The United Illuminating Company

Development and Management Plan

For the

Construction of the

Singer-Housatonic River West Bank 345-kV Transmission Cable:

Pequonnock River, Yellow Mill Creek, Bruce Brook and Long Brook Crossings

Pursuant to:

The United Illuminating Company's and the Connecticut Light & Power Company's April 7, 2005 receipt of a Certificate of Environmental Compatibility and Public Need from the Connecticut Siting Council for the construction of a 345-kV electric transmission line and associated facilities between the Scovill Rock Switching Station in the City of Middletown and the Norwalk Substation in the City of Norwalk, Connecticut.

(Docket No. 272)

August 16, 2006

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The United Illuminating Company ("UI") hereby submits to the Connecticut Siting Council ("the Council", or "Siting Council") this Development and Management ("D&M") Plan for the construction of four watercourse crossings along UI's portion of the Middletown to Norwalk 345-kV Transmission Line Project ("the Project"). The Project, which UI is developing with The Connecticut Light and Power Company ("CL&P", together with UI, "the Companies") will extend from CL&P's existing Scovill Rock Switching Station in the City of Middletown (Middlesex County) to CL&P's existing Norwalk Substation in the City of Norwalk (Fairfield County). The Project was certificated by the Siting Council on April 7, 2005.

The UI portion of the Project is located in the Town of Stratford and the City of Bridgeport (Fairfield County) and includes the following principal components:

1) Construction of the new 345-kV Singer Substation in Bridgeport, including several hundred feet of underground 115-kV line to interconnect Bridgeport Energy's generators and Pequonnock Substation to Singer Substation, and

2) Construction of approximately 5.6 miles of double circuit underground 345-kV transmission line, referred to as the "Singer-Housatonic River West Bank 345-kV Double Circuit Transmission Line (the "Line"), extending from the new Singer Substation to an underground splice chamber (vault) that is planned for location in an upland area west of the Housatonic River in Stratford.

Three separate D & M Plans will govern the construction of the UI portion of the Project. UI's D & M Plan for the Singer Substation and associated 115-kV interconnections was conditionally approved by the Siting Council on June 8, 2005. Similarly, UI's D & M Plan for the upland portion of the Singer-Housatonic River West Bank 345-kV Line was conditionally approved by the Siting Council on June 7, 2006.

This D&M Plan addresses the procedures that will be used to install the underground 345-kV transmission cables across the four watercourses within the Singer-Housatonic River West Bank 345 kV segment. These crossings are: the Pequonnock River, Yellow Mill Creek, and Bruce Brook in Bridgeport, and Long Brook in Stratford.

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SECTION 1.0
INTRODUCTION

This D&M Plan was prepared in accordance with the D&M Plan requirements contained within the Regulations of Connecticut State Agencies (RCSA), Sections 16-50j-60 through 16-50j-62, as they pertain to construction of a new transmission line project and in accordance with the Decision and Order received from the Siting Council for the Middletown-Norwalk Project ("the Project").

To interconnect certain substations that are a part of the Middletown-Norwalk Project, UI will construct a double circuit 345-kV transmission line between the Singer Substation in the City of Bridgeport and proposed splice chambers near the west bank of the Housatonic River, in the Town of Stratford. The total linear length of this portion of the Project is approximately 5.6 miles. All of the Line will be placed underground, with most located within public road rights-of-way ("ROW's"). The *Singer-Housatonic River West Bank 345-kV Transmission Line D&M Plan*, which UI submitted in March 2006, describes the overall construction of the 5.6-mile underground 345-kV transmission Line. That D&M Plan was conditionally approved by the Council on June 7, 2006.

This D&M Plan specifically addresses the installation of the Line across four watercourses along UI's 5.6-mile transmission line route: these are the Pequonnock River, Yellow Mill Creek, and, Bruce Brook in Bridgeport, and Long Brook in Stratford. Of these crossings, only the Pequonnock River is tidal. Yellow Mill Creek, although within the Connecticut coastal boundary, is not tidal at the planned crossing. Both Bruce Brook and Long Brook are freshwater streams.

SECTION 2.0
TRANSMISSION LINE REQUIREMENTS

The installation of the electrical facilities necessary for the Line requires a continuous path from one end to the other. Crossing obstacles such as the above mentioned watercourses via the open cut method is not feasible due to length, depth, or potential for either physical or environmental damage. The Line will consist of six cross-linked polyethylene ("XLPE") insulated power cables, along with two fiber optic cables for protection and control of the Line. Each power cable will measure approximately 5.5 inches in diameter and will be placed within a concrete encased conduit system. Each fiber optic cable will be within its own conduit and will be part of the previously mentioned conduit system.

To install the cables beneath the Pequonnock River, Yellow Mill Creek,, Bruce Brook, and Long Brook, UI proposes to use subsurface techniques (horizontal directional drilling ["HDD"] and jack and bore construction) that will avoid direct disturbance to streambeds. Jack and bore construction will be used to install the conduit system that will contain the transmission cables beneath Yellow Mill Creek, Bruce Brook and Long Brook, whereas HDD will be used to construct the Pequonnock River crossing.

The use of both the HDD and jack and bore methods will require the temporary establishment of staging areas on either side of each water crossing. These staging areas will vary in size (depending on the watercourse crossing and the technique used)

and will be used for the construction equipment and materials that will be required to install each crossing (refer to the drawings for each crossing in Appendix A). After the conduits are installed beneath each of the water crossings, they will be connected to the duct bank system that will be installed in the adjacent upland areas, using the conventional open trenching methods described in the D&M Plan for the *Construction of the Singer-Housatonic West Bank 345-kV Transmission Line*.

The following briefly describes the principal processes and requirements that will be involved in the use of each subsurface technique for the water crossings. Both techniques are described in greater detail in Sections 4 and 6. Appendix A contains the drawings showing the plan and profile of the installations as well as information on the material used.

2.1 Jack and Bore Method

At the crossings that will be installed using the jack and bore method, a pre-cast concrete casing will first be installed under the crossing, after which a PVC conduit system will be installed in the casing. After the conduit system is installed, grouting material will be pumped in to fill the voids between the inside of the casing and the outside of the conduits.

At each of the three watercourses where the jack and bore method will be used, one casing will be installed that will accommodate the conduit system for the double circuit transmission line.

2.2 HDD Method

For the HDD installation of the transmission cables beneath the Pequonnock River, staging areas will be established on either side of the river. One of the staging areas will be used to accommodate the drilling rig and other associated equipment and materials that will be required to drill the initial (pilot) hole beneath the river, ream, and pull back the pipe that will be used to enlarge the hole. The other staging area will be used for laying out pipe sections to be used in the HDD process, as well as for storing cable conduit system materials.

The first step in the HDD process will involve drilling a small-diameter “pilot” hole beneath the river along the designated directional drill path. A specialized HDD drilling rig, equipped with a hydraulic-powered drill bit (which can be guided), will be used to drill along the drill path, exiting at a pre-determined location on the opposite side of the river. As the pilot hole drilling proceeds, lengths of pipe are added to extend the length of the drill.

Once the pilot hole is completed (i.e., reaches the exit point on the opposite side of the river), the auger will be removed and a reamer/expander will be attached to the drill stem. This reamer/expander, which will be used to enlarge the pilot hole, will be rotated and pulled back along the drill path to the opposite (drill rig) side of the river. As the reaming process proceeds toward the drill rig, joints of drill pipe will be added behind the reamer to maintain a string of pipe in the drilled hole at all times as the hole is enlarged. Several passes of progressively larger diameter reaming tools will be required before the hole is large enough to accommodate the cable conduit system.

During the drilling and reaming operations, drilling fluid, which typically consists of bentonite[1] mixed with water, will be pumped into the drill hole. This fluid, also sometimes referred to as “drilling mud”, is used to lubricate the drill string; transport the drilled spoil (consisting of excavated soil or rock cuttings) to the staging area mud pit; cool and clean the drill cutters; reduce friction between the pipe and the wall of the hole; and stabilize the hole. In addition, the drilling fluid helps in turning the drill bit.

Until the pilot hole is completed, the drilling fluid will recirculate to a mud pit that will be located at the HDD rig staging area. This pit will be used to contain the drilling fluid and associated cutting returns from the drilling operation. Once the pilot hole reaches the exit point on the opposite side of the river, drilling fluid will be discharged to a similar drilling fluid collection pit there. Excess drilling fluid will be collected at the entry point and processed to separate auger cuttings from the drilling fluid. The drilling fluid will be recycled and the auger cuttings will be disposed of in accordance with all applicable local, state, and federal regulations.

