Company for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need is required for the replacement/relocation of the 115kV transmission lines crossing the Housatonic River in Stratford & Milford, Connecticut (the “Petition”).

3. I hereby certify, in accordance with Regulations of Connecticut State Agencies Section 16-50j-40 that a copy of the Petition of the Petition was sent via certified mail on January 30, 2015 to the following:

John A. Harkins  
Mayor, Town of Stratford  
Town Hall, 2725 Main Street  
Stratford, CT 06615

Benjamin G. Blake  
Mayor, City of Milford  
City Hall, 110 River Street  
Milford, CT 06460

4. I hereby certify, accordance with Regulations of Connecticut State Agencies Section 16-50j-40, that notice of the Petition was sent via certified mail service on January 30, 2015 on the following owners of property that about the Project:

Aschcroft Inc	Bruce Albright	250	EAST MAIN ST	STRATFORD	CT	06614
Devon Power LLC		211	CARNEGIE CENTER	Princeton	NJ	08540
UB Railside LLC	Willing Biddle	321	RAILROAD AVE	GREENWICH	CT	06830

5. Additionally, I hereby certify, accordance with Regulations of Connecticut State Agencies Section 16-50j-40, that notice of the Petition was served via certified mail on January 30, 2015 on the following owners of property in close proximity to the Project:

State of Connecticut		2800	BERLIN TURNPIKE	Newington	CT	06131
CASEY BROTHERS LLC		77	TODD DR	Milford	CT	06460
NOVAK JANET A		806	NAUGATUCK AVE	Milford	CT	06460
KAYALIOGLU ZERRIN &		814	NAUGATUCK AVE	Milford	CT	06461
PHILLIPS ALEXANDER & YATES MARGARET		800	WEST END AVE UN 1A	New York	NY	10025
CIMBAK JEROME JR & GINA & SURV		844	NAUGATUCK AV	Milford	CT	06461
CIOPPA STEVEN A & ROSE MARIE G LIFE USE		846	NAUGATUCK AVE	Milford	CT	06460
GLOECKNER MARC A		696	BOSTON POST RD	Milford	CT	06460
PISELLI CARLO A &		856	NAUGATUCK AV	Milford	CT	06461
CITY OF MILFORD		70	WEST RIVER ST	Milford	CT	06460
ALBRITTON THOMAS & MAUREEN & S		948	NAUGATUCK AV	Milford	CT	06461
SERVIDEO LOUIS A & ANN C & SURV		956	NAUGATUCK AV	Milford	CT	06461
DRAPP LAWRENCE A & ROSEMARY E		964	NAUGATUCK AV	Milford	CT	06461

LAVIGNE MAURICE J &		1	GREENVIEW LA	Milford	CT	06461
BELDEN BETTY ANN		28	WOODHILL RD	Milford	CT	06461
BARICHKO STEPHANIE M		33	WOODHILL RD	Milford	CT	06461
HELM PAMELA J		32	WOODHILL RD	Milford	CT	06461
SELMON TRACY & MAYNARD		32	GREENVIEW LN	Milford	CT	06461
MCGINNIS GRACE M		31	WOODHILL RD	Milford	CT	06461
HAGER THOMAS		30	WOODHILL RD	Milford	CT	06461
CURMA PAUL S		30	GREENVIEW LN	Milford	CT	06461
CAFIERO JOHN H &		3	WOODHILL RD	Milford	CT	06461
SANTIAGO JOAN		29	WOODHILL RD	Milford	CT	06461
FICANO LINDSAY		28	GREENVIEW LN	Milford	CT	06461
HOFFMAN TERESA A		34	WOODHILL RD	Milford	CT	06461
PRUCHNICKI KENNETH C		44	GREENVIEW LN	Milford	CT	06461
STIEWING GEORGE R & GARY E &		3	GREENVIEW LN	Milford	CT	06461
BETLOW LAURA A		40	WOODHILL RD	Milford	CT	06461
PELLETIER LEO J		48	WOODHILL RD	Milford	CT	06461
SWIST KEVIN L		46	WOODHILL RD	Milford	CT	06461
CHELAK MICHAEL JR		46	GREENVIEW LN	Milford	CT	06461
GREANEY MARY T		44	WOODHILL RD	Milford	CT	06461
HEFFERNAN LINDA		2	GREENVIEW LN	Milford	CT	06461
WALLMAN CAROL A		42	GREENVIEW LN	Milford	CT	06461
Stratford Self Storage LLC		360	EAST MAIN ST	Stratford	CT	06614
BEP LLC		380	EAST MAIN ST	Stratford	CT	06614
An-Noor International Foundation		64	DEERWOOD AVE	Milford	CT	06460-532
Gerard J Sack		22	PROSPECT ST	BETHEL	CT	06801
Town Of Stratford		2725	MAIN STREET	Stratford	CT	06615-740
William & Veronica Fellows		654	LITCHFIELD RD	Stratford	CT	06058-1254
Dominick & Theresa Incerto		135	Peck St	Stratford	CT	06614-444
Edward & Patricia Baker		133	Peck St	Stratford	CT	06614-4443
Ilija Demiraj		119	Peck St	Stratford	CT	06614
Paul R & Claudia Peterson	109-111		PECK ST	Stratford	CT	06614-4466
Lee Gulash		70	CHANDA DR	Stratford	CT	06614
Marjorie A Brelsford		81	Peck St	Stratford	CT	06614-4443

  
James Yeske  
Project Manager

On this the 30 day of January, 2015, before me, the undersigned representative, personally appeared, James Yeske, known to me (or satisfactorily proven) to be the person whose name is subscribed to the foregoing instrument and acknowledged that he executed the same for the purposed therein contained.

In Witness Whereof, I hereunto set my hand and official seal.

  
Notary Public/ HEIDI E. GLATZEL  
Commissioner of Superior Court  
MY COMMISSION EXPIRES 6-30-19