January 5, 2016

Mr. Robert Stein
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 461 - CSC 461 Greenwich Substation and Line Project

Dear Mr. Stein:

This letter provides the response to requests for the information listed below.

Response to CSC-03 Interrogatories dated 12/14/2015
CSC-001

Response to HD-02 Late Filed Exhibits dated 12/08/2015
LF-008, 009, 010, 011, 012, 013, 014

Response to OCC-05 Interrogatories dated 12/22/2015
OCC-064, 065, 066, 067, 068, 069, 070, 071, 072

Very truly yours,

John Morissette
Project Manager
Siting
As Agent for CL&P
dba EversourceEnergy

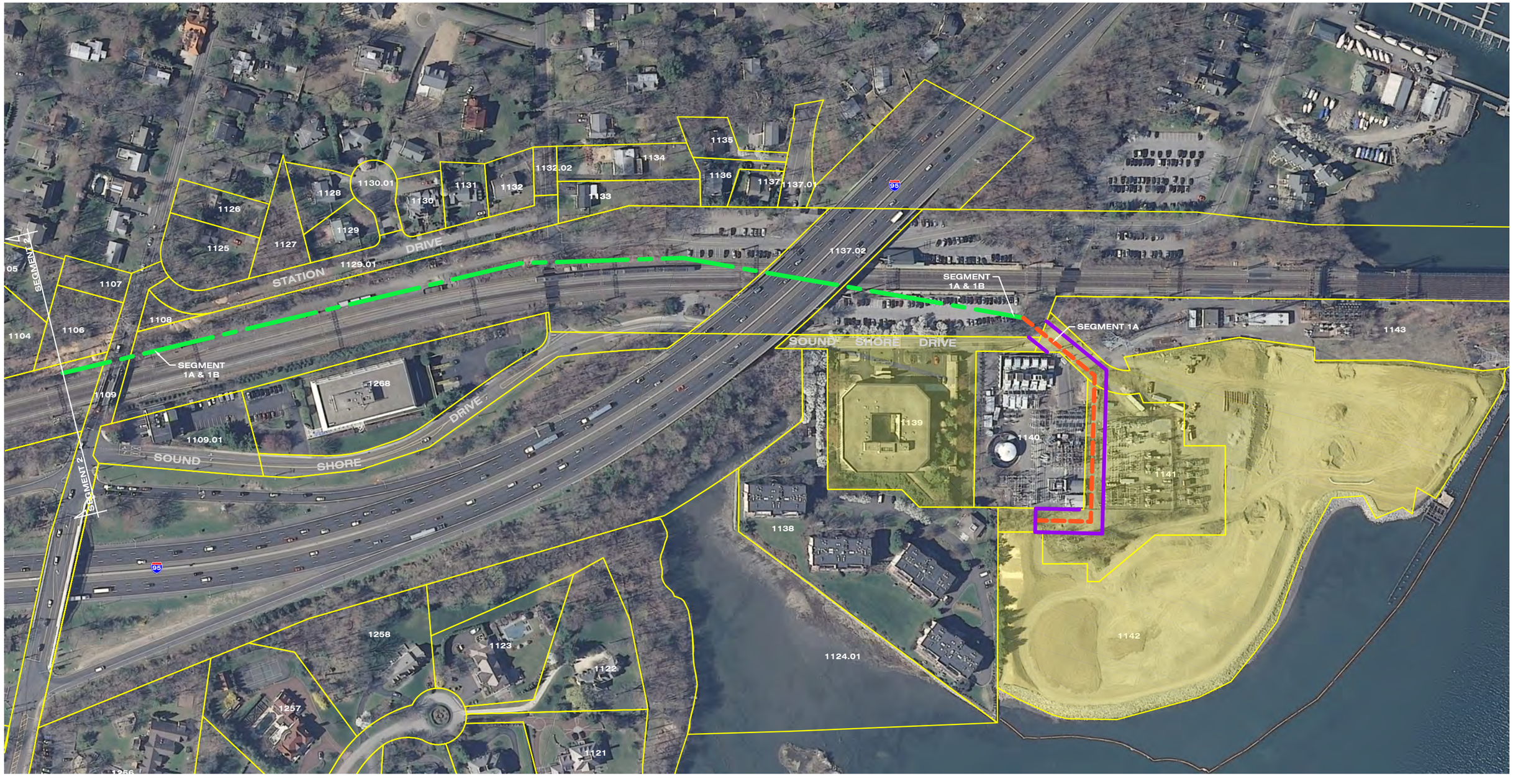
cc: Service List

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Provide revised maps for LF-003 with legible route lines.

Response:
The revised maps for LF-003 are attached.

Attachment



N

LEGEND

- PROPOSED CENTERLINE – UNDERGROUND ROUTE
- PROPOSED CENTERLINE – OVERHEAD RR ROUTE
- PROPOSED EASEMENT BOUNDARY
- PROPOSED EASEMENT
- PARCEL BOUNDARY

SCALE

0 50 100 200 400

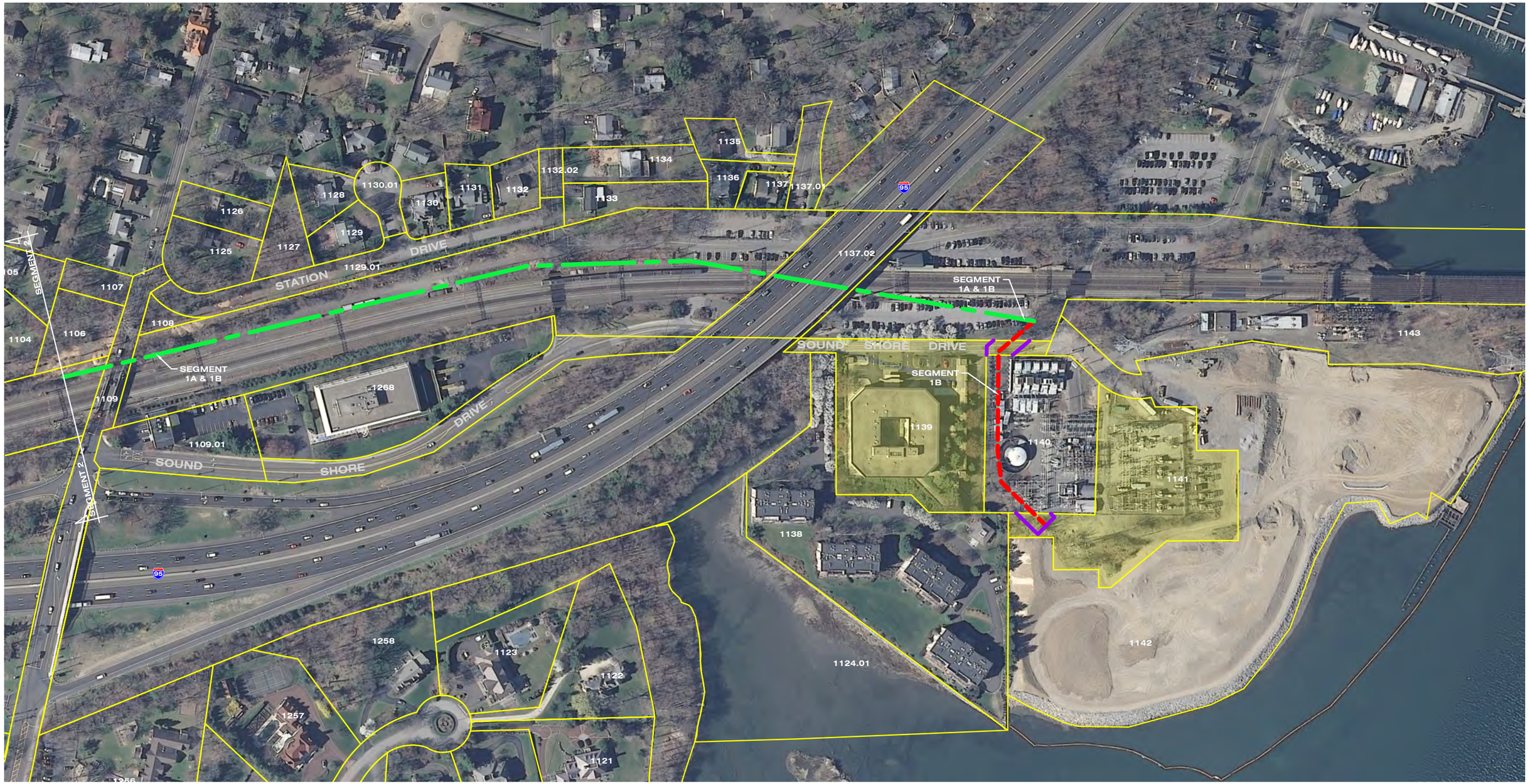
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 1A ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