Once the bore hole has been reamed to the correct diameter, lengths of High Density Polyethylene (HDPE) conduit will be fusion welded together and bundled. The bundle is then pulled through the bore hole.

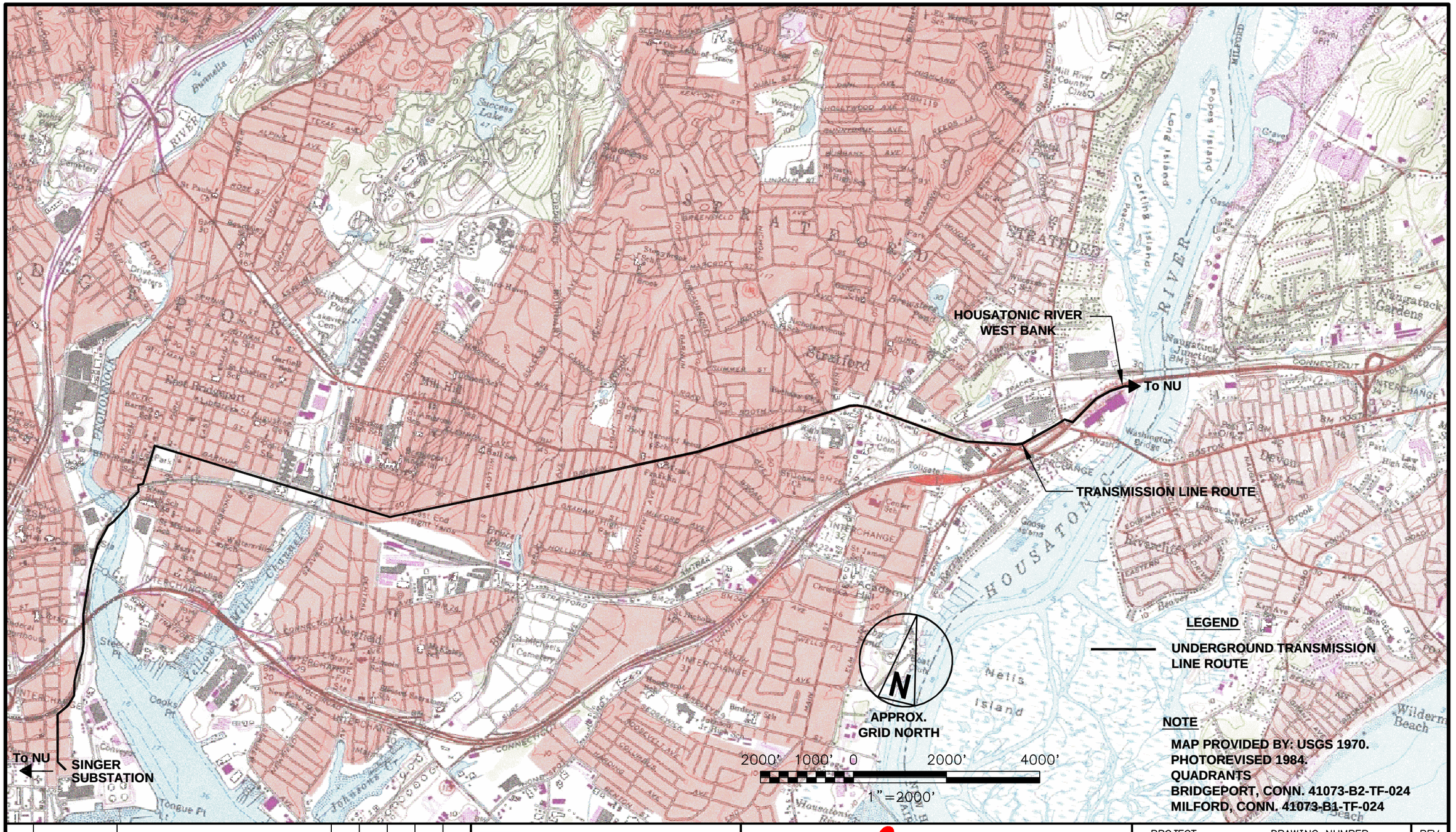
Finally, the cables themselves are pulled through the completed conduit system.

In order to install the 345-kV cables beneath the Pequonnock River while maintaining appropriate separation between the two circuits that comprise the transmission line, two HDD's will be performed along separate drill paths. Each drill path will contain the conduit and associated cables for one of the circuits that make up the double circuit line.

[1] Bentonite is a naturally-occurring mined clay-like material that is mixed with water to form a benign drilling fluid. Bentonite is biologically and chemically inert, and has been defined by the U.S. Environmental Protection Agency as a non-hazardous material.

SECTION 3.0
KEY MAP

A Key Map identifying routing of the Line, as described above, is shown in Figure 1.



NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
1	1/06/2006	MINOR REVISION	GS	MAP			
0	11/23/2005	INITIAL ISSUE	ASM	ASM			

BLACK & VEATCH CORPORATION

The United Illuminating Company
157 Church St. New Haven, Ct. 06506

ENGINEER	DRAWN ASM
CHECKED	DATE

MIDDLETOWN – NORWALK PROJECT
DEVELOPMENT AND MANAGEMENT PLAN
USGS MAP WITH ROUTE LAYOUT

PROJECT	DRAWING NUMBER	REV
136745	SK111904	1

CODE

AREA

FIGURE 1

SECTION 4.0
CONSTRUCTION

Construction work tasks will include minor clearing of scrub brush and trees as required on both sides of the HDD operation, pavement cutting, pit excavations, directional drilling and jack and bore construction, conduit installation, backfilling, cable pulling and splicing, final grading, and restoration. Additional details concerning these activities are provided in Section 6 Supplemental Information. Both directional drilling and jack and bore construction will include planning activities such as development of set-up areas, a Worksite Safety Plan, a Traffic Maintenance and Control Plan, and a Sediment and Erosion Control Plan.

4.1 Schedule

UI proposes to construct these crossings according to the schedule in Table 1. The final schedule may be affected by the terms of the applicable ACOE and DEP permits as well as restrictions imposed on the project by each community and CDOT. Specialized crews with experience will be employed for the HDD and jack and bore construction. Additionally, the crews performing the jack and bores will have experience working within city streets and roadways. The Pequonnock River directional drill crossing construction activities will be conducted on private land adjacent to the river and will have little to no impact on the public.

Table 1
Watercourse Construction Schedule

ID	Task Name	Start	Finish
1	Pequonnock River Horizontal Directional Drill	1/09/07	5/16/07
2	Yellow Mill Creek Jack and Bore	2/06/07	3/15/07
3	Bruce Brook Jack and Bore	11/28/06	1/19/07
4	Long Brook Jack and Bore	1/22/07	2/23/07

It is the intent of UI to energize its portion of the Middletown-Norwalk Project according the project's master schedule. However, full restoration of public road ROW's and certain disturbed areas off of the final ROW (lay down and staging areas, damaged sidewalks, etc.) may require additional time beyond the scheduled project energizing date. Such restoration work (final site stabilization, reseeding, paving and resurfacing, etc.) may be performed after the project is in service, during appropriate weather conditions. Depending on the timing of the completion of construction work in a specific area, final restoration may not be completed until the next growing season.

4.1.1 Work Hours

Normal work hours for most of the project construction will vary according to land use, road jurisdiction, and traffic counts, with construction activities in public road rights-of-way being guided by the proposed Traffic Maintenance and Control Plan once it is approved. These construction hours may be altered by the entity having jurisdiction over the road as a result of adjoining land use activities. For example, no night work will likely occur on municipal roads in residential areas. However, in commercial areas, night work may be required to minimize customer disruptions and economic impacts to nearby commercial establishments.

Jack and bore construction work will proceed Monday through Saturday, excluding some statutory holidays. The proposed work hours may be extended, on a temporary and case-by-case basis, and with the authorization of the entity that has jurisdiction over the road, to complete critical installation items that otherwise could result in inconvenience to the public or result in adverse impacts to identified environmental resources. The Yellow Mill Creek and the Long Brook crossings are in industrial and commercial areas, while the Bruce Brook crossing is in a mix of residential and commercial use.

However, because directional drilling operations must proceed continuously until the conduits are pulled back through the drill hole, such construction may be performed seven days a week and at all hours of the day and night. Both sides of the HDD operation to cross the Pequonnock River are off road. The land use in the vicinity of both sides of the operation is industrial.

4.1.2 Special Construction Timing Windows

Special timing windows have been established for certain activities associated with construction and operation of the Line. The special timing windows for the Line, along with conditions associated with them, are as follows.

4.1.2.1 Construction Access

The installation of the Line beneath the four watercourse crossings will not require any in-stream work, or any access through these watercourses. Directional drilling and jack and bore construction crews and equipment will access these crossings using existing bridges and roads. For the Pequonnock River crossing, access to both banks of the river will be via existing bridges on Crescent Avenue and Stratford Avenue. For the crossings of Yellow Mill Creek, Bruce Brook and Long Brook, construction personnel and equipment will use Barnum Avenue.

4.1.2.2 Construction at Wetland Crossings – The Company does not anticipate encountering any wetlands at any of the jack and bore sites or on either side of the Pequonnock River.

4.1.2.3 Soil Stabilization after Grading – At the Pequonnock River, the planned HDD staging areas are located on private property. After the completion of construction, these staging areas will be stabilized after grading according to the following guidelines:

- Work areas will be seeded and mulched or otherwise stabilized within seven workdays after the final grade has been established.

- If any grading work is suspended for more than 30 days, seed, mulch or other industry-recognized measures will be applied within the first seven days after the stoppage of grading activities in order to stabilize soils.

The jack and bore sites are located in public paved streets and will not require soil stabilization.

4.2 Ancillary and Support Facilities

The following ancillary and support facilities are associated with the UI portion of the Project. The terminal station and 115-kV interconnection lines required for the Project are addressed in the D&M Plan for Singer Substation.

4.2.1 Communications System

Up to four separate communication conduits will be constructed in the double circuit 345 kV conduit systems. One fiber optic cable will be installed in each of the communication conduits to provide independent relaying communication between Singer Substation and East-Devon Substation. Each directional drilling and jack and bore conduit system will be required to include these communication conduits, up to two for each circuit.

4.2.2 Project Administration and Construction Offices

UI will direct the overall construction of the Project from its existing engineering headquarters in New Haven, Connecticut. In addition, a temporary construction office for UI's field engineering and construction management representatives will be located at or near the Singer Substation site.

4.2.3 Staging Areas

The directional drilling and jack and bore contractors, working with UI, will establish temporary staging areas for construction of the crossings. These areas will be used for the staging of construction materials, supplies and equipment. The contractor may also use one or more staging areas to locate temporary construction offices, trailers and materials. Staging areas for directional drilling operations will likely be located at the actual drilling construction locations on both sides of the Pequonnock River. Materials and conduit storage will be situated on the west side of the river. UI's temporary and permanent easements anticipated the need for such staging areas and were sized accordingly so space is available on both sides of the Pequonnock River for the establishment of staging areas.

Because the jack and bore construction of the three smaller watercourses will involve work within public roads, separate, off ROW staging areas will be required to store bulk materials and equipment. Possible preliminary staging areas for this work have been identified as follows:

In Bridgeport:

- The site of a future HUD housing development bounded by Main Street, Broad Street, Whiting Street, and Railroad Avenue. This site has been secured.
- Vacant lots bounded by the Metro North Railroad to the south, Barnum Avenue to the north, Pembroke Street to the west, and Yellow Mill Creek to the east.
- A vacant lot on the south side of Barnum Avenue at Sage Avenue.
- The lot bounded by Metro North, Stratford Avenue, Housatonic Avenue, and the Pequonnock River. This site has been secured.

In Stratford:

- A vacant lot on the south side of Barnum Avenue just west of California Street.
- Vacant parcels near the intersection of Barnum Avenue and East Main Street and Bridgeport Avenue (U. S. Route 1).

4.2.4 Vehicular Parking

HDD construction workers and UI engineering and construction management personnel will park their personal vehicles at the staging areas. Adequate space exists at each

HDD staging area to allow for such vehicular parking. Parking of personal and company vehicles will not be permitted on Noble Avenue since there will be travel lane restrictions due to the HDD operation.

Jack and bore construction workers and UI engineering and construction management personnel will park their personal vehicles at project staging areas or use off-street parking, when available, near each of the watercourse crossings. Those workers that must use their personal vehicles to gain access to construction areas will park on side streets when off-street parking is not available. Parking of personal and company vehicles will be permitted on Barnum Avenue only if it can be demonstrated that such parking will not adversely impact the flow of traffic around the jack and bore work locations.

4.3 Land Requirements

At the Pequonnock River, the HDD will require work areas on each side. On one side, the work area must be large enough to accommodate the large drilling machine and slurry mixing facilities. On the opposite side, the work area must be able to support the required slurry pit and the storage of conduits that will eventually be welded together and pulled back through the drilled hole. In addition, there must be adequate work space on both sides for excavations to accommodate interconnecting to the concrete-encased duct bank. A work area of approximately 150 feet by 250 feet will be required on the drilling side of the directional drilling operation, with a second work area of 80 feet by 370 feet on the receiving pit side.

For jack and bore construction, two large excavations will be required on either side of the streams crossed. An entrance pit approximately 30 feet long by 12 feet wide by the required depth of the crossing will be required for the hydraulic jack and bore apparatus. A smaller exit pit will be required on the opposite side to receive the bore as it is pushed through the earth. These excavations will also be large enough to facilitate connecting the casing-enclosed conduit that is pulled through the bore to the concrete-encased duct bank.

4.4 Jack and Bore and Directional Drilling Construction

Jack and bore construction and directional drilling construction are two methods of boring beneath obstacles to allow for the placement of underground utilities. Jack and bore construction is typically used for short bores of up to 200-300 feet. Directional drilling is used for long bores, with today's technology allowing directional drilling to achieve lengths approaching 7,000 feet.

4.4.1 Jack and Bore Procedure

Jack and bore construction consists of excavating two large pits at either end of the required bore using a large backhoe. A hydraulic boring machine is placed on tracks, within the entrance pit. The machine will bore into the earth while using the back wall of the pit for bracing (jacking). Hobus Polymer Concrete casing sections are lowered into the pit and attached to the boring machine as it pushes the casings through the earth. A small auguring device is attached to the lead casing. Once most of the casing has been pushed and augured into the soil, the casing is disconnected from the boring machine, the machine is rolled back on its rails to the back end of the pit, and a second section of casing is lowered into the pit. This next section of casing is attached to the lead section of casing and the jack and bore machine, and the boring process commences again. This process is repeated until the bore reaches the exit bore pit. The Hobus Polymer

Concrete casing then serves as the casing for the conduit. The boring procedure proceeds to the second smaller excavation, where the PVC conduits are pulled back through the casings. Once the PVC conduits are installed in the casings, the ends of the PVC conduit on each side are sealed. The empty space between the PVC conduit and the inner edge of the casing is then filled with thermal grout that is required for proper electrical performance of the cables. The grout may consist of a lean concrete mix, or bentonite slurry. The grout is inserted at one end of the casing and is under pressure to force all excess air out of the dead space in the casing.
The boring machine is then removed from the boring pit and the encased conduits are attached to the concrete-encased duct bank that was installed in the open cut trench. Once this attachment is made, the two boring pits are backfilled and the bored casings and conduit are ready for cable installation.

4.4.1.1 Yellow Mill Creek

The crossing of Yellow Mill Creek will be accomplished through a 30 foot jack and bore at a depth of approximately 24 feet below the road surface. The actual construction area will be situated in the Barnum Avenue pavement in Bridgeport. The jacking and boring operation will place the casing approximately 5 feet beneath the bottom of the spread footing, open floor culvert that carries the creek beneath Barnum Avenue. Jack and bore pits will be excavated adjacent to this culvert on either side, with the hydraulic jacking and boring machine located in one of the pits. Workers and equipment will access the site using Barnum Avenue. A large vacant parcel of land immediately west of the jack and bore location and south of Barnum Avenue and the Remington Union Metallic Cartridge Company will provide adequate space to store equipment, casing sections and PVC conduit required for this stream crossing.

4.4.1.2 Bruce Brook

The crossing of Bruce Brook in Stratford will use two 60 foot jack and bores 85 feet apart. The first is approximately 17 feet below the road surface. The second is approximately 15 feet below the road surface. The actual construction area will be situated in the pavement of Barnum Avenue. The jacking and boring operation will place the casing approximately 5 feet beneath the bottom of the two culverts that have channelized and enclosed the brook. Jack and bore pits will be excavated adjacent to either side of each culvert, with the hydraulic jacking and boring machine located in one of the pits at each location. Workers and equipment will access the site using Barnum Avenue. UI will lease a portion of the adjoining parking lot to store equipment, casing sections and PVC conduit required for this stream crossing.