N

LEGEND

- PROPOSED CENTERLINE – UNDERGROUND ROUTE
- PROPOSED CENTERLINE – OVERHEAD RR ROUTE
- PROPOSED EASEMENT BOUNDARY
- PROPOSED EASEMENT
- PARCEL BOUNDARY

SCALE
0 50 100 200 400

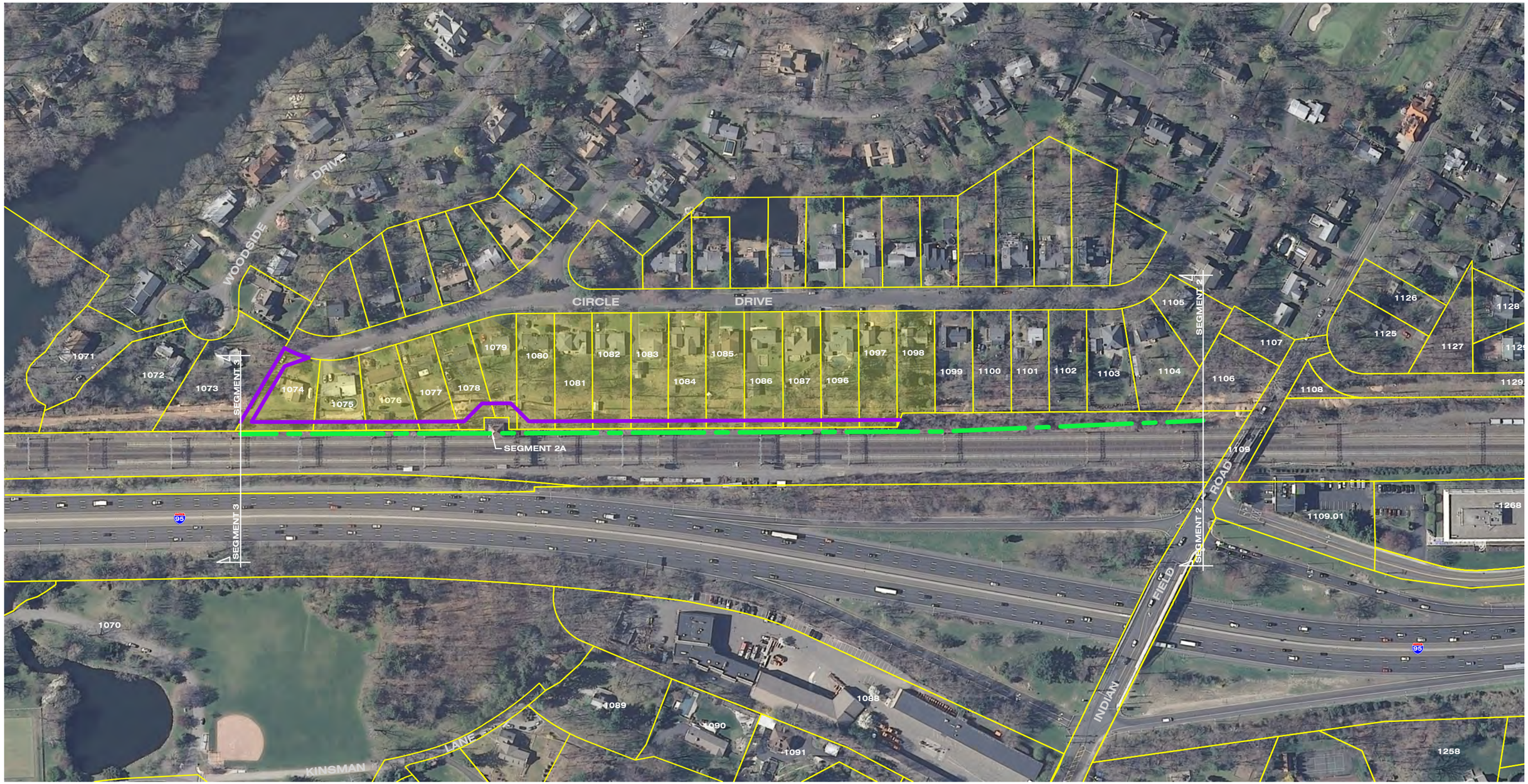
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 1B ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



LEGEND

PROPOSED CENTERLINE – OVERHEAD RR ROUTE

PROPOSED EASEMENT BOUNDARY

PROPOSED EASEMENT

PARCEL BOUNDARY

SCALE

0 50 100 200 400

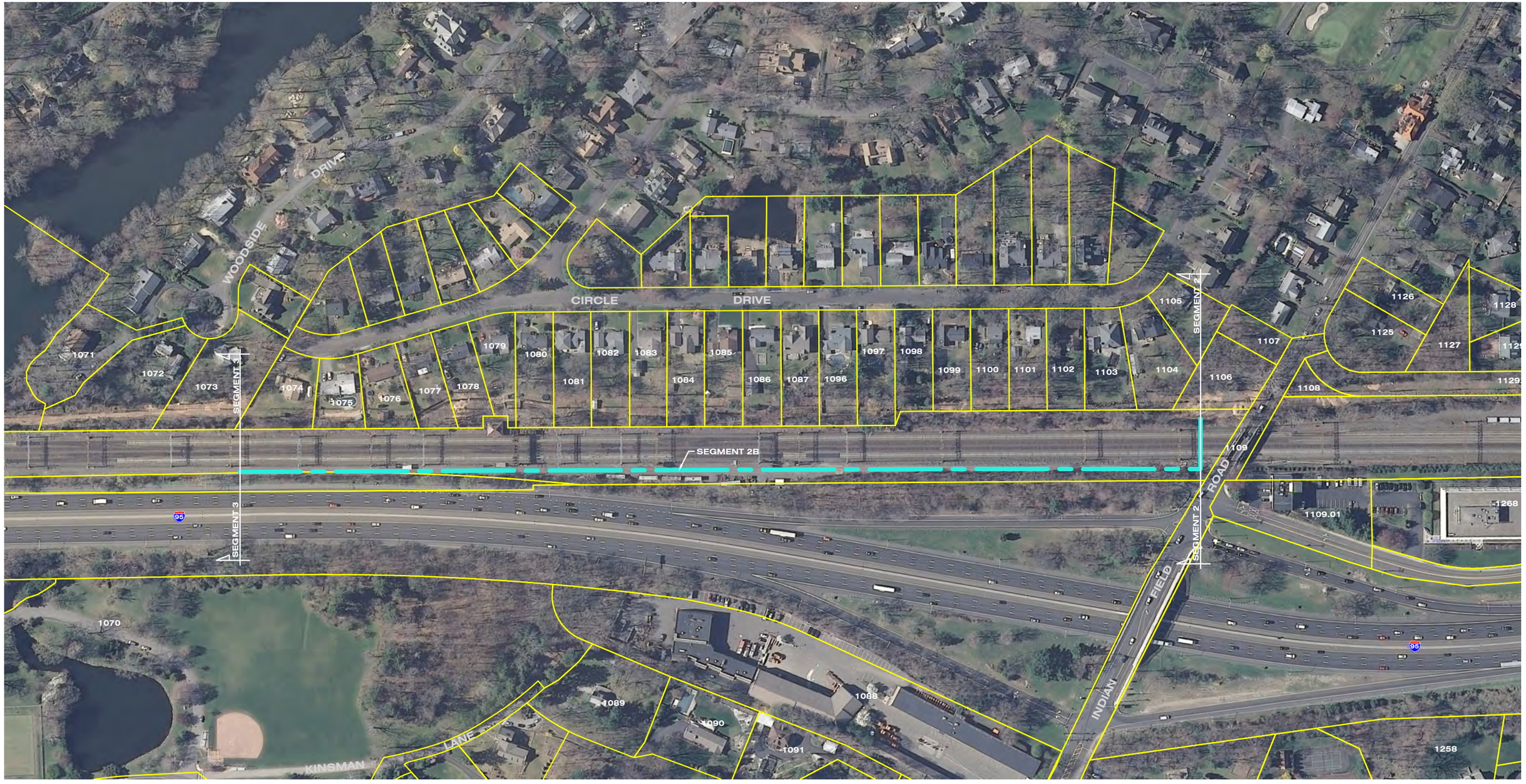
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 2A ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