4.4.1.3 Long Brook

The crossing of Long Brook in Stratford will use a 70 foot jack and bore approximately 22 feet below the road surface. The actual construction area will be situated in the pavement of Barnum Avenue. The jacking and boring operation will place the casing approximately 5 feet beneath the bottom of the culvert that has channelized and enclosed the brook. Jack and bore pits will be excavated adjacent to either side of the culvert, with the hydraulic jacking and boring machine located in one of the pits. Workers and equipment will access the site using Barnum Avenue. UI will lease a portion of the adjoining parking lot to store equipment and PVC conduit required for this stream crossing.

4.4.2 Directional Drilling Procedure

Directional drilling is a more complicated drilling procedure. At one end, a large boring machine drills into the earth at a computed angle to pass beneath the obstacle in question. As the drill proceeds, a bentonite slurry is pumped into the open bore hole to provide lubrication for the auger and to maintain the integrity of the bore hole and prevent it from collapsing. The bentonite slurry is mixed at the site and pumped into the bore hole under pressure. As the auger emerges at the receiving end of the bore, the slurry spills out of the bore hole and is contained in a slurry pit. Likewise, when the HDPE conduits are pulled back through the bore hole to the boring end, the slurry in the bore is ejected from the bore hole at the boring end of the operation where it is contained in a slurry pit. The direction and angle of the boring auger is radio-controlled and monitored to ensure that it accurately emerges at the designated point on the opposite side of the obstacle. Once the drilling is completed, sections of 10 inch HDPE conduit that have been welded together and sections of 8 inch HDPE conduit that have been welded together will be assembled in a bundle of four 10 inch HDPE conduits and one 8 inch HDPE conduit. These bundled conduits will then be pulled back through the bore hole. If the length of the directional drill is such that work space prohibits connecting all the required sections at one time, the pull back of the conduit sections occurs in stages, periodically stopping to allow for more sections to be attached for the pull through of the bore hole. These conduits will be used to house the XLPE power cables and fiber optic communication cables.

4.4.2.1 Pequonnock River

UI will cross the Pequonnock River by means of an 800 foot directional drill that will be located immediately east of the Metro North Railroad bridge over the river. It will have a maximum depth of 50 feet below mean high water and 42 feet below mean low water. Drilling and slurry pits will be constructed approximately 200 feet from each bank of the river. Drilling operations will be set up on the north side of the river, with HDPE conduit stored on the south side. The south side of the crossing location provides adequate space to assemble and connect several sections of conduit that will need to be pulled back through the bore hole. The actual bore hole will be a minimum of 15 feet below the authorized 18 foot dredged depth of the Federal Navigation Channel. Construction equipment and vehicles will gain access to each side of the river via the Stratford Avenue Bridge or the Crescent Avenue Bridge. The actual areas selected for directional drilling construction are undeveloped and void of any vegetation. The crossing location is in an industrial/commercial area of Bridgeport. The selected locations on either side of the river provide adequate space to set up the drilling and conduit pulling equipment, slurry mixing and pumping facilities, slurry and bore pits, and to store the HDPE material and required conduit.

SECTION 5.0
PLAN DRAWINGS

Various transmission line construction drawings are being submitted with this D&M Plan to depict the location of the proposed directional drilling and jack and bore construction locations along the route. The drawings are presented as Appendix A. The plan and profile drawings have been prepared using a vertical scale of 1” = 4’ and a horizontal scale of 1” = 40’. Information provided on the drawings includes locations of buildings, existing vegetation, waterways, streets, curb lines, existing vaults, sidewalks, and

driveways. Underground utilities, such as storm sewers and catch basins, sanitary sewers, gas lines, water lines, telephone facilities, and electric facilities, are also located on the drawings. The information provided in each drawing represents the existing utilities' positions as identified from the best available information. Key locations will be verified via test pitting prior to the start of construction.

SECTION 6.0
SUPPLEMENTAL INFORMATION

This portion of the D&M Plan provides more specific information on anticipated construction methods to be employed during directional drilling and jack and bore construction. The following narrative is supplemented by appendices A, C, D, and E.

6.1 Proposed Rights-of-Way

At the Pequonnock River, directional drilling is required. This procedure will place the underground transmission line beneath the bottom of the river. Polyethylene conduits will be placed in two separate drill holes for each crossing, with each drill hole being approximately 42 inches in diameter and approximately 20 feet apart on center. At these locations, a right-of-way width of 50 feet will be required. In addition, a temporary construction area of approximately 150 feet by 250 feet will be required on the drilling side of the directional drilling operation, with a second work area of 80 feet by 370 feet on the receiving pit side.

The jack and bore crossings under Yellow Mill Creek, Bruce Brook, and Long Brook will be constructed beneath public road ROW's and will not need additional private ROW's.

6.2 Clearing

It is expected that no large trees, street shade trees and ornamental trees will require removal or otherwise be impacted by construction of the crossings. Construction equipment and vehicles will not be parked within the drip line of trees near or adjacent to the staging areas, equipment and vehicle parking areas, and directional drilling and jack and bore construction locations.

6.2.1 General Guidelines for Vegetation Removal

Should minor clearing be required, such as at the HDD site, all vegetation removal activities will conform to the methods described in this section and to any applicable requirements in the Project's Erosion and Sediment Control Plan, Appendix E, and in consideration of the following:

- Any required clearing will be confined to the designated workspace and in no case will the contractor cut trees located outside of the designated workspace.
- Clearing activities will be restricted to the work hours as defined in Section 4.1.1 or will be in accordance with local regulations.
- Stump removal (if any) will only occur if stumps are in the designated workspace and are impeding the HDD operation.

6.3 Other Underground Facilities

The directional drilling and jack and bore installations will cross other underground facilities. To avoid damage to these facilities, the following measures will be taken:

- Project coordination meetings with all utilities, CDOT, and municipal officials will be held periodically.
- All utilities, CDOT, and municipal officials will be kept appraised of the schedule for performing each jack and bore in the roadway within their jurisdiction.
- The Connecticut Call-Before-You-Dig system will be utilized to locate known underground facilities before excavation commences.
- Facilities that are in conflict will be relocated prior the start of the specific jack and bore operation causing the conflict.
- Underground crossings will be located and carefully exposed during excavation, by hand digging if required.
- The Project will provide UI's underground inspectors with as-built drawings as each jack and bore is completed to assist them when they are marking out UI's facilities for other entities.

At this time, UI knows of two conflicts with the Southern Connecticut Gas Company facilities at the site of the Bruce Brook crossing. Arrangements are being made to relocate these facilities. The need to relocate additional underground facilities will be determined during final design which will incorporate updated information from utilities, CDOT, and municipalities, as well as information derived from test pits taken in the vicinity of the crossings.

6.4 Sensitive Areas

Sensitive areas have been defined as certain environmental areas along the proposed routes, such as the locations of known and recorded federal and state designated protected plant and animal species and habitats, area wetlands, rivers and streams, known and recorded cultural resources, population concentrations, and other noise sensitive receptors.

6.4.1 Environmental Areas

6.4.1.1 Protected Species and Habitats

As identified in the Middletown-Norwalk Project Application to the Siting Council, one protected species has been identified for the project area between Singer Substation and Housatonic River West Bank. The peregrine falcon has been listed as "Endangered" by both the Federal Government and the State of Connecticut, and is reported to nest on an Interstate 95 (I-95) bridge in Bridgeport. UI will consult with the Connecticut Department of Environmental Protection (DEP) to determine the exact bridge location in Bridgeport relative to the Pequonnock River.

The falcon is a frequent resident in urban environments, finding locations and habitat for nesting, forage, cover, resting, and roosting. If peregrine falcons are identified as nesting on bridge support structures sufficiently near to the directional drilling to disturb them, construction activities will be scheduled outside of the falcon's breeding season, which is generally from April 1 to August 1. Final construction scheduling at the specific location will be dependent on the presence of the falcon and on consultations with DEP.

6.4.1.2 Wetlands, Rivers and Streams

Hydrologic areas identified as being sensitive along the transmission line routes include the Pequonnock River, Yellow Mill Creek, Bruce Brook and Long Brook. The Line will be placed beneath the bottoms of the river and these streams through directional drilling or jack and bore construction techniques, which are addressed in this D&M Plan.

6.4.1.3 Cultural Resources

UI has completed a Phase II Archeological Reconnaissance Survey of the route along which the Project facilities will be located. Of the crossing locations, it was the opinion of the surveyor (Raber Associates) that only the Long Brook crossing had the potential to impact deeply-buried glacial outwash surfaces sensitive for Native American resources. The State Historic Preservation Office (SHPO) concurs with this assessment and has requested that an archeologist monitor the operation when the entrance and receiving pits are excavated. UI will comply with this request.

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Nonetheless, UI recognizes that unknown and unrecorded cultural resources may exist at the other jack and bore or HDD sites. Such resources, if any, are usually discovered during excavation work. In the event that new cultural resource sites or human remains are discovered, UI proposes to implement the following procedures:

Artifact Discoveries

- If suspected artifacts are uncovered during a construction activity, that activity will be immediately stopped until a determination is made as to the significance of the find. If contractor construction personnel discover the artifacts, any construction activities that could adversely affect the integrity of the cultural materials will be suspended and the contractor's construction foreman will be notified immediately. The foreman will, in turn, notify UI's Project Manager. Notification will include the specific location of the discovery. If artifacts are identified by UI personnel, they will direct the contractor to stop work on activities that could adversely affect the integrity of the resource and inform the UI Project Manager.
- Upon notification or discovery of a possible site, UI will determine if the artifacts are within a previously recorded site. If the artifacts are determined to be from a previously recorded site that was addressed in the pre-construction archaeological investigations, no further work will be required. The location of the find will be recorded on UI project maps, along with the date of the discovery.
- If the artifacts are discovered in an area in which no sites were recorded, UI will consult with a professional archaeologist to determine the significance of the resource. If the archaeologist cannot visually examine the artifacts immediately, UI will fax photographs or drawings to the archaeologist for review. If on-site archaeological investigations are determined to be necessary, UI will inform the construction contractor to suspend all construction in the vicinity of the find. The site will be flagged as being off-limits for work.
- Review of the artifacts and the site, along with testing and data recovery, will be performed in a timely manner to determine the significance of the site and to allow for construction at the site, if permitted, to continue in a timely manner.

- Information and data on the site will be faxed or sent by overnight express mail to the Siting Council and the Connecticut State Historic Preservation Officer (SHPO). Regardless of the site's significance, UI will work with the Siting Council and the SHPO to ensure that the site is protected, recorded, and eventually cleared as soon as possible to avoid adverse delays to the project schedule.

Human Remains Discoveries

- If discovered, the treatment of human remains will be guided by the policy statement adopted by the Advisory Council on Historic Preservation (see *Consulting about Archaeology under Section 106,* Advisory Council 1990), and by the relevant state laws and guidelines.
- If human remains are identified during construction, all construction work in the immediate vicinity of the site that could affect the integrity of the remains will be stopped immediately. The remains will not be touched, moved, or further disturbed.
- The exact location and time of discovery will be immediately forwarded to the UI Project Manager, who will be responsible for immediately contacting an archaeologist.
- UI will be responsible for the prompt notification of appropriate Siting Council personnel as well as the SHPO, the Chief Medical Examiner of the appropriate governmental jurisdiction (as applicable), and the State Police.
- If the remains are Native American, consultations will be held with the SHPO to determine if prudent and feasible alternatives are available to protect the site. Results of any consultations will be provided to the Siting Council in writing. If it is not possible to protect the remains, they may be excavated only under a Special Permit granted by the State Archaeologist after review and approval of a data recovery plan that specifies the qualified research team, the appropriate research design, and the proposed method of disposition of the remains. If the remains are determined not to be Native American, the remains will be treated in accordance with the Connecticut Historical Commission's (CHC) policy and guidelines.
- In all cases, UI will take due care in the excavation and subsequent transport and storage of remains to ensure that the remains, regardless of origin, are afforded the utmost respect and protection.

6.4.1.4 Population Concentrations

The Pequonnock River, Yellow Mill Creek, Bruce Brook and Long Brook crossings are located in urban environments. While construction will be similar to typical street and utility construction activities, UI will be sensitive to areas where there are large residential concentrations. Wherever possible, construction activities will be scheduled between 7:00 a.m. and 7:00 p.m. Monday through Saturday in residential areas. To minimize construction noise, UI will require that construction equipment and vehicles are properly muffled and that all equipment and mufflers are in proper working condition. Fugitive dust will be controlled by regular sweeping, watering or other industry-recognized dust control methods as described in 6.5.7 Excavation in proximity to driveways will be performed in such a manner to allow for access.

In commercial districts, UI will minimize disruptions to individual business establishments wherever possible by scheduling work during hours that would minimize impact to the business establishment.

Table 2 tabulates the land use in the proximity of the HDD and each jack and bore.

Table 2
Land Use

Facility	Location	Land Use	Authority
Pequonnock River West Side	Corner of Stratford Avenue and Housatonic Avenue, Bridgeport	Commercial/ Industrial	Bridgeport
Pequonnock River East Side	Corner of Noble Avenue and Clarence Street, Bridgeport (Frisbee Park)	Commercial/ Industrial	Bridgeport
Yellow Mill Creek	Barnum Avenue west of Seaview Avenue, Bridgeport	Industrial	Bridgeport
Bruce Brook	Barnum Avenue east of Sage Avenue, Stratford	Mix/ Commercial	Bridgeport/Stratford (jack and bore straddles the municipal boundary
Long Brook	Barnum Avenue east of Main Street, Stratford	Commercial / Industrial	CDOT

6.4.1.5 Other Noise Sensitive Receptors

Other noise sensitive receptors in the project area can include parks, schools, churches, and other facilities where people congregate. There are no known other noise sensitive receptors in the vicinity of any of the jack and bores or HDD operations.

6.5 Additional Construction Procedures

6.5.1 Worksite Safety Plan

UI is developing a worksite safety plan that will be strictly adhered to by all UI employees and contractors during construction of the Pequonnock River, Yellow Mill Creek, Bruce Brook and Long Brook crossings. Each construction contractor will be responsible for the safety and protection of all workers on-site. In addition, with construction in public road rights-of-way, contractors will also be responsible for the safety and protection of the public, including but not limited to vehicles, pedestrians and adjoining private property. During construction, contractors will protect all existing structures, features, utilities, and equipment near the work area that are designated to remain in place.

As the jack and bore crossings are located in municipal streets in urban built-up sections of Bridgeport and Stratford, they will encounter intersections and sidewalks. These intersections and sidewalks will remain open during construction. If certain traffic lanes must be temporarily closed for construction, traffic will be rerouted according to the

project's proposed Traffic Maintenance and Control Plan once it is approved by municipalities and CDOT. Appropriate signage and barriers will clearly alert motorists to detours, lane closures, or lane shifts. Likewise, if sidewalks must be temporarily closed, UI will ensure that alternate pedestrian routes are clearly indicated by signage, with secure barriers being employed to prohibit pedestrian usage of the closed sidewalks. Appropriate signs, barricades, warning devices, flagmen, traffic control officers, and temporary sidewalks will be used during construction of the jack and bores in public roads. When temporary lane or sidewalk closures are required, such closures will be coordinated with and approved by CDOT or the local governments, depending on who has jurisdiction, before such closures are instituted.

6.5.2 Traffic Maintenance and Control

UI and its construction contractor will establish a system to maintain and control vehicular, bicycle and pedestrian traffic through consultations with the municipalities of Bridgeport and Stratford and CDOT. The developed system will provide safe passage to the public and a safe working environment for construction workers. Vehicular and bicycle traffic will be safely and adequately accommodated. Excavated materials, tools, machinery, and other objects that could impede or endanger pedestrians will be kept off of sidewalks. Owners of private drives to residences and business establishments will be notified in advance of construction activities that could temporarily block their driveways. If the owner or occupant of the home or business is not available, written notification will be left at the residence or business.

At the Yellow Mill Creek, Bruce Brook and Long Brook Crossings located in the traffic lanes of Barnum Avenue, it is UI's intent to maintain traffic flow by keeping one or two travel lanes open at all times. Appendix D provides the detail for the proposed signage; lane closures and routing of traffic around each jack and bore location. Once approved by the municipalities or CDOT, depending on who has jurisdiction, they will become part of the overall proposed Traffic Maintenance and Control Plan to which the contractor will be required to adhere. For example, multiple travel lanes exist, along with parking lanes on each side of the street. Depending on the final location of the crossings in Barnum Avenue, a parking lane and one travel lane may be temporarily closed, or two travel lanes will be closed for construction and parking will be prohibited on one side, allowing for the parking lane to be used as a temporary travel lane in order to maintain traffic flow. On Noble Avenue adjacent to the Pequonnock River crossing, local access will be maintained at all times. Protection and maintenance of traffic flow and access at all intersections adjacent to the jack and bore locations, and to parking lots impacted by the construction will be required. No streets or intersections will be totally obstructed to traffic during the construction at the jack and bore locations without prior authorization from the governing jurisdiction. UI will provide the Siting Council with the final Traffic Maintenance and Control Plan once it approved by the authority having jurisdiction over the roadway at the particular jack and bore location.