LEGEND

PROPOSED CENTERLINE – OVERHEAD RR ROUTE

PARCEL BOUNDARY

SCALE

0 50 100 200 400

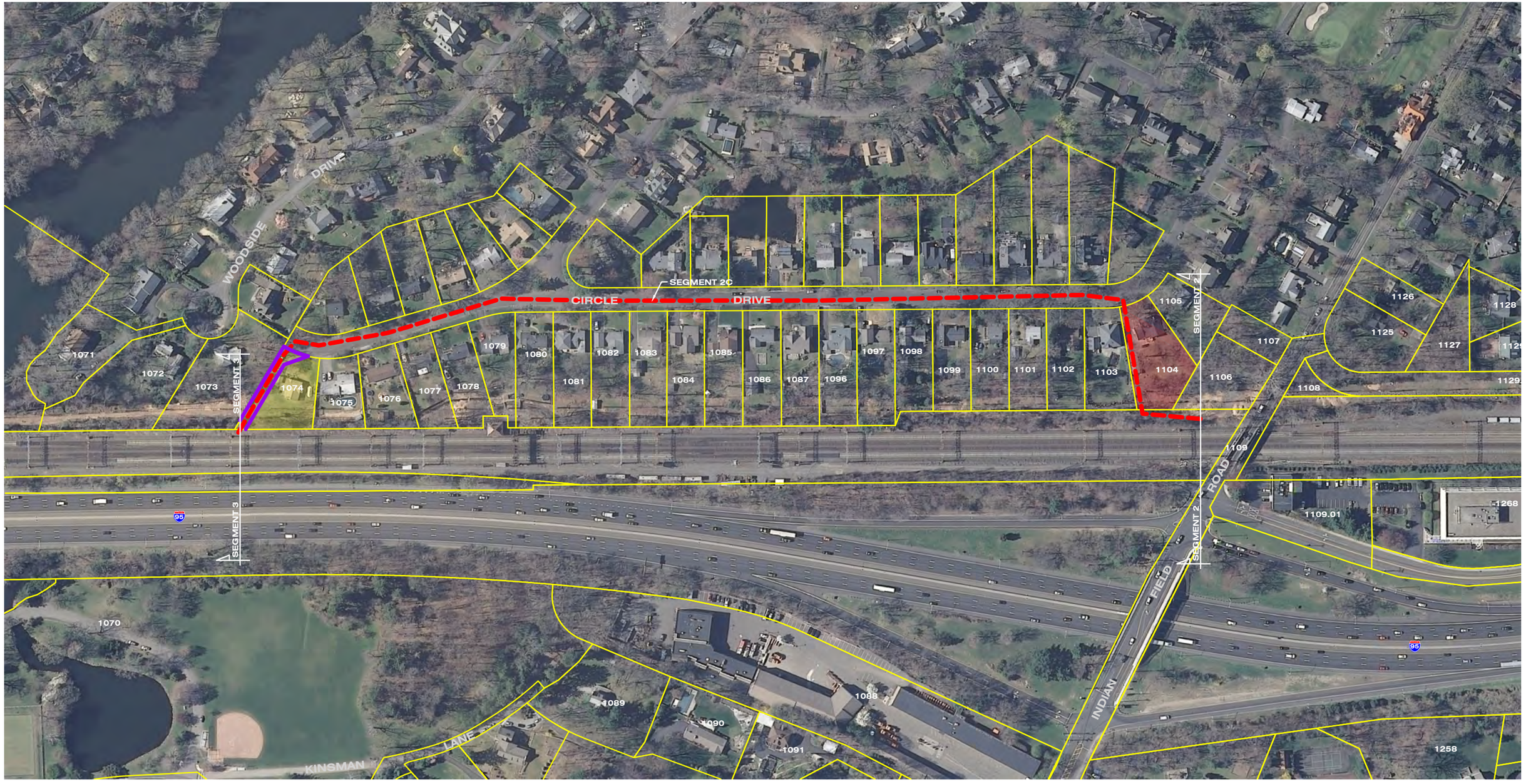
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 2B ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



LEGEND

- PROPOSED CENTERLINE – UNDERGROUND ROUTE
- PROPOSED EASEMENT BOUNDARY
- PROPOSED FEE PURCHASE
- PROPOSED EASEMENT
- PARCEL BOUNDARY

SCALE
0 50 100 200 400

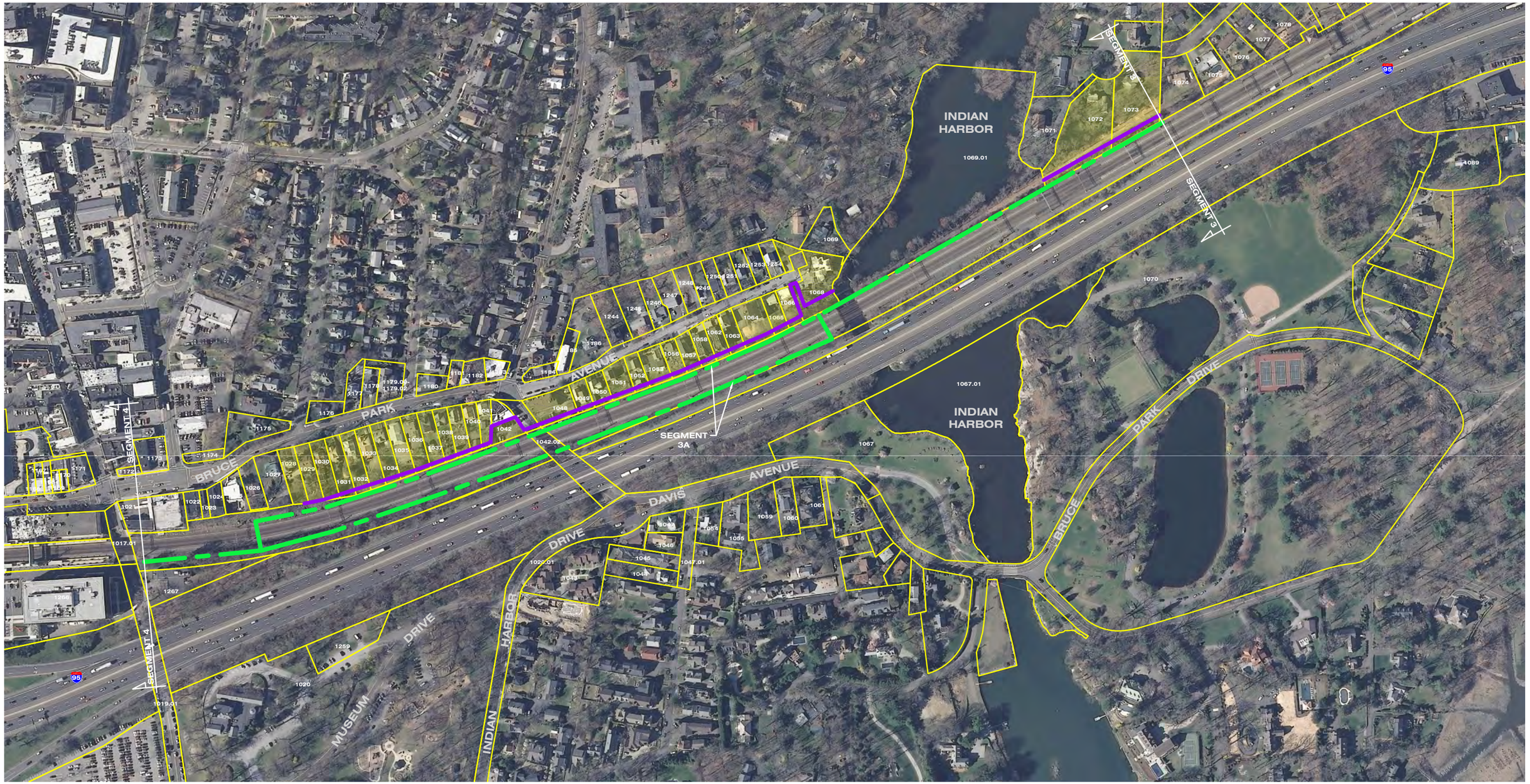
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 2C ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