The procedures to maintain and control vehicular, bicycle and pedestrian traffic will be in accordance with guidelines published by CDOT (Highway Design Manual), the Manual on Uniform Traffic Control Devices, and the standards and guidelines provided by the two local governmental jurisdictions (Bridgeport and Stratford). Such procedures will provide every means available to minimize inconvenience to the public, and will use appropriate barricades, lighting, protective fencing, steel plating, warning lights, uniformed traffic control police officers, and flagmen. The Traffic Maintenance and Control Plan for the Line, including the crossings to be developed and approved by

CDOT and the local governmental jurisdictions, will be provided to the Council. The proposed Traffic Maintenance and Control Plan is included as Appendix C. Appendix D is specific to the jack and bore crossings themselves. Once the Plan, including the drawings is approved by the municipalities and CDOT it will be provided to the Council prior to the start of construction.

6.5.3 Sedimentation and Erosion Control

Soil erosion and sediment control at the jack and bore crossings and the HDD will be consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control (2002). A project specific Erosion and Sediment Control Plan appears in Appendix E of this D&M Plan.

Throughout the Middletown-Norwalk project, UI and its contractors will practice sound and prudent construction procedures to reduce or eliminate the potential for soil erosion and sedimentation. As such, measures will be taken to avoid sediment flow into city storm sewers. All excavated materials will be removed from the construction area in city streets immediately upon being excavated. The intent is to have no earthen materials stockpiled anywhere at the crossing locations, especially on pavement. During stripping and vegetation removal, some topsoil may be stockpiled on grassy areas at the HDD site of the Pequonnock River. This will only be done if a suitable amount of topsoil is available and can be used for site restoration and seeding after construction is completed at this location.

If earthen materials must be temporarily stockpiled on or near pavement at the jack and bore crossings, such stockpiles will be surrounded by a straw or hay bale sediment barrier, such barrier to remain until all earthen materials are removed. Likewise, all directional drilling construction sites at the Pequonnock River will be required to have sediment barriers between the construction work area and the banks of the river. The sediment barrier is intended to filter any runoff as it flows through the area before it enters the city storm sewer system or the river. Straw or hay bales will be placed in a single row, lengthwise, with the ends of adjacent bales tightly abutting one another. To prevent deterioration of the bindings, bales will be bound (string-tied or wire-bound) around the sides rather than along the tops and bottoms. Rebar driven through the bale will be used to securely anchor each individual bale. Gaps between bales will be filled in by wedging loose straw in the gaps to prevent water from escaping between the bales. Sediment fabric filter fences will be used to control runoff when earthen materials are temporarily stockpiled on pavement.

While there are no areas of high erosion potential at any of the planned jack and bore and directional drilling construction locations, land disturbance at the crossings of the Pequonnock River, Yellow Mill Creek,, Bruce Brook and Long Brook will be kept to a minimum. The use of directional drilling and jack and bore construction methods rather than the usual trenching will minimize the potential for such disturbance. Nevertheless, some land disturbance will occur at each jack and bore and directional drilling site in the form of pit excavations, operation of heavy boring and drilling equipment, storage of casings, movement of casings from their storage area to the bore or drilling site, and containment of slurry. Storm water will be diverted away from disturbed areas, and perimeter control measures will be employed as needed.

If bore and drilling pits must be dewatered, water pumped from the pits will be directed through a straw or hay bale sediment barrier to filter out sediment before entering the

city storm sewer system. No water will be pumped into the Pequonnock River, Yellow Mill Creek, Bruce Brook, or Long Brook. In the event that water containing contaminates that are unsuitable for disposal into the sanitary sewer system is encountered, the water will be collected in tanks and disposed of according to all applicable local, state and federal regulations.

If excavated earthen materials or topsoil are stockpiled for any duration, the contractor will be required to develop and implement suitable dust control measures. These could include the application of water, calcium chloride or other industry-recognized measures. Dust control measures will be approved by the local governing jurisdiction.

Once jack and bore construction and directional drilling operations are completed and the conduit system is installed, bore and drill pits will be backfilled with suitable materials. Slurry pits will be cleaned of excess bentonite slurry before being backfilled. When in city streets, backfill will be applied directly from truck to the open pit. Pavement will be cleaned of excess backfill as soon as backfilling operations are completed at a given site.

6.5.4 Pavement Cutting and Removal

At the Yellow Mill Creek, Bruce Brook and Long Brook crossings, jack and bore pits will be located in city streets. Pavement will be cut with a concrete saw. The cuts in concrete and asphalt will be no larger than necessary to provide adequate working space for the safe and efficient operation of the boring equipment and to make the necessary connections to the concrete-encased duct bank and conduit. Pavement cuts will consist of a clean groove at least equal in depth to the thickness of the existing pavement. Cuts will be made for the pit size required at each jack and bore location. Once mechanically broken, the pieces of pavement will be immediately removed from the work area and not be stored at the bore site.

6.5.5 Boring Pit Excavation

A large backhoe will typically be used to mechanically excavate each jack and bore pit once pavement has been cut. However, mechanical equipment will not be used in locations where its operation would cause damage to trees, buildings, culverts, or other existing property, utilities, or structures above or below ground. For these locations, hand excavation methods will be used. Each pit will be excavated to the minimum length, width, and depth that will be required to provide adequate working space and clearance for the boring machine and casings.

At the crossing of the Pequonnock River where directional drilling procedures will be employed, directional drill holes and slurry pits will be excavated by mechanical means except when underground utilities or other features are encountered.

6.5.6 Blasting

Because the location of the jack and bore crossings is proposed to be predominantly beneath city streets, it is anticipated that previous underground construction of other utilities and street construction itself at these locations will have eliminated most major rock formations and thus precluded the need for blasting. Similarly, both sides of the Pequonnock River HDD operation are on former industrial land. At this time, no blasting at any jack and bore location or the HDD crossing is anticipated.

6.5.7 Fugitive Dust Control

UI will require that all contractors practice dust control throughout the construction period. Dust suppression will be accomplished through the use of water, calcium chloride or a crushed stone cover. Dust control on pavement during excavation activities will use a water spray, continuous sweeping, crusting agent, or a material covering, whichever is most feasible given the size and location of the area to be controlled.

6.5.8 Disposal of Materials

6.5.8.1 Normal Earthen Materials – At bore pit excavations, all normal earthen materials will be immediately hauled away from each boring construction site for disposal at a state-approved construction landfill. When excavation is not in public road rights-of-way, such as at the directional drilling locations at the Pequonnock River crossing, earthen materials free of rock, broken concrete, tree roots, etc. that may be suitable for backfill or site restoration will be stockpiled at an appropriate location for later use. UI will notify the Siting Council of the designated landfill at the time the construction contract is awarded.

6.5.8.2 Broken Concrete and Pavement – All broken pavement from bore pit excavations will be immediately removed from the project site and hauled away for disposal at a state-approved construction landfill. At no time will broken concrete and pavement be used as backfill.

6.5.8.3 Contaminated Soils and/or Hazardous Substances and Waste – If contaminated soils or hazardous substances or waste are encountered during bore pit excavations, UI will notify the appropriate authorities. Contractors will be directed to stop excavation of such soils until a special waste disposal contractor can be brought on site. The contaminated soils will be disposed of through a state-approved waste disposal contractor. UI's general contractor will be responsible for the disposal of such contaminated soils, either directly if qualified or through a qualified firm.

6.5.8.4 Directional Drilling Fluid

During the drilling and reaming operations, drilling fluid, which typically consists of bentonite mixed with water, will be pumped into the drill hole. This fluid, also sometimes referred to as "drilling mud", is used to lubricate the drill string; transport the drilled spoil (consisting of excavated soil or rock cuttings) to the staging area mud pit; cool and clean the drill cutters; reduce friction between the pipe and the wall of the hole; and stabilize the hole. In addition, the drilling fluid helps in turning the drill bit.

Until the pilot hole is completed, the drilling fluid will recirculate to a mud pit that will be located at the HDD rig staging area. This pit will be used to contain the drilling fluid and associated cutting returns from the drilling operation. Once the pilot hole reaches the exit point on the opposite side of the river, drilling fluid will be discharged to a similar drilling fluid collection pit there. Excess drilling fluid will be collected at the entry point and processed to separate auger cuttings from the drilling fluid. To the extent possible, the drilling fluid will be recycled. The drilling fluid that can not be recycled and the auger cuttings will be disposed of in accordance with all applicable local, state, and federal regulations.