N

LEGEND

PROPOSED CENTERLINE – OVERHEAD RR ROUTE

PROPOSED EASEMENT BOUNDARY

PROPOSED EASEMENT

PARCEL BOUNDARY

SCALE

0 75 150 300 600

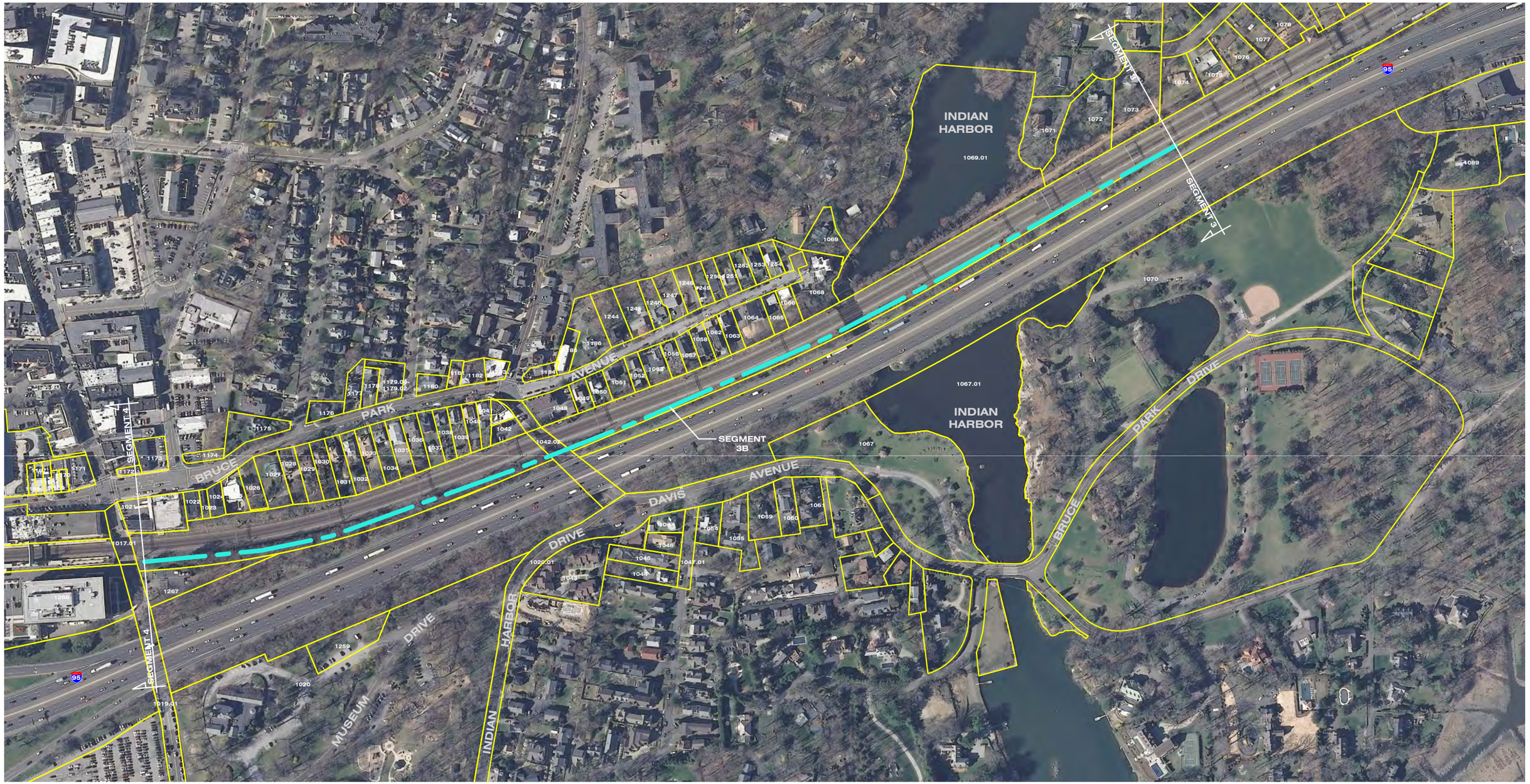
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 3A ROUTE"

SCALE: 1" = 300'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



N

LEGEND

PROPOSED CENTERLINE – OVERHEAD ROUTE

PARCEL BOUNDARY

SCALE

0 75 150 300 600

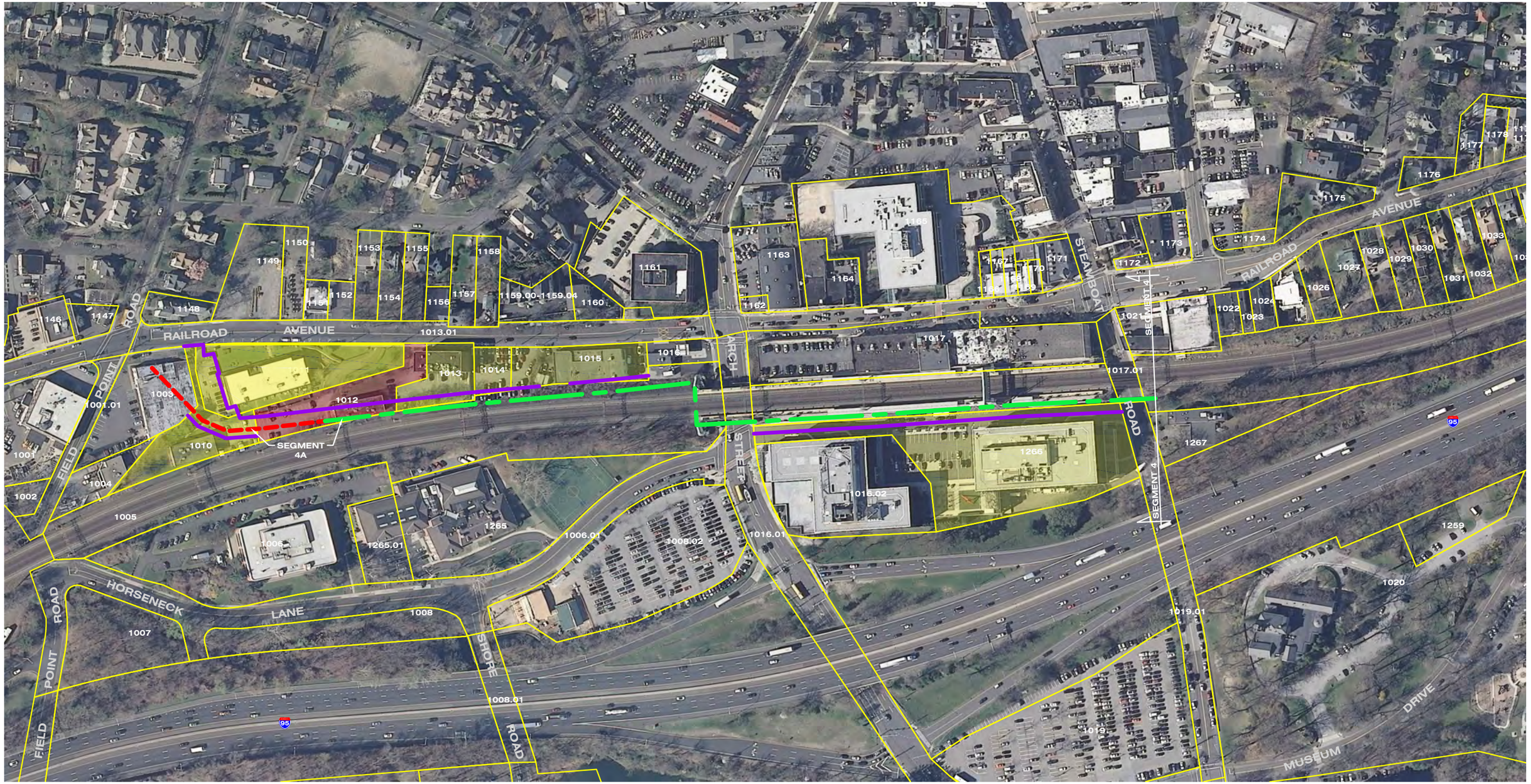
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 3B ROUTE"

SCALE: 1" = 300'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



N

LEGEND

- PROPOSED CENTERLINE – UNDERGROUND ROUTE
- PROPOSED CENTERLINE – OVERHEAD RR ROUTE
- PROPOSED EASEMENT BOUNDARY
- PROPOSED FEE PURCHASE
- PROPOSED EASEMENT
- PARCEL BOUNDARY

SCALE

0 50 100 200 400

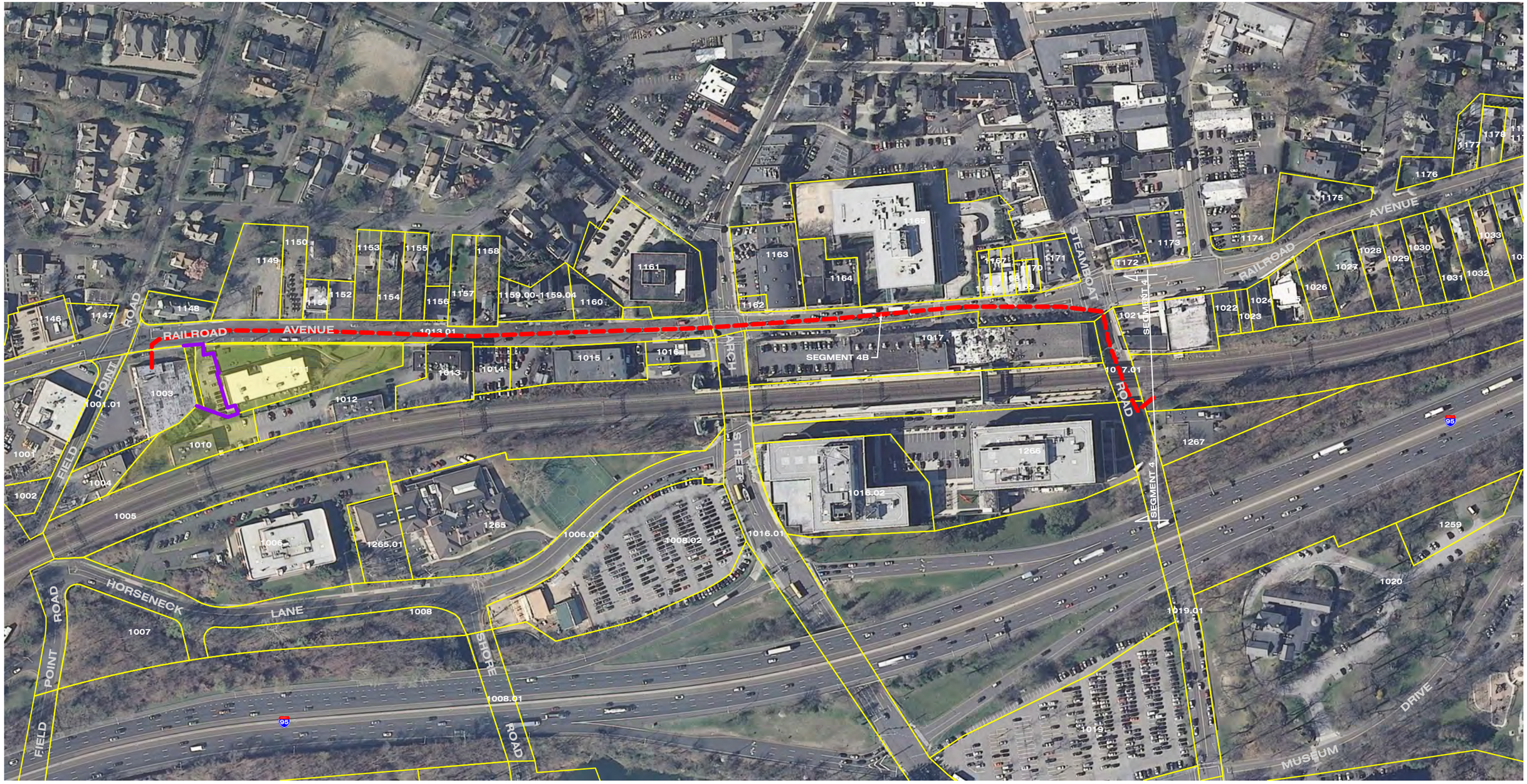
Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 4A ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Attachment



N

LEGEND

PROPOSED CENTERLINE – UNDERGROUND ROUTE

PROPOSED EASEMENT BOUNDARY

PROPOSED EASEMENT

PARCEL BOUNDARY

SCALE

0 50 100 200 400

Cornerstone Energy Services

EVERSOURCE ENERGY

PROPOSED POWER LINE ROUTE FROM
COS COB SUBSTATION TO GREENWICH SUBSTATION
"SEGMENT 4B ROUTE"

SCALE: 1" = 200'	PAGE 1 OF 1	DATE: 12/17/2015

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Provide flood elevation topographic information, including benchmark elevations for the proposed Greenwich Substation site.

Response:
The flood profile for Horseneck Brook reveals that the 100-year base flood elevation nearest to 290 Railroad Avenue is 27 feet above mean sea level ("AMSL") at the south end of the property and 28 feet on the north side of the property – see attached map. The 27 foot Base Flood Elevation is associated with an open section of Horseneck Brook (located between 330 Railroad Avenue south parcel boundary and the railroad tracks culvert farther to the south). A review of the flood profile for this section of Horseneck Brook reveals that the 500 year flood elevation is interpolated as ranging from approximately 32.6 feet AMSL and approximately 34 feet AMSL (from south to north in the area of the 290 Railroad Ave property).

The existing ground elevations at 290 Railroad Avenue range from a low of 38 feet (in the extreme west-central part of site adjacent to Field Point Road, where no equipment is planned) to a high of 41 feet AMSL; average grade where building and equipment are planned is 40 feet. As planned, the final grade of the Substation development would be similar to existing conditions, thus placing equipment at least 12 feet above the 100-year base flood elevation and at least 6 feet above the 500-year base flood elevation.

Resources:
Flood Insurance Rate Map Number 09001C0494G (Revised July 8, 2013)
FEMA – Fairfield County, Flood Profiles, Horseneck Brook, 165P

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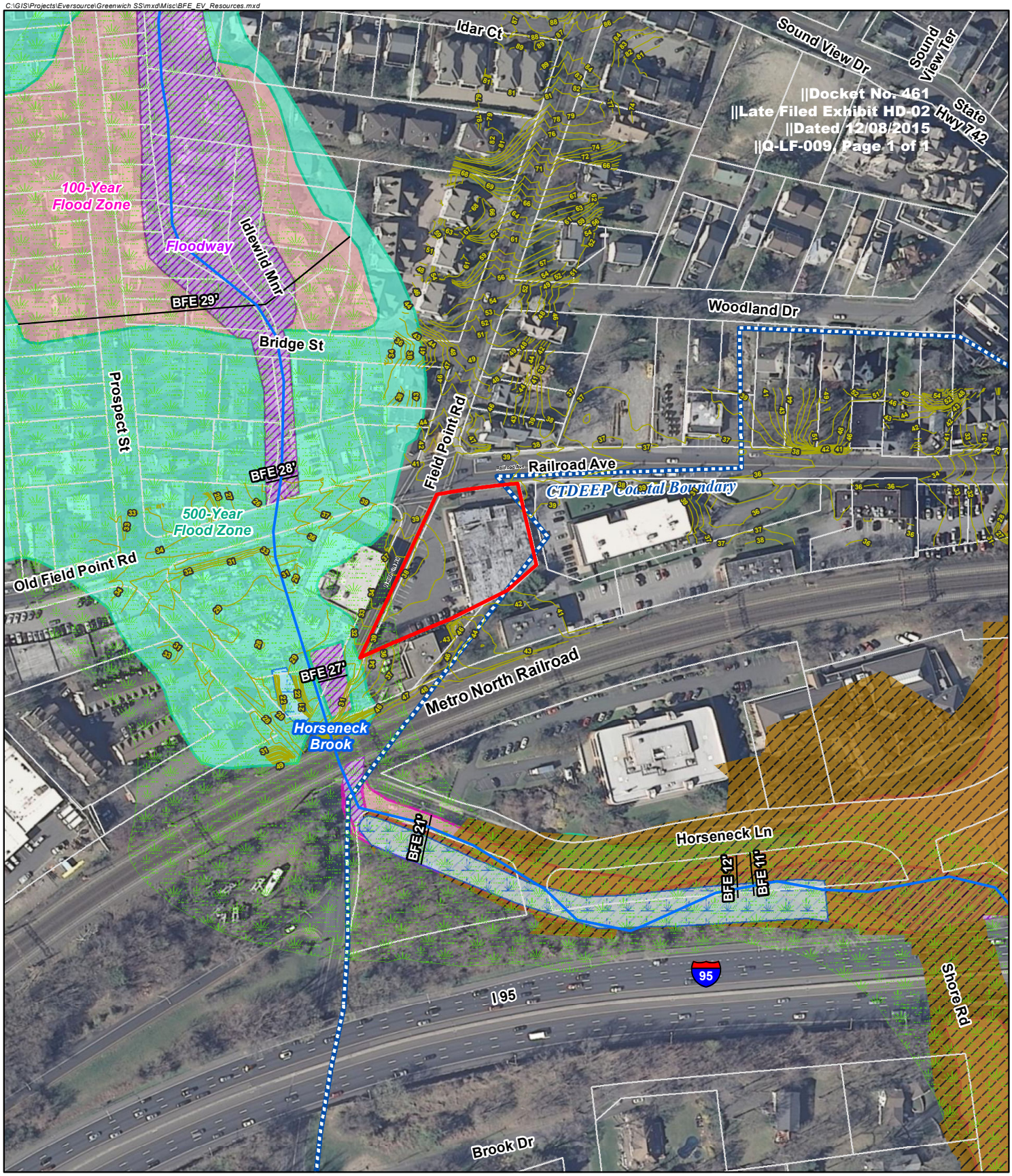


Legend

- Subject Property Boundary
- CTDEEP Watercourse
- CTDEEP Tidal Wetland (1990)*
- Inland Wetland
- Natural Diversity Database Area (12/2014)*
- Town of Greenwich Wetlands
- CTDEEP Coastal Boundary
- CTDEEP Hurricane Survey Inundation
- Approximate Parcel Boundary

FEMA Flood Zones

- 100-Year Flood Zone
- 500-Year Flood Zone
- Floodway
- Base Flood Elevation (BFE)
- Contour Line

*none in mapped area
Base Map: 2012 Aerial Photograph (CTECO)
Map Scale: 1 inch = 200 feet
Map Date: June 2015

N W E S

200 100 0 200 Feet

Greenwich Substation Environmental Resources Map

Greenwich Substation
290 Railroad Avenue
Greenwich, Connecticut

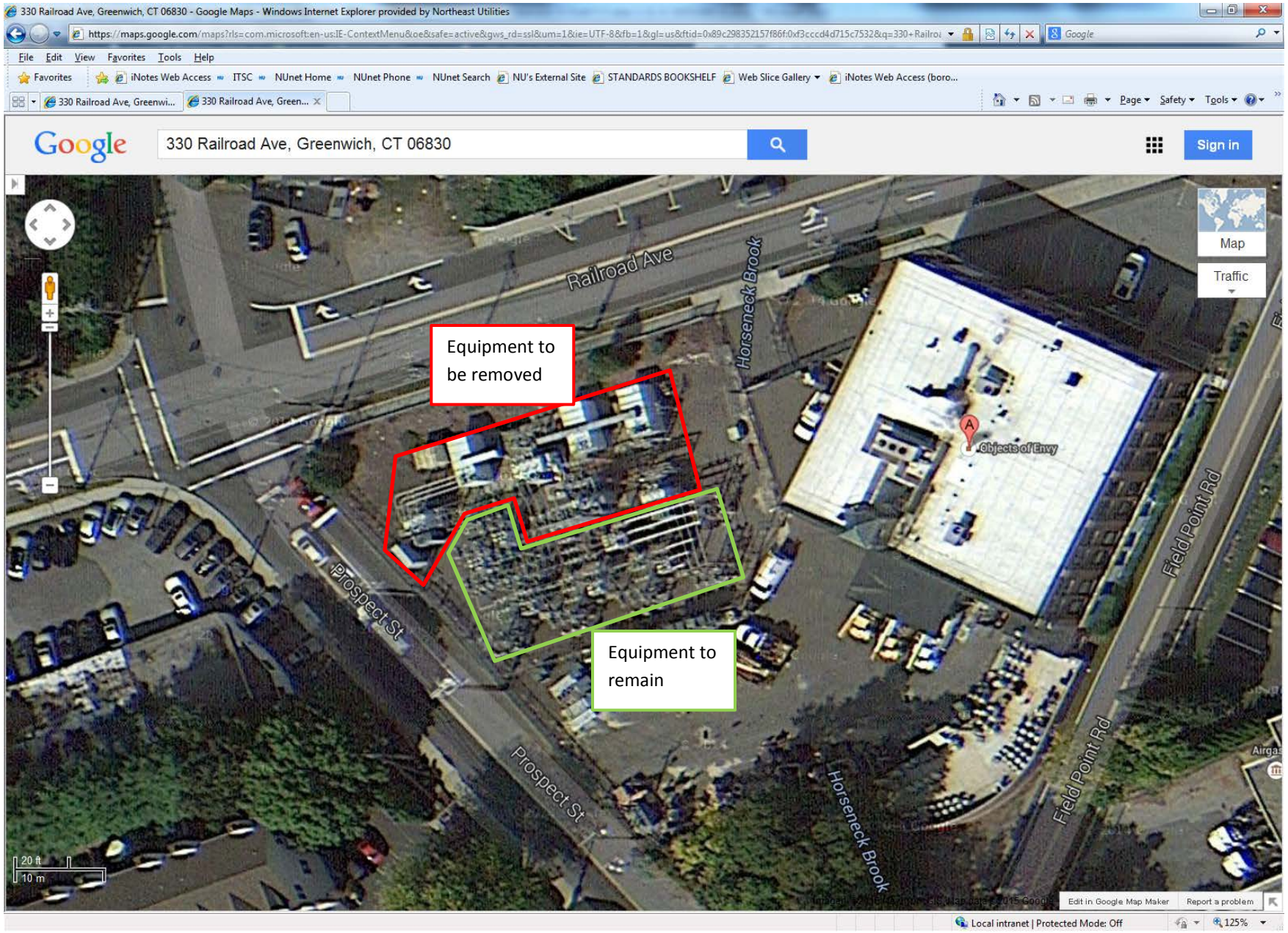
EVERSOURCE ENERGY

ALL-POINTS TECHNOLOGY CORPORATION

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Provide a plan of the Prospect Substation modifications after the Project has been completed.