6.5.8.5 Excavated Rock Disposal – If rock is encountered during excavations, it is assumed at this time that such rock can be broken into pieces through drilling or mechanical rock fracturing equipment and not by blasting. Excavated rock will be immediately removed from the project site and hauled away for disposal at a state-approved landfill. At no time will excavated rock be used as backfill. UI will notify the Siting Council of the designated landfill at the time the construction contract is awarded.

6. 5.9 Sheeting and Shoring

To protect and maintain the stability of previously constructed structures and facilities and the sides of bore pit excavations until they are backfilled, adequate sheeting and shoring will be provided. Sheeting, bracing and shoring will be designed and built according to OSHA regulations. It will be capable of withstanding all loads that might occur as a result of earth movement or pressure, and will maintain the shape of the excavation under all circumstances.

6. 5.10 Removal of Water

UI will maintain adequate dewatering equipment on-site at all times to remove surface and ground water that may enter the bore pit excavations. All excavations will be kept dry through construction so that no damage from hydrostatic pressure, flotation, or other hydrologic causes will result to installed facilities or the sub grade. Surface water (storm water runoff) will be diverted and prevented from entering excavations. Water that is removed from excavations will be directed through a straw or hay bale sediment barrier to filter out sediment before it is allowed to enter city storm sewers. In the event that water containing contaminates that are unsuitable for disposal into the sanitary sewer system, is encountered, the water will be collected in tanks and disposed of according to all applicable local, state and federal regulations.

6. 5.11 Temporary Plating of Trench

The temporary use of heavy steel plating will be employed to allow traffic in streets and at intersections and access to driveways, parking facilities, sidewalks, walkways, and similar facilities to be maintained. Any bore pit excavations that have been backfilled but not resurfaced, will be covered by plating where traffic flow or access must be maintained. The use of such temporary plating will meet the requirements of CDOT and the local municipalities.

6.5.12 Material Receiving and Handling

HDPE and PVC conduit used to construct the directional drilling and jack and bore crossing will be stored at the construction site. For the directional drilling operation, the conduits will be stockpiled on the west side of the river so that it can be assembled into predetermined lengths and pulled back through the bore hole once the drill has been completed. For the jack and bore operation, the PVC conduit will be stockpiled on the same side as the jack and bore machine where the casing will be pushed under the streams.

6.5.13 XLPE Cable Installation

The details concerning the techniques to be used for the installation of the XLPE cable are set forth in Section 6.8.7 of UI's March 6, 2006 D&M Plan for the Construction of the Singer-Housatonic River West Bank 345 kV Transmission Line. This Plan was conditionally approved by the Council on June 13, 2006.

6.5.14 Specialized Construction Procedures and Plans

This portion of the D&M Plan provides information on specialized construction procedures that may be employed with installation of the proposed crossings. These methods have been developed in response to site and project specific conditions along the transmission line route relative to wetland and water body crossings, roadway and railroad crossings, cultural resources, visually sensitive and residential areas, and sensitive wildlife habitats.

6.5.14.1Notification – UI will notify utilities, municipalities and CDOT of the new construction through the Connecticut One-Call system (Call-Before-You-Dig). UI will also hold periodic utility, municipal and CDOT coordination meetings. Notification will be given to all parties at least ten days before construction commences within the right-of-way of local streets and state roads.

6.5.14.2 Road Construction, Road Crossings and Traffic Control – Installation of the river and stream crossings will be completed by directional drilling or jack and bore techniques. During construction, every effort will be made to eliminate delays or public inconvenience in streets and at intersections, and to otherwise avoid restricting normal vehicular, bicycle and pedestrian traffic flow. Local or state permit(s) will dictate final traffic control procedures. A proposed Traffic Maintenance and Control Plan has been prepared by UI to mitigate potential adverse impacts to traffic during construction and will be submitted for approval to CDOT and the affected municipalities. The proposed Plan and drawings are attached as Appendices C and D.

The intent of the proposed Traffic Maintenance and Control Plan is to minimize disruptions to traffic flow and access, and to maintain continuous traffic flow while adhering to the project construction schedule. Various mitigation measures may be employed to maintain traffic flow, including but not limited to, temporary lane closures with suitable detours and use of off-road areas for equipment and materials staging and storage. UI will consult with traffic authorities at local and state levels regarding the development, review and approval of the proposed Traffic Maintenance and Control Plans.

UI will implement appropriate safety procedures to prevent injuries to workers in city streets and to the general public. Construction warnings for the public will consist of flag persons, signs and barricades, police details, traffic controls, flashing lights, and markers. Similar warnings will be used for adjacent spoil piles, construction equipment and project materials left within 50 feet of the street.

6.5.14.3 Visual Impact Mitigation Plan

Temporary visual impacts during jack and bore and directional drilling construction will consist of excavating equipment, contractor's vehicles, material delivery trucks, small lifting cranes, boring machines, long lengths of assembled HDPE conduit at directional drilling locations, slurry mixing facilities and pits, bore control facilities, and barricades on or immediately adjacent to city streets. Stored HDPE and PVC conduit, and other materials in marshalling yards at specific drilling and bore locations will also disrupt the visual integrity of an area, especially in residential areas along Barnum Avenue. While these visual impacts are unavoidable, they are temporary and short-term in duration. Once the PVC conduit is installed, bore pits will be backfilled and a temporary pavement patch will be applied. Thus, the visual impact of construction will move along the city

streets as construction proceeds from one stream to the next. Actual visual impacts during construction activities will be similar to typical urban street construction or utility installations within city streets. Upon completion of all construction, final pavement restoration will leave the project area in a similar appearance to pre-construction conditions.

6.5.14.4 Residential Impact Mitigation Plan

Residential areas are considered to be noise sensitive receptors. As such, UI will implement procedures to minimize the impact of construction work on such areas.

The extent of noise impact at a sensitive receptor is dependent upon a number of factors. These can include the following:

- Change in the ambient noise level.
- Duration and character of the noise.
- Presence of other, non-project noise sources.
- People's attitudes towards the project.
- Number of people exposed to the noise.
- Type of activity affected by the noise.

Directional drilling and jack and bore construction will require the use of various types of construction equipment (e.g. pavement cutting saws, backhoes, rock drills, boring machines, dump trucks, concrete trucks, side booms and small lifting cranes, and various smaller utility vehicles). Each of these will generate sounds that may or may not be heard above the ambient sounds along the routes. Noise sensitive receptors adjacent to the crossing sites will be accustomed to the urban traffic noise on Barnum Avenue which generates a considerable amount of background noise on a daily basis at all hours of the day and night.

To minimize construction noise impacts, UI will implement and require the following: Construction activities in residential areas will be limited to daylight hours, generally between 7:00 a.m. and 7:00 p.m. on roads over which the Municipality has jurisdiction. Hours of construction activity on roads under CDOT jurisdiction will be governed by the terms of the Encroachment Permit.

- Construction equipment will be properly muffled, with mufflers being in good working condition and property maintained to minimize engine noise. Such equipment will not be permitted to operate or idle unnecessarily near noise sensitive receptors.
- Construction schedules will be modified, where possible, to mitigate construction noise on sensitive sites.
- UI will make every effort to schedule high noise and vibration activities such as rock drilling or hammering to the least disruptive time period.
- Critical operations or extreme circumstances may require a deviation from the scheduled work hours of during the normal work week of Monday through Saturday. Exceptions to this schedule, such as overtime work, which may include Sundays and holidays, will be at the discretion of UI and subject to approval of the local municipality and CDOT, depending on who has jurisdiction over the roadway.
- UI will be receptive to local agreements which will expedite the construction activity through a particular neighborhood.

6.5.14.5 Invasive Species Control and Management Plan

Given the extremely small area at the HDD site on either side of the Pequonnock River that may require clearing, UI has opted not to prepare an Invasive Species Control and Management Plan for the directional drilling and bore locations along the route.

6.6 Construction Supervision and Environmental Monitoring and Compliance

6.6.1 General

UI construction contractors will be required to adhere to all project-specific permit and certificate conditions and stipulations, applicable regulatory requirements, construction specifications, contract conditions, and best management practices that pertain to the jack and bore and HDD operations. For the directional drilling and jack and boring construction tasks required for the project, UI will retain specialized contractors with extensive successful experience in placing utility facilities underground through directional drilling and jack and boring procedures. UI will oversee these specialized contractors with a team dedicated solely to management and supervision of the construction activities and the contractors. This team will have expertise in the areas of construction management, construction engineering, right-of-way surveying, government relations, and environmental services. It is the intent of UI to staff this team with personnel who have been involved with the project through the Siting Council permitting and licensing process and who routinely work with CDOT and local governments.