Response:
See attached aerial photo of the Prospect Substation showing equipment to be removed and equipment to remain following the completion of the proposed Greenwich Substation.


330 Railroad Ave, Greenwich, CT 06830 - Google Maps - Windows Internet Explorer provided by Northeast Utilities
Google
330 Railroad Ave, Greenwich, CT 06830
Sign in
Map
Traffic
Railroad Ave
Horseneck Brook
Equipment to be removed
Equipment to remain
Objects of Envy
Field Point Rd
Prospect St
Prospect St
Field Point Rd
Horseneck Brook
20 ft
10 m
Edit in Google Map Maker
Report a problem
Local intranet | Protected Mode: Off
125%

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Investigate the potential of a bulk substation in North Greenwich. Transcript page 154.
North Greenwich Substation:

a. Provide when it will make sense to require a bulk in North Greenwich.
b. Where would we connect North Greenwich from?
c. Which substations could we come out of and what are the limitations?
d. Aerial Mapping of Substation
e. Provide high level cost of the proposed North Greenwich Expansion
f. Is land sufficient for bulk substation?
g. If the load growth requires a bulk and if so when?

Response:

a. Given the fact that North Greenwich Substation was recently rebuilt with all new equipment and there are no other issues that need to be addressed at this substation, the only reason to build a new substation would be due to load growth. Based on the 2013 peak load of approximately 31 MVA and a 1% growth in peak demand, a new substation would not be needed for at least 30 years. Please refer to Eversource's response to Q-LF-012 for an explanation of the substantial effects that switching operations had on North Greenwich Substation's peak load levels in 2014 and 2015.

b. A future bulk substation that would replace the existing North Greenwich Distribution Substation hypothetically could be supplied from Cedar Heights, Cos Cob, Glenbrook, Greenwich, South End, Tomac, or Waterside Substations. Presently, the most feasible option for the transmission source for a future bulk substation in North Greenwich would be Cedar Heights Substation. Cedar Heights Substation in Stamford is the most feasible candidate because it is the closest existing bulk substation to the existing North Greenwich Distribution Substation and Cedar Heights Substation has room to expand to accommodate two line positions for two new transmission circuits to North Greenwich Substation. A preliminary investigation of potential transmission routes from any of the existing substations to the North Greenwich site indicates that all of the routes would encounter similar types of routing issues, so picking the shortest route would minimize the risk of encountering significant issues with routing.

c. Cedar Heights Substation is a candidate with feasibility of feeding a bulk substation in North Greenwich. The straight line distance between Cedar Heights Substation and the existing North Greenwich Distribution Substation is about 5 miles. Cedar Heights Substation has about 15 MW of spare capacity available to

share with North Greenwich. If more power than 15 MW were required, then the two HPFF underground cables that feed the Cedar Heights Substation from Glenbrook Substation would need to be upgraded.

d. See attachment.

e. If the purpose of the bulk North Greenwich Substation would be to replace the existing distribution North Greenwich Substation, the scope of the bulk substation construction would be very similar to the proposed Greenwich Substation and the cost of the substation would be similar as well. Note that there would also be costs for the expansion at the 115-kV source substation as well as the 115-kV lines, which would most likely be different than the proposed project and there might be additional costs to upgrade the 115-kV supply lines to the source substation.

f. The North Greenwich Substation property is not adequate for a bulk substation expansion because there is very little existing unused space. There also is no abutting property that would be sufficient or available for either an expansion or building a new bulk substation. The property is constrained immediately to the west and to the north (across Old Mill Road) by Converse Pond Brook and associated wetlands. Land to the east and south is owned and maintained by CDOT as part of the Merritt Parkway ROW corridor. A new, separate bulk substation would have to be constructed somewhere nearby on other property within what has become an increasingly developed residential area, requiring acquisition of property for the sole purpose of building the new bulk substation.

g. Refer to answer "a".

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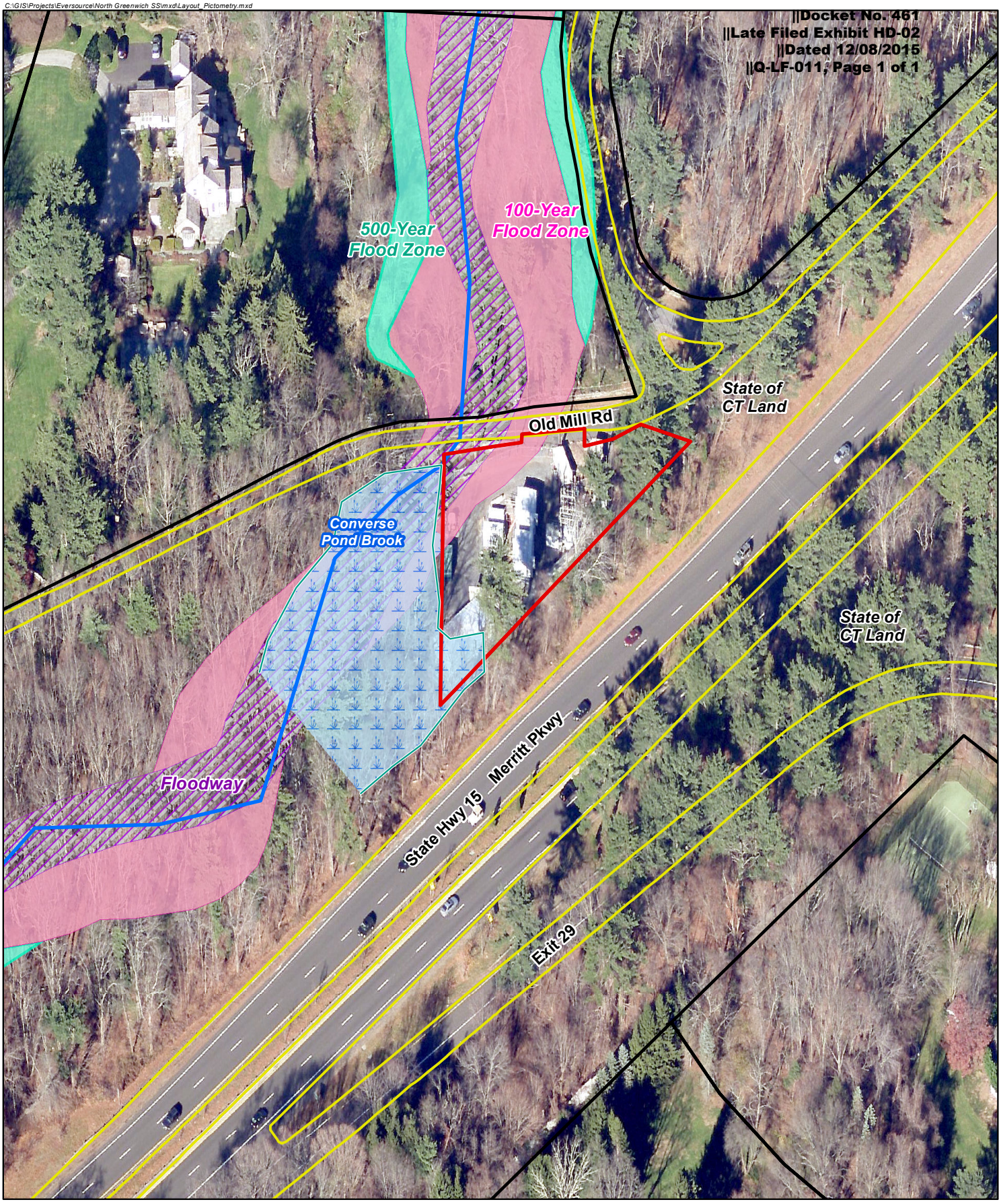

Legend

- North Greenwich Substation Property Boundary
- Approximate Parcel Boundary
- Approximate Road Edge
- CTDEEP Watercourse
- Wetland Line
- Wetland Area

FEMA Flood Zones

- 100-Year Flood Zone
- 500-Year Flood Zone
- Floodway

N W E S

100 50 0 100 Feet

Environmental Resources Map

North Greenwich Substation
Old Mill Road
Greenwich, Connecticut

EVERSOURCE ENERGY

ALL-POINTS TECHNOLOGY CORPORATION

Base Map: 2010 Pictometry Imagery
Map Scale: 1 inch = 100 feet
Map Date: December 2015

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Reconcile exhibit E2 (Color map) with the statement of growth in North Greenwich. Explain how there is a 33 percent increase in demand or use in North Greenwich, and yet the North Greenwich it's largely green which means very low demand. Ken took this as a late file. Transcript page 91, 154-155

Response:

Figure E2 depicts the estimated load demand concentration by area, it does not represent load growth.