Direction of all aspects of directional drilling and jack and bore construction and ensuring contractor compliance with the D&M Plan and all other applicable permit requirements will be the responsibility of UI's Construction Manager. Environmental compliance monitoring will be the responsibility of UI's Environmental Management Department.

UI's environmental and compliance monitoring program will consist of the following;

- All applicable environmental provisions and stipulations will be included in the Line's directional drilling and jack and boring construction specifications and contract provisions. The final approved D&M Plan will be made a part of these documents as an attachment.
- All personnel that will be involved in directional drilling and jack and boring construction activities will be subject to pre-construction environmental training to ensure that they are aware of all pertinent environmental documents, permits, and certificate conditions and stipulations that will govern work on the project. The role and authority of UI's environmental inspector will be clearly defined at this time.
- .An environmental inspector will be hired, subject to the Siting Council's approval, to monitor and report on the installation of the Line. It will be the environmental inspector's responsibility to verify that directional drilling and jack and boring construction is performed in accordance with all environmental requirements.
- All regulatory authorities and municipal officials will be notified regarding the participants on UI's project team. Names, areas of responsibility and telephone numbers (day and evening) will be provided to ensure points-of-contact are continuously available so that prompt coordination can be facilitated and the appropriate follow-ups can occur in the event that concerns

or issues arise during the course of directional drilling and jack and boring construction.

- Continuous dialogue, communication channels and on-going coordination with the Siting Council will be established and maintained to facilitate the exchange of information concerning crossing status, issues, and issue resolution.
- Established procedures developed by UI's Environmental Department will be used in the event of environmental compliance issues or disputes. Such procedures will facilitate the quick resolution of such issues or disputes in order to minimize adverse impacts to the environment.
- Directional drilling and jack and boring construction personnel will be made aware of the penalties and subsequent contractual consequences for not adhering to the environmental permit and certificate conditions and stipulations.

All directional drilling and jack and boring construction personnel and inspectors (UI and contractors) will be required to attend a project-specific safety and environmental training workshop. At this time, relevant portions of the D&M Plans and other permit/certificate requirements that will govern construction activities pertaining to the jack and bore and HDD operations will be summarized. Work site safety and environmental compliance will be emphasized, and consequences of non-compliance will be addressed.

The specialized directional drilling and jack and bore contractors will be provided with a copy of this D&M Plan as part of the construction specification. These contractors will be responsible for compliance with all portions of the Plan. UI will periodically audit the contractor's work, and will have the authority to stop contractor tasks or to perform activities to maintain compliance.

UI will require directional drilling and jack and boring contractors to certify that they understand and will comply with this D&M Plan and other relevant environmental requirements. UI may also require the contractor to sign an affidavit that confirms compliance with all of the specified environmental conditions.

6.7 Proposed Deviations to the D&M Plan

UI will use one or more of the following procedures to notify the Siting Council of deviations from the D&M Plan after Siting Council review and approval of the D&M Plan. Notification will occur prior to implementation of the proposed deviation.

- For emergency situations in the field, UI will contact Siting Council staff by telephone to present the proposed modification. Upon receipt of verbal approval, a written specification of the deviation will be submitted to the Siting Council within 24 hours after receipt of the Siting Council verbal approval.
- Prior to the start of construction, or well in advance of a certain phase or activity of construction, UI will submit a written request explaining the deviation to the Siting Council for its review and approval.
- Implementation of Siting Council approved deviations to the D&M Plan will be documented in the project's quarterly progress reports to the Siting Council.

6.8 Final Restoration

All the jack and bore sites are located within public road rights-of-way; little grading and restoration of disturbed areas will be required. Primary restoration efforts will involve

pavement replacement and staging area cleanup. The park on the east side of the Pequonnock River will be restored to a condition mutually acceptable to the City of Bridgeport, and the owner.

6.8.1 Final Grading

For workspaces off of public road rights-of-way at the Pequonnock River, the backfilled slurry pits will be graded to pre-construction contours that match adjacent unaltered areas. If topsoil was stockpiled, it will be spread back across the graded workspace. A slight crown will be maintained over the backfilled pits to allow for consolidation and settling. Similar grading procedures will be employed, if necessary, at material marshalling yards along the route.

6.8.2 Pavement Replacement

Once bore pit excavations in city streets have been backfilled and compacted, temporary replacement pavement will be installed. Permanent pavement replacement will occur as part of the overall permanent paving schedule. All pavement replacement will be in accordance with UI directives and requirements set forth by the municipalities of Bridgeport and Stratford. CDOT will also be consulted relative to final pavement replacement at the Long Brook crossing.

Finished replacement surfacing will match the existing pavement surface in content, strength, material type, and appearance. It will be finished flush with the adjoining surfaces. Base material will match the thickness and density of the base material removed during excavation work. All replacement surfacing will be coordinated with and approved by the municipalities of Bridgeport and Stratford, and CDOT. Detailed pavement restoration information in the form of drawings will be part of the construction drawing set.

6.8.3 Rehabilitation of Disturbed Areas

Rehabilitation and restoration of disturbed areas, in the form of grading, seeding and plantings, will occur as required at the work areas adjacent to the Pequonnock River.

Rehabilitation of disturbed areas will be graded and seeded, most likely with a mixture of Kentucky bluegrass and fescues, both common to Connecticut. Grass seeding will be by one of two methods: hydro-seeding or broadcast seeding with a covering of straw mulch to retain moisture and control seed erosion during major rain events. Unless woody vegetation is damaged or destroyed during construction activities. UI does not expect to plant any woody species as part of project rehabilitation and restoration activities. In the unlikely event that plants are damaged or destroyed by construction activities at the jack and bore or HDD sites, UI will work with the landowner to determine the replacement species. UI will either compensate the landowner for the lost plants, or replace them with approval of the landowner.

6.9 Site Security

UI's contractor will retain responsibility for security at each of the water crossing areas. Pit excavation work areas will be fenced to prohibit unauthorized access. Secure barricades, warning signs and lights, and police officers will provide security. Construction equipment that cannot be stored at a secure site during inactive periods will be locked at all times.

6.10 Public Safety

The contractor will be responsible for the protection of all workers and the public. During directional drilling and jack and bore construction activities, they will protect all existing structures, features, utilities, and equipment designated to remain in place and which are adjacent to the bore pit excavations.

Appendices C and D (Proposed Traffic Management and Control Plan and Drawings) provide the proposed methods by which UI will maintain a safe environment for vehicle and pedestrian traffic during construction. These appendices have been reviewed by CDOT and the municipalities of Bridgeport and Stratford, whose approval will be required prior to the start of construction.

6.11 Cleanup

All construction equipment and excess materials will be removed upon completion of all construction, installation, testing, and pavement replacement surfacing. Debris and waste will be disposed of by the contractor at a state-approved area construction landfill. Excess XLPE cable, hardware, and other useable materials will be returned to UI, and will be stored at existing UI storage facilities. Cleanup will be the final task in restoring city streets and state roads to their pre-construction appearance, or as close to such appearance as possible.

6.12 Permits

All permits required for construction of the new crossings and for the disposal of excess materials and spoil will be secured by the construction contractor before such activities occur.

6.13 Maintenance

There is no routine maintenance required for the new crossings installed using directional drilling and jack and bore construction.

SECTION 7.0
PROCEDURES FOR NOTICES AND REPORTS

The procedure governing notices of the beginning and completion of construction activities, and of any changes in the D&M Plan during construction activities, will be as follows:

7.1 Advance Notice on Construction Activities

UI will inform the Siting Council, in writing, with a minimum of two weeks advance notice of the beginning of construction activities at the water crossings.

7.2 Municipal Notification

UI will inform the City of Bridgeport and the Town of Stratford, in writing, with a minimum of two weeks advance notice of the beginning of construction activities at the water crossings.

7.3 Landowner Notification

UI will notify each adjoining landowner, in writing, with a minimum of two weeks advance notice of the beginning of construction activities at the water crossings.

7.4 Notice of Completion
UI will provide the Siting Council with written notice of completion of construction activities as the work at the water crossings is completed.

7.5 Weekly Report
A weekly report will be submitted to the Siting Council, either via e-mail or fax, regarding construction work and environmental issues at the water crossing sites, and the methods implemented to resolve them.

7.6 Quarterly Progress Reports
UI will submit to the Siting Council quarterly progress reports concerning the construction phase of each water crossing. Any changes and deviations from the approved D&M Plan will be included in the quarterly progress reports.

7.7 Final Report
UI will provide the Siting Council with a final report on the construction phase of the project after completion of all construction activities for the Line. The Final Report will also identify any significant changes to the D&M Plan that were required during the course of construction.