The 33 percent increase in demand at the North Greenwich Substation between 2010 and 2015 was a result of switching operations in 2015, which were implemented in response to a fault that occurred on a circuit not normally fed by the North Greenwich Substation. Upon occurrence of the fault, Eversource used switching to maintain service to customers on the faulted circuit, which caused the additional load of such customers to be temporarily served by North Greenwich Substation. The temporary increase in demand resulting from the load of these customers, in combination with the aggregate demand at that time from customers normally supplied by North Greenwich Substation, established the highest peak demand on North Greenwich Substation in 2015. Similar switching operations resulted in temporary service to additional customers in 2014, which also established the peak demand on North Greenwich Substation for 2014. Consequently, the relatively higher peak demand levels for the North Greenwich Substation in 2014 and 2015 should not be equated to an increase in demand by the customers who are normally served by North Greenwich Substation.

Switching operations to maintain service to customers via temporary connection to another circuit, where available, is a frequently-used step to maintain electric service to customers when a fault occurs on a circuit. Occasionally, such switching operations can cause substantial swings in peak demand levels recorded for particular distribution substations in certain years, such as in 2014 and 2015 for North Greenwich Substation.

The Cos Cob Substation 27.6-kV system is the source for the Prospect, Byram and North Greenwich Distribution Substations so the demand remains the same on the Cos Cob Substation 27.6-kV system even when switching operations are used in order to maintain service to customers.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Investigate having Con Ed supply 50 MWs to Greenwich. Ask ConEd whether there are any capabilities existing in New York State that could be utilized for Greenwich? Transcript Page 149.

Response:
The Company reviewed an alternative of using distribution facilities to supply 50 MW of load from New York and an alternative of supplying the Greenwich Substation at the transmission level from New York. The Company also contacted staff at Consolidated Edison Company of New Company ("Con Ed") to determine existing capabilities of Con Ed to supply Greenwich.

Distribution Supplying 50 MW of Load from New York

This alternative would require building a new 13.2-kV substation at the New York border and initially serving 50 MVA of load in Connecticut at 13.2 kV. The new substation would be required because Con Ed staff indicated that Con Ed does not presently have 50 MVA of capacity available at the distribution level at the New York border. This alternative would require reconfiguring the existing Byram and Prospect Substations as follows:

1. supply 3 new distribution feeders at 13.2 KV from the New York border to Byram Substation and interconnect with the existing feeders,
2. supply 6 new distribution feeders at 13.2 KV from the New York border to Prospect Substation and interconnect with the existing feeders,
3. add feeder regulation as required, and
4. add loop scheme reconfigurations.

A high level evaluation utilized the Eastview Substation, a Con Edison Substation located in Hawthorne, New York, as the point of interconnection from the New York transmission system. It is the closest bulk transmission substation in New York (approximately 7 miles to border) and a similar set of transmission requirements for supplying a new 13.2-kV substation at the New York border would apply. The high level evaluation assumes additional transformation to 115-kV at Eastview Substation. It was also assumed that two new transmission lines to the Connecticut border at Greenwich would be built underground due to the urban nature of the path between Eastview Substation and Greenwich. This alternative would be a costly solution based upon the following factors:

1. The length of the transmission lines needed of approximately 14 circuit miles via roads;
2. The extensive substation improvements required for the interconnection in New York, including a 345/115-kV autotransformer to provide a transmission source for the new substation; and
3. The time and cost of permitting in New York.

Transmission Supplying the Greenwich Substation from New York

This alternative would involve supplying the new Greenwich Substation from two transmission supplies from the New York transmission system. A high level evaluation utilized the Eastview Substation, a Con Edison Substation located in Hawthorne, New York, as the point of interconnection from the New York transmission system. Eastview Substation was chosen because it is the closest transmission source to the proposed Greenwich Substation (approximately 10 miles to the proposed Greenwich substation site). The high level evaluation assumed additional transformation to 115-kV at Eastview Substation. It was also assumed that the 115-kV lines to Greenwich would be built underground due to the urban nature of the path between Eastview and Greenwich Substations. This alternative was considered cost prohibitive based on the following factors:

1. The length of the lines needed of approximately 20 circuit miles via roads;
2. The extensive substation improvements required for the interconnection in New York, including a 345/115-kV autotransformer to provide a 115-kV source for the lines to Greenwich; and
3. The time and cost of permitting in New York.

In addition to the above, there are several other considerations that involve the public need for transmission in New York to serve distribution customers in Connecticut, market complexities between the NYISO and ISO-NE, and operating a system that ties two transmission systems together via the distribution system.

If Connecticut load is radially fed from Con Ed, the load would obtain its capacity and energy requirements from the NYISO rather than ISO-NE. If this is the case, these charges would be based on NY costs rather than ISO-NE costs. The load would obtain default service from Con Ed or from retail suppliers sourcing the power in NY. It is likely that Con Ed would include charges for use of their distribution and/or transmission system to transmit the power to the NY/CT border. It is possible Con Ed would also include certain allocations of general and administrative costs as well. Purchase of power on that basis would also appear to conflict with the deregulated electric utility industry structure in Connecticut. Under Connecticut's current deregulated generation services structure, Eversource electric customers have the option to purchase their generation services directly from any authorized competitive suppliers of such services or directly from Eversource in the form of Standard Service or Supplier of Last Resort service in accordance with §16-244c of the Connecticut General Statutes and Public Utility Regulatory Authority regulations and decisions.

The interconnection of the New York and Connecticut systems would need further system planning studies to determine the impact on existing transfer limits between the two systems.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Review the Conservation Director's drainage study for Greenwich.

Response:
Mike Libertine contacted Ms. Denise Savageau regarding the Town's drainage studies and was informed that several drainage studies have been developed by consultants for the Greenwich Department of Public Works (beginning in 2008), that the development of these studies is an ongoing process and that there is no overall Town-wide study.

Mr. Libertine reviewed a study available on the Town's website related to Horseneck Brook (dated 4/1/10), which was prompted by flooding that occurred in the spring of 2007. The study determined that under existing conditions, flooding occurs during a 25-year storm; 24-hour storm event in four locations well north of the proposed Substation site at 290 Railroad Avenue.

Mr. Libertine also reviewed a study for the Morningside Drive-Circle Drive area (September 2009), located immediately north of Bruce Park, I-95 and MetroNorth Railroad. The study concluded that the drainage system in the area at that time was largely insufficient to handle peak rate of runoff produced by a 10-year, 24-hour duration storm event.

Based on this review, Mr. Libertine concluded that most stormwater originating in areas north of the Project is intercepted by engineered systems that manage and, to some extent treat the runoff prior to discharge to the Sound. As evidenced by the drainage studies, there are likely several areas where these systems are inadequate, but any direct impacts to the Project Area are more likely to be a result of storm surges associated with Indian Harbor and Long Island Sound in the area of Bruce Park, as opposed to Railroad Avenue (where Horseneck Brook is either highly channelized or culverted